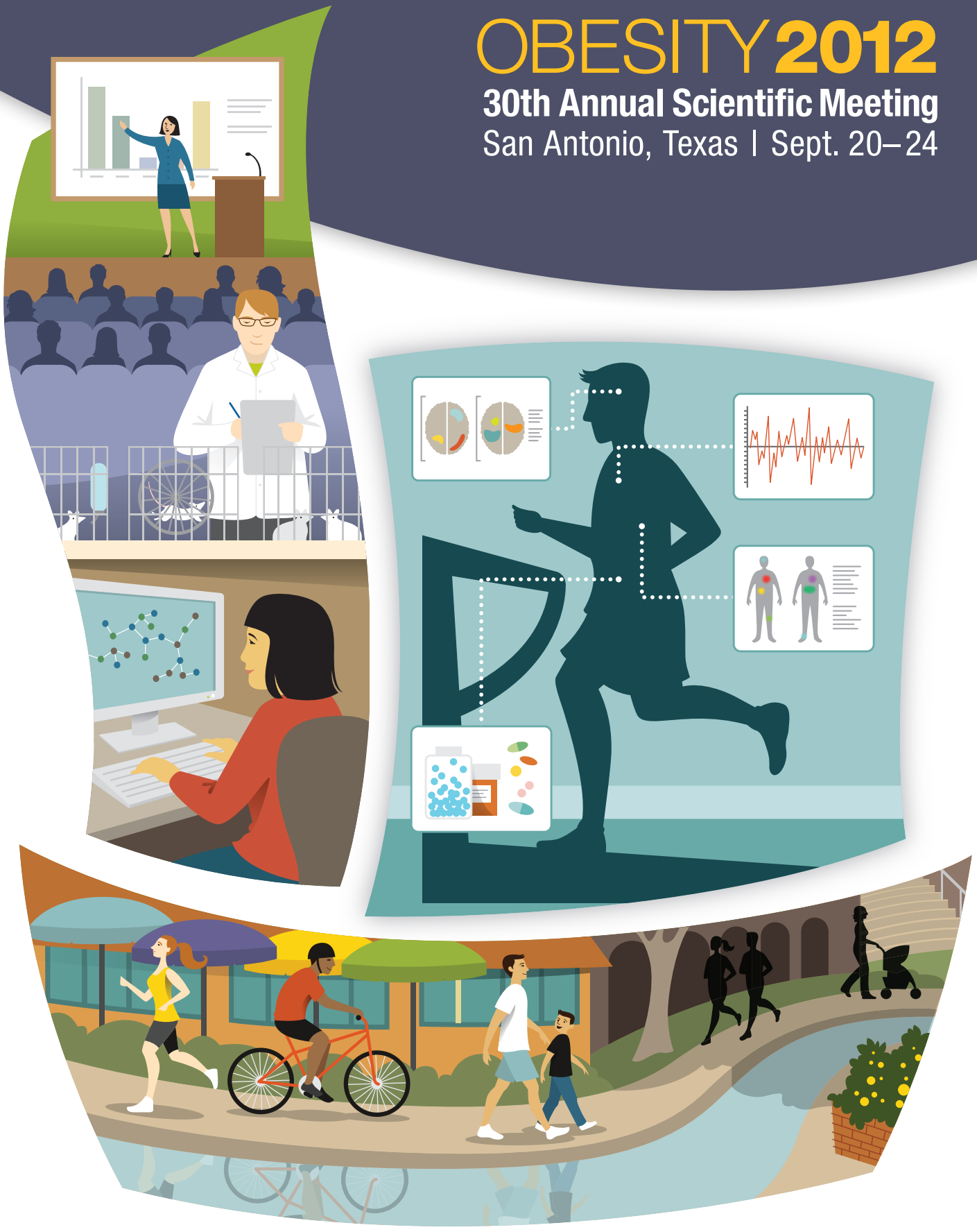
OBESITY 2012

30th Annual Scientific Meeting

San Antonio, Texas | Sept. 20–24



OBESITY SOCIETY

Abstract Book

OBESITY SOCIETY

About The Obesity Society

The Obesity Society (www.obesity.org) is the leading professional society dedicated to the study, prevention and treatment of obesity. Since 1982, the society has been committed to encouraging research on the causes, treatment, and prevention of obesity as well as keeping the scientific community and public informed of new advances in the field.

About the Meeting

Obesity 2012, the 30th Annual Scientific Meeting of The Obesity Society, brings together the most prestigious professionals in the field of obesity, from world-renowned basic and clinical researchers to educators, advocates and practitioners. Through its scientific, educational, mentoring and networking events, Obesity 2012 is dedicated to increasing knowledge, stimulating research, furthering careers, and promoting prevention and better treatment for those affected by obesity. Attendees will take part in scientific and education sessions, oral and poster presentations, and other programs covering the full interdisciplinary regimen of obesity research, education, advocacy and development, including key lectures from the top professionals in each field.

- Metabolism and Integrative Physiology
- Neuroscience
- Intervention and Clinical Studies
- Population Health
- Clinical and Professional Practice – Policy

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All Attendees Have Access to Obesity Online!

Audio Recordings of Obesity 2012 Sessions

- Listen to recordings of and view slides for annual scientific meeting sessions that you couldn't attend onsite
- Replay meeting highlights all year
- Download audio synchronized-to-PowerPoint slide presentations anytime, anywhere!
- Access to online sessions will be available starting in mid-November
- Colleagues who did not attend the Annual Meeting but wish to view content may purchase individual sessions or the entire set of conference recordings!

Continuing Education Credits for Obesity 2012

- Attendees may complete session evaluations, claim credits and print certificates online
- Attendees may choose from CME, CNE, CPE, ACPE, or CEU credit types

All of this is included with your Obesity 2012 registration

Simply visit Obesity Online at www.softconference.com/obesity

Learn more about Obesity Online by visiting the Education Booth in the Exhibit Hall

Obesity 2012 Abstracts

September 20 – 24, 2012

San Antonio, TX

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Learning Objectives, Accreditation and Continuing Education

Learning Objectives

At the conclusion of this meeting, attendees will be able to:

- Analyze results from recent basic research studies in cell and molecular biology (signal transduction, substrate/fuel metabolism, transcriptional regulation) and assess their potential clinical implications on the causes and treatment of obesity and its related comorbidities.
- Analyze results from recent basic research studies in integrative biology (CNS and gut regulation of energy balance, animal and human physiology) and assess their potential clinical implications on the causes and treatment of obesity and its related comorbidities.
- Analyze results from recent clinical studies (diet, physical activity, behavior, methodology, body composition, pharmacology, surgery) and access their potential impact on current strategies for diagnosing and treating obesity and its related comorbidities.
- Analyze the results from recent population studies (genetics, physical activity and/or diet, behavioral/economic/ environmental, metabolic/CVD/methodology) and assess their impact on our current ability to identify groups at risk and develop preventive strategies.
- Implement new strategies and techniques in nutrition, exercise and physical activity, behavioral medicine, pharmacotherapy, and surgery to improve clinical outcomes in overweight/obese patients.

Accreditation and Continuing Education Credit

Physicians

The Obesity Society is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

The Obesity Society designates this live educational activity for a maximum of 21.50 *AMA PRA Category 1 Credits*™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

International CME

International Physicians are formally eligible for *AMA PRA Category 1 Credit*™.

Physician Assistants

AAPA accepts Category 1 Credits from AOACCME, Prescribed credit from AAFP, and *AMA PRA Category 1 Credits*™ for the PRA from organizations accredited by ACCME.

Dietitians

Registered Dietitians may earn a maximum of 21.50 hours of continuing professional education (CPE) units toward recertification as part of their individualized Professional Development Portfolio program. Each dietitian should record the actual time he/she spent in these activities in their Step 4—Learning Activities Log.

Pharmacists

Accreditation Statement

The Minnesota Pharmacists Association is accredited by the Accreditation Council for Pharmacy Education (ACPE) as a provider of continuing education. Successful completion of this program qualifies for a maximum of 21.50 contact hours.

Nurses

Aspen CME Services is an approved provider of continuing nursing education by the Wisconsin Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.

Aspen CME Services designates this activity for 21.50 contact hours.

CA Nurses

Aspen CME Services is approved by the California Board of Registered Nursing, Provider number CEP14739, for 21.50 contact hours.

Satisfactory Completion for Credits

All attendees must complete a course attendance/evaluation form online. http://tos.sclivelearningcenter.com Each session claimed for credit must be attended in its entirety.

CONTENTS

OBESITY2012 ABSTRACTS

The science presented at Obesity 2012, including the abstracts contained in this Abstract Book, are embargoed until time of presentation.
We appreciate your cooperation in honoring this embargo request.

All Oral Abstracts are embargoed until start of presentation.
All Posters are embargoed until day of presentation.

For full details of the Obesity 2012 Embargo Policy, please go to:
http://www.obesity.org/images/AbstractEmbargoPolicies2012.pdf

2012 Diversity Tour

The Diversity Section is excited to recognize the top abstracts from the 2nd Annual Diversity Tour. These abstracts have been identified as being among the top abstracts from over 368 abstracts submitted for consideration. The top abstracts recognized here represent a small sampling of the impressive breadth of work being carried out by abstract submitters in diverse populations. The goal of the Diversity Tour is to highlight work in the field of obesity that includes a focus on diverse populations. The Diversity Tour is designed to emphasize this research, hopefully serving as a spark for members of TOS to engage in scientific dialogue and discovery that further addresses issues relevant to diverse population groups. We encourage you to take a look at all the abstract presentations that are a part of the 2nd Annual Diversity Tour.

Please join us in congratulating our Diversity Tour winners

133-P **Differential Expression of SOCS7, PDIA3, TBRG1 and COL4A2 in Visceral Adipose Tissue of Obese Diabetic African Americans**
Ayo P. Doumatey, Hanxia Hang, Adebowale Adeyemo, Charles N. Rotimi

163-P **Balancing the Scales: An Examination of the Relationship Between Maternal Body Mass Index and Placental Infection**
Karyn A. Stewart

272-P **Identification of Pleiotropic Genetic Effects on Obesity and Brain Structure**
Joanne E. Curran, Anderson M. Winkler, Rene L. Olvera, Melanie A. Carless, Thomas D. Dyer, Jack W. Kent, Peter Kochunov, Michael C. Mahaney, Anthony Comuzzie, Peter T. Fox, Laura Almasy, Ravindranath Duggirala, John Blangero, David C. Glahn

279-P **Neural White Matter and Adiposity Influenced By Common Genetic Factors in Mexican-Americans**
Elena Spieker, Peter Kochunov, Laura M. Rowland, Ravindranath Duggirala, Rene L. Olvera, Laura Almasy, John Blangero, David C. Glahn, Joanne E. Curran

371-P **Racial Differences in Weight Loss Among Adults in Behavioral Weight Loss Intervention: The Role of Dietary Intake and Physical Activity**
Kelliann Davis, Deborah F. Tate, Kristen Polzien, Karen Erickson, Wei Lang, Amy D. Rickman, John M. Jakicic, Rebecca Neiberg

493-P **Racial Disparities in Lipid Profile Outcomes Following Gastric Bypass Surgery**
Nawfal W. Istfan, Jen-Pin Chuang, Wendy A. Anderson, Megan Ruth, Donald T. Hess, Brian Carmine, Caroline Apovian

532-P **Ethnic Differences in Ectopic Fat Deposition in Pre-Diabetic Overweight African-American (AA) and Latino (LA) Adolescents**
Claudia Toledo-Corral, Tanya L. Alderete, Sherryl Esplana, Houchun H. Hu, Krishna S. Nayak, Michael Goran, Marc J. Weigensberg

729-P **African Men Have A Lower Waist Circumference of Risk for Cardiometabolic Disease Than African-American Men**
Sophia S. Yu, Peter T. Katzmarzyk, Anne E. Sumner, Charles N. Rotimi

730-P **Adipokines Are Associated With Adiposity Across the Epidemiologic Transition.**
Lara Dugas, Pascal Bovet, Estelle Lambert, Naomi Levitt, Jacob Plange-Rhule, Ramon A. Durazo-Arvizu, Ulf Ekelund, Soren Brage, Terrence Forrester, David A. Shoham, Amy Luke

778-P **Optimal Thresholds of Visceral Adipose Tissue For the Identification of Cardiometabolic Risk in White and African American Adults**
Peter T. Katzmarzyk, Steven B. Heymsfield, Claude Bouchard

DT To highlight the range of work focused on diverse populations, the Diversity Section has identified abstracts that are a part of the Diversity Tour. These abstracts have been labeled with the symbol “DT” next to the abstract number in the sections of this book that contain the full abstract, to recognize research that includes diverse populations.

Poster Presentations

Session 1: Friday, September 21, 12:00 PM – 1:30 PM
Session 2: Friday, September 21, 6:00 PM – 7:30 PM
Session 3: Saturday, September 22, 12:00 PM – 1:30 PM

Location: Exhibit Hall C

Refer to Final Program for Poster Presentation Assignments

* Track 1: Metabolism and Integrative Physiology
Track 2: Neuroscience
Track 3: Intervention and Clinical Studies
Track 4: Population Health and Policy

DT To highlight the range of work focused on diverse populations, the Diversity Section has identified abstracts that are a part of the Diversity Tour. These abstracts have been labeled with the symbol “DT” next to the abstract number in the sections of this book that contain the full abstract, to recognize research that includes diverse populations.

Oral Presentations

September 21, 2012

8:00 AM – 9:30 AM
Session: Plenary Oral Abstract Presentations
Chair: Patrick M. O'Neil, PhD

8:00 AM – 8:15 AM

1-OR[DT] The Joint Role of Moderate to Vigorous Physical Activity and Established Obesity Genetic Variants With Body Mass Index in a Large and Ethnically Diverse Cohort of US Adolescents
Andrea S. Richardson, Kari North, Mariaelisa Graff, Kristin L. Young, Leslie A. Lange, Ethan M. Lange, Kathleen M. Harris, Penny Gordon-Larsen *Chapel Hill, NC*

8:15 AM – 8:30 AM

2-OR B Lymphocytes Are Master Regulators of a Pro-inflammatory T Cell Balance in Obesity and Glucose Intolerance
Jason DeFuria, Anna C. Belkina, Jennifer Snyder-Cappione, Madhumita Jagannathan-Bogdan, Jordan Carr, Douglas J. Markham, Jessica Allen, Jacqueline Bouchard, Yanina Nersesova, Amanda A. Watkins, Gianluca Toraldo, Ravi Jasuja, Marie E. McDonnell, Caroline Apovian, Gerald V. Denis, Barbara Nikolajczyk *Boston, MA*

8:30 AM – 8:45 AM

3-OR Co-agonism of GLP1 and Glucagon Receptors Through Glucagon/Exendin-4 Analogues Provides a Potentially Valuable Treatment For Obesity
James Plumer, James Minnion, Stephen R. Bloom *London, United Kingdom*

8:45 AM – 9:00 AM

4-OR High-Satiety Foods: How Robust Are Their Effects in an Obesogenic Environment?
Rachel A. Williams, Liane S. Roe, Barbara J. Rolls *University Park, PA*

9:00 AM – 9:15 AM

5-OR The Influence of the Children's Food and Beverage Advertising Initiative: A 2006-2011 Comparison of Food and Beverage Advertising on Television in Canada
Monique Potvin Kent, Alissa Wanless, Margaret de Groh *Ottawa, Canada*

9:15 AM – 9:30 AM

6-OR Does Behavioral Intervention in Pregnancy Prevent High Postpartum Weight Retention? 12 Month Outcomes in the Fit For Delivery Study
Suzanne Phelan *San Luis Obispo, CA*; Maureen G. Phipps *Providence, RI*; Barbara Abrams *Berkeley, CA*; Angelica Adams *Providence, RI*; Andrew Schaffner *San Luis Obispo, CA*; Rena R. Wing *Providence, RI*

4:45 PM – 6:15 PM
Session: Adipose Regulation
Chairs: Yang Wang, MD, PhD, Chad M. Paton, PhD

4:45 PM – 5:00 PM

7-OR Dynamic Regulation of IGF-1 in Adipose Tissue
Hye Rim Kang, Xiaoyuan Xu, Anthony Ferrante *New York, NY*

5:00 PM – 5:15 PM

8-OR G-Protein Coupled Estrogen Receptor (GPER) Regulates Adiposity in Mice By Modulating Glucose Uptake
Geetanjali Sharma, Che-Lin Hu, Helen J. Hathaway, Eric R. Prossnitz *Albuquerque, NM*

5:15 PM – 5:30 PM

9-OR An E2 Ubiquitin-Conjugating Enzyme Controls Lipolysis and Triglycerides Stores in Adipocytes
Genevieve Marcelin, Shun-Mei Liu, Gary J. Schwartz, Streamson Chua *Bronx, NY*

5:30 PM – 5:45 PM

10-OR The Ubiquitin Ligase Siah2 Regulates PPARγ Protein Levels and Insulin Sensitivity
Gail Kilroy, Heather Kirk-Ballard, Lauren Carter, Elizabeth Floyd *Baton Rouge, LA*

5:45 PM – 6:00 PM

11-OR Angiotensinogen Gene Silencing in Adipocytes Reduces Markers of Lipogenesis and Inflammation
Naima Moustaid-Moussa, Wenting Xin, Nishan S. Kalupahana, Suzanne Booker, Nalin Siriwardhana *Knoxville, TN*

6:00 PM – 6:15 PM

12-OR[DT] Dedifferentiation of Human Mature Adipocytes From Subcutaneous and Omental Fat Depots Using Ceiling Culture
Julie Lessard, Mélissa Pelletier, Laurent Biertho, Picard Marceau, Andre Tchernof *Quebec, Canada*

4:45 PM – 6:15 PM
Session: Reward Circuits and Related Topics
Chair: TBD

4:45 PM – 5:00 PM

13-OR Central μ-opioid System Response to Feeding in Obesity
Paul R. Burghardt, Amy E. Rothberg, Charles Burant, Jon-Kar Zubieta *Ann Arbor, MI*

5:00 PM – 5:15 PM

14-OR The NMDA Feceptor NR2B Subunits in the Parabrachial Nucleus Mediate Compensatory Feeding
Qi Wu *Iowa City, IA*; Ruimao Zheng, Stanley McKnight, Richard Palmiter *Seattle, WA*

5:15 PM – 5:30 PM

15-OR Global and Intra-Network Functional Connectivity in Overweight Middle-Aged and Older Adults With Insulin Resistance
Jason Hassenstab, Dana M. Gredysa, Jewell Thomas, Beau Ances, Tammie L. Benzinger, Anne Fagan, John C. Morris *St. Louis, MO*

5:30 PM – 5:45 PM

16-OR The Role of Obesity in Chemotherapy-Induced Malaise
Bart C. De Jonghe, Laura E. Rupprecht, Scott E. Kanoski, Matthew R. Hayes *Philadelphia, PA*

5:45 PM – 6:00 PM

17-OR Roux-en-Y Gastric Bypass Increases Alcohol Reward in Dietary Obese Rats and Altered Ghrelin Signaling Is a Plausible Mechanism
Andras Hajnal, Alevtina Zharikov, Jonathan Tomasko *Hershey, PA*; Panayotis K. Thanos *Upton, NY*; Ann M. Rogers *Hershey, PA*

6:00 PM – 6:15 PM

18-OR Amylin Receptor Signaling in the Ventral Tegmental Area Reduces Food Intake By Suppressing Meal Size
Elizabeth G. Mietlicki-Baase, Laura E. Rupprecht, Diana R. Olivos, Matthew R. Hayes *Philadelphia, PA*

4:45 PM – 6:15 PM
Session: Exercise, Metabolic Disease Risk, and Obesity
Chair: Joseph Houmard, PhD

4:45 PM – 5:00 PM

19-OR Why Do Individuals Not Lose More Weight From an Aerobic Exercise Intervention at a Defined Dose? An Energy Balance Analysis
Diana Thomas *Montclair, NJ*; Claude Bouchard, Timothy Church *Baton Rouge, LA*; Cris A. Slentz, William E. Kraus *Durham, NC*; Leanne Redman, Corby K. Martin *Baton Rouge, LA*; Analiza M. Silva *Cruz-Quebrada, Portugal*; Michaela Vossen *Montclair, NJ*; Klaas Westerterp *Maastricht, Netherlands*; Steven B. Heymsfield *Baton Rouge, LA*

5:00 PM – 5:15 PM

20-OR Aerobic Exercise Training Differentially Affects Autonomic Function in Obese Individuals With Either Low or High Parasympathetic Modulation
Tracy Baynard *Chicago, IL*; Jill Kanaley *Columbia, MO*; Styliani Goulopoulou *Augusta, GA*; Ruth M. Sosnoff *Urbana, IL*; Bo Fernhall *Chicago, IL*

5:15 PM – 5:30 PM

21-OR Effect of Physical Activity on Energy Balance During Weight Loss Intervention
James P. DeLany, John M. Jakicic, Kazanna Hames, Bret H. Goodpaster *Pittsburgh, PA*

5:30 PM – 5:45 PM

22-OR Silent Coronary Atherosclerosis in Metabolically Healthy and Unhealthy Obese People From Families With Premature Coronary Disease
Rochelle Brown, Brian G. Kral, Lisa R. Yanek, Dhananjay Vaidya, Lewis C. Becker, Diane M. Becker *Baltimore, MD*

5:45 PM – 6:00 PM

23-OR Differential Hemoglobin A1c and Antiglycemic Medication Effects of Two Interventions Commensurate For Weight Loss
Stéphanie B. Mayer, Amy S. Jeffreys, Maren K. Olsen, Jennifer McDuffie, Mark Feinglos, William S. Yancy *Durham, NC*

6:00 PM – 6:15 PM

24-OR Excess Fall in Blood Pressure Predicts Negative Outcomes in Overweight High Cardiovascular Risk Patients – Findings From SCOUT
Arya M. Sharma *Edmonton, Canada*; Ian D. Caterson *Sydney, Australia*; Nick Finer *London, United Kingdom*; Walmir Coutinho *Rio de Janeiro, Brazil*; Luc F. Van Gaal *Antwerp, Belgium*; Aldo P. Maggioni *Florence, Italy*; Christian Torp-Pedersen *Hellerup, Denmark*; Philip W. James *London, United Kingdom*

4:45 PM – 6:15 PM
Session: Food and Beverage Consumption in Children and Adolescents
Chairs: Simone A. French, PhD, Daniel R. Taber, PhD, MPH

4:45 PM – 5:00 PM

25-OR How School Meal Nutrition Laws May Offset Disadvantages in Healthy Food Availability Within the Home
Daniel R. Taber, Jamie F. Chriqui, Frank J. Chaloupka *Chicago, IL*

5:00 PM – 5:15 PM

26-OR[DT] Underestimation of Calories Purchased at Fast-Food Restaurants For School-Age Children—Who and How Much?
Jason P. Block, Suzanne K. Condon, Ken Kleinman, Stephanie Linakis, Matthew W. Gillman *Boston, MA*

5:15 PM – 5:30 PM

27-OR Consumption of Sports Drinks Prospectively Associated With Greater Weight Change Among Adolescents
Alison E. Field, Alan Flint, Kendrin R. Sonneville, Holly Gooding, Jennifer Falbe *Boston, MA*; Jess Haines *Guelph, Canada*; Bernard Rosner, Carlos A. Camargo *Boston, MA*

5:30 PM – 5:45 PM

28-OR A Decrease in Diet Quality Occurs During Pregnancy in Overweight and Obese Women Which Is Maintained Post-Partum
Lisa J. Moran, Zhixian Sui, Courtney S. Cramp, Jodie M. Dodd *North Adelaide, Australia*

5:45 PM – 6:00 PM

29-OR Associations of Parental Control of Feeding With Overeating and With Food Sneaking, Hiding, and Hoarding Among Young Overweight Children
Kendrin R. Sonneville, Sheryl L. Rifas-Shiman, Steven Gortmaker, Kathleen F. Mitchell, Matthew W. Gillman, Elsie M. Taveras *Boston, MA*

6:00 PM – 6:15 PM

30-OR Association of Emotional and Externally-Induced Eating With Weight Status Among Adolescent Males and Females in the United States
Victoria Macias, Kendrin R. Sonneville, Alan Flint, Holly Gooding *Boston, MA*; Jess Haines *Guelph, Canada*; Kirsten Davison, Carlos A. Camargo, Alison E. Field *Boston, MA*

Oral Presentations

September 22, 2012

3:15 PM – 4:45 PM
Session: Metabolic Mechanisms of Gastric Bypass
Chairs: Judith Korner, MD, PhD, Nancy Puzziferri, MD

3:15 PM – 3:30 PM

31-OR Prehepatic Insulin Secretion Rate 3 Years After GBP in Patients With T2DM
Phoebe Bunker, Phoebe Johnson-Black *New York, NY*; Andre C. Carpentier *Sherbrooke, Canada*; Gary Wang, Keesandra K. Agenor, Furcy Paultre, Misty Embrey, Ciaran S. OBrien *New York, NY*; Peter Homel *Brooklyn, NY*; Antonia Colarusso, Blandine Laferrere *New York, NY*

3:30 PM – 3:45 PM

32-OR Changes in Insulin Sensitivity and Secretion in Patients With T2DM After Weight Loss Induced By Roux-en-Y Gastric Bypass or Equivalent Caloric Restriction
Clifton M. Jackness, Wahida Karmally, Gerardo J. Febres, Irene M. Conwell, Donald J. McMahon, Judith Korner *New York, NY*

3:45 PM – 4:00 PM

33-OR Up-Regulation of Fatty Acid Uptake into Adipocytes Persists After Major Bariatric Surgical Weight Loss
Paul D. Berk, Fengxia Ge, Harrison Lobdell, Chunguang Hu, Shengli Zhou, Jose L. Walewski, Gregory Dakin, Alfons Pomp, William B Inabnet, Marc Bessler *New York, NY*

4:00 PM – 4:15 PM

34-OR Changes in Gut Morphology and Gut Hormone Gene Expression Following Roux-en-Y Gastric Bypass
Frederik Hansen, Thomas A. Lutz, Niels Vrang, Jacob Jelsing *Hørsholm, Denmark*

4:15 PM – 4:30 PM

35-OR miRNA-Regulated Gene Expression in Subcutaneous Adipose Tissue From Severely Obese Subjects Before and After Bariatric Surgery
Carmela Nardelli, Maddalena Ferrigno, Laura Iaffaldano, Giuseppe Labruna, Andreina Alfieri, Vincenzo Pilone, Pietro Forestieri, Lucia Sacchetti, Pasqualina Buono *Naples, Italy*

4:30 PM – 4:45 PM

36-OR Gene Expression Profiling Reveals Widespread, Weight Loss-Independent Changes in Cytoskeletal Signaling After RYGB in Mice
Ida Hatoum *Charlestown, MA*; Nicholas Stylopoulos *Boston, MA*; Andrea Peier, Daniel Kemp, Donald Marsh *Rahway, NJ*; Lee M. Kaplan *Charlestown, MA*

3:15 PM – 4:45 PM
Session: Appetite and Eating Behaviors
Chairs: Myles Faith, PhD, Kyung E. Rhee, MD, MSc

3:15 PM – 3:30 PM

37-OR Does Increasing the Variety of Vegetables and Fruits at a Snack Influence Intake in Preschool Children?
Samantha M. Kling, Leann L. Birch, Jennifer S. Meengs, Liane S. Roe, Barbara J. Rolls *University Park, PA*

3:30 PM – 3:45 PM

38-OR Restrained Eating Is Associated With Acquired Differences in the Response of Plasma Ghrelin to a Milkshake Preload
Rachel Myhre, Mario Kratz *Seattle, WA*; Janet Polivy *Toronto, Canada*; Jack Goldberg, Dedra Buchwald, David E. Cummings, Ellen A. Schur *Seattle, WA*

3:45 PM – 4:00 PM

39-OR Children's Ad Libitum Intake of High-Fat Foods and Body Composition Predict Level of Parental Weight Concern
Kathleen Keller, Laura Kuilema *University Park, PA*; Annemarie Olsen *Copenhagen, Denmark*

4:00 PM – 4:15 PM

40-OR Eating in the Absence of Hunger and Caloric Compensation: A Study of Weight-Discordant Siblings
Tanja V. Kral *Philadelphia, PA*; David B. Allison *Birmingham, AL*; Leann L. Birch *University Park, PA*; Virginia A. Stallings, Renee H. Moore *Philadelphia, PA*; Myles S. Faith *Chapel Hill, NC*

4:15 PM – 4:30 PM

41-OR Visual Illusions and Plate Design: The Effects of Plate Rim Widths and Designs on Perceptions of Food Portions
Arianna D. McClain, Wouter van den Bos, Donna Matheson, Manisha Desai, Sam McClure, Thomas Robinson *Palo Alto, CA*

4:30 PM – 4:45 PM

42-OR[DT] Individual Differences in Susceptibility to Large Portion Sizes Among Obese and Non-Obese African American Children
Jennifer O. Fisher, Issa Zakeri *Philadelphia, PA*; Leann L. Birch *State College, PA*; Tanja V. Kral *Philadelphia, PA*

3:15 PM – 4:45 PM
Session: Children
Chairs: Kirsten Davison, PhD, Courtney Byrd-Williams, PhD

3:15 PM – 3:30 PM

43-OR Important Improvements in Nutrition and Physical Activity Habits in Young Children Attending MEND 2-4 in the UK: A Community-Based Healthy Lifestyle Program For the Prevention and Management of Childhood Obesity
Maria Kolotourou, Paul Chadwick, Duncan Radley, Michelle Ball, Paul M. Sacher *London, United Kingdom*

3:30 PM – 3:45 PM

44-OR Childhood Obesity Prevention: A Significant Decrease of Overweight Prevalence in Two Pilot Towns of the VIASANO Programme After 2 Years of Intervention
Jean-Michel Borys *Paris, France*; Mireille Roillet, Julie Beysens, Nèle Jacobs, Jean Nève *Brussels, Belgium*

3:45 PM – 4:00 PM

45-OR Loss of Control Over Eating, Weight/Shape Concern, and Treatment Response Among Overweight Treatment-Seeking Children
Kelly R. Theim, Andrea E. Kass, Richard I. Stein *St. Louis, MO*; Brian E. Saelens *Seattle, WA*; R. Robinson Welch *St. Louis, MO*; Michael G. Perri *Gainesville, FL*; Kenneth B. Schechtman *St. Louis, MO*; Leonard H. Epstein *Buffalo, NY*; Denise E. Wilfley *St. Louis, MO*

4:00 PM – 4:15 PM

46-OR Changes in Parent Feeding Practices Are Associated With Positive Weight Outcomes for Obese Preschoolers
Elizabeth S. Kuhl, Lisa M. Clifford, Stephanie S. Filigno, Lori J. Stark *Cincinnati, OH*

4:15 PM – 4:30 PM

47-OR Parity Predicts Excessive Gestational Weight Gain and Higher Infant Birth Weight Among Women Intending to Breastfeed
Chelsea M. Rose, Michele Marini, Stephanie Anzman-Frasca, Jennifer S. Savage *State College, PA*; Ian M. Paul *Hershey, PA*; Leann L. Birch *State College, PA*

4:30 PM – 4:45 PM

48-OR Active Video Gaming Compared to Unstructured, Outdoor Play in Children: Measurements of Estimated Energy Expenditure and Percent Time in Moderate-to Vigorous-Intensity Physical Activity
Susan B. MacArthur, Hollie Raynor *Knoxville, TN*

3:15 PM – 4:45 PM
Session: Advances in Genetics
Chair: Ruth J. Loos, PhD

3:15 PM – 3:30 PM

49-OR Sedentary Behavior May Interact With Some Obesity Genes, Independent of Physical Activity, to Influence BMI: Findings From a US, Ethnically-Diverse Adolescent Cohort
Mariaelisa Graff, Kari North, Andrea S. Richardson, Kristin L. Young, Karen L. Mohlke, Leslie A. Lange, Ethan M. Lange, Kathleen M. Harris, Penny Gordon-Larsen *Chapel Hill, NC*

3:30 PM – 3:45 PM

50-OR Meta-Analyses of Genetic Associations in Up to 339,224 Individuals Identify 61 New Loci For BMI, Confirming a Neuronal Contribution to Body Weight Regulation and Implicating Several Novel Pathways
Ruth J. Loos *New York, NY*; Sailaja Vedantam *Boston, MA*; Felix R. Day *Cambridge, United Kingdom*; Sonja Berndt *Bethesda, MD*; Stefan Gustafsson *Stockholm, Sweden*; Adam E. Locke, Corey Powell, Bratati Kahali *Ann Harbor, MI*; Damien C. Croteau-Chonka *Chapel Hill, NC*; Thomas W. Winkler *Regensburg, Germany*; André Scherag *Essen, Germany*; Inês Barroso *Hinxton, United Kingdom*; Jacques S. Beckmann *Lausanne, Switzerland*; Anne Justice *Chapel Hill, NC*; Cecilia M. Lindgren *Oxford, United Kingdom*; Tune H. Pers *Boston, MA*; Peter Visscher *Brisbane, Australia*; Cristen Willer *Ann Harbor, MI*; Jian Yang *Brisbane, Australia*; Karen L. Mohlke, Kari North *Chapel Hill, NC*; Joel N. Hirschhorn *Boston, MA*; Erik Ingelsson *Stockholm, Sweden*; Elizabeth Speliotes *Ann Harbor, MI*

3:45 PM – 4:00 PM

51-OR Secular Trends in the Effect of an Obesity Genetic Risk Score on Adulthood BMI and Adiposity
Ellen W. Demerath *Minneapolis, MN*; Audrey C. Choh *Dayton, OH*; William Johnson *Minneapolis, MN*; Joanne E. Curran, Thomas D. Dyer *San Antonio, TX*; Miryoung Lee, Bradford Towne *Dayton, OH*; John Blangero *San Antonio, TX*; Stefan A. Czerwinski *Dayton, OH*

4:00 PM – 4:15 PM

52-OR Sex-Stratified Genome-Wide Association Studies Including 270,000 Individuals Show Evidence For Sexual Dimorphism in Genetic Loci For Anthropometric Traits
Tuomas O. Kilpeläinen, Joshua C. Randall *Cambridge, United Kingdom*; Thomas W. Winkler *Regensburg, Germany*; Zoltán Kutalik *Lausanne, Switzerland*; Sonja Berndt *Bethesda, MD*; Anne U. Jackson *Ann Arbor, MI*; Keri L. Monda *Chapel Hill, NC*; Tõnu Esko *Tartu, Estonia*; Reedik Mägi *Oxford, United Kingdom*; Shengxu Li *Cambridge, United Kingdom*; Tsegaseassie Workalemahu *Boston, MA*; Mary F. Feitosa *St Louis, MO*; Lu Qi *Boston, MA*; Ruth J. Loos *Cambridge, United Kingdom*; Cecilia M. Lindgren *Oxford, United Kingdom*; Kari North *Chapel Hill, NC*; Iris M. Heid *Regensburg, Germany*

4:15 PM – 4:30 PM

53-OR Meta-Analyses of Genome-Wide Association Studies Including Up to 263,486 Individuals Identifies 12 Novel Loci For Height, Overweight, and Clinical Classes of Obesity

Anne Justice *Chapel Hill, NC*; Erik Ingelsson *Stockholm, Sweden*; Reedik Magi *Oxford, United Kingdom*; Stefan Gustafsson, Andrea Ganna *Stockholm, Sweden*; André Scherag *Essen, Germany*; Mary F. Feitosa *St. Louis, MO*; David Meyre *Hamilton, Canada*; Kari North *Chapel Hill, NC*; Cecilia M. Lindgren, Andrew P. Morris *Oxford, United Kingdom*; Elizabeth Speliotes *Cambridge, MA*; Ruth J. Loos *New York, NY*; Mark McCarthy *Oxford, United Kingdom*; Sonja Berndt *Bethesda, MD*

4:30 PM – 4:45 PM

54-OR Associating Rare-Coding Variants With Body Mass Index: The NHLBI Exome Sequencing Project

Paul Auer, Chris Carlson *Seattle, WA*; Rebecca D. Jackson *Columbus, OH*; Leslie A. Lange, Kari North *Chapel Hill, NC*; Nancy L. Heard-Costa *Boston, MA*; David Siscovick *Seattle, WA*; James Meigs *Boston, MA*; James G. Wilson *Oxford, MS*; Li Hsu *Seattle, WA*; Donald W. Bowden *Winston-Salem, NC*; L. A. Cupples *Boston, MA*; Danyu Lin *Chapel Hill, NC*; Cristen Willer *Ann Arbor, MI*; Charles Kooperberg *Seattle, WA*; Myron Gross *Minneapolis, MN*; Jay Shendure, Ulrike Peters *Seattle, WA*; Yun Li *Chapel Hill, NC*; Guillaume Lettre *Montreal, Canada*; Nora Franceschini, Keri L. Monda *Chapel Hill, NC*; Jerome Rotter *Los Angeles, CA*; James S. Pankow *Minneapolis, MN*; Nik Krumm *Seattle, WA*

Oral Presentations

September 23, 2012

8:00 AM – 10:30 AM
Session: Ethan Sims Young Investigator Finalists' Presentations
Chair: Jennifer Lovejoy, PhD

8:00 AM – 8:15 AM

55-OR Liver Fat Not Visceral Fat Drives Insulin Resistance Among Obese African American and Hispanic Youth With a Greater Impact of Liver Fat in African Americans
Tanya L. Alderete, Claudia Toledo-Corral, Preeya Desai, Marc J. Weigensberg, Michael Goran *Los Angeles, CA*

8:15 AM – 8:30 AM

56-OR Neural Responsivity to Coca-Cola® Advertisement Exposure and Receipt in Habitually Consuming Adolescents: A Pilot fMRI Investigation
Kyle S. Burger, Eric Stice *Eugene, OR*

8:30 AM – 8:45 AM

57-OR[DT] Greater Consumption of Polyunsaturated Fatty Acids Are Related to Increased Lean Mass and Decreased Total and Visceral Adiposity in a Racially Diverse Sample of Children
Michelle Cardel *Birmingham, AL*; Dominick Lemas *Fairbanks, AK*; Jose R. Fernandez *Birmingham, AL*

8:45 AM – 9:00 AM

58-OR Leptin Signaling in the Nucleus Tractus Solitarius Suppresses Motivation to Obtain Rewarding Food
Scott E. Kanoski, Samantha Fortin, Harvey Grill *Philadelphia, PA*

9:00 AM – 9:15 AM

59-OR Robust Increases in Extracellular Matrix Remodeling in Adipose Tissue and Skeletal Muscle After 8-Week Overfeeding in Healthy Subjects
Charmaine S. Tam, Jeffrey D. Covington, Yourka Tchoukalova, David H. Burk, Krisztian Stadler, Sudip Bajpeyi, Darcy L. Johannsen, Eric Ravussin *Baton Rouge, LA*

4:00 PM – 5:30 PM
Session: Skeletal Muscle and Lipid Metabolism
Chairs: Labros S. Sidossis, PhD, John J. Dube, PhD

4:00 PM – 4:15 PM

60-OR Dietary Fatty Acids Modulate Visceral Fat Adipokine Secretion and Induce Skeletal Muscle Inflammation Without Affecting Insulin Responsiveness, Ex Vivo
Justine Tishinsky, Anna A. De Boer, David Dyck, Lindsay Robinson *Guelph, Canada*

4:15 PM – 4:30 PM

61-OR Skeletal Muscle Specific Deletion of CPT1b Improves Insulin Sensitivity Despite Suppressed Mitochondrial Fatty Acid Oxidation
Kimberly R. Haynie, Bolormaa Vandanmasgar, Shawna Wicks, Jingying Zhang, Robert C. Noland, Randall Mynatt *Baton Rouge, LA*

4:45 PM – 5:00 PM

62-OR Contribution of SCD1 Expression to Exercise Capacity, Muscle Lipid Composition, and PPARδ Expression
Arwa Aljawadi *Lubbock, TX*; James M. Ntambi *Madison, WI*; Chad M. Paton *Lubbock, TX*; Matthew Flowers *Madison, WI*

5:00 PM – 5:15 PM

63-OR Overexpression of Mitochondrial Fatty Acyl-Coenzyme A Thioesterase-2 in Heart Produces Lean Body in Mice
Mohammed A. Matlib, Lamar K. Gerber, Harvey Hahn, Patrick Tso, Roy Lynch *Cincinnati, OH*

5:15 PM – 5:30 PM

64-OR Myotubes Derived From Obese Non-Diabetic Subjects With a Family History of Type 2 Diabetes Present Mitochondrial Defects With No Sign of Insulin Resistance
Celine Aguer, Melissa R. Pasqua, Rui Zhang, Robert Dent, Ruth McPherson, Mary-Ellen Harper *Ottawa, Canada*

5:30 PM – 5:45 PM

65-OR Impact of SIRT3 and p65 Subunit of NFκB (RelA) on Muscle Mitochondrial Function After an 8-Week High-Fat 40% Overfeeding
Jeffrey D. Covington, Darcy L. Johannsen, Zhengyu Zhang, Charmaine Tam, Sudip Bajpeyi, Eric Ravussin *Baton Rouge, LA*

4:00 PM – 5:30 PM
Session: Neuropeptides that Regulate Feeding Behaviors and Related Topics
Chair: TBD

4:00 PM – 4:15 PM

66-OR Salivary PYY Regulates CNS Nuclei Involved in Feeding Behavior and Taste Perception
Maria D. Hurtado, Andres Acosta, Oleg Gotbaryuk *Gainesville, FL*; Valery G. Sergeyev *Udmurt, Russian Federation*; C. Shawn Dotson, Sergei Zolotukhin *Gainesville, FL*; Herbert Herzog *Darlinghurst, Australia*

4:15 PM – 4:30 PM

67-OR Peripheral CB1 Receptor Blockade Reverses Obesity-Induced Leptin Resistance By Decreasing Leptin Secretion and Increasing Leptin Clearance
Joseph Tam, Resat Cinar *Bethesda, MD*; Robert J. Chorvat, John F. McElroy *West Chester, PA*; George Kunos *Bethesda, MD*

4:30 PM – 4:45 PM

68-OR Altered Central GLP-1 Signaling Does Not Account For Weight Loss After Roux-en-Y Gastric Bypass in Mice
Jill Carmody, Melissa Paziuk, Huali Yin, Rodrigo Munoz, Lee M. Kaplan *Boston, MA*

4:45 PM – 5:00 PM

69-OR Orexin A Reduces Body Weight Gain and Obesity Resistant Rats Have Elevated Non-Resting Energy Expenditure
Jennifer Teske *Tucson, AZ*; Claudio E. Perez-Leighton, Martha K. Grace, Charles J. Billington, Catherine Kotz *Minneapolis, MN*

5:00 PM – 5:15 PM

70-OR BDNF Reduces Ceramide-Induced Neurodegeneration in Hypothalamic Cells
Tammy A. Butterick-Peterson, Morgan Little, Claudio E. Perez-Leighton, Catherine Kotz, Charles J. Billington, ChuanFeng Wang *Minneapolis, MN*

5:15 PM – 5:30 PM

71-OR Molecular Basis of Melanocortin 4 Receptor Responsible For Ligand-Biased Signal Transduction
Yingkui Yang, Min Chen, Vinod K. Mishra, Reed Dimmitt, Carroll M. Harmon *Birmingham, AL*

4:00 PM – 5:30 PM
Session: Intervention
Chairs: Leanne Redman, PhD, Stephen Anton, PhD

4:00 PM – 4:15 PM

72-OR Comparing Three Ways to Reduce Energy Density: Does Daily Energy Intake Differ?
Rachel A. Williams, Liane S. Roe, Barbara J. Rolls *University Park, PA*

4:15 PM – 4:30 PM

73-OR Internet Behavioral Weight Loss Program and Optional Group Sessions Improve Outcomes in a Community-Based Weight Loss Campaign
Tricia M. Leahey, Graham Thomas, Brad Weinberg, Rajiv Kumar, Rena R. Wing *Providence, RI*

4:30 PM – 4:45 PM

74-OR Effect of the Time-Based Intervention Enhancements on 18-Month Weight Loss in Overweight and Obese Adults
John M. Jakicic, Amy D. Rickman *Pittsburgh, PA*; Wei Lang *Winston-Salem, NC*; Kelliann Davis, Bethany Barone Gibbs *Pittsburgh, PA*; Rebecca Neiberg *Winston-Salem, NC*

4:45 PM – 5:00 PM

75-OR Preliminary Outcome Data For a Weight Management Program Designed to Help Obese Women Minimize Weight Gain During Pregnancy: The Healthy Moms Trial
Kimberly K. Vesco, Njeri Karanja *Portland, OR*; Janet C. King *Oakland, CA*; Matthew W. Gillman *Boston, MA*; Nancy A. Perrin, Michael C. Leo, Cindy McEvoy, Cara Eckhardt, K. S. Smith, Victor J. Stevens *Portland, OR*

5:00 PM – 5:15 PM

76-OR Long-Term Green Tea Extract Consumption May Reduce Body Weight in Healthy Postmenopausal Women Independent of Other Diet/Lifestyle Interventions
Nicole R. Stendell-Hollis *St. Paul, MN*; Scott Jackson *Minneapolis, MN*; Hamed Samavat *St. Paul, MN*; Renwei Wang *Pittsburgh, PA*; Allison Dostal *St. Paul, MN*; Jian-Min Yuan *Pittsburgh, PA*; Mindy S. Kurzer *St. Paul, MN*

5:15 PM – 5:30 PM

77-OR Dropout Associated With VLCD and LCD in Commercial Weight Loss: Observational Cohort Study
Erik Hemmingsson, Kari Johansson, Jonas Eriksson, Martin Neovius, Claude Marcus *Stockholm, Sweden*

4:00 PM – 5:30 PM
Session: Pregnancy and Early Life
Chairs: Matthew W. Gillman, MD, SM, Alison Tovar, PhD

4:00 PM – 4:15 PM

78-OR[DT] Trends in the Prevalence of Obesity and Extreme Obesity Among US Low-Income, Preschool-Aged Children, 1998-2010
Liping Pan, Heidi M. Blanck, Bettylou Sherry, Karen E. Dalenius, Ashleigh May, Laurence Grummer-Strawn *Atlanta, GA*

4:15 PM – 4:30 PM

79-OR Maternal Obesity Influences Fat Patterning in Offspring at Birth
Holly Hull *Kansas City, KS*; John C. Thornton, Charles Paley, Khursheed Navder, Dympna Gallagher *New York, NY*

4:30 PM – 4:45 PM

80-OR Modifiable Determinants of Four Components of Gestational Weight Gain
Xiaozhong Wen *Boston, MA*; Stephen Buka, Eric Loucks *Providence, RI*; Emily Oken, Ken Kleinman, Jill M. Goldstein *Boston, MA*; Barbara Heude *Villejuif Cedex, France*; Charles B. Eaton *Providence, RI*; Matthew W. Gillman *Boston, MA*

4:45 PM – 5:00 PM

81-OR Mother-Infant Interactions at 9 Months of Age Predict Obesity Risk at Age 5.5 Years
Sarah E. Anderson, Stanley Lemeshow *Columbus, OH*; Robert C. Whitaker *Philadelphia, PA*

5:00 PM – 5:15 PM

82-OR Change in Maternal Beverage Intake and Weight Gain From the First to Second Trimester of Pregnancy
Matthew W. Gillman, Sheryl L. Rifas-Shiman, Emily Oken, Ken Kleinman, Elsie M. Taveras *Boston, MA*

5:15 PM – 5:30 PM

83-OR[DT] Infant Feeding and Growth During the First Year of Life in GDM Offspring: SWIFT Offspring Study
Erica P. Gunderson, Vicky Chiang, Susana L. Matias, Shanta Hurston, Charles Quesenberry *Oakland, CA*

Oral Presentations

September 24, 2012

8:00 AM – 9:30 AM
Session: Energy Balance: Predictive Factors
Chairs: Joseph J. Kehayias, PhD, Jennifer Lambert, PhD

8:00 AM – 8:15 AM

84-OR Using Empirical Observations to Update Theoretical Predictions of the Effects of Manipulations on Components of Energy Balance
Kathryn A. Kaiser, Emily J. Dhurandhar, David B. Allison *Birmingham, AL*

8:15 AM – 8:30 AM

85-OR Carbohydrate vs. Fat Restriction For Body Fat Loss: An Inpatient Metabolic Balance Study
Bernard V. Miller, Stephanie K. Goodwin, Mario Siervo, Carla M. Prado, Nicolas D. Knuth, Amber B. Courville, Kevin D. Hall *Bethesda, MD*

8:30 AM – 8:45 AM

86-OR Vitamin D- and Ca2+-Sensing Receptor Single Nucleotide Polymorphisms and Resting Energy Expenditure in Adolescents
Lynae J. Hanks, Krista Casazza, Ambika P. Ashraf, Sasanka Ramanadham, Jamy Ard, Molly S. Bray, T. M. Beasley, Jose R. Fernandez *Birmingham, AL*

8:45 AM – 9:00 AM

87-OR[DT] Invariance of the Thermic Effect of Food After Long-Term Weight Change
Paolo Piaggi, Jonathan Krakoff, Marie S. Thearle *Phoenix, AZ*

9:00 AM – 9:15 AM

88-OR Changes in Energy Balance and Substrate Utilization Identified From Breath Carbon Stable Isotope Ratios
Leah D. Whigham *Grand Forks, ND*; Daniel E. Butz *Madison, WI*; LuAnn K. Johnson *Grand Forks, ND*; Dale Schoeller, David H. Abbott, Warren P. Porter, Mark E. Cook *Madison, WI*

9:15 AM – 9:30 AM

89-OR Improving Accuracy of Energy Expenditure Measurements From Room Calorimetry in Youth
Lauren Whitaker *Nashville, TN*; Erica Wohlers *St Louis Park, MN*; Ashley Shoemaker, Mac Buchowski *Nashville, TN*; Jon Moon *St Louis Park, MN*

8:00 AM – 9:30 AM
Session: Drugs/Surgery
Chairs: Edward Livingston, MD, Domenica Rubino, MD

8:00 AM – 8:15 AM

90-OR Association Between FTO rs9939609 Genotype and Response to Orlistat in Obese African American and Caucasian Adolescents
Lindsay Hunter, Joan C. Han, Seo Yoon Chung, Zongyang Mou, Sheila M. Brady, Marian Tanofsky-Kraff *Bethesda, MD*; Jennifer McDuffie *Durham, NC*; Van S. Hubbard, Jack A. Yanovski *Bethesda, MD*

8:15 AM – 8:30 AM

91-OR Different Changes in Fasting and Early Meal Responses of Plasma Insulin Within Two Months Following Laparoscopic BAND and Gastric Bypass Surgery
Joy C. Bunt *Phoenix, AZ*; Robin Blackstone *Scottsdale, AZ*; Susanne B. Votruba, Jonathan Krakoff *Phoenix, AZ*

8:30 AM – 8:45 AM

92-OR Resting Metabolic Rate and Fat Free Mass, Not Diet or Exercise, Predict Weight Regain Six Years after Gastric Bypass Surgery
Lance E. Davidson, Ted D. Adams *Salt Lake City, UT*; Michael J. LaMonte *Buffalo, NY*; Sheldon E. Litwin *Augusta, GA*; Steven C. Hunt *Salt Lake City, UT*

8:45 AM – 9:00 AM

93-OR[DT] Race and Ethnic Differences in Weight Loss After Gastric Bypass Surgery
Wendy A. Anderson, Megan Ruth, Caroline Apovian, Brian Carmine, Donald T. Hess, Nawfal W. Istfan *Boston, MA*

9:00 AM – 9:15 AM

94-OR Characterization of a Novel, Selective MCHR1 Antagonist in Rodents and Humans
Brian J. Murphy, William N. Washburn, Christine Huang, Brian Gemzik, Timothy P. Reilly, Nico Pannacciulli, Stephen Griffen, Chunyu Wu *Princeton, NJ*; William T. Cefalu, Corby K. Martin, Jennifer C. Rood, Steven R. Smith *Baton Rouge, LA*; James Devenny, Mary Ann Pelleymounter *Princeton, NJ*

9:15 AM – 9:30 AM

95-OR Are Medical vs. Surgical Randomized Controlled Trials Feasible? Results of the STAMPEDE Trial Recruitment
Philip R. Schauer, Sangeeta Kashyap, Kathy Wolski, Stacy A. Brethauer, John P. Kirwan, Claire E. Pothier, Chytaine Hall, Beth Abood, Beth Abood, Steven E. Nissen *Cleveland, OH*; Deepak L. Bhatt *Boston, MA*

8:00 AM – 9:30 AM
Session: Epidemiological Trends and Methods
Chair: Klara J. Rosenquist, MD

8:00 AM – 8:15 AM

96-OR[DT] Prevalence and Trends of Extreme Obesity in New York City Public School Children Grades K-8, Ages 5-14 For School Years 2006-07 through 2010-11
Sophia E. Day, Kevin Konty, Magdalena Berger, Cathy Nonas *Long Island City, NY*

8:15 AM – 8:30 AM

97-OR[DT] Body Mass Index and Mortality Risk in US Blacks Compared to Whites
Chandra Jackson, Moyses Szklo, Nae-Yuh Wang, Hsin-Chieh (Jessica) Yeh, Frederick L. Brancati *Baltimore, MD*

8:30 AM – 8:45 AM

98-OR[DT] Dynamics in Purchases and Consumption of Soft Drinks By Sweetener Type in U.S. Households, 2000-2010
Carmen Piernas, Shu Wen Ng, Barry M. Popkin *Chapel Hill, NC*

8:45 AM – 9:00 AM

99-OR EPODE Methodology: Community-Based Intervention Approaches to Prevent Childhood Obesity
Jean-Michel Borys, Hugues Ruault du Plessis, Pauline Harper, Lea Walter *Paris, France*

9:00 AM – 9:15 AM

100-OR Forty-Year Changes in the Fat and Fat-Free Components of Childhood Body Mass Index
William Johnson *Minneapolis, MN*; W. Cameron Chumlea, Stefan A. Czerwinski *Dayton, OH*; Ellen W. Demerath *Minneapolis, MN*

9:15 AM – 9:30 AM

101-OR Comparative Study of Four Growth Models Applied to Weight and Height Data From Birth to 8 Years in a Cohort of US Children
Nolwenn Regnault, Matthew W. Gillman, Ken Kleinman, Sheryl L. Rifas-Shiman, Emily Oken *Boston, MA*; Jeremie Botton *Villejuif, France*

8:00 AM – 9:30 AM
Session: Physical Activity Epidemiology
Chairs: Peter T. Katzmarzyk, PhD, Janne Boone-Heinonen, PhD

8:00 AM – 8:15 AM

102-OR[DT] Time Use and Physical Activity: A Shift Away From Movement Across the Globe
Shu Wen Ng, Barry M. Popkin *Chapel Hill, NC*

8:15 AM – 8:30 AM

103-OR[DT] Marginalization Orientation of Acculturation Predicts Activity Levels in Young Latina and African American Females: A Three-year Observational Study
Ya-Wen Hsu *Tainan, Taiwan*; Chih-Ping Chou *Los Angeles, CA*; Britni R. Belcher *Bethesda, MD*; Selena Nguyen-Rodriguez *Long Beach, CA*; Marc J. Weigensberg *Los Angeles, CA*; Arianna D. McClain *Stanford, CA*; Donna Spruijt-Metz *Los Angeles, CA*

8:30 AM – 8:45 AM

104-OR Influence of Familial Support and School Sports Opportunities on Adolescent Sports Participation
Keith M. Drake, Meghan R. Longacre, Todd Mackenzie, Linda J. Titus, Michael L. Beach *Lebanon, NH*; Andrew G. Rundle *New York, NY*; Madeline A. Dalton *Lebanon, NH*

8:45 AM – 9:00 AM

105-OR Contextual Differences Influence Association Between Physical Activity Energy Expenditure and Adiposity in Five Young Adult Populations
Amy Luke *Maywood, IL*; Pascal Bovet *Victoria, Seychelles*; Terrence Forrester *Kingston, Jamaica*; Jacob Plange-Rhule *Kumasi, Ghana*; Estelle Lambert *Cape Town, South Africa*; Dale Schoeller *Madison, WI*; Lara Dugas, Ramon A. Durazo-Arvizu, Richard S. Cooper *Maywood, IL*; Ulf Ekelund, Soren Brage *Cambridge, United Kingdom*

9:00 AM – 9:15 AM

106-OR[DT] Gene-by-Physical Activity Interaction Effects on Cardio-metabolic Risk Factors in Mexican American Children
Rector Arya, Vincent P. Diego, Sharon P. Fowler, Sobha Puppala, Vidya S. Farook, Geetha Chittoor, Jennifer Schneider, Roy G. Resendez *San Antonio, TX*; Kelly J. Hunt *Charleston, SC*; Benjamin S. Bradshaw *Houston, TX*; Laura Almasy, Joanne E. Curran, Anthony G. Comuzzie, Donna M. Lehman, Christopher P. Jenkinson, Jane L. Lynch, Ralph A. DeFronzo, John Blangero, Daniel E. Hale, Ravindranath Duggirala *San Antonio, TX*

9:15 AM – 9:30 AM

107-OR Longitudinal Relationship Between Screen Time and Change in Body Mass Index Among Adolescents Participating in the Growing Up Today Study II
Jennifer Falbe, Bernard Rosner, Walter C. Willett, Kendrin R. Sonneville, Frank Hu, Alison E. Field *Boston, MA*

9:45 AM – 11:15 AM
Session: Update on the Dissection of Neural/Endocrine Pathways Important in Obesity
Chair: Marc Reitman

10:45 AM – 11:00 AM

108-OR Shared and Separate CNS Sympathetic Circuits Innervating Visceral and Subcutaneous White Adipose Tissue
Ngoc Ly Nguyen, Timothy Bartness *Atlanta, GA*

11:00 AM – 11:15 AM

109-OR A Paradoxical Inhibition of Palatable Food Preference By Melanocortin-4 Receptor Deletion
Brandon L. Panaro, Roger D. Cone *Nashville, TN*

Poster Presentations

All posters will be on display during all poster sessions.

Viewing
Friday, September 21, 9:30 AM – 3:00 PM and 6:00 PM – 7:30 PM
Saturday, September 22, 9:30 AM – 2:00 PM

Presenters at Posters
Friday, September 21, 12:00 PM – 1:30 PM and 6:00 PM – 7:30 PM
Saturday, September 22, 12:00 PM – 1:30 PM

Location: Exhibit Hall C

Adipose Tissue Biology

110-P Local Adrenergic Innervation of Omental Fat Depot Is an Important Link between Visceral Obesity and Metabolic Disorders in Dogs
Ana Valeria B. Castro, Orison O. Woolcott, Darko Stefanovski, Cathryn M. Kolka, Viorica Ionut, Malini S. Iyer, Morvarid Kabir, Erlinda L. Kirkman, Richard N. Bergman *Los Angeles, CA*

111-P VLDL-Triglyceride Storage in Liver, Visceral, and Upper Body Subcutaneous Adipose Tissue in Obesity
Nikki C. Bush, Jessica M. Triay, Nicola W. Gathaiya, James M. Swain, Michael L. Kendrick, Florencia G. Que, Michael D. Jensen *Rochester, MN*

112-P AdiposeENPP1-Tg Mouse: A Novel Animal Model of Systemic Insulin Resistance Induced By Adipose Tissue Dysfunction
Nicola Abate, Manisha Chandalia *Galveston, TX*

113-P Fasting and Leanness Are Associated With Enhanced Fat Oxidation in Adipose Tissue of the Domestic Chicken
Bo Ji, Suchita Das *Knoxville, TN*; Jean Simon, Joelle Dupont *Nouzilly, France*; Susan Lamont *Ames, IA*; Arnold Saxton, Brynn Voy *Knoxville, TN*

114-P Intra-Abdominal Transplantation of Subcutaneous Adipose Tissue in Mice Improves Glucose Tolerance and Promotes Browning of Intact Subcutaneous Adipose Depots
Michael M. Swarbrick, Samantha L. Hocking, Elaine Preston, Donna Wilks, Amanda E. Brandon *Sydney, Australia*; Ganesh Kolumam *South San Francisco, CA*; Donald Chisholm, David E. James, Gregory J. Cooney *Sydney, Australia*

115-P Leucine Supplementation in High-Fat Induced Insulin Resistant Rats Increased Adiposity and Lipogenesis on Subcutaneous Adipocytes
Francisco L. Torres-Leal, Ariclécio C. de Oliveira, Talita S. Farias, Patrícia Chimin, Andressa B. Lopes, Arnaldo H. de Souza, Rennan de Oliveira Caminhotto, Fabio Bessa Lima *São Paulo, Brazil*

116-P CTRP3 Reduces Hepatic Triglyceride Accumulation in High Fat Fed Mice
Jonathan M. Peterson *Johnson City, TN*; Marcus M. Seldin, G.William Wong *Baltimore, MD*

117-P Vasocrine Effect of Local Noradrenaline Synthesis on Abdominal Adipose Tissue Micro Vessels in Diabetes
Lei Shen *London, United Kingdom*; Nelson N. Orie *Doha, Qatar*; Carlo Casale, Nephtali Marina, Michael P. Gilbey, Mick Dashwood, Rosaire Gray, Pratik Sufi, Heath Dugal, Vidya Mohamed-Ali *London, United Kingdom*

118-P Abdominal Adipocyte Morphology and Its Relation to Adipose Tissue Metabolism, Gene Expression, Lipolysys and Adipokine Levels
Andréanne Michaud, Suzanne Noël, Gaétan Parie, Andre Tchernof *Quebec, Canada*

119-P Circulating 5α-Dihydrotestosterone and Abdominal Adipocyte Characteristics in Healthy Women
Julie Anne Côté, Julie Lessard, Jacques Mailloux, Philippe Y. Laberge, Caroline Réhaume, Andre Tchernof *Quebec, Canada*

120-P RNAi-Mediated Knockdown of Metabolic Proteins in 3D Coculture of Adipocytes and Endothelial Cells
James K. Sims, Brian Rohr, Esha John, Eric Miller *Medford, MA*; Arul Jayaraman *College Station, TX*; S. P. Walton *Lansing, MI*; Kyongbum Lee *Medford, MA*

121-P Reversal of Visceral Obesity-Induce Liver Pathophysiology in Mice Via Visceral Transplantation of Subcutaneous Fat
Kimberly Cox-York, Michelle T. Foster *Fort Collins, CO*

122-P APP Gene Expression Is Upregulated By Diet-Induced Obesity in Mice
Ja In Jeong, Jinil Kim, Sung Hyun Park, Hyeon Kyeong Kim, Nu Ri Oh, Jin Seok Yang, Han Sol Min *Gyeongsan, Republic of Korea*; William G. Tharp *Burlington, VT*; Richard Pratley *Orlando, FL*; Yong-Ho Lee *Gyeongsan, Republic of Korea*

123-P FAS and Malic Enzyme Activities in HFD-Induced Obesity Are Increased By Treatment of Rats With Croton Zehntneri Essential Oil or Anethole, Its Main Constituent
Raquel C S. Lima *Fortaleza, Brazil*; Ariclécio C. de Oliveira, Francisco L. Torres-Leal *São Paulo, Brazil*; Andrelina N. Coelho-de-Souza *Fortaleza, Brazil*; Fabio Bessa Lima *São Paulo, Brazil*

124-P Acute Estradiol Treatment in Postmenopausal Women Modulates Postprandial Triglyceride Clearance and Adipose Tissue Cellularity
Kimberly Cox-York, Daniel H. Bessesen, Christopher B. Erickson, Teri L. Hernandez, Matthew R. Jackman, Molly A. Krause, Hong Wang, Rachael E. Van Pelt *Aurora, CO*

125-P Differential Response to Thiazolidinedions in Leptin Deficient Lepmkyo/Lepmkyo Rats and Lepob/Lepob Mice
Chihiro Ebihara, Ken Ebihara, Megumi Aizawa-Abe, Tomoji Mashimo, Akiko Takizawa, Tsutomu Tomita, Toru Kusakabe, Yuji Yamamoto, Daisuke Aotani, Sachiko Kataoka, Takeru Sakai, Kiminori Hosoda, Tadao Serikawa, Kazuwa Nakao *Kyoto, Japan*

126-P Implication of Klotho Gene in Obesity Related Aging - Studies in WNIN Obese Rats
Giridharan N. Veettil, Validandi Vakdevi, G. Bhanuprakash Reddy *Hyderabad, India*

127-P MRI-Measured Bone Marrow Adipose Tissue (BMAT) Is Inversely Related to DXA-Measured Volumetric Bone Mineral Density (BMD) in Postmenopausal Women
Yoon Kim, Madeleine Gantz, Jun Chen, Xavier Pi-Sunyer, Wei Shen *New York, NY*

128-P Relationship Between Serum Resistin Concentrations and Insulin Resistance in Obese Patients With Chronic Hepatitis C
Rusu Emilia, Mariana Jinga, Simona Ateia, Florin Rusu, Georgiana Enache, Andreea Dragomir, Ramona Dragut, Raluca Nan, Gabriela Radulian *Bucharest, Romania*

129-P Differential Impact of Obesity on Endothelium-Dependent Relaxation of Omental vs. Subcutaneous Adipose Small Vessels From Young Morbidly Obese Female Qataris
Nelson N. Orie, Aysha A. Bakhamis, Mashael Aljaber, Mohammed Alemadi, Samer Rida, Muhammed Alsayrafi *Doha, Qatar*; Vidya Mohamed-Ali *London, United Kingdom*

130-P Potential Candidate Genes For Obesity in the TALLYHO Mouse
James Denvir, Donald Primerano, Goran Boskovic, Jun Fan, Jung Han Kim *Huntington, WV*

131-P Upregulation of the Complement System and Its Association With Local Insulin Resistance in Subcutaneous Adipocytes From Non-Obese, Hypertriglyceridemic Subjects
Sujoy Ghosh *Durham, NC*; M. van Greevenbroek, C. van der Kallen, M. Brouwers, C. Schalkwijk, C. Stehouwer *Maastricht, Netherlands*

132-P Control of Non-Genetic Variation Enhanced the Survival of an Obesity QTL Within Three Congenic Strains
Danielle Reed, Cailu Lin, Anna Lysenko, Brad D. Fesi, Maria L. Theodorides, Alexander Bachmanov *Philadelphia, PA*

133-P[DT] Differential Expression of SOCS7, PDIA3, TBRG1 and COL4A2 in Visceral Adipose Tissue of Obese Diabetic African Americans
Ayo P. Doumatey, Hanxia Hang, Adebowale Adeyemo, Charles N. Rotimi *Bethesda, MD*

134-P[DT] Adipose Tissue 11-Beta Hydroxysteroid Dehydrogenase Type-1 (11βHSD1) Gene Expression, Insulin Resistance, Beta-Cell Function, and Ectopic Fat in Obese African Americans
Lauren E. Gyllenhammer, Tanya L. Alderete, Swapna Mahurkar, Brandon D. Kayser, Hooman Allayee, Michael Goran *Los Angeles, CA*

135-P ENPP1 Modulates Fatty Acid-Induced Systemic Insulin Resistance
Nicola Abate, Manisha Chandalia *Galveston, TX*

136-P ENPP1 and Metabolic Complications of Adipose Tissue Dysfunction in Humans
Nicola Abate, Manisha Chandalia *Galveston, TX*

137-P Biomarker Profile Does Not Predict Weight Loss Success
Sarit Polsky, Lorraine G. Ogden, Paul S. MacLean, Erin D. Giles, Carrie Brill, James Hill, Holly R. Wyatt *Aurora, CO*

138-P Action of Nicotinic Acid on Adiponectin and Leptin Production and Expression in 3T3-L1 Adipocytes Under Oxigen Deprivation
Renata Nakamichi, Erika Prates, Beata M. Quinto, Maria T. Zanela, Marcelo C. Batista *São Paulo, Brazil*

139-P Activation of Calcium Sensing Receptor in Adipose Tissue and Human Adipose Cells Elevates the Expression of Proinflammatory Factors
Mariana Cifuentes, Elisa L. Villalobos, Marcela Reyes *Santiago, Chile*

140-P Loss of Regulatory T Cells (Tregs) in Visceral Fat Is Mediated by NADPH Oxidase 2 Activation and Contributes to Sleep Fragmentation-induced Accelerated Weight Gain in Mice
Shelley X. Zhang, Zhuanhong Qiao, David Gozal, Yang Wang *Chicago, IL*

141-P Advanced Glycation End Products (AGEs) Promote Adipogenesis of Senescent Preadipocytes through AGE Receptor (RAGE)-Inhibited p53 Function
Chihyu Chen, Allison M. Abell *West Lafayette, IN*; Yang Soo Moon *Jinju, Republic of Korea*; Kee-Hong Kim *West Lafayette, IN*

142-P Lipocalin-2 Expression Increases Adipocyte Fatty Acid Oxidation Through PPARδ
Rogowski P. Rogowski, Amanda L. Kozimor, Jada L. Stevenson, Hui Chang *Lubbock, TX*; James M. Ntambi *Madison, WI*; Jamie A. Cooper, Chad M. Paton *Lubbock, TX*

143-P Role of Collagen VI in Human Adipocyte Function
Stephane Gesta, Shiuli Agarwal, Eric Grund, Vivek K. Vishnudas, Niven R. Narain, Rangaprasad Sarangarajan *Natick, MA*

144-P Obesity Induced Fibrinogen Formation and Its Effect on Adipocyte Inflammation, Fibrosis, and Glucose Uptake
Minsung Kang, Chad M. Paton *Lubbock, TX*

145-P Increased Adiposity and Altered Glucose Metabolism in Galectin 3 KO Mice
Jingbo Pang, Davina H. Rhodes, Elise Malecki, Karla J. Castellanos, Maria Pini *Chicago, IL*; Mauro Perretti, Dianne Cooper *London, United Kingdom*; Giamila Fantuzzi *Chicago, IL*

146-P MTOR Complexes 1 and 2 Are Involved in the Modulation of the Expression of Coregulators Associated With PPARγ Activation in 3T3-L1
Juliana Magdalon, Thiago B. Oliveira, Vivian A. Paschoal, Rui Curi, William Festuccia *Sao Paulo, Brazil*

147-P Annexin A1 Regulates Adiposity and Glucose Metabolism in Mice
Rand Akasheh, Maria Pini, Davina H. Rhodes, Karla J. Castellanos, Cassie L. Kerr *Chicago, IL*; Trinidad Montero-Melendez, Roderick J. Flower, Mauro Perretti, Dianne Cooper *London, United Kingdom*; Giamila Fantuzzi *Chicago, IL*

148-P Polyunsaturated Fatty Acids (PUFA) Suppress Adiponectin Secretion By Adipocytes: Involvement of Lipid Peroxidation
Jamie Abbott, Susie O'Conner Butler, Sainath Kotha, Travis Gurney, Shariq Sherwani, Ulysses J. Magalang, Narasimham Parinandi *Columbus, OH*

149-P Enhanced Glucose Disposal in Human Adipocyte Progenitors By E4orf1 Protein
Olga Dubuisson, Rashmi Krishnapuram, Vijay Hegde, Jeffrey M. Gimble, Nikhil V. Dhurandhar *Baton Rouge, LA*

150-P In Adipocytes E4orf1 Protein Enhances Cellular Glucose Uptake Independent of PPARgamma
Rashmi Krishnapuram, Olga Dubuisson, Vijay Hegde, Nikhil V. Dhurandhar, Vijay Hegde *Baton Rouge, LA*

151-P Glycogen Synthase Kinase (GSK) May Play a Role in E4orf1-Induced Glut1 Up-Regulation and Glucose Uptake
Soo-Ho Park, Jae-Hwan Nam, Olga Dubuisson, Vijay Hegde, Rashmi Krishnapuram, Na Ha-Na, Nikhil V. Dhurandhar *Baton Rouge, LA*

152-P Effect of Glyburide on Human Mesenchymal Stem Cell Development
Justin J. D'Agostino, Thuy Bach, Narek Perian, Yuanxiang Zhao *Pomona, CA*

153-P Characterization of Adipose Tissue Myeloid Cell Populations By Flow Cytometry: The Devil Is in the Details
Derek Hagman, Jessica N. Kuzma, Ilona Larson, Karen Foster-Schubert, Ling-Yu Kuan *Seattle, WA*; Andrea Cignarella *Padua, Italy*; Elena D. Geamanu, Karen W. Makar, Jourdan R. Gottlieb, Mario Kratz *Seattle, WA*

154-P The Metabolic-Immune Interactions Regulate Adipose Tissue Leukocytosis in Obesity
Anthony Ravussin, Ryan W. Grant, Yun-Hee Youm *Baton Rouge, LA*; Yann Ravussin, Rudy Leibel, Charles A. LeDuc *New York, NY*; Vishwa D. Dixit *Baton Rouge, LA*

155-P Mitochondrial Antioxidant Manganese Superoxide Dismutase (MnSOD) Up-Regulated Human Bone Marrow Derived MSC Reduces Fat Droplets in Adipocytes in a Co-Culture System
Sabyasachi Sen, Cyril Chou, Mary Young, Nagendra Yadava *Springfield, MA*

156-P Pro-Inflammatory and Anti-Inflammatory Cytokines Collaborate to Determine Lipid Accretion
Vijay Hegde, Olga Dubuisson, Rashmi Krishnapuram, Jianping Ye, Nikhil V. Dhurandhar *Baton Rouge, LA*

157-P Diet-Induced Obesity Coupled With Stress Accelerates an Increase in Residual Adipose Stem Cells Augmenting a Susceptibility to an Obese Phenotype: Genetic and Epigenetic Implications of the Neuropeptide Y (NPY) System
Amrutesh S. Puranik, Dalay Hrisch, Allison Gurney, Kathryne Oldsberg, Jixia Liu, Jeehye Jung, Caara Hirsch, Patrick Bolan, Zofia Zulowska *Minneapolis, MN*

Gonadal Hormones / Pregnancy / Lactation / Childhood

158-P MRI-Measured Bone Marrow Adipose Tissue (BMAT) Is Inversely Related to DXA-Measured Bone Mineral in 5-17 Year Old Children
Don Kim, Jun Chen *New York, NY*; Steven B. Heymsfield *Baton Rouge, LA*; Xavier Pi-Sunyer, Wei Shen *New York, NY*

159-P[DT] Impact of Breastfeeding (BF) in Gestational Diabetes (GDM) Offspring on Adiposity and Metabolic Outcomes in Latino Youth Across Puberty
Jaimie N. Davis *Austin, CA*; Erica P. Gunderson *Oakland, CA*; Michael Goran *Los Angeles, CA*

160-P High Fat Diet Increased Hepatic Inflammatory Marker Gene COX-2 Expression Associated With DNA Methylation and Histone Modifications
Dan Zhou, Yuan-Xiang Pan, Hong Chen *Urbana, IL*

161-P Immunophenotyping of Human Mesenchymal Stem Cells From Amnion of Full-Term Placentas Highlights CD13 As a New Obesity Marker in Pregnancy
Laura Iaffaldano, Maddalena Raia, Carmela Nardelli, Elisabetta Mariotti, Maddalena Ferrigno, Filomena Quaglia, Lucio Pastore, Rosa Di Noto, Pasquale Martinelli, Lucia Sacchetti, Luigi Del Vecchio *Naples, Italy*

162-P Metabolic Profile of Obese and Overweight Women During and After Pregnancy
Anne-Sophie Morisset, Marie-Christine Dubé, S John Weisnagel, Andre Tchernof, Julie Robitaille *Quebec City, Canada*

163-P[DT] Balancing the Scales: An Examination of the Relationship Between Maternal Body Mass Index and Placental Infection
Karyn A. Stewart *Syracuse, NY*

164-P Ovariectomy in Rat Potentializes High-Fat Diet-Induced Hepatic Steatosis: Link to Hepatic Cholesterol Metabolism
Emilienne T. Ngo Sock, Isabelle Côté, Junior S. Mentor, Raynald Bergeron, Jean-Marc Lavoie *Montréal, Canada*

165-P Prenatal Stress Induced Programming For Adult Obesity: Role of Neuropeptide Y System in Adipogenic Lineage Commitment
Ruijun Han, Xinying Wang *Minneapolis, MN*; Joanna B. Kitlinska, Aiyun Li, Ian G. Gallicano *Washington, DC*; Zofia Zulowska *Minneapolis, MN*

166-P Central Obesity Is Detrimental to Bone Health in Postmenopausal Women
Jung-Eun Yim *Changwon, Republic of Korea*; Young-Seol Kim *Seoul, Republic of Korea*; Ryowon Choue *Suwon, Republic of Korea*

167-P Relation of Food Intake Behaviors and Obesity Development in Young Common Marmoset Monkeys (Callithrix Jacchus)
Corinna N. Ross *San Antonio, TX*; Michael L. Power *Washington, DC*; Suzette Tardif *San Antonio, TX*

Epidemiology and Genetics of Obesity

168-P The Differences of Age Distribution Among Metabolic Syndrome With or Without Waist Component at Different Ranges of Fasting Blood Glucose Level – A Population Approach
Martin M. Fuh *Taichung, Taiwan*; Peggy Pei-Chin Chen *Hsinchu, Taiwan*; Chia-Ing Li *Taichung, Taiwan*; Hsiu Yueh Su *Taipei, Taiwan*

169-P The Abnormalities of HOMA-IR Appear to Japanese College Athletes From 27 or More BMI
Keiko Aoishi *Nagoya, Japan*; Toshiharu Eto *Miyazaki, Japan*; Hisataka Sakakibara *Nagoya, Japan*

170-P[DT] Impact of Gene-Gene Interactions of PPAR Delta, PPAR Alpha and PPAR Gama on Abdominal Obesity Quantitative Trait
Yi Ding, Zhirong Guo *Suzhou, China*; Ming Wu *Nanjing, China*; Zhengyuan Zhou *Changshu, China*; Lijun Zhang *Suzhou, China*

171-P Influence of Weight Loss, Body Composition, and Lifestyle Behaviors on Plasma Adipokines. A Randomized Controlled Weight Loss Trial in Older Obese Adults
Gary Miller, Monica Jenks, Mandolyn J. Vendela-Meyer, Gloria Muday *Winston-Salem, NC*

172-P A Randomized Controlled Intervention Study on the Effect of Obesity, Puberty and Physical Activity on Serum Transthyretin and Its Role in the Regulation of Retinol Binding Protein-4
Prabhakaran (Babu) Balagopal, Jose A. Canas, Astrid Altomare, Vicky Funanage, Donald George, Dominique Darmaun *Jacksonville, FL*

173-P Expression Analyses of the Genes Harbored By the Type 2 Diabetes and Pediatric BMI Associated Locus on 10q23
Jianhua Zhao, Sandra Deliard, Ali R. Aziz, Struan Grant *Philadelphia, PA*

174-P Caloric Excess and Cardiovascular Risk Escalation in Healthy Adults
Alok K. Gupta, William D. Johnson, Darcy L. Johannsen, Eric Ravussin *Baton Rouge, LA*

175-P Joint Associations of Visceral Abdominal Fat Quality and Absolute Volume and Insulin Resistance: The Framingham Heart Study
Klara J. Rosenquist *Boston, MA*; Alison Pedley *Framingham, MA*; Joseph M. Massaro, Joanne M. Murabito, Udo Hoffmann, Caroline S. Fox *Boston, MA*

176-P Association Between the Body Adiposity Index (BAI) and Cardiometabolic Risk Factors (CRFs) Among Normal-Weight (NW), Overweight (OW), and Obese (OB) Men and Women in the CODING Study
Farrell Cahill, Danny Wadden, Peyvand Amini, Yanqing Yi, Edward Randell, Sudesh Vasdev, Guang Sun *St. John's, Canada*

177-P[DT] Adiponectin is Decreased in Mexican-Americans Compared to Non-Latino Whites Independent of Differences in Adiposity and Diet
Rocio I. Pereira *Aurora, CO*; Daniel H. Bessesen *Denver, CO*

178-P Genetic Predisposition to Obesity Predicted With Thousands of Single Nucleotide Polymorphisms
Ana I. Vazquez, Emily J. Dhurandhar *Birmingham, AL*; George Argyropoulos *Danville, PA*; Maxine N. Gonzalez *Puerto Rico, Puerto Rico*; Molly S. Bray, Gustavo de los Campos, Yann C. Klimentidis, David B. Allison *Birmingham, AL*

179-P Obesity in Rhesus and Cynomolgus Monkeys: Adiposity, Human BMI Equivalents, and Comparative Risks
Barbara C. Hansen, Ellen Linden, Jennifer Newcomb *Tampa, FL*; Paul B. Higgins *Kannapolis, NC*

180-P[DT] Infection With a Human Adenovirus Ad36 Is Associated With Longitudinal Changes in Adiposity and Glycemic Control in Men and Women
Nikhil V. Dhurandhar *Baton Rouge, LA*; Wan-Yu Lin *Birmingham, AL*; Olga Dubuisson *Baton Rouge, LA*; Rohina Rubicz *San Antonio, TX*; Nianjun Liu, David B. Allison *Birmingham, AL*; Harald H. Göring *San Antonio, TX*

Exercise and Muscle

181-P[DT] Effects of Exercise Modality on Abdominal Fat and Skeletal Muscle Composition in Obese Adolescent Girls: A Randomized Controlled Trial
David A. White, Anthony Deldin, SoJung Lee *Pittsburgh, PA*

182-P Use of Computed Tomography (CT) to Evaluate the Impact of Calories Received on Body Composition Changes in Obese and Non-Obese ICU Patients
Carol Braunschweig, Patricia Sheean, Sarah Peterson, Zebin Wang, Sally Freels, Karen Troy, Sandra Gomez-Perez, Joy Sclamberg, Omar Lateef *Chicago, IL*

183-P Research on Weight Loss Effect by Exercise Combined With Massage on Severe Obese Adolescents
Yin Guo, Wen H. Chen, Ren W. Wang *Shanghai, China*

184-P Aerobic Physical Training and Melatonin Acting Together Reduces Adiposity in Rats
André Ricardo G. Proença, Sandra Andreotti, Amanda Baron Campaña, Ariclécio C. de Oliveira, Rennan de Oliveira Caminhotto, Ana C. Silva, Fábio B. Lima *Sao Paulo, Brazil*

185-P The Combination of Decaffeinated Green Tean Extract and Voluntary Exercise Increases Macronutrient Excretion and Alters the Expression of Lipid Metabolizing Genes in High Fat-Fed Mice
Sudathip Sae-tan, Connie J. Rogers, Joshua D. Lambert *University Park, PA*

186-P Eight Weeks of Overfeeding Increases PLIN2 and PLIN3 Gene Expression
Sudip Bajpeyi, Jeffrey D. Covington, Charmaine Tam, Eric Ravussin *Baton Rouge, LA*

Gut Hormones

187-P Vagal Response to High-Caloric Food Presentation and Subsequent Consumption in Obese and Non-Obese Individuals
Tomoko Udo, Carlos M. Grilo, Kelly D. Brownell, Andrea H. Weinberger, Ralph J. DiLeone, Sherry A. McKee *New Haven, CT*

188-P Efficacy, Safety and Mode of Action of an Anti-Obesity Vaccine Directed Against Somatostatin
Keith N. Haffer *Garretson, SD*

189-P Effects of Regimens For Acute Metabolic Disturbance With a Late Dinner
Mika Ishida, Mitsuhiro Katashima, Hideto Takase, Shinichiro Takashima, Rika Yokoyama *Tokyo, Japan*

190-P Dietary Fatty Acid Composition Regulates Acylated Ghrelin Levels in Humans
Bethany J. Klopfenstein, Jonathan Q. Purnell *Portland, OR*

191-P Liraglutide and Linagliptin Improve Glycemic Control But Show Differential Anti-Obesity and Hypolipidemic Efficacy in a Novel Hamster Model of Diet-Induced Obesity and Hypercholesterolemia
Henrik B. Hansen, Gitte Hansen, Philip J. Pedersen, Frederik Hansen, Jacob Jelsing, Niels Vrang *Hørsholm, Denmark*

192-P Post-Prandial Ghrelin Response Is Associated With Cortisol Response, Perceived Stress and Anxiety, and Self-Reported Coping and Hunger in Obese Women
Marjana R. Sarker, Susan Franks, James Caffrey *Fort Worth, TX*

193-P Octreotide Alleviates Obesity By Reducing Intestinal Glucose Absorption and Inhibiting Low Grade Inflammation
Rui Liu, Yan Ou, Wei Huang, Chengwei Tang *Chengdu, China*

194-P Exenatide Prevents Fat Deposition and Insulin Resistance in a Canine Type 2 Diabetic Model
Viorica Ionut, Hasmik J. Mkrtchyan, Darko Stefanovski, Ana Valeria B. Castro, Orison O. Woolcott, Malini Iyer, Josiane Broussard, Richard N. Bergman *Los Angeles, CA*

195-P GLP-1 Response to Short-Term Overfeeding in Young Men
Danny Wadden, Farrell Cahill, Edward Randell, Yanqing Yi, Sudesh Vasdev, Guang Sun *St. John's, Canada*

196-P Circulating Ghrelin Is Associated With Alcohol Consumption in the CODING Study
Peyvand Amini, Danny Wadden, Sangeetha Vidyasankar, Farrell Cahill *St.John's, Canada*; Weizhen Zhang *Ann Arbor, MI*; Wayne Gulliver, Hongwei Zhang, Guang Sun *St.John's, Canada*

197-P Circulating Ghrelin Is Inversely Associated With Dietary Sugar Intake in the Newfoundland Population
Danny Wadden, Peyvand Amini, Farrell Cahill, Andrew Lee, Sudesh Vasdev, Edward Randell, Wayne Gulliver, Guang Sun *St. John's, Canada*

198-P Role of Ghrelin in Inflammation in Healthy Pre-Pubertal Children
Jovanny Zabaleta, John Estrada *New Orleans, LA*; Eric Ravussin *Baton Rouge, LA*; Enette Larson-Meyer *Laramie, WY*; Cruz Velasco-Gonzalez, Nicole Pelligrino, Alexandria Augustus, Brian Bennett, Yolanda Powell-Young, Hamid Boulares, Melinda S. Sothern *New Orleans, LA*

199-P[DT] Circulating Ghrelin Is Associated With Bone Mineral Content in the CODING Study
Peyvand Amini, Farrell Cahill, Sangeetha Vidyasankar, Danny Wadden, Hongwei Zhang, Wayne Gulliver, Guang Sun *St.John's, Canada*

200-P Short-Term Positive Energy Challenge Does Not Change Fasting Serum Cholecystokinin Level
Peyvand Amini, Farrell Cahill, Danny Wadden, Edward Randell, Sudesh Vasdev, Guang Sun *St.John's, Canada*

201-P Pancreatic Polypeptide (PP) Response to a Seven-Day Overfeeding in Young Men
Farrell Cahill, Danny Wadden, Peyvand Amini, Andrew Lee, Edward Randell, Sudesh Vasdev, Guang Sun *Logy Bay, Canada*

202-P The Response of Five Functionally Connected Gut Hormones (PP, PYY, CCK, GLP-1 and Ghrelin) to a Short-Term Positive Energy Challenge
Farrell Cahill, Danny Wadden, Peyvand Amini, Andrew Lee, Yanqing Yi, Edward Randell, Guang Sun *Logy Bay, Canada*

In vivo Studies

203-P Regional Free Fatty Acid Uptake Assessed By Positron Emission Tomography in Postabsorptive Humans
Nicola W. Gathaiya, Qiaojun Han, Christina Koutsari, Bradley Kemp, Michael D. Jensen *Rochester, MN*

204-P Insulin Resistance and β-Cell Function in Patients With Obesity
Simona Ateia, Emilia Rusu, Doru Traistaru, Gabriela Radulian, Dan Cheta *Bucharest, Romania*

205-P[DT] Modulation of the IL-6 System and STAT-3 Activation in Lymphocytes of Lean and Obese Women
Davina H. Rhodes, Van Nguyen, Margaret M. Sullivan, Sandra Gomez-Perez, Carol Braunschweig, Giamila Fantuzzi *Chicago, IL*

206-P Hyperglycemia in Metabolic Syndrome Is Detrimental to Eye Health
Leah Marron *Fort Lauderdale-Davie, FL*

207-P Cyclooxygenase Inhibition Improves Endothelial Vasomotor Dysfunction of Visceral Adipose Arterioles in Obese Humans
Melissa G. Farb, Stephanie Tiwari, Brian Carmine, Donald T. Hess, Joseph A. Vita, Caroline Apovian, Noyan Gokce *Boston, MA*

208-P *This abstract has been withdrawn.*

209-P Resistin Is Associated With Pro-inflammatory Adipokines in Healthy, Pre-Pubertal Youth
Yolanda Powell-Young, Melinda S. Sothern, Jovanny Zabaleta *New Orleans, LA*; Eric Ravussin *Baton Rouge, LA*; Cruz Velasco-Gonzalez *New Orleans, LA*; Enette Larson-Meyer *Laramie, WY*; Nicole Pelligrino, Alexandria Augustus, Brian Bennett, Hamid Boulares, John Estrada *New Orleans, LA*

210-P Effect of Bariatric Surgery on Glucose Kinetics After Mixed-Meal Ingestion
David Bradley, Caterina Conte, J. Christopher Eagon, Esteban Varela *St. Louis, MO*; Amalia Gastadelli *Pisa, Italy*; Bettina Mittendorfer, Bruce W. Patterson, Samuel Klein *St. Louis, MO*

Models of Metabolism and Obesity

211-P Interactive Effects of Amylin and Bupropion/Naltrexone on Food Intake and Body Weight in Rodent Models
Jonathan D. Roth, Carrie Wittmer, Pete Griffin, David G. Parkes *San Diego, CA*

212-P 5-HT1a Antagonists Reduce Food Intake and Body Weight by Reducing Total Meals With No Conditioned Taste Aversion
Joelle Dill, Dana K. Sindelar *Indianapolis, IN*

213-P Brown Norway Chromosome 1 Alleles Improve Kidney Function, Insulin Sensitivity and Glucose Tolerance in Zucker Fatty Rats
Craig H. Warden, Fawaz Haj *Davis, CA*; Rodrigo Gularte-Merida *sart-Tilman, Belgium*; Esther Min, Anh B. Le, Susan B. Hansen, Juan F. Medrano, Judith S. Stern *Davis, CA*

214-P Activation of Liver X Receptor Prevents High Fat Diet-induced Obesity in Mice
Mingming Gao, Dexi Liu *Athens, GA*

215-P Activation of Pregnane X Receptor By Pregnenolone 16 α-Carbonitrile Blocks High Fat Diet-Induced Obesity in AKR/J Mice
Yongjie Ma, Dexi Liu *Athens, GA*

216-P Liver-Specific Effect of Leptin and Its Usefulness For the Treatment of NAFLD
Sachiko Y. Kataoka, Ken Ebihara, Megumi Aizawa-Abe, Toru Kusakabe, Yuji Yamamoto, Daisuke Aotani, Licht Miyamoto, Takeru Sakai, Chihiro Ebihara, Junji Fujikura, Kiminori Hosoda, Kazuwa Nakao *Kyoto, Japan*

217-P Compound 206 Reduced Body Fat: Identification of the Mechanism of Action in C. Elegans Model
Jolene Zheng *Baton Rouge, LA*; Wenqian Wei *Shanghai, China*; Jason F. King, Michael King, Zachary Fitzpatrick, Michael J. Keenan, John W. Finley, Frederick M. Enright, Roy J. Martin *Baton Rouge, LA*; Frank L. Greenway *Davis, CA*

218-P Rosiglitazone Improves Survival and Hastens Recovery From Acute Pancreatitis in Obese Mice
Karla J. Castellanos, Maria Pini, Robert J. Cabay, Giamila Fantuzzi *Chicago, IL*

219-P Relationships Among Body Fat, Hepatic Lipid, and Intramuscular TAG During Weight Gain and Weight Loss
Kenneth Axen, Kathleen V. Axen *Brooklyn, NY*

220-P IGF1 Dependence of Dietary Energy Balance Regimens on Murine Luminal B Mammary Tumor Progression, Epithelial-to-Mesenchymal Transition and Chemokine Expression
Nikki A. Ford, Nomeli P. Nunez, Stephen D. Hursting *Austin, TX*

221-P Hypoglycemic Effect of Electroacupunture on High Fat Diet-Induced Insulin Resistance in Mice
Jieyun YIn, Jian Kuang, Nicola Abate, Manisha Chandalia, Jiande Chen *Galveston, TX*

222-P Variation in Liquid Food Intake Patterns Associated With Obesity Development in Marmoset Monkeys: Lick Size
Suzette Tardif, Corinna N. Ross, Michael L. Power *San Antonio, TX*

223-P Role of Hepatic Monounsaturated Fatty Acid Synthesis in Metabolic Regulation
Maggie Strable, James M. Ntambi *Madison, WI*

224-P The Drosophila Titin Is a Potential Regulator of Mitochondrial Proton Leak and Fat Storage
Su Bu, Juanita C. Slaughter, Maria De Luca *Birmingham, AL*

Nutrient Effects

225-P Megadoses of Vitamin C Reduce Fat Mass in Mice
Craig H. Warden, John Meissen, Oliver Fiehn, Janis S. Fisler *Davis, CA*

226-P Cyclopia Maculata Attenuates Diet-Induced Obesity in Wistar Rats
Carmen Pheiffer *Parow, South Africa*; Oelfah Patel *Bellville, South Africa*; Christo J. Muller *Parow, South Africa*; Elizabeth Joubert *Stellenbosch, South Africa*; James Syce *Bellville, South Africa*; Johan Louw *Parow, South Africa*

227-P Ability of an Acylated Isoquinoline Compound to Inhibit Food Intake, Reduce Body Weight, and Enhance Leptin Responsiveness in Rats
Joseph R. Vasselli, Justine Mumma *New York, NY*

228-P The Hypolipidemic Effects of Lactobacillus Curvatus HY7601 and Lactobacillus Plantarum KY1032 on High Fructose-Fed Rats
Do-Young Park, Hongsup Yoon, Hoyong Lee, Se-Hoon Park, Kil-Sun Myoung, Myoung-Hee Lee, Young-Tae Ahn, Chul-Sung Huh *Yongin-si, Republic of Korea*

229-P Eicosapentaenoic Acid Stimulates Genes Associated with Mitochondrial Biogenesis in Subcutaneous Adipocytes from Overweight Subjects
Maria J. Moreno-Aliaga, Pedro L. Prieto-Hontoria, Marta Fernández-Galilea, Sonia M. Ribeiro, J. Alfredo Martinez *Pamplona, Spain*

230-P Some Natural Products, Especially Mulberry, Attenuate Inflammation and Inflammation-Induced Obesity
Na Ha-Na *Baton Rouge, LA*; Park Soo Ho, Nam Jae-Hwan *Bucheon, Republic of Korea*

231-P Effects of Mungbean and Testa Extract on Anti-Obesity Related Inflammation in Vitro 3T3L1 Cells and in Vivo KK-Ay Mice
Inhae Kang *Gainesville, FL*; Munji Choi *Seoul, Republic of Korea*; Soojin Yang *Gwangju, Republic of Korea*; Jungim Kim, Haeri Wi, Selim Choi, Myoungsook Lee *Seoul, Republic of Korea*

232-P Anti-Obesity Effects of Captopril are Dependent on the Level of Dietary Intake of Salt
Jessica E. Radcliffe, Denovan P. Begg, Richard S. Weisinger, Markandeya Jois *Bundoora, Australia*

233-P Effects of Supplementation With n-3 Polyunsaturated Fatty Acids on Subcutaneous, Visceral and Pericardial Adiposity in Minipigs Fed a High-fat Diet
Bryan C. Bastin, Emily B. Martin, Jonathan S. Wall, Federica Morandi, Amy K. LeBlanc, Robert L. Donnell, Reza Seddighi, Thomas J. Doherty, Misty J. Long, Cheryl Kojima *Knoxville, TN*

234-P Systematic Analysis of the Effects of Anti-Diabetic Herbal Extracts on Adipogenesis and Adipokine Secretion in 3T3-L1 Cells
Manti Ortiz, Diana Elizondo, Catherine Duazo, Andrea E. Schwarzbach, Saraswathy Nair *Brownsville, TX*

235-P Dietary Leucine is Associated With Reduced Insulin Resistance in Women in the Newfoundland Population
Danny Wadden, Farrell Cahill, Peyvand Amini, Sudesh Vasdev, Edward Randell, Wayne Gulliver, Guang Sun *St. John's, NL, Canada*

236-P Botanical Extracts Modulate Adipocyte Function and Insulin Sensitivity in Vitro and in Vivo
Allison J. Richard *Baton Rouge, LA*; David Ribnicky *New Brunswick, NJ*; Jacqueline M. Stephens *Baton Rouge, LA*

237-P Metabolic and Cardiovascular Effects of Genistein in Obese Female Rats With Hypoestrogenism
Luis A. Lima, Karla González, Juventino Colado, Marbella Chavez, Guadalupe Bravo *Mexico City, Mexico*

238-P Effect of Lycopene Supplementation on Nox2 Gene Expression in Adipose, Cardiac and Hepatic Tissues from High-Fat Diet-Fed Rats
Renata A. Luvizotto, Andre F. Nascimento, Paula T. Presti, Natália C. Miranda, ÉriKa Imaizumi, Damiana T. Pierine, Camila Correa, Ana Lúcia A. Ferreira *Botucatu, Brazil*

239-P Dietary Glutamate Promotes Fat Oxidation and Inhibits Fatty Acid Synthesis in Rats
Hidehiro Nakamura, Keigi Chin, Yasuko Kawamata, Tomomi Kuwahara, Kunio Torii, Hisayuki Uneyama, Ryosei Sakai *KAWASAKI-shi, Japan*

Feeding Studies

240-P Effects of Dietary Fatty Acid Composition From a High Fat Meal on Postprandial Satiety
Amanda L. Kozimor, Hui Chang, Jamie A. Cooper *Lubbock, TX*

241-P *This abstract has been withdrawn.*

242-P Higher Plasma Concentrations of Unsaturated Fatty Acids Are Associated With Lower Food Intake in Pima Indians During an "Ad Libitum" Food Intake Study
Maximilian Hohenadel *Phoenix, AZ*; Ana Guijarro *Irvine, CA*; Reiner Jumpertz, Susanne B. Votruba, Paolo Piaggi *Phoenix, AZ*; Danielle Piomelli *Irvine, CA*; Jonathan Krakoff *Phoenix, AZ*

243-P Effect of a 40% 8-Week Overfeeding on Cellular Dynamics of Subcutaneous Abdominal Adipocyte Progenitors in Healthy Men
Yourka Tchoukalova, Charmaine Tam, Darcy L. Johannsen, David H. Burk, Dexter Graves, Eric Ravussin *Baton Rouge, LA*

244-P Effects of Dietary Protein to Carbohydrate Balance on Hepatic Metabolism in Mice: A Systems Biology Approach
Xin Huang *Sydney, Australia*; Natalie A. Eriksson *Brisbane, Australia*; Kari Ruohonen *Dirdal, Norway*; George E. Muscat *Brisbane, Australia*; Dale P. Hancock, Arthur D. Conigrave *Sydney, Australia*; David Raubenheimer *Auckland, New Zealand*; Stephen J. Simpson *Sydney, Australia*

245-P Effect of Hypercaloric, Coca-Cola and Fat-Rich Diets on Organ and Body Weight of Male Wistar Rats
Juventino Colado, Marbella Chavez, Patrick Mailloux, Luis A. Lima, Guadalupe Bravo *Mexico City, Mexico*

246-P Eight Weeks of 40% Overfeeding induces Metabolic Adaptation in Energy Expenditure in Young, Healthy Adults
Darcy L. Johannsen, Charmaine Tam, Virgile Lecoultre, Wenting Xie, Jennifer C. Rood, Eric Ravussin *Baton Rouge, LA*

247-P *This abstract has been withdrawn.*

248-P Effects of High-Fat Dietary Obesity on Hepatic Lipogenic Mechanisms in Rats
Kathleen V. Axen, Marianna A. Harper, Yu-Fu Kuo, Steven Clarke, Jean Grassman, Kenneth Axen *Brooklyn, NY*

249-P Short-Term of Nutritional Overload Alters Metabolism-Related Gene Expression Profile in Hepatic Tissue of Wistar Rats
Andre F. Nascimento, Renata A. Luvizotto, Camila Correa, Aline O. Martins, Tamiris Oliveira, Cintia Miyake, Antonio Cicogna *Botucatu, Brazil*

250-P Five Days of High Saturated Fat Feeding Abrogates the Transcriptional Response to a High Fat Meal Challenge in Healthy, Nonobese, College-Aged Males
Kimberly R. Haynie *Baton Rouge, LA*; Kristen Wahlberg, Elika Shabrokh, Michael Tarpey, Yaru Wu, Ryan P. McMillan, Madlyn Frisard, Kevin P. Davy, Matthew W. Hulver *Blacksburg, VA*

251-P[DT] Spillover of Dietary Fatty Acids Is Related to Delivery by Lipoproteins and Contributes to Postprandial Plasma NEFA Concentration
Jennifer Lambert, Joseph J. Lee, Yelena Hovhannisyan, Dora L. Bradford, Maressa J. Valdez, Elizabeth J. Parks *Dallas, TX*

252-P Effect of Overfeeding in Obese Humans
Elisa Fabbrini, Gemma Fraterrigo, Paloma Almeda-Valdes, Samuel Klein *St. Louis, MO*

253-P Glucose and Insulin Response to Cephalic Stimulation of Sweetened Mouth Rinses
Keely Hawkins, Alexis Stamatikos, Jamie A. Cooper *Lubbock, TX*

254-P Stress Sensitivity and Dietary Restraint: Exploring the Psychobiological Profile of Restrained Eaters
Jaime R. Silva, Karina Jaramillo, Jenny Lagos, Luis A. Salazar *Temuco, Chile*

255-P Plasma Triglyceride Clearance Following an Intravenous Fat Tolerance Test in the Presence of Increased Plasma Insulin Concentrations and With/Without Nitric Oxide Inhibition in Healthy Humans
Christos S. Katsanos, Christian Meyer, Lawrence J. Mandarino, Sarah Everman *Scottsdale, AZ*

Sleep

256-P Insufficient Sleep Is Not Associated With a Greater Adaptive Reduction in Thermogenesis During Weight Loss in Adults
Jean-Philippe Chaput *Ottawa, Canada*; Caroline Y. Doyon *Quebec City, Canada*; Jessica McNeil, Éric Doucet *Ottawa, Canada*; Angelo Tremblay *Quebec City, Canada*

257-P Sleep Disruption Induces Hypothalamic Endoplasmic Reticulum Stress and Leptin Resistance in Mice
Fahed Hakim, Jing Zhang, Alba Carreras, Camila Hirotsu, Eduard Peris, Yang Wang, David Gozal *Chicago, IL*

258-P The Effects of Obesity on Obstructive Sleep Apnea in Pediatric Patients
Leah Marron, Jennifer Berkovich, Matthew Uhde *Fort Lauderdale-Davie, FL*

Energy Balance Regulation/Brown Adipose Tissue

259-P Effects of Liraglutide on Appetite, *ad Libitum* Energy Intake, 24-hour Energy Expenditure and Substrate Oxidation in Obese Non-Diabetic Adults: A Randomized, Placebo-Controlled, Incomplete Crossover Trial
Judith van Can *Maastricht, Netherlands*; Birgitte Sloth, Christine B. Jensen, Tu D. Le Thi, Anne Flint *Soeborg, Denmark*; Ellen E. Blaak, Wim H. Saris *Maastricht, Netherlands*

260-P Capsinoids Induce Brite/Beige Cells in White Adipose Tissue in Mice When Acclimated in Mild Cold Environment
Kana Ohyama, Yoshihito Nogusa, Katsuya Suzuki *Kanagawa, Japan*

261-P[DT] Lipid Oxidation During 24 hours of Fasting Predicts 6 Month Weight Change
Marie S. Thearle, Susan Bonfiglio, Jonathan Krakoff *Phoenix, AZ*

262-P Acute Effect of Dietary Fatty Acid Saturation on Postprandial Thermogenesis and Substrate Oxidation
Hui Chang, Amanda L. Kozimor, Jamie A. Cooper *Lubbock, TX*

263-P Accuracy of a Combined Heart Rate and Motion Sensor for Assessing Energy Expenditure in Free-Living Adults During a Double-Blind Crossover Caffeine Trial Using Double Labeled Water as the Reference Method
Analiza M. Silva, Diana A. Santos, Catarina N. Matias, Pedro B. Júdice, João P. Magalhães, Luís B. Sardinha *Cruz Quebrada, Portugal*

264-P Impact of Exergaming on Energy Expenditure and Heart Rate in Young Women
Carine Platat *Al Ain, United Arab Emirates*

265-P A Stable Isotope Method For Energy Intake Assessment in Free Living Subjects
Joseph J. Kehayias, Gregory Dolnikowski *Boston, MA*; Pauli M. Kehayias *Berkeley, CA*; Helen M. Rasmussen, Erek Alper, Anna A. Rossinoff, Edward Saltzman *Boston, MA*

266-P Elucidating the Mechanism of Uncoupling Protein 1 Phosphorylation
Cyril N. Adjeitey, Ryan J. Mailloux, Mary-Ellen Harper *Ottawa, Canada*

267-P Cold Exposure Suppresses High Fat Diet-induced Obesity in Mice
Le Bu, Mingming Gao *Athens, GA*; Shen Qu *Shanghai, China*; Dexi Liu *Athens, GA*

268-P Equations For Extimating Energy Requirements in Normal Weight and Overweight Men and Women
Leanne Redman *Baton Rouge, LA*; Sai Krupa Das *Boston, MA*; Manju Bhapkar *Durham, NC*; Susan B. Racette, Luigi Fontana *St. Louis, MO*; William E. Kraus *Durham, NC*; William W. Wong *Houston, TX*; Susan Roberts *Boston, MA*; Eric Ravussin *Baton Rouge, LA*

269-P Brown Adipose Tissue (BAT) and Adipocytokines in Obese Young Adults
Nicole L. Mihalopoulos, M. N. Nanjee, Jaci Skidmore, Regan Butterfield, John M. Hoffman *Salt Lake City, UT*

Brain-Gut Communication

270-P The Activation of Appetite Regulating Centres By Preproglucagon Derived Peptides
Jennifer Parker, John A. Tadross, Benjamin C. Field, James Minnion, Stephen R. Bloom *London, United Kingdom*

271-P Targeting the GCC Endocrine Signaling Axis to Reduce Appetite in Obesity
Gilbert W. Kim, Scott A. Waldman *Philadelphia, PA*

272-P[DT] Identification of Pleiotropic Genetic Effects on Obesity and Brain Structure
Joanne E. Curran *San Antonio, TX*; Anderson M. Winkler *Harftord, CT*; Rene L. Olvera, Melanie A. Carless, Thomas D. Dyer, Jack W. Kent *San Antonio, TX*; Peter Kochunov *Catonsville, MD*; Michael C. Mahaney, Anthony G. Comuzzie, Peter T. Fox, Laura Almasy, Ravindranath Duggirala, John Blangero *San Antonio, TX*; David C. Glahn *Harftord, CT*

Leptin Biology

273-P Leptin Plasma Levels in Males Predict Percentage Body Fat as Measured by DXA Compared to BMI
Eric Braverman, Kristina Dushaj, Raquel Lohmann, Uma J. Damle, Kenneth Blum, Richard Smayda *New York, NY*

274-P The Physiological Role of Leptin in the Regulation of the Hypothalamo-Pituitary-Adrenal (HPA) Axis Response to Stress
Saadia Basharat, Kevin G. Murphy, Julia C. Buckingham, Christopher D. John *London, United Kingdom*

Neuronal Control of Metabolism

275-P Fat-Free Mass But Not Fat Mass Is Associated With Reduced Gray Matter Volume of Cortical Brain Regions Implicated in Autonomic and Homeostatic Regulation
Christopher Weise, Pradeep Thiyyagura, Eric M. Reiman, Kewei Chen, Jonathan Krakoff *Phoenix, AZ*

276-P LPS Induces Prolonged Increased Sympathetic Activation of Brown Adipose Tissue in Obese Rats
Megan Sheppard, Barbara Woodside, Giamal Luheshi *Montreal, Canada*

277-P Synphilin-1 Alters Metabolic Homeostasis: A Novel Drosophila Model For Obesity
Jingnan Liu, Tianxia Li, Dejun Yang, Rui Ma *Baltimore, MD*; Timothy Moran *baltimore, MD*; Wanli W. Smith *Baltimore, MD*

278-P Zanamivir and Pyridoxine Increase Dopamine Levels on Young Rat Brain in Presence of Sucrose
David Calderon *Mexico City, Mexico*

279-P[DT] Neural White Matter and Adiposity Influenced By Common Genetic Factors in Mexican-Americans
Elena Spieker, Peter Kochunov, Laura M. Rowland *Baltimore, MD*; Ravindranath Duggirala, Rene L. Olvera, Laura Almasy, John Blangero, David C. Glahn, Joanne E. Curran *San Antonio, TX*

280-P Neuroendocrine Changes in the Hippocampus and Their Effects on Systemic or Peripheral Metabolism
Nicole M. Ruiz, Luis Pacheco, Christa G. Ramirez, Andrea D. Fragoso, Bianca Farrell, Tammy Munoz, Emilio R. Garrido-Sanabria, Saraswathy Nair *Brownsville, TX*

Neuropeptides

281-P Adult Mice Maintained on a High-Fat Diet Exhibit Object Location Memory Deficits and Altered Hippocampal Gene Expression
Frankie D. Heyward, Rosicka G. Walton, Matt S. Carle, Mark A. Coleman, W. Timothy Garvey, J. D. Sweatt *Birmingham, AL*

282-P Adipogenic Effect of QRFP Peptides in 3T3-F442A and Its Expression in Adipose Tissue Depots in Wistar Rats
Marbella Chavez, Juventino Colado, Patrick Mailloux, Luis A. Lima, Guadalupe Bravo *Mexico city, Mexico*

Neuronal Control of Satiety

283-P Effects of Allopregnanolone on Feeding Behavior in Male Wistar Rats
Ellinor Holmberg, Maja Johansson, Torbjörn Bäckström, Magnus Löfgren, David Haage *Umeå, Sweden*

284-P Midbrain Dopaminergic Regulation of Novelty Seeking Traits Are Altered in Obese Females
Julia P. Dunn, Shane W. Savage, David H. Zald, Robert Kessler, Naji N. Abumrad *Nashville, TN*

285-P Sex-based Differences in the Hormonal and Behavioral Responses to Energy Imbalance
Elizabeth A. Thomas, Jamie L. Bechtell, Elizabeth H. Kealey, Susan L. Johnson, Daniel H. Bessesen, Marc-Andre Cornier *Aurora, CO*

286-P Obesity Proneness Is Associated With Altered Brain Structure
Marc-Andre Cornier, Jason Smucny, Jamie L. Bechtell, Lindsay Eichman, Jason R. Tregellas *Aurora, CO*

287-P Sex But Not Obesity Proneness or Energy Imbalance Impacts the Neuronal Response to Sweet Taste
Marc-Andre Cornier, Megan E. Shott, Jamie L. Bechtell, Guido K. Frank *Aurora, CO*

288-P Obese Women Show Increased Activation of Frontal Reward Regions to Odors of Foods Eaten to Satiety
William J. Eiler, Mario Dzemidzic, Rose Case, Robert V. Considine, David A. Kareken *Indianapolis, IN*

289-P Individual Genetic Variations Related to Satiety and Appetite Control Increase Risk of Obesity in Preschool Age Children From STRONG Kids Program
Yingying Wang, Anthony Wang, Margarita Teran-Garcia *Urbana, IL*

290-P Obesity Induced By High-Fat Diet Modifies Rat Hypothalamic Proteome
Regina L. Watanabe, Amanda P. Pedroso, Mônica M. Telles, Maria Claudina C. Andrade, Claudia O. Nascimento, Lila M. Oyama *São Paulo, Brazil*; Jose C. Rosa *Ribeirão Preto, Brazil*; Dulce E. Casarini, Eliane B. Ribeiro *São Paulo, Brazil*

291-P Effects of Rimonabant, a Cannabinoid-1 Receptor Antagonist, on Satiety Signaling in Overweight People With Schizophrenia: A Randomized, Double-Blind, Pilot Study
Kimberly R. Warren, Robert W. Buchanan, Stephanie M. Feldman *Baltimore, MD*; Robert Conley *Indianapolis, IN*; Jared Linthicum, M. Patricia Ball, Fang Liu, Robert P. McMahon, David Gorelick, Marilyn A. Huestis, Deanna L. Kelly *Baltimore, MD*

292-P Appeal of and Brain Response to Fattening Foods Predict Subsequent Food Intake and Choices During Post-Meal Satiety
Susan J. Melhorn, Sonya Mehta *Seattle, WA*; Anne Smeraglio *Portland, OR*; Vidhi Tyagi, Thomas J. Grabowski, Michael Schwartz, Ellen A. Schur *Seattle, WA*

293-P The Neural Response of Lean Subjects to Visual Food cues in a Fasted vs. Satiated State: An FMRI Approach
Pooja Sarkar, Claudia Huerta, Muhammad Abdul-Ghani, Ralph A. DeFronzo, Timothy Duong *San Antonio, TX*

Neuroscience-Other

294-P Doubly-Labeled Water Estimates of Food Intake Is Positively Related to Activity in Attentional and Gustatory Brain Regions When Anticipating Palatable Food Receipt
Kyle S. Burger, Eric Stice *Eugene, OR*

295-P Interaction of Dieting Status With Reward Response to Palatable Food Cues: An fMRI Study
Alice V. Ely, Anna Rose Childress, Michael R. Lowe *Philadelphia, PA*

296-P Body Mass Index in Children Is Associated With Altered Brain Gray Matter Volumer: Implications For the Neurobiological Mechanisms of Obesity
Ronald L. Cowan, Evan Dalton, Carrie Black, Christina Di Iorio, Tristan J. Watkins, Mary Dietrich, Aize Cao, Jennifer Blackford, Margaret M. Benningfield, Mac Buchowski, Ronald M. Salomon *Nashville, TN*

297-P A Functional MRI Investigation of the Neural Correlates of Declarative and Recognition Memory in Obese Patients With and Without Major Depressive Disorder (MDD)
Maria R. Restivo, Margaret C. McKinnon, Benicio Frey, Geoff Hall *Hamilton, Canada*; Valerie Taylor *Toronto, Canada*

298-P The Unique Knotted Structure Regulates Leptin Function
Ellinor Haglund, Joanna I. Sulkowska, Zhao He, Gen-Sheng Feng, Patricia A. Jennings *La Jolla, CA*; José N. Onuchic *Houston, TX*

Intervention Studies — Behavioral-Adult

299-P Self-Control in Food Choice Decision-Making Changes After Participating in a Behavioral Weight Loss Intervention
Kathryn E. Demos, Jeanne M. McCaffery *Providence, RI*; Antonio Rangel *Pasadena, CA*; Todd A. Hare *Blümlisalpstrasse, Switzerland*; Graham Thomas, Rena R. Wing *Providence, RI*

300-P Enhancing Long-Term Weight Loss Maintenance: Two-Year Results From the Keep It Off Trial
Nancy E. Sherwood, A. Lauren Crain, Brian C. Martinson, Christopher Anderson, Marcia Hayes, Julie D. Anderson, Meghan M. Senso, Robert W. Jeffery *Minneapolis, MN*

301-P BMI Predicts Exercise Fear-Avoidance Better Than Presence of Hypertension or Arthritis
Brooks C. Wingo, Jamy Ard, Renee Desmond *Birmingham, AL*

302-P[DT] Effects of Behavioral Weight Loss Intervention on Depression in Severely Obese African American Versus Caucasian Women
Amy D. Rickman, Bethany Barone Gibbs, Bret H. Goodpaster, John M. Jakicic *Pittsburgh, PA*

303-P A Randomized Controlled Trial Comparing Gold Standard and Acceptance-based Behavioral Treatment For Obesity: Outcomes From the Mind Your Health Program
Evan M. Forman, Meghan Butryn, Adrienne S. Juarascio, Lauren E. Bradley, Mackenzie Kelly, Ami P. Belmont, Michael R. Lowe, James D. Herbert, Vicki L. Clark *Philadelphia, PA*

304-P Targeted Needs Assessment For Inpatient Weight Loss Strategies Among Obese Patients
Che M. Harris, Rebeca Rios, Regina Landis, Scott Wright *Baltimore, MD*

305-P Hedonic Hunger and Weight Loss Within a Short-Term Comprehensive Program Using a Partial Meal-Replacement Diet
Kelly R. Theim, Joshua D. Brown, Robert J. Malcolm, Patrick M. O'Neil *Charleston, SC*

306-P Self-Reported and Accelerometer Levels of Physical Activity and Associations With Weight Loss Among Rural Breast Cancer Survivors
Christie Befort *Kansas City, KS*; Kelley P. Gabriel *Austin, TX*; Heather L. Austin *Kansas City, KS*

307-P Weight Loss Maintenance Subsequent to a Behavioral Weight Loss Intervention among Rural Breast Cancer Survivors
Christie Befort, Danielle Atwood *Kansas City, KS*; Rebecca Clausius *Lawrence, KS*; Heather L. Austin *Kansas City, KS*

308-P[DT] Examining Non-usage Attrition in an eHealth Weight Loss Intervention
Ilana B. Schriftman, Sandy Askew, Gary G. Bennett *Durham, NC*

309-P The Power of Tenacity: Behavioral Perseverance Is Associated With Successful Weight Loss and Increases in Physical Activity
Xiaomeng Xu, Tricia M. Leahey, Rena R. Wing *Providence, RI*

310-P Human CVD (IBC) Chip-Wide Analysis of Weight Loss in Response to Lifestyle Intervention in the Look Ahead Trial
Jeanne M. McCaffery, George D. Papandonatos *Providence, RI*; Gordon S. Huggins *Boston, MA*; Inga Peter *New York, NY*; Steven E. Kahn *Seattle, WA*; William C. Knowler *Pheonix, AZ*; Gina Evans-Hudnall *Houston, TX*; Edward Lipkin *Seattle, WA*; Abbas E. Kitabchi *Memphis, TN*; Lynne E. Wagenknecht *Winston-Salem, NC*; Rena R. Wing *Providence, RI*

311-P A Pilot Study of Acceptance and Commitment Therapy as a Group Treatment For Overweight Individuals With Eating Pathology
Adrienne S. Juarascio, Jena Shaw, Evan M. Forman *Philadelphia, PA*

312-P Do Weight Status and the Level of Dietary Restraint Moderate the Relationship Between Package Unit Size and Food Intake?
Chrystal L. Haire, Hollie Raynor *Knoxville, TN*

313-P Innovative Technology to Improve Patient Adherence to Physician Weight Loss Recommendations
Graham Thomas, Tricia M. Leahey, Katelyn M. Gettens, Rena R. Wing *Providence, RI*

314-P Sleep Disturbances Related to Psychosocial Functioning But Not Weight Retention in Postpartum Women
Todd Hagobian, Suzanne Phelan *San Luis Obispo, CA*; Chantelle N. Hart, Maureen G. Phipps *Providence, RI*; Barbara Abrams *Berkeley, CA*; Rena R. Wing *Providence, RI*

315-P Outcomes From the WEIGH Study: A Low-Intensity Approach Promoting Daily Self-Weighing
Dori M. Steinberg, Deborah F. Tate *Chapel Hill, NC*; Gary G. Bennett *Durham, NC*; Susan Ennett, Carmen D. Samuel-Hodge, Dianne S. Ward *Chapel Hill, NC*

316-P Sleep Duration and Dietary Intake in Treatment Seeking Obese Adults
Jessica M. Lawton, Chantelle N. Hart, Erin M. O'Brien, Rena R. Wing *Providence, RI*

317-P Effectiveness of the LOSE BIG Challenge, a Culturally-Based, Inner-City Weight Loss Program
Julie Hall, Kirk Anderson, Debbie Lown *Allendale, MI*

318-P Long-Term Weight Control Strategies and Their Association With Weight Maintenance in a Behavioral Weight Loss Program
Lauren E. Bradley, Evan M. Forman, Meghan Butryn *Philadelphia, PA*

319-P Perceived Stress, Anhedonia and Emotional Eating Are Associated With Future Weight Change
Marie S. Thearle, Colleen Venti, Cindy Ziker, Susanne B. Votruba, Jonathan Krakoff, Marci E. Gluck *Pheonix, AZ*

320-P Eating in a Buffet Setting Leads to Higher Fat and Energy Intake Among Lean Young Women With the PROP (6-n-Propylthiouracil) Non-Taster Phenotype
Yasmine Shafaie, Yvonne Koelliker, Daniel Hoffman, Beverly J. Tepper *New Brunswick, NJ*

321-P Examining Associations Between Treatment Adherence and Weight Loss Among Natural Social Contacts in a Behavioral Weight Loss Intervention
Tiffany L. Cox, Kenya Eddings, Rebecca A. Krukowski, ShaRhonda Love *Little Rock, AR*; Jean Harvey-Berino *Burlington, VT*; Delia S. West *Little Rock, AR*

322-P WAIST: A Randomized Controlled Clinical Trial (RCT) of a Behavioral Lifestyle Intervention For Weight Reduction in Schizophrenia
Rohan Ganguli *Toronto, Canada*; Jaspreet S. Brar, Chung-Chou H. Chang *Pittsburgh, PA*; Martin Strassnig *Miami, FL*; Ching-wen Lee *Pittsburgh, PA*; Todd Jenkins *Toronto, Canada*

323-P Consumption of a High Fat Soup Preload Leads to Differences in Short-Term Energy Adjustment in PROP Non-Taster Women Compared to Super-Taster Women
Yasmine Shafaie, Daniel Hoffman, Beverly J. Tepper *New Brunswick, NJ*

324-P Text Message Preferences of Young Adults Seeking Weight Loss: The IDEA Study
Diane Helsel, David O. Garcia, Leah M. DiCicco, John M. Jakicic *Pittsburgh, PA*

325-P Facebook Participation During a Worksite Program Is Associated With Greater Weight Loss
Kasia Burton, Sheri Wells-Chesley, Kristin Reimers *Omaha, NE*

326-P Effectiveness of an Online, Interactive Energy Balance Curriculum For College Students
Simonne M. Eisenhardt, Linda Berlin, Regina Toolin, Stephen J. Pintauro *Burlington, VT*

327-P[DT] How to Successfully Administer a Behavioral Weight Management Program Among African American Women
Elena Spieker, Dillon Kayser, Vasiliki Anagnostopoulos, Robyn Osborn, Tricia L. Psota, Tracy Sbrocco *Bethesda, MD*

328-P A Cognitive- Behavioural Treatment Impact on Hyperobesity Effectiveness of a Clinical-Nutritional Approach
Karina P. Zullich, Máximo G. Ravenna, Abel Olkies, María L. Carracedo, Liliana G. Lerda *Capital Federal, Argentina*

329-P Evaluating Women's Beliefs on Total Weight Gain During Pregnancy
Nkiruka Arinze, Angela Mendoza, Anne F. Crook, Eileen Ruchman, Lauren Davis, Sabina B. Gesell *Nashville, TN*

330-P Behavioral Interventions to Modify Obesity Risk in the Postpartum Period: A Systematic Review
Alexander A. Berger, Wanda Nicholson *Carrboro, NC*

331-P Self-Identity, Self-Esteem, and Body Attitude in Thin and Overweight Hispanic Females
Lorena Martin, Arlette C. Perry *Coral Gables, FL*; Barbara E. Kahn *Philadelphia, PA*; Joseph F. Signorile *Coral Gables, FL*; Andrew Perkins *London, Canada*

332-P Food Intake Detection By Automatic Ingestion Monitor
Edward Sazonov, Juan Fontana *Tuscaloosa, AL*

333-P Barriers to Healthy Eating in Low-Income WIC Mothers Is Associated With Unhealthy Weight Control Strategies
Brittany L. James, Jennifer S. Savage, Leann L. Birch *University Park, PA*

Intervention Studies — Behavioral-Pediatric

334-P Parent Food Reinforcement Moderates the Effects of Child Food Reinforcement on Child Body Composition
John Best, Kelly R. Theim, Richard I. Stein, R. Robinson Welch *St. Louis, MO*; Brian E. Saelens *Seattle, WA*; Michael G. Perri *Gainesville, FL*; Kenneth B. Schechtman *St. Louis, MO*; Leonard H. Epstein *Buffalo, NY*; Denise E. Wilfley *St. Louis, MO*

335-P Decreases in Maternal Criticism Are Associated With Positive Weight Outcomes For Adolescents Participating in a Weight Management Program
Elizabeth S. Kuhl, Wendy Hadley *Providence, RI*; Elizabeth E. Lloyd-Richardson *North Dartmouth, MA*; Danielle R. Oster *Providence, RI*; Amy Sato *Kent, OH*; Elissa Jelalian *Providence, RI*

336-P A Pilot Randomized Control Trial Comparing Behavioral Intervention to Enhanced Standard of Care For Treatment of Obesity in Preschoolers
Elizabeth S. Kuhl, Lisa M. Clifford, Joseph R. Rausch, Lori J. Stark *Cincinnati, OH*

337-P School-Based Obesity Intervention: Inclusion of Peers
Craig A. Johnston, Jennette Moreno, Deborah L. Woehler, Abeer A. El-Mubasher, Maria A. Papaioannou *Houston, TX*

338-P[DT] Long-Term BMI Results From Motivating Adolescents With Technology to Choose Health (MATCH) and Associated Current Health Behaviors
Suzanne Lazorick, George T. Hardison, Xiangming Fang, Yancey Crawford, Veronica Burr, Valeria Moore *Greenville, NC*

339-P Baseline Lipids and Weight Loss Among Youth Are Associated With Ad36 Antibody Status
Jillon S. Vander Wal *St. Louis, MO*; Jean Huelsing *Imperial, MO*; Olga Dubuisson, Nikhil V. Dhurandhar *Baton Rouge, LA*

340-P[DT] Family Meals, Screen Time and Overweight/Obesity in Immigrant Children
Alison Tovar, Rebecca J. Boulos, Sarah Sliwa, Emily Kuross Vikre *Boston, MA*; Alex Pirie *Somerville, MA*; Christina D. Economos *Boston, MA*

341-P Multidisciplinary Childhood Obesity Treatment is Associated With Body Mass Reduction and Improved Quality of Life
Wendy M. Miller *Royal Oak, MI*; Brian R. Goslin *Rochester, MI*; Judy Boura, Catherine Coleman *Royal Oak, MI*; Patricia A. Wren, Ronald Gellish *Rochester, MI*; Ronette Kolotkin *Durham, NC*

342-P[DT] Effects of a School-Based Intensive Intervention on Systemic Inflammation and Disease Risk in Mexican-American Children
Whitney L. Breslin, Craig A. Johnston, Jennette Moreno, John P. Foreyt, Brian K. McFarlin *Houston, TX*

343-P[DT] A Comparison of Fat Mass By Bioelectrical Impedance Analysis and Air Displacement Plethysmography in African American College Students
Amy Schweitzer, Eleanor R. Mackey, Maria-Eugenia Hurtado, Joanne Hathway, Catherine J. Klein *Washington, DC*; Kai Y. Lei *College Park, MD*

344-P Gift of Health Through Nutrition and Exercise: Feasibility of a Community-Based Intervention With Caregiver-Child Dyads
Cynthia A. Danford *Ann Arbor, MI*; Feleta L. Wilson, Cheryl K. Nordstrom *Detroit, MI*

345-P[DT] Opportunities to Strengthen Childhood Obesity Prevention in Two Mexican Health Care Settings
Elizabeth Cespedes *Boston, MA*; Gloria Martinez-Andrade *Mexico City, Mexico*; Guadalupe Rodríguez-Oliveros *Cuernavaca, Mexico*; Ricardo Perez-Cuevas, Marco González-Unzaga, Maria Amalia Benitez Trejo *Mexico City, Mexico*; Jess Haines *Guelph, Canada*; Matthew W. Gillman, Elsie M. Taveras *Boston, MA*

346-P Pilot RCT Examining Parental Involvement in Adolescent Weight Control
Elissa Jelalian, Wendy Hadley *Providence, RI*; Elizabeth E. Lloyd-Richardson *North Dartmouth, MA*; Elizabeth S. Kuhl, Danielle R. Oster *Providence, RI*; Amy Sato *Kent, OH*

347-P Quantity and Quality of Sleep As Predictors of Physical Activity Among Overweight, Depressed, Adolescent Females With Polycystic Ovary Syndrome
Karen P. Jakubowski, Nermeen El Nokali, Kevin Kralik *Pittsburgh, PA*; Jessica J. Black *Cincinnati, OH*; Dana Rofey *Pittsburgh, PA*

348-P In Their Own Words: Seventh Graders' Assessment of Changes From MATCH, a Middle School-Based Childhood Obesity Intervention
Suzanne Lazorick *Greenville, NC*; Claire I. Viadro *Chapel Hill, NC*; Veronica Burr, Hannah E. Woriax, Yancey Crawford, George T. Hardison *Greenville, NC*

349-P[DT] Supporting Autonomy of Obese Minority Youth Participating in a Weight Loss Study: Offering the Choice of Diet Plans
Kathryn Brogan, Sylvie Naar-King, Deborah Ellis, Kai-Lin, Catherine Jen *Detroit, MI*

350-P Mothers Report Fewer Behavioral Concerns and Higher Confidence in Managing Behavior Issues After a 3-Phase Camp Intervention
Cristiana Milone, Karen A. Lindsley, Laura Colbert, Courtney McCracken, Andrew Muir *Atlanta, GA*

351-P Do Children Really Eat What They Like? Results From a Laboratory Feeding Study in 4-6 Year-Olds
Laura Kuilema, Kathleen Keller *University Park, PA*

352-P Addiction Model Intervention For Childhood Obesity, Implemented as a Smartphone App: A Pilot Study
Robert Pretlow *Seattle, WA*

353-P Cooking Healthy to Eat Foods (CHEF) – A Study of Hands-On Meal Preparation For the Treatment of Adolescent Obesity
Chanelle T. Bishop-Gilyard, Thomas A. Wadden, Robert I. Berkowitz, Colleen F. Bechtel, Priscilla Costa, Megan Brault, Brooke A. Bailer, Sharon Leonard, Monica Mullen, Theodora K. Wong, David Sarwer, Renee H. Moore *Philadelphia, PA*

354-P Randomized Control Trial of a Weight Management Program Targeting Both Parent and Child Weight Loss
Cathleen Odar *Kansas City, MO*; Marina Daldalian, Kelsey Dean *Kansas City, KS*; Ann M. Davis *Kansas City, MO*

355-P Efficacy of a Program of Cognitive Behavioral Treatment in Overweight Adolescents
Ricardo Lanza Saiz *Madrid. Santander, Spain*; Jesus Lino Alvarez Granda, María Jesus Cabero Perez, Trinidad Dierssen Sotos, Luis Gaite Pindado, María José Noriega Borge, Raul Pesquera Cabezas, Miguel García Fuentes *Santander, Spain*

356-P Support From Family and Friends to Eat Healthy Among African-American College Students and the Association With Fruit Intake
Eleanor R. Mackey, Joanne Hathway, Amy Schweitzer, Maria-Eugenia Hurtado *Washington, DC*; Kai Y. Lei *College Park, MD*; Catherine J. Klein *Washington, DC*

357-P "Stomp For Life!" Improves Physical Activity and Nutrition in Underserved Youth
Susan Franks, Heather Kitzman-Ulrich, Paul Bowman *Fort Worth, TX*

358-P Convergent Validity of the Clinical Assessment of Depression as a Screening Procedure For Immersion Treatment of Adolescent Obesity
Dan Kirschenbaum *Chicago, IL*; Kristina M. Pecora, Kristen Gierut *Cupertino, CA*

359-P Using Technology to Accelerate the Adoption of Childhood Obesity Comparative Effectiveness Research - The STAR Study
Christine M. Horan, Renata L. Koziol, Sarah N. Price, Richard Marshall, Elsie M. Taveras *Boston, MA*

360-P[DT] Parenting Style Influences on Appetite Regulations in African American School Age Children
Meredith I. Borine, Adam Davey, Jennifer O. Fisher *Philadelpha, PA*

361-P Linking Parents, Families and Communities to Prevent Obesity Among Children: NET-Works Pilot Study
Simone A. French, Nancy E. Sherwood, Sara Veblen-Mortenson, A. Lauren Crain, Meghan M. Senso, Nathan R. Mitchell, Annie Hotop, Anne F. Gerlach *Minneapolis, MN*

362-P Change in Maternal Weight During Participation in a Weight Management Program For Children
Susan J. Woolford, Christine Robert, Heidi IglayReger, Ashley Amick, Paul M. Gordon, Bethany J. Sallinen *Ann Arbor, MI*

Intervention Studies — Diet With & Without Physical Activity-Adult

363-P Changes in Weight and Symptoms of Depression in Overweight or Obese Individuals With Type 2 Diabetes in the Look AHEAD Trial: Four-Year Results
Lucy F. Faulconbridge, Thomas A. Wadden *Philadelphia, PA*; Richard R. Rubin *Baltimore, MD*; William C. Knowler *Phoenix, AZ*; Haiying Chen *Winston-Salem, NC*; Delia S. West *Little Rock, AR*; Jack Rejeski *Winston-Salem, NC*; Mace Coday *Memphis, TN*; Lin J. Ewing *Pittsburg, PA*

364-P[DT] Risk of Gallstones in a Commercial Weight Loss Program Using Very Low Energy Diet or Low Energy Diet: Matched Cohort Study
Kari Johansson *Stockholm, Sweden*; Johan Sundström *Uppsala, Sweden*; Claude Marcus, Erik Hemmingsson, Martin Neovius *Stockholm, Sweden*

365-P Effect of Protein Intake on Weight Loss and Body Composition Among Older, Overweight Adults in a Community-Based Weight Loss Intervention
Denise K. Houston, Walter T. Ambrosius, Kristen M. Beavers, Beverly Nesbit, Jack Rejeski *Winston Salem, NC*

366-P Self-Monitoring on the Go: Mobile App Self-Monitoring is Related to Increased Energy Expenditure, Decreased Energy Intake, and Weight Loss
Gabrielle Turner-McGrievy, Michael Beets, Justin B. Moore, Andrew Kaczynski, Daheia J. Barr-Anderson *Columbia, SC*; Deborah F. Tate *Chapel Hill, NC*

367-P[DT] Insulin and Extremity Lean Mass in Overweight or Obese Women
Benjamin M. Leon, Shannon Jenkins, Kristen Pepin, Hira Chaudhry, Kevin P. Smith, Gloria G. Zalos, Myron A. Waclawiw, Bernard V. Miller, Anne E. Sumner, Kong Y. Chen, Richard O. Cannon *Bethesda, MD*

368-P Detecting the Eating Activities of a Free Living Human By Tracking Wrist Motion
Yujie Dong, Jenna L. Scisco, Adam Hoover, Eric R. Muth *Clemson, SC*

369-P Comparing Meal Duration and Eating Rate Between In-Lab and Real-World Meals
Jenna L. Scisco, James N. Salley, Adam Hoover, Eric R. Muth *Clemson, SC*

370-P Effects of Energy Restricted High Protein, Low Fat vs. Standard Protein, Low Fat Diets: A Meta-Analysis of Randomized Controlled Trials
Thomas P. Wycherley, Lisa J. Moran, Peter M. Clifton, Manny Noakes, Grant D. Brinkworth *Adelaide, Australia*

371-P[DT] Racial Differences in Weight Loss Among Adults in Behavioral Weight Loss Intervention: The Role of Dietary Intake and Physical Activity
Kelliann Davis *Pittsburgh, PA*; Deborah F. Tate, Kristen Polzien, Karen Erickson *Chapel Hill, NC*; Wei Lang *Winston-Salem, NC*; Amy D. Rickman, John M. Jakicic *Pittsburgh, PA*; Rebecca Neiberg *Winston-Salem, NC*

372-P A Plant-Based Diet Reduces Body Weight and Cardiovascular Risk: The GEICO Multicenter Trial
Suruchi Mishra, Neal D. Barnard, Jia Xu, Joseph Gonzales, Susan M. Levin, Ulka Agarwal, Caroline Trapp *Washington, DC*

373-P Fatty Acid Binding Protein-4, Leptin/Adiponectin Ratio and Insulin Resistance in Overweight Boys: A 6-Month Randomized Placebo Controlled Trial of an Antioxidant Supplement + Nutritional Counseling vs. Nutrition Counseling Alone
Jose A. Canas, Ligeia C. Damaso, Karl Mann, Shawn Sweeten, Prabhakaran (Babu) Balagopal *Jacksonville, FL*

374-P Do Weight Loss Goals and Expectations Become Aligned With Actual Weight Loss During a Long-Term Weight Management Program
Cheryl A. Gibson *Kansas City, KS*; Jaehoon Lee *Lawrence, KS*; Kate Lambourne, Joseph E. Donnelly *Kansas City, KS*

375-P Development of EMA Items For Study Examining the Triggers of Relapse Following Intentional Weight Loss
Lora E. Burke, Mindi A. Styn, Lin J. Ewing, Andrea M. Kriska, Patrick J. Strollo, Saul Shiffman *Pittsburgh, PA*

376-P Effects of a Dietary Restriction Plus Exercise Program on Central Adiposity in Obese, Older Women: A Randomized Controlled Trial
Christy Karabetian, Todd M. Manini *Gainesville, FL*; Donovan Lott *Gainesvilee, FL*; Stephen Anton *Gainesville, FL*

377-P Unintended Weight Loss With an Iso-Caloric Mediterranean Diet in Persons Who Are Overweight or Obese
Zora Djuric, Elkhansa Sidahmed, Maria L. Cornellier, Yiting Li, Mary Rapai, Mack Ruffin, Dean E. Brenner, Danielle K. Turgeon, Ananda Sen *Ann Arbor, MI*

378-P Effects of a High-Protein Energy Restricted Low-Carbohydrate or Low-Fat Diet on Weight Loss Pre and Post-Surgery in Bariatric Surgery Candidates With Non-Alcoholic Fatty Liver Disease (NAFLD): Results From a Pilot Study
Virginia Uhley, Adam Neidert, Charles Burant, John Birkmeyer, Jonathan Finks, Elif A. Oral *Ann Arbor, MI*

379-P Differential Metabolic Effects of Dietary Macrocomposition in Bariatric Surgery Candidates With Non-Alcoholic Fatty Liver Disease (NAFLD): Results From a Pilot Study
Virginia Uhley, Adam Neidert, John Birkmeyer, Jonathan Finks, Hero Hussain, Thomas Chenevert, Barbara McKenna, Charles Burant, Elif A. Oral *Ann Arbor, MI*

380-P Incretins and Hepatic Metabolites Correlate With Weight Loss, Hepatic Fat Content and Nonalcoholic Steatohepatitis (NASH) Scores in Women With Nonalcoholic Fatty Liver Disease (NAFLD) After Hypocaloric Diet Interventions
Elif A. Oral, Adam Neidert, Virginia Uhley, Jonathan Finks, John Birkmeyer, Barbara McKenna, Thomas Chenevert, Charles Burant *Ann Arbor, MI*

381-P High Fructose Corn Syrup and Sucrose Sweetened Milk Result in Equivalent Body Composition Changes and Weight Loss Irrespective of Baseline Calcium Consumption During Weight Loss
Nan Lv, Zhiping Yu, Joshua Lowndes, Stephanie Sinnett, James M. Rippe *Celebration, FL*

382-P Monitoring of Daily Activity With a Smartphone Onboard Accelerometer
Jon Moon, Jared Sieling, Charles Barden, Lulu Wang *St Louis Park, MN*; Andrew DeMott, Alex Pictor, Arlen Moller *Chicago, IL*

383-P Efficacy of Web-Based Self-Care Lifestyle Modification Program For Weight Loss in Type 2 DM Patients
Kanji Akai, Kathy Kleyn *Itasca, IL*; Hideto Takase *Tokyo, Japan*; Paul Tutt *Itasca, IL*; Neal D. Kaufman *Los Angels, CA*

384-P Physical Activity Improvements Among Morbidly Obese Individuals 6 Months After a Residentially-Based Behavioral Weight Loss Program
Jennifer Pells, Chandra A. Quigley *Durham, NC*

385-P The Relationship Between Dietary Energy Density and Body Mass Index During an 18-month Lifestyle Intervention
Hollie Raynor, Elizabeth Steeves *Knoxville, TN*; Jacki Hecht, Jessica G. LaRose, Rena R. Wing *Providence, RI*

386-P Validation of a Weight Management Program Featuring a Protein-Sparing Food Plan and a 10,000-Step Exercise Regimen For Obese Individuals
Joseph J. Lamb, Deanna M. Minich, Jacob J. Kornberg, Robert H. Lerman, Todd Killebrew *Gig Harbor, WA*; Jacqueline Jacques *Irvine, CA*; Barbara Schiltz, Jeffrey S. Bland, Matthew L. Tripp *Gig Harbor, WA*

387-P Sex Differences in Arterial Destiffening With Weight Loss
Elizabeth Erhlick, Elaina Marinik, Tim Werner, Nabil Boutagy, Brenda M. Davy, Kevin P. Davy *Blacksburg, VA*

388-P An Employer-Based Diabetes Prevention Project in a Rural Underserved Area
Joyce G. Pastors, Jon T. Saunders *Charlottesville, VA*

389-P Comprehensive Assessment of Long-Term Effects of Reducing Intake of Energy (CALERIE) Screening and Recruitment: Methods and Results
Tiffany M. Stewart *Baton Rouge, LA*; Manju Bhapkar *Durham, NC*; Sai Krupa Das *Boston, MA*; Katherine M. Galan *Durham, NC*; Corby K. Martin *Baton Rouge, LA*; Luanne McAdams, Carl Pieper *Durham, NC*; Leanne Redman *Baton Rouge, LA*; Susan Roberts *Boston, MA*; James Rochon *Durham, NC*; Richard I. Stein *St. Louis, MO*; Donald Williamson *Baton Rouge, LA*

390-P Design and Baseline Characteristics of the Live For Life Employee Weight Management Study
Truls Ostbye, Marissa Stroo, Bernard F. Fuemmeler, Julie Joyner, Eric L. Eisenstein, Bercedis Peterson, John Dement *Durham, NC*

391-P The Effects of Six-Week Consumption of Ruby Red Grapefruits on Markers Associated With Cardiovascular Disease Risk in Overweight and Obese Adults
Caitlin Dow, Betsy Wertheim, Cynthia Thomson *Tucson, AZ*

392-P[DT] A 12-Month, Randomized, Controlled Trial to Examine the Efficacy of the Korean Diet in an Austrailian Overweight and Obese Population - A Follow Up Analysis
Nicholas Fuller, Namson S. Lau, Gareth Denyer, Ian D. Caterson *Sydney, Australia*

Intervention Studies — Physical Activity Only-Adult

393-P Pancreatic and Gut Peptide Responses to Short-Term Exercise Training in Obese Individuals
Jill Kanaley, Tim Heden, Ying Liu, Lauren Sims, Monica L. Kearney, Adam Whaley-Connell, Anand Chockalingam, Kevin C. Dellsperger *Columbia, MO*; Timothy J. Fairchild *Perth, Australia*

394-P Comparison of Physical Activity, Sedentary Behaviors and Health-Related Quality of Life in Severely Obese Individuals Seeking Bariatric Surgery or Lifestyle Intervention
Dale S. Bond, Jessica L. Unick, John M. Jakicic, Jennifer Trautvetter, Kevin O'Leary, Rena R. Wing *Providence, RI*

395-P Comparison of Bariatric Surgery Candidates' Self-Reported and Objectively - Measured Time Spent in Sedentary Behaviors
Dale S. Bond, Graham Thomas, Jessica L. Unick *Providence, RI*; Hollie Raynor *Knoxville, TN*; Sivamainthan Vithiananthan, Jennifer Trautvetter, Rena R. Wing *Providence, RI*

396-P Comparison of Exercise-Related Psychological Factors in Severely Obese Individuals Seeking Bariatric Surgery vs. Lifestyle Treatment
Jessica L. Unick, Dale S. Bond, Kevin O'Leary, Jennifer Trautvetter, Sivamainthan Vithiananthan, Beth Ryder, Dieter Pohl *Providence, RI*

397-P Muscle Cross Sectional Area Increases and Low Back Pain Severity Decreases in Obese Older Adults After Progressive Resistance Exercise
Heather K. Vincent, Amanda N. Seay, Cindy Montero, Kevin R. Vincent, Robert W. Hurley *Gainesville, FL*

398-P Physical Activity Across Pregnancy in Sedentary, Overweight or Obese Women
Kai Ling Kong, Randal Foster, Christina Campbell, Lorraine M. Lanningham-Foster *Ames, IA*

399-P Burn and Earn: Incentivizing Exercise in First-Year College Students
Lizzy Pope, Jean Harvey-Berino *Burlington, VT*

400-P Impact of Exercise Training Plus Interdisciplinary Lifestyle Management on Physical Capacity, Quality of Life and Physical Exercise Beliefs in Obese Subjects Before Bariatric Surgery: A Pilot Study
Aurélie Baillot, Warner Mampuya, Emilie Comeau, Anne Meziat-Burdin, Marie-France Langlois *Sherbrooke, Canada*

401-P[DT] Inconsistent Reporting of Physical Activity From Screener to Baseline
Heather J. Adamus-Leach, Scherezade K. Mama, Rebecca E. Lee *Houston, TX*

402-P From Zero to Hero: Improved Screening Improves Physical Activity Intervention Efficacy
Scherezade K. Mama, Heather J. Adamus-Leach, Rebecca E. Lee *Houston, TX*

403-P Initial Validation of the Physical Activity Acceptance Questionnaire
Meghan Butryn, Shawn N. Katterman, Stephanie G. Kerrigan *Philadelphia, PA*

404-P The Effects of an 8-Week Walking Intervention on Physical Activity and Anthropometric Measures in Inactive Middle Aged Women
Merrill Funk, Ghadah Alshuwaiyer, Susan Zacharia, Laurette Taylor *Norman, OK*

Intervention Studies — Diet and/or Physical Activity-Pediatric

405-P Degree of zBMI Change and Health Benefits in Obese Children Attending a Community Weight Management Program
Maria Kolotourou, Duncan Radley, Lindsey R. Smith, Stavros Orfanos, Paul Chadwick, Tim J. Cole, Paul M. Sacher *London, United Kingdom*

406-P Assessing the Short-Term Effects of the MEND Program for 5-7 Year Old Overweight and Obese Children in UK Community Settings
Lindsey R. Smith, Duncan Radley, Paul Chadwick, Maria Kolotourou, Catherine S. Gammon, Jennifer M. Rosborough, Paul M. Sacher *London, United Kingdom*

407-P Effects of a Multidisciplinary Intervention on Cardiometabolic Risk Factors Among Obese Adolescents
Patricia Blackburn, Lison Houde, Véronique Julien, Mario Leone, Dominique Desrosiers, Johanne Harvey *Saguenay, Canada*

408-P Influence of Fruit Variety and Course Sequence on Fruit Intake During a Snack in Preschool-Aged Children
Chelsi Cardoso, Shannon Looney, Hollie Raynor *Knoxville, TN*

409-P A Family-Centered Obesity Prevention Program Developed By Families for Families: Outcome Evaluation Findings
Kirsten Davison *Boston, MA*; Janine M. Jurkowski *Albany, NY*; Kaigang Li *Bethesda, MD*; Sibylle Kranz *Lafayette, IL*; Hal A. Lawson *Albany, NY*

410-P[DT] Evaluation of a Community-Based Weight Management Program For Obese, Inner-City, Minority Adolescents Using the RE-AIM Framework
Jessica Rieder, Unab I. Khan *Bronx, NY*

411-P Are High-Fiber Snacks Acceptable to School-Aged Children and What Snacks Do Children Prefer?
Mary Brauchla, Sibylle Kranz *West Lafayette, IN*

412-P Changes in Eating Behaviors of Obese Children in Response to Carbohydrate-Modified and Portion-Controlled Diets
Shelley Kirk, Jessica G. Woo, Bonnie Brehm, Margaret Neidhard *Cincinnati, OH*; Brian E. Saelens *Seattle, WA*

413-P Cross-Sectional Time Series and Multivariate Adaptive Regression Splines Models For Prediction of Energy Expenditure of Preschool-Aged Children
Issa Zakeri *Philadelphia, PA*; Anne L. Adolph, Maurice Puyau, Theresa A. Wilson, Nancy F. Butte *Houston, TX*

414-P Similar Physiological and Perceived Variables Observed in Obese and Healthy Weight Children During Unstructured, Sustained Vigorous Physical Activity
Connie L. Tompkins, Timothy Flanagan, Julie Benay, David Brock *Burlington, VT*

415-P Identifying Constructs of Parenting Practices Related to Childhood Obesity
Dianne S. Ward, Amber E. Vaughn *Chapel Hill, NC*; Rachel G. Tabak *St. Louis, MO*; Maria Bryant *Leeds, United Kingdom*

416-P[DT] Postprandial Triglyceride Concentration and Resting Blood Pressure in Black vs White Adolescents: Effect of a Single Bout of Exercise
Sojung Lee *Pittsburgh, PA*; Stephen Burns *Singapore, Singapore*; David A. White, Silva Arslanian *Pittsburgh, PA*

417-P Design and Methods For an Intervention Utilizing Peer Facilitators to Reduce Adolescent Obesity: Team Up for Healthy Living
Deborah L. Slawson, William T. Dalton, Liang Wang, Mary Ann Littleton, Elizabeth Lowe, Mozen Diana, Karen E. Schetzina, James Stoots, Christian L. Williams, Jodi Southerland, Taylor L. McKeehan, Tiejian Wu *Johnson City, TN*

418-P *This abstract has been withdrawn.*

419-P[DT] Texas Fun-Based Summer Camp Program for Obese Children, Kamp K'aana, Is Reproducible in Wisconsin's YMCA Residential Camp Manitou
Stephanie H. Abrams, Sarah Barlow, Carmen Mikhail, Vernisha Shepard, Paula Mrowczynski-Hernandez, William J. Klish *Houston, TX*; Garret Larsen *Livingston, TX*; Joanne M. Gilles, John Plewa, Carol Fahrenkrog *Eau Claire, WI*; William W. Wong *Houston, TX*

420-P Obese, Mexican-American Children Have Elevated Non-Traditional Metabolic Risk Factors
Brian K. McFarlin, Craig A. Johnston, Jennette Moreno, Whitney L. Breslin, John P. Foreyt *Houston, TX*

421-P[DT] Kinecting With Friends: Social and Individual Active Video Game Play in Hong Kong Girls
Robin Mellecker, Alison McManus *Pokfulam, Hong Kong*

422-P[DT] It's All About F.U.N: A Church-Based Intervention To Promote Physical Activity in African American Adolescent Girls
Wanda M. Thompson *Chapel Hill, NC*

423-P[DT] Healthy Families Study: Design of a Childhood Obesity Prevention Trial For Hispanic Families
Roger Zoorob, Mac Buchowski *Nashville, TN*; Bettina M. Beech *Winston-Salem, NC*; Juan Canedo, Sylvie Akohoue, Pamela Hull *Nashville, TN*

424-P[DT] Increasing Activity and Health in Overweight Kids: Do Psychological Interventions Make a Difference?
Elizabeth Milligan, Becca Resich *Hillsboro, OR*; Daniel Munoz *Portland, OR*; Erin E. Jobst *Hillsboro, OR*

425-P A Parental Education Intervention to Reduce Body Weight In Overweight Preschoolers
Jennifer C. Schrecengost, Wendy L. Biddle, Carolyn Rutledge *Norfolk, VA*

426-P Process and Outcome: Converting a Parent-Child Weight Managment Program to a Parent-Only Child Weight Management Program
Eileen Kennedy, Karen S. Vargo, Beth Sprogis, Sarah Worley, Katherine Mone, Heather Nettle, Jill Fisher *Independence, OH*

Intervention Studies — Other-Adult

427-P Energy Intake and Expenditure During Sedentary and Active Screen Time
Elizabeth Lyons *Galveston, TX*; Deborah F. Tate, Dianne S. Ward *Chapel Hill, NC*

428-P[DT] Preventing Excess Weight Gain During Pregnancy Among Overweight and Obese Women With a Technology-Based Approach
Kelly C. Allison, Stacia K. Studt, Lisa K. Diewald, Sindhu K. Srinivas, David Sarwer *Philadelphia, PA*

429-P Rapid Total Body Water Estimation By Quantitative Magnetic Resonance
Steven B. Heymsfield, Kori B. Murray *Baton Rouge, LA*; Jose E. Galgani *Santiago, Chile*; Virgile Lecoultre, Jennifer C. Rood, Eric Ravussin *Baton Rouge, LA*

430-P Durable Weight Loss and Metabolic Improvement at Two Years With the EndoBarrier (DJBL)
Alex Escalona, Fernando Pimentel, Allan C. Sharp, Cesar Munoz, Dannae Turiel, Cecilia Gomez, Milenko Slako, Luis Ibáñez, Sergio Guzman *Santiago, Chile*

431-P Clinical Efficacy and Tolerability of Chromium Dinicocysteinate Supplementation on Levels of Insulin, Insulin Resistance, TNF-α and Oxidative Stress in Type 2 Diabetic Subjects
Sushil K. Jain *Shreveport, LA*; Francis C. Lau *Benicia, CA*

432-P An Obesity Educational Intervention for Medical Students Addressing Weight Bias and Communication Skills Using Standardized Patients
Robert F. Kushner, Dinah M. Zeiss, Joseph Feinglass, Marsha E. Kaye *Chicago, IL*

433-P The Effect of Sleep Deprivation on Free-Living Physical Activity: A Cross-Over Study
James D. LeCheminant, Lora L. Romney, Tyler Clark, Andrew Black, Bruce W. Bailey, Michael J. Larson *Provo, UT*

434-P Effects of Weight Loss on Dynamic Plantar Pressure in Obese Adults: A Pilot Study
Jinsup Song, Reagan Kane, Dana N. Tango, Stephanie S. Vander Veur, Naomi R. Reyes, Caitlin A. LaGrotte, James Furmato, Eugene Komaroff, Gary Foster *Philadelphia, PA*

435-P Frequency of Exercise Training and Body Image in Older Women
William Neumeier, Gordon Fisher, Paula Chandler-Laney, Gary Hunter *Birmingham, AL*

436-P Clinical Efficacy and Safety of Meratrim For Weight Management
Francis C. Lau *Benicia, CA*; Artatrana T. Mishra *Vijayawada, India*; M. V. Sadasiva Rao *Eluru, India*; K. P. Rajeswari, Golakoti Trimurtulu, Alluri V. Krishnaraju, Krishanu Sengupta *Vijayawada, India*

437-P Using Qualitative Research Methods to Inform the Development of Behavioral Weight Loss Programs For Young Adults
Jessica G. LaRose, Kathleen M. Morrow, Erica F. Robichaud, Kathy M. Palmer, Rena R. Wing *Providence, RI*

438-P Comparison of Energy Intakes Using Subject-Coded vs Investigator-Coded Diet Records: An Evaluation of the ASA24 Diet Tracking Tool
Carol Johnston, Brooke Schohl *Phoenix, AZ*

439-P The Effect of Alpha-Cyclodextrin on Acute Blood Lipid and Glycemic Responses to a Fat-Containing Meal
Patricia A. Jarosz, Joseph D. Artiss, Kai-Lin, Catherine Jen *Detroit, MI*

440-P Acute Appetitive Effects of Ready-To-Eat Breakfast Cereals Containing Different Dietary Fiber Ingredients in Overweight Women
David Lafond *Battle Creek, MI*; Tia M. Rains, Kevin C. Maki, Arianne Schild, Valerie N. Kaden, Kathleen M. Kelley, Andrea L. Lawless *Glen Ellyn, IL*; Dale Romsos *East Lansing, MI*

441-P Resolution of Idiopathic Cardiomyopathy With Medical Weight Loss: A Case of Adipositas Cordis
Gabriel Uwaifo, Kamran Rasul, Robert L. Dubin *New Orleans, LA*; Ariane O. Conrad *new Orleans, LA*; Lisa G. Berthaut *New Orleans, LA*

442-P Qualitative Study of Weight Control Interventions For Patients With Mental Illnesses
Chad Morris *Aurora, CO*

443-P Correlations Between Body Composition, Body Mass Index and Bone Mineral Density in Women With Endometirosis: Preliminary Report
Edna J. Nava-Gonzalez, Yolanda E. de la Garza-C, Raul G. Salazar-Montalvo *Monterrey, Mexico*; Raul Bastarrachea *San Antonio, TX*; Esther C. Gallegos-Cabriales *Monterrey, Mexico*

444-P *This abstract has been withdrawn.*

445-P *This abstract has been withdrawn.*

446-P Lose Fat - Not Weight!
James R. Matthie *La Jolla, CA*; Robert Huizenga *Los Angeles, CA*

447-P[DT] A Comparison of Body Composition Assessment Methods in Young Non-Hispanic Black Women
Jody L. Clasey, Kelly Bradley, James W. Bradley *Lexington, KY*; Brian A. Irving *Rochester, MN*; Leslie J. Crofford *Lexington, KY*

Intervention Studies — Other-Pediatric

448-P Evaluating the Effectiveness of the MEND 7-13 Childhood Obesity Program When Delivered at Scale in Community Settings in Australia and New Zealand
Paul M. Sacher *London, United Kingdom*; Sarah Lukeis *Australia, Australia*; Paul Chadwick, Maria Kolotourou, Duncan Radley, Tim J. Cole, Atul Singhal *London, United Kingdom*

449-P Parental Perceptions of Pediatric Pain: The Effect of Child Obesity and Diagnostic Status
Jacquelyn A. Corvan, Kristen Jastrowski-Mano, Kristie Bergmann *San Diego, CA*; Steven Weisman, W. H. Davies, Keri Hainsworth *Milwaukee, WI*

450-P Graded Exercise Testing in a Stage III Pediatric Weight Management Center
Joey Eisenmann, Kyle Morrison, Emily E. Hill, William Stratbucker *Grand Rapids, MI*

451-P[DT] An After Hours Rapid Access Pediatric Weight Management Clinic Increases Show Rate
Robert M. Siegel, Christopher Kist, Lawrence Ingram, Shelley Kirk *Cincinnati, OH*

452-P The Effect of Cognitive Function on Weight Loss After Bariatric Surgery in Adolescents
Thao-Ly T. Phan, Jennifer L. Curran, Kirk Reichard, George Datto *Wilmington, DE*

453-P The Use of Health and Behavior Codes in Pediatric Obesity Treatment
Melissa Santos *Hartford, CT*; Stephanie S. Filigno *Cincinnati, OH*; Jane Gray *Austin, TX*; Wendy Ward *Little Rock, AR*; Ann M. Davis *Kansas City, KS*

454-P DNA Methylation Changes After a Lifestyle Intervention in Overweight and Obese Adolescents: The EVASYON Study
Adriana Moleres, Javier Campion, Fermin I. Milagro *Pamplona, Spain*; Ascensión Marcos, Cristina Campoy, Jesus Garagorri *Madrid, Spain*; Maria J. Moreno-Aliaga, J. Alfredo Martinez, Cristina Azcona-Sanjulián, Amelia Marti *Pamplona, Spain*

455-P An Integrative Review of Five Recent Sets of Expert Recommendations For the Treatment of Childhood and Adolescent Obesity
Dan Kirschenbaum *Chicago, IL*; Kristen Gierut *Cupertino, CA*

Intervention Studies — Pharmacotherapy

456-P Beloranib Phase 1b Dose Response, Safety and CV Biomarkers: Novel Methionine Aminopeptidase 2 Inhibitor Shows Rapid Weight Reduction Over 4 Weeks
Dennis D. Kim, James E. Vath *Cambridge, MA*; John K. Whisnant *Harpers Ferry, WV*; Joanne Marjason *Herson, Australia*; Thomas E. Hughes *Cambridge, MA*

457-P Combination Pharmacotherapy With Metformin and Topiramate Reduces Blood Pressure and Vascular Stiffness in Obesity With Metabolic Syndrome: A Randomized Double-Blind Clinical Trial
Graziela Z. Kalil, Robyn Netz, Christine Sinkey, Gil Bensasson, William G. Haynes *Iowa City, IA*

458-P The Effect of Glucagon Like Peptide-1 Receptor Agonist Therapy on Body Mass Index in Adolescents With Severe Obesity
Aaron S. Kelly, Kyle D. Rudser, Brandon M. Nathan, Claudia K. Fox, Andrea M. Metzig, Brandon J. Coombes, Angela K. Fitch, Eric M. Bomberg *Minneapolis, MN*; M. Jennifer Abuzzahab *St. Paul, MN*

459-P Weight Loss (WL) and Reduction in Unique Antidiabetic Medication Use in Obese Subjects With Type 2 Diabetes Mellitus (T2DM) Using Extended-Release Phentermine/Topiramate (PHEN/TPM ER) Over 2 Years
W. Timothy Garvey *Birmingham, AL*; Robert F. Kushner *Chicago, IL*; Wesley W. Day *Mountain View, CA*

460-P Weight Loss (WL) By Degree of Comorbidity as Assessed By the Edmonton Obesity Staging System (EOSS) in Subjects Receiving Extended-Release Phentermine/Topiramate (PHEN/TPM ER)
Lawrence J. Cheskin *Baltimore, MD*; Arya M. Sharma, Raj S. Padwal *Edmonton, Canada*; Charles H. Bowden *Mountain View, CA*

461-P Weight Loss (WL) and Changes in Blood Pressure (BP) and Triglycerides (TG) By Degree of Comorbidity in Subjects Receiving Extended-Release Phentermine/Topiramate (PHEN/TPM ER)
Arya M. Sharma, Raj S. Padwal *Edmonton, Canada*; Craig A. Peterson *Mountain View, CA*

462-P Reduction in Cardiovascular (CV) Risk Associated With Weight Loss (WL) in Three Clinical Trials of Obese Subjects Receiving Extended-Release Phentermine/Topiramate (PHEN/TPM ER)
Timothy Church, Alok K. Gupta *Baton Rouge, LA*; Charles H. Bowden *Mountain View, CA*

463-P Compared to Telmisartan 80mg Alone, a Single-Pill Combination of Telmisartan 80 mg/Hydrochlorothiazide 25 mg Provides Superior Blood Pressure Reductions Among Obese, Diabetes Mellitus and Patients at High Cardiovascular Risk
Harold Bays *Louisville, KY*; Dingliang Zhu, Pingjin Gao *Shanghai, China*; Michaela Mattheus, Birgit Voelker *Ingelheim, Germany*; Luis M. Ruilope *Madrid, Spain*

464-P Differential Effects of Adding Weight Loss Medications to the Gastric Band, Sleeve Gastrectomy, and Gastric Bypass
Ken Fujioka, Max A. Macmillan *La Jolla, CA*

465-P Substantial Weight Loss and Beneficial Effects of the Metabolic Syndrome As a Result of Testosterone Treatement For Up to 15 Years With Testosterone Undecanoate Injections in 334 Hypogonadal Men
Farid Saad *Berlin, Germany*; Michael Zitzmann, Eberhard Nieschlag *Muenster, Germany*

466-P Weight Loss in Middle-Aged Hypogonadal Men on Long-Term Treatment With Testosterone Undecanoate Injections
Farid Saad *Berlin, Germany*; Gheorghe Doros *Boston, MA*; Ahmad Haider *Bremerhaven, Germany*; Abdulmaged Traish *Boston, MA*

467-P Favourable Changes in Body-Weight and Waist Circumference in Middle-Aged Hypogonadal Men Treated With Testosterone Undecanoate Injections For Up to 5 Years
Farid Saad *Berlin, Germany*; Gheorghe Doros *Boston, MA*; Aksam A. Yassin *Norderstedt, Germany*

468-P Safety and Efficacy of a Long Acting alpha-MSH Analogue, MC4-NN2, in Overweight to Obese But Otherwise Healthy Subjects
Birgit S. Hansen *Soeborg, Denmark*; Ct Chang, Bartholomew Tortella *Prinecton, NJ*; Jane Royalty *Evansville, IN*; Birgitte S. Wulff *Maaloev, Denmark*

469-P Telmisartan Prevents New-Onset Diabetes in Pre-Diabetic OLETF Rats on a High-Fat Diet: Evidence of an Anti-Diabetes Action
Feng-shi Tian, Zi-Qin Zhao, Rong Luo, Lan-ying Li, Xi-lan Zheng, Hai-liang Xiong, Li-ting Sun *Tianjin, China*

470-P L-Arginine For the Treatment of Centrally Obese Patients: A Pilot Study
Ryan T. Hurt, Jon O. Ebbert, Ivana T. Croghan *Rochester, MN*; Stephen A. McClave *Louisville, KY*; Darrell R. Schroeder, Brent A. Bauer, John M. Miles *Rochester, MN*

471-P Effect of Lorcaserin on the Use of Concomitant Medications For Dyslipidemia, Hypertension and Type 2 Diabetes During Phase 3 Clinical Trials Assessing Weight Loss
Emelyn Vargas, Matilde Sanchez, William R. Shanahan, Christen M. Anderson *San Diego, CA*

472-P The MetStudy: Metformin, Eating Behaviors and Anthropometric Measures in a Prospective Cohort of Obese Children and Adolescents
Ihuoma Eneli, Jeff Bridge, Monika Chaudhari, Tricia Fine Rosenstein, MaryAnn Murphy, Susan Timan, Carrie A. Tolman, Cynthia Yensel, Rosanna Watowicz *Columbus, OH*

473-P Effects of Liraglutide on Gastric Emptying and Postprandial Glucose Metabolism in Obese, Non-Diabetic Adults: A Randomized, Placebo-Controlled, Incomplete Crossover Trial
Judith van Can *Maastricht, Netherlands*; Birgitte Sloth, Christine B. Jensen, Tu Duyen Le Thi, Anne Flint *Soeborg, Denmark*; Ellen E. Blaak, Wim H. Saris *Maastricht, Netherlands*

474-P Lipid-Lowering Effect of Berberine in Human Subjects and Rats
Yueshan Hu, Erik A. Ehli, Julie Kittelsrud, Patrick J. Ronan, Karen A. Munger, Terry Downey, Krista Bohlen, Leah Callahan, Vicki Munson, Mike Jahnke, Lindsey L. Marshall, Kelly Nelson, Patricia Huizenga, Ryan Hansen, Timothy J. Soundy, Gareth E. Davies *Sioux Falls, SD*

Surgical Treatment of Obesity

475-P[DT] Perceptions and Attitudes of Post-Gastric Bypass Patients Regarding Weight Maintenance: A Qualitative Study
Sue Benson-Davies *Brookings, SD*; Michael L. Davies *Washington, DC*

476-P Percent Total Body Weight Change Is the Optimal Method of Reporting Weight Loss After Roux-en-Y Gastric Bypass (RYGB)
Lee M. Kaplan, Ida Hatoum *Charlestown, MA*

477-P[DT] Binge Eating and Changes in Body Mass Index (BMI) Following Bariatric Weight Loss Surgery (WLS)
Alexis Conason, Julio Teixeira, Chia-Hao Hsu, Lauren Puma, Allan Geliebter *New York, NY*

478-P Elevated Systemic Fasting and Post-Prandial Glucagon-Like Peptide 1 in Patients With Symptoms of Nausea and Vomiting Following Surgical Weight Loss
Noora Al-Rasheid, Pratik Sufi, Rosaire Gray, Lucy Jones, Kirsten McDougall, Elizabet Atherton, Vidya Mohamed-Ali *London, United Kingdom*

479-P Changes in Metabolic Parameters Are Not Related to Weight Regain Six Years After Gastric Bypass Surgery
Ted D. Adams, Lance E. Davidson *Salt Lake City, UT*; Sheldon E. Litwin *Augusta, GA*; Richard E. Gress, Paul N. Hopkins, Steven C. Hunt *Salt Lake City, UT*

480-P[DT] Behavioral or Meal Replacement Weight Change in Presurgical Bariatric Adolescents: A Red Flag, Green Light, or Proceed With Caution
George Datto, Kirk Reichard *Wilmington, DE*

481-P[DT] Bone Mineral Density Loss After Bariatric Surgery: Comparison of Duodenal Switch and Gastric Bypass
Nuria Vilarrasa, Anna Casajoana, Rocio Valera, Mireia Guerrero, Silvia Toro, Iñaki Elio, Amador Garcia-Ruiz Gordejuela, Jordi Pujol, Joan Soler, Jose Manuel Gomez *Hospitalet, Spain*

482-P Protein Intake and Body Composition Following Bariatric Surgery
Violeta Moize, Alba Andreu, Lilliam Flores, Lucia Rodriguez, Emilio Ortega, Josep Vidal *Barcelona, Spain*

483-P One Year Evaluation of Metabolic Syndrome in the Helping Evaluate Reduction in Obesity (HERO) Study
John Dixon *Melbourne, Australia*; Ted Okerson *Irvine, CA*; Caroline Burk *Laguna Beach, CA*; Rui Shi, Daisy S. Ng-Mak, Denise Globe *Irvine, CA*; Nancy Dreyer *Cambridge, MA*

484-P Preoperative Circulating Adiposity-Adjusted Leptin (Lep_{AA}) Predicts Weight Loss After Roux-en-Y Gastric Bypass
Sriram Machineni, Ida Hatoum, Jill Carmody, Lee M. Kaplan *Boston, MA*

485-P The Isolated Effects of Roux-en-Y Gastric Bypass Compared With "Pair-Fed" Controls on Appetite and GLP-1
Julie B. Schmidt, Nikolaj T. Gregersen, Sue D. Pedersen *Frederiksberg, Denmark*; Jens J. Holst, Dorte L. Hansen, Dorte Worm, Sten Madsbad *Copenhagen, Denmark*; Arne Astrup, Anders M. Sjödin *Frederiksberg, Denmark*

486-P The Relationship of Recalled Weight Status at Age 18 With Adult Health Status at the Time of Bariatric Surgery
Thomas Inge, Todd M. Jenkins *Cincinnati, OH*; Wendy C. King, Anita P. Courcoulas *Pittsburgh, PA*; Stephen R. Daniels *Aurora, CO*; David R. Flum *Seattle, WA*; Bruce Wolfe *Portland, OR*; Alfons Pomp, Gregory Dakin *Aurora, NY*; Saurabh Khandelwal *Seattle, WA*; Meg Zeller *Cincinnati, OH*; Mary Horlick *Bethesda, MD*; John R. Pender *Greenville, NC*

487-P *This abstract has been withdrawn.*

488-P Medical and Pharmacy Costs for Bariatric Surgery: A Six-Year Follow-Up
Valerie H. Myers, Megan A. McVay, Meghan Brashear *Baton Rouge, LA*; Claire E. Adams *Houston, TX*; Brooke L. Barbera, William D. Johnson, Patricia S. Boyd, Phillip J. Brantley *Baton Rouge, LA*

489-P Which Weight Loss Surgery Patients Are at Risk For Development of Post-Surgical Substance Use Disorders?
Karen K. Saules, Summar H. Reslan *Ypsilanti, MI*; Leslie M. Schuh *Carmel, IN*

490-P Validating a Human Behavioral Economic Choice Paradigm For Assessing Food Demand Among Post-Weight Loss Surgery Patients
Shannon Clark, Summar Reslan, Karen K. Saules *Ypsilanti, MI*; Mark K. Greenwald *Detroit, MI*

491-P Sleep Disordered Breathing in Extremely Obese Adolescents Before and After Bariatric Surgery
Thomas Inge, Todd M. Jenkins, Raouf Amin, Narong Simikajornboon *Cincinnati, OH*

492-P A Closer Look at the Nature of Anxiety in Weight Loss Surgery Candidates
Shenelle A. Edwards-Hampton, Alok Madan, Sharlene Wedin, Jeffrey J. Borckardt, Nina M. Crowley, T. Karl Byrne *Charleston, SC*

493-P^{DT} Racial Disparities in Lipid Profile Outcomes Following Gastric Bypass Surgery
Nawfal W. Istfan, Jen-Pin Chuang, Wendy A. Anderson, Megan Ruth, Donald T. Hess, Brian Carmine, Caroline Apovian *Boston, MA*

494-P Identifying Psychosocial Barriers to Bariatric Surgery
David Mahony *Brooklyn, NY*; Henry Alder, Jeffrey Eha *Cincinatti, OH*

495-P Post-Surgical Substance Abuse By Gastric Bypass Patients Predicts Poor Weight Loss Beyond That Predicted By Eating-Related Variables
Summar Reslan, Karen K. Saules *Ypsilanti, MI*; Leslie M. Schuh *Carmel, IN*

496-P Evaluation of a Group Intervention to Reduce Substance Abuse Relapse For At-Risk Bariatric Surgery Candidates
Kathleen Ashton, Leslie Heinberg, Amy K. Windover, Julie Merrell, Megan Lavery *Cleveland, OH*

497-P Baseline Insulin Use and Older Age Predict Failure to Achieve Diabetes Remission After Bariatric Surgery
Kristina H. Lewis, Matthew W. Gillman *Boston, MA*; David Arterburn *Seattle, WA*; Fang Zhang, Claire F. Canning, Dennis Ross-Degnan, James F. Wharam *Boston, MA*

498-P Psychosocial Co-Morbidity and Excess BMI Loss Among Patients With BMI≥70
Leslie Heinberg, Julie Merrell, Kathleen Ashton, Megan Lavery *Cleveland, OH*

499-P Body Silhouette and Weight Loss Expectations and Their Relationship with BMI and Comorbid Health Risk in Laparoscopic Sleeve Gastrectomy Candidates in Newfoundland and Labrador
Hilary I. Price, Deborah M. Gregory, Laurie K. Twells *St. John's, Canada*

500-P Results From the Newfoundland and Labrador Bariatric Surgery Cohort Study
Laurie K. Twells *St. John's, Canada*; Deborah M. Gregory, William K. MIdodzi, Kendra Lester, Carla M. Dillon, Elizabeth Hatfield, Don M. MacDonald, Kimberley Manning *St.John's, Canada*; Christopher S. Kovacs *St. John's, Canada*; Raleen M. Murphy, Rhoda Crawley, David Pace, Darrell Boone, Maria H. Tracey, Elaine Warren *St.John's, Canada*

501-P Weight Loss Goals and Expectations of Laparoscopic Sleeve Gastrectomy Candidates in Newfoundland & Labrador
Hilary I. Price, Deborah M. Gregory, Laurie K. Twells *St. John's, Canada*

502-P A Prospective, Longitudinal Comparison of the Pharmacokinetic Properties of Tablet and Solution Sertraline Formulations in Roux-en-Y Gastric Bypass Patients
Kristine Steffen, James Mitchell, James Roerig, Ross D. Crosby, Li Cao *Fargo, ND*

503-P How Do I Look? Body Image and Bariatric Surgery
Nayna Lodhia, Jaffer Kattan, Dylan Gwaltney, Margaret Nkansah, John Morton *Stanford, CA*

504-P Satisfaction With Life and Bariatric Surgery: A Long Term Outcome Study
Joseph Stote, Leslie M. Schuh, David Creel, Katharine C. Hudson, Brenda M. Cacucci, David Diaz, Christopher M. Evanson, John M. Huse, Margaret M. Inman, Douglas Kaderabek *Carmel, IN*

505-P Differences Between Bariatric Patients With and Without Problematic Alcohol Use Seven Years Post-Surgery
Valentina Ivezaj *Ypsilanti, MI*; Leslie M. Schuh, David Creel, Joseph Stote, Katharine C. Hudson *Carmel, IN*; Karen K. Saules *Ypsilanti, MI*; Brenda M. Cacucci, David Diaz, Christopher M. Evanson, John M. Huse, Margaret M. Inman, Douglas Kaderabek *Carmel, IN*

506-P Exercise Tolerance and Physical Activity Patterns Among Bariatric Surgery Candidates
David Creel, Leslie M. Schuh, Adrienne Gomez, Christina Reed, Brenda M. Cacucci, David Diaz, Christopher M. Evanson, John M. Huse, Margaret M. Inman, Douglas Kaderabek *Carmel, IN*

507-P Rates of Problematic Substance Use and Other Excessive Behaviors in Post-RYGB Patients
Melissa E. Pulcini *Ypsilanti, MI*; Leslie M. Schuh *Carmel, IN*; Karen K. Saules *Ypsilanti, MI*; David Creel, Joseph Stote, Katharine C. Hudson, Brenda M. Cacucci, David Diaz, Christopher M. Evanson, John M. Huse, Margaret M. Inman, Douglas Kaderabek *Carmel, IN*

508-P Effect of Bariatric Surgery on Cardiometabolic Risk in Elderly Subjects: A Population-Based Study
John A. Batsis *Hanover, NH*; Chaithra Prasad, William Miranda, Maria L. Collazo-Clavell, Virend K. Somers, Michael G. Sarr, Francisco Lopez-Jimenez *Rochester, MN*

509-P Diagnosis of Eating Disorder Not Otherwise Specified Relates to Behavioral Adherence and Complications One Month After Weight Loss Surgery
Julie Merrell, Leslie Heinberg, Amy K. Windover, Megan Lavery, Kathleen Ashton *Cleveland, OH*

510-P The Impact of Sleeve Gastrectomy as Compared to Adjustable Gastric Band on Active and Total Ghrelin and Other GI Hormones and Their Influence on Satiety and Hunger
Ahmed Almamar, Arya M. Sharma, Raj S. Padwal, Andrea M. Haqq *Edmonton, Canada*; Michael Thorner *Charlottesville, VA*; Daniel W. Birch *Edmonton, Canada*

511-P[DT] Quality of Life Following Panniculectomy For Gynecologic Cancer Surgery
Ronald Picazo, Elena Diaz *Los Angeles, CA*; Nicole Fleming *Houston, TN*; Malaika Amneus, Scott E. Lentz *Los Angeles, CA*

512-P Folic Acid Levels in an Adolescent Bariatric Laparoscopic Adjustable Gastric Band (LAGB) Population
Emily E. Hartline, George Datto, Kirk Reichard *Wilmington, DE*

513-P Effectiveness of Adjustable Gastric Banding Based on Baseline BMI
Brad Watkins *Cincinnati, OH*; Christopher Cornell, Ted Okerson *Irvine, CA*

514-P HDL Increases Correlate With Weight Change After Laparoscopic Sleeve Gastrectomy (LSG)
Gladys W. Strain, Taha Saif, Faith Ebel, Gregory Dakin *New York, NY*; Michel Gagner *Montreal, Canada*; Alfons Pomp *New York, NY*

515-P Visceral Adiposity After Bariatric Surgery: Improvement in Depressive Symptoms and Fatigue
Nana Gletsu-Miller *West Lafayette, IN*; Dominique Musselman *Miami, FL*; Edward Lin *Atlanta, GA*

516-P Post-RYGB Outcomes Among Those With and Without Current Substance Use Disorders: A Matched Controlled Study
Melissa E. Pulcini, Karen K. Saules *Ypsilanti, MI*; Leslie M. Schuh *Carmel, IN*

517-P Robotic-Assisted Sleeve Gastrectomy For Obesity and Diabetes: A New Approach
Eduardo H. Pirolla *Sao Paulo, Brazil*

Clinical Practice-Based Trials

518-P Correlations Between Biomarkers of the Metabolic Syndrome and Men and Women With Grade 2 and Grade 3 Obesity
Richard Weil, Xavier Pi-Sunyer, Simon Klebanov, Betty Kovacs *New York, NY*

519-P Self Measured vs. Professionally Measured Waist Circumference in a Primary Care Setting
Teresa B. Jensen, Christina Koutsari *Rochester, MN*; Sylvia Santosa *Montreal, Canada*; Jennifer J. Hartman *Rochester, MN*; Lorraine M. Lanningham-Foster *Ames, IA*; Michael D. Jensen *Rochester, MN*

520-P Young Hearts, Strong Starts: A RCT to Enhance Utilization of Pediatric Cardiovascular Risk Reduction Guidelines
Lauren M. Whetstone, Suzanne Lazorick *Greenville, NC*; Helen J. Binns, Adolfo J. Ariza *Chicago, IL*; Connie L. Hobbs, Robert D. Furberg *Research Triangle Park, NC*; Kenneth A. LaBresh *Waltham, MA*

521-P Effectiveness of a Weight Loss Program in Community-Cased Primary Care Offices: High-Intensity Intervention Versus Low-Intensity Intervention
William C. Haas *Greenville, NC*; Michael Kaplan *Smithtown, NY*; Craig A. Johnston, John P. Foreyt *Houston, TX*; Eric Ravussin *Baton Rouge, LA*; Justin B. Moore *columbia, SC*

522-P Patients With Diabetes Who Lose Greater Amounts of Weight Have Greater Reductions in Fasting Lipids, Hyperlipidemia Medications and Associated Costs Compared to Those Who Lose Modest Amounts of Weight
Jeanene Fogli, Linda Gotthelf, Linda Grant *Boston, MA*

523-P Patients With Diabetes Who Lose Greater Amounts of Weight Have Greater Reductions in Fasting Blood Glucose, Diabetes Medications and Associated Costs Compared to Those Who Lose Modest Amounts of Weight
Jeanene Fogli, Linda Gotthelf, Linda Grant *Boston, MA*

524-P High-Risk Patients With Multiple Co-Morbidities Reduce Medical Risk Factors and Medications After Participating in Weight Management Program
Linda Gotthelf, Jeanene Fogli, Linda Grant *Boston, MA*

525-P Plasma Lipids and HDL Metabolism in Obese and in Non-Obese Type 2 Diabetes (T2DM) Patients With Equal Glycemic Levels
Marilia C. Sprandel, Priscila O. Carvalho, Oscar G. Laverdy, Alexandre Segre, Antonio Casella-Filho, Antonio C. Lerario, Whady A. Hueb, Raul C. Maranhão *Sao Paulo, Brazil*

526-P Complex Treatment of NAFLD Patients Without Histological Answer on Previous Therapy
Evgeny Sas, Vladimir Grinevich, Oleg Efimov *St.-Petersburg, Russian Federation*

527-P Medican Nutrition Therapy in the Treatment of Type 2 Diabetes Mellitus
Stanford Owen *Gulfport, MS*

528-P Weight and Body Composition Changes After a 10-Day Cycle of Ketogenic Enteral Nutrition
Gianfranco Cappello, Annalisa Cappello, Antonella Franceschelli *Rome, Italy*

529-P[DT] Challenges in the Use of Hemoglobin A1c For the Diagnosis of Diabetes and Prediabetes in Youth: Variation Between Methodologies
Christine L. Chan, Kim McFann, Kristen J. Nadeau, Lindsey Newnes, Philip Zeitler, Megan Kelsey *Aurora, CO*

530-P Personalized Reminder Phone Calls: Do They Improve Attendance Rates at Multidisciplinary Obesity Clinics?
Ihuoma Eneli, Amanda Wodzisz, Rhyan Williams, Teresa Brode *Columbus, OH*

Clinical Studies on Mechanisms, Including Imaging

531-P Obesity and Bone Marrow Fat: Relationship With Regional Adiposity and Leptin
Francesca Amati *Lausanne, Switzerland*; Bret H. Goodpaster, Yahtyng Sheu, Tanushree Prasad *Pittsburgh, PA*; Xiaojuan Li, Ann V. Schwartz *San Francisco, CA*; Fernando E. Boada, Michelle E. Danielson, Jane A. Cauley *Pittsburgh, PA*

532-P[DT] Ethnic Differences in Ectopic Fat Deposition in Pre-Diabetic Overweight African-American (AA) and Latino (LA) Adolescents
Claudia Toledo-Corral, Tanya L. Alderete, Sherryl Esplana, Houchun H. Hu, Krishna S. Nayak, Michael Goran, Marc J. Weigensberg *Los Angeles, CA*

533-P Evaluation of Vascular Function in Pre-Menopausal Overweight and Obese Women
Sebely Pal, Simone Radavelli-Bagatini *Perth, Australia*

534-P The Influence of Children's Sleep on Leptin, Ghrelin, and C-Reactive Protein
Chantelle N. Hart *Providence, RI*; Robert V. Considine *Indianapolis, IN*; Joseph L. Fava, Mary A. Carskadon, Elissa Jelalian *Providence, RI*; Hollie Raynor *Knoxville, TN*; Judith Owens *Washington, DC*; Rena R. Wing *Providence, RI*

535-P A Diurnal Cortisol Pattern Reflecting Chronic Stress Is Associated With Stress-Eating Behaviors and Overweight in Preschool-Aged Children in Poverty
Julie C. Lumeng, Alison L. Miller, Karen E. Peterson, Niko Kaciroti, Julie Sturza, Katherine Rosenblum, Delia M. Vazquez *Ann Arbor, MI*

536-P Cerebral Vasoregulation in Patients With Obesity
Marcela Rodriguez-Flores, Carlos Cantu-Brito, Eduardo Garcia-Garcia, Claudia V. Cano-Nigenda *Mexico city, Mexico*

537-P Xanthine Oxidase and Cardiovascular Risk in Obese Children
Harrison Tam, Aaron S. Kelly, Andrea M. Metzig, L'Aurelle A. Johnson *Minneapolis, MN*

538-P An Automated Algorithm to Detect and Quantify Brown Adipose Tissue in ^{18}F-FDG-PET/CT Scans
Megan Ruth, Tyler Wellman, Gustavo Mercier, Thomas Szabo, Caroline Apovian *Boston, MA*

539-P Low Serum Obestatin Concentration Is a Predictor of All-Cause and Cardio-Vascular Mortality in Maintenance Hemodialysis Patients
Ilia Beberashvili, Inna Sinuani, Ada Azar, Hadas Kadoshi, Gregory Shapiro, Leonid Feldman, Zhan Averbukh, Joshua Weissgarten *Zerifin, Israel*

540-P Obesity Is Associated With Dobutamine Stress-Induced Changes in Aortic Stiffness in Older Adults at High Cardiac Risk
Tina E. Brinkley, Dalane W. Kitzman, Jingzhong Ding, Barbara J. Nicklas, Stephen B. Kritchevsky, W. Gregory Hundley *Winston-Salem, NC*

541-P The Relationship Between Distress Tolerance and Disordered Eating Related Constructs
Stephanie P. Goldstein, Lindsay M. Martin, Lisa Hayley Glassman, Lauren E. Bradley, Evan M. Forman, James D. Herbert *Philadelphia, PA*

542-P Implicit-Explicit Attitude Discrepancy as a Predictor of Disinhibited Eating
Stephanie P. Goldstein, Evan M. Forman, James D. Herbert, Adrienne S. Juarascio, Breann M. Erford, Amanda Barbieri *Philadelphia, PA*

543-P Elevated Growth Hormone 120 Minutes Following a Single Low-Dose of Amino Acids in Healthy Subjects
Charmaine Tam, William D. Johnson, Jennifer C. Rood, Alok K. Gupta, Frank L. Greenway *Baton Rouge, LA*

544-P Gene Expression Correlations of Obesity BMI With Low and High Percentage of Body Fat
Karen L. Zanni *Vestal, NY*

545-P Persistence of Metabolic Syndrome in Obese Children and Adolescents
Sarah Tsai *Kansas City, MO*; Stasia Hadjiyannakis *Ottawa, Canada*

546-P Evaluation of Anthropometric Measurements That Affects Respiratory Muscle Strength in Obese Women
Marcela C. Barbalho-Moulim, Gustavo P. Miguel *Vila Velha, Brazil*; Eli Maria Pazzianotto-Forti *Piracicaba, Brazil*; Dirceu Costa *Sao Carlos, Brazil*

547-P Cardiometabolic and Endocrine Effects of Increasing Age and Body Fat Mass: A Study of Healthy Men, Comparing Younger Overweight With Older Thin
Katie Glymph, Donna M. Lawson, Ali Iranamnesh *Salem, VA*

Population-Based Intervention Studies — Behavioral/Environmental/Economic

548-P Maternal Depression Affects Both Responsive Feeding Practices and Perceived Infant Negativity in a Sample of WIC Mothers
Jennifer S. Savage, Leann L. Birch *University Park, PA*

549-P[DT] Comparative Effectiveness of Afterschool Programs to Increase Physical Activity
Sabina B. Gesell, E. Warren Lambert, Ana Regina Vides de Andrade, Lauren Davis *Nashville, TN*; Bettina M. Beech *Winston-Salem, NC*; Nkiruka Arinze, Stevon Neloms, Colleen Ryan, Shari Barkin *Nashville, TN*

550-P On the Relations Between Reward Discounting and Obesity: Evidence From a Large-scale Crowdsourcing Study
Warren K. Bickel, Eldon T. Mueller, Christopher T. Franck, David P. Jarmolowicz, Kirstin M. Gatchalian, Samantha J. Fede *Roanoke, VA*

551-P[DT] Differences in the Decrease in Health Related Quality of Life (HRQOL) Associated With Obesity Between Black and White Adolescents
Elizabeth P. Parks, Rashikh A. Choudhury *Philadelphia, PA*; Nicolas Stettler *Washington, DC*

552-P Social Support Therapy and Weight Loss: Systematic Review
Ivan Flores-Gomez, Montserrat Bacardi-Gascon, Maria Eugenia Perez-Morales, Ana Lilia Armendariz-Anguiano, Arturo Jimenez-Cruz *Tijuana, Mexico*

553-P[DT] The Grandmothers' Recipes Project. An Integrated Comprehensive Intervention Aimed at Counteracting the Obesity Epidemics in Childhood By Promoting Knowledge and Skills of Mediterranean Diet
Elena Alonzo, Guglielmo M. Trovato, Salvatore Cacciola, Virgina Cannizzaro, Giuseppe Emmanuele, Angela Ferro, Rosanna La Carruba, Patrizia Pisana, Agata Purrello, Maria Enza Raiti, AnnaMaria Santangelo, Paola Valvo, Maristella Fardella *Catania, Italy*

554-P[DT] Parents Under-Report Body Mass Index and Obesity
Jennette Moreno, Craig A. Johnston, Christian E. Holmes, John P. Foreyt, Maria A. Papaioannou *Houston, TX*

555-P[DT] Childhood Overweight and Obesity Prevention Interventions Among Hispanic Children: Literature Review
Maria Eugenia Perez-Morales, Montserrat Bacardi-Gascon, Arturo Jimenez-Cruz *Tijuana, Mexico*

556-P Weight Perceptions and Health Self-Efficacy in African American College Students
Joanne Hathway, Eleanor R. Mackey, Maria-Eugenia Hurtado, Amy Schweitzer *Washington, DC*; Kai Y. Lei *College Park, MD*; Catherine J. Klein *Washington, DC*

557-P Use of Different Treatement Modalities For Weight Loss Among Obese Mexican-American Women
Nangel M. Lindberg, Victor J. Stevens *Portland, OR*

Population-Based Intervention Studies — Physical Activity and/or Diet

558-P Physical Activity-Induced Reduction in Elevated Gamma′ (γ′) fibrinogen in Obese Children: A Randomized Controlled Study
Rehana Lovely *Fort Worth, TX*; Jobayer Hossain *Wilmington, DE*; Jonathen P. Ramsey *Springfield, MO*; Donald George *Jacksonville, FL*; David H. Farrell *Portland, OR*; Prabhakaran (Babu) Balagopal *Jacksonville, FL*

559-P Food Preferences Associated With Body Composition
Susanne B. Votruba, Colleen Venti, Jonathan Krakoff *Phoenix, AZ*

560-P Resistance Exercise Training Increases Exercise Capacity and Reduces Exercise Pain Severity in Obese Older Adults With Low Back Pain
Heather K. Vincent, Amanda N. Seay, Cindy Montero, Bryan P. Conrad, Kevin R. Vincent, Robert W. Hurley, Steven Z. George *Gainesville, FL*

561-P[DT] Motivational Interviewing For Obesity Prevention in Families With 10-12 Year Old Children
Virginia P. Quinn *Pasadena, CA*; Kathleen Garrett *Aurora, CO*; Nirupa A. Ghai *Pasadena, CA*; Denise Barnes *Aurora, CO*; Anny H. Xiang *Pasadena, CA*; Carol Koprowski *Los Angeles, CA*; Kim Reynolds *San Dimas, CA*

562-P[DT] Body Fatness and Fitness Improvements in Latina and African American Girls
Norma Olvera, Patrick Leung, Jian Liu, Stephanie Kellam *Houston, TX*

563-P Associations of Sleep Quality and Total Sleep Time With Body Composition and Exercise Responses in the Training Intervention and Genetics of Exercise Response (TIGER) Study
Matthew P. Herring *Birmingham, AL*; Rod K. Dishman *Athens, GA*; Uma Srivastava, Molly S. Bray *Birmingham, AL*

564-P Leg Extension Strength is a Strong Predictor of 6 Minute Walk Distance in Older Overweight Adults With Knee Osteoarthritis
Cindy Montero, Kevin R. Vincent, Amanda N. Seay, Robert W. Hurley, Heather K. Vincent *Gainesville, FL*

Nutritional Epidemiology

565-P[DT] Is Fast Food or the Fast Food Consumer to Blame?
Jennifer M. Poti, Kiyah J. Duffey, Barry M. Popkin *Chapel Hill, NC*

566-P Cooking and Away-From-Home Food Consumption in U.S Adults
Lindsey P. Smith, Shu Wen Ng, Barry M. Popkin *Chapel Hill, NC*

567-P[DT] Effects of Breast Feeding and FTO on Adiposity in Obese Hispanic Children
Ryan W. Walker *Los Angeles, CA*; Jaimie N. Davis *Austin, TX*; Hooman Allayee, Michael Goran *Los Angeles, CA*

568-P[DT] Longitudinal Association of Preschool Dietary Patterns With BMI in Mexican Children at Ages 7-15 Years
Karen E. Peterson, Zhenzhen Zhang, Brisa Sanchez, Yunyun Jiang *Ann Arbor, MI*; Adrienne S. Ettinger *New Haven, CT*; Alejandra Cantoral *Cuernavaca, Mexico*; Sung Kyun Park *Ann Arbor, MI*; Martha M. Téllez-Rojo *Cuernavaca, Mexico*

569-P Percent Body Fat Equations For Children Developed From Nhanes
Amy Roberts, Kimberly P. Truesdale, Jianwen Cai, June Stevens *Chapel Hill, NC*

570-P School Meal and Household Income Influences on Adolescents' Fruit and Vegetable Intake
Madeline A. Dalton, Meghan R. Longacre, Keith M. Drake, Gail Langeloh *Lebanon, NH*; Karen E. Peterson *Ann Arbor, MI*; Kristy M. Hendricks, Michael L. Beach, Linda J. Titus *Lebanon, NH*

571-P Neonatal Body Composition in Infants Born to Women Who Are Overweight or Obese
Andrea R. Deussen, Izyan Mohamad, Lisa N. Yelland, Rosalie M. Grivell, Andrew J. McPhee, Jodie M. Dodd *North Adelaide, Australia*

572-P Alcohol Intake and BMI Change During Late Adolescence and Early Adulthood
Kendrin R. Sonneville, Carlos A. Camargo, Eric Rimm, Alison E. Field *Boston, MA*

573-P[DT] Perceived and Measured Diet Quality in U.S. Adults: The National Health and Nutrition Examination Survey (NHANES)
Tiffany M. Powell-Wiley, Paige E. Miller, Jill Reedy *Bethesda, MD*

574-P[DT] Dietary Protein, Skeletal Muscle Mass, and Obesity Risk in Adolescent Girls
Syed R. Hasnain, Justin R. Buendia, M. Loring Bradlee, Lynn L. Moore *Boston, MA*

575-P Maternal Adherence to the Mediterranean Diet in Association With Offspring Birthweight and Infant Growth
Nansi Boghossian, Edwina Yeung, Paul Albert, Cuilin Zhang *Bethesda, MD*

576-P Causes of Increased Energy Intake Among Children in the US, 1977-2008
Kiyah J. Duffey, Barry M. Popkin *Chapel Hill, NC*

577-P[DT] Patterns of Dietary Intake Among U.S. 2-6 Year Olds, 2003-2008
Chris N. Ford, Barry M. Popkin *Chapel Hill, NC*

578-P Food Sources of Dietary Fiber in 2-18 Year Olds in NHANES 2003-2006 and the Association Between Fiber Density and Children's Chronic Disease Risk
Mary Brauchla, Sibylle Kranz *West Lafayette, IN*

579-P[DT] The Joint Effects of BMI, Waist Circumference and Cardiovascular Risk Factors on Mortality in Whites and Blacks: The Atherosclerosis Risk in Communities Study
Eva Erber, Kimberly P. Truesdale, Jianwen Cai, June Stevens *Chapel Hill, NC*

580-P[DT] Diet Patterns and Weight and Waist Circumference Change Among Chinese Adults
Carolina Batis, Barry M. Popkin *Chapel Hill, NC*

581-P[DT] Characteristics Associated With Consumption of Sports and Energy Drinks Among US Adults
Sohyun Park, Stephen J. Onufrak, Heidi M. Blanck, Bettylou Sherry *Atlanta, GA*

582-P Differences in Body Fat Explain Beneficial Effects of Dietary Protein on Adolescent Blood Pressure
Justin R. Buendia, Syed R. Hasnain, Martha R. Singer, Lynn L. Moore *Boston, MA*

583-P Does Waist Circumference Need To Be Scaled By Height in Reference to Measured Total Body Fat Mass?
Moonseong Heo, Geoffrey C. Kabat, Steven B. Heymsfield, Thomas E. Rohan *Bronx, NY*

584-P Associations of DXA-Measured Percent Body Fat With BMI, BMI Z-score, BMI Percentile, and Percent Overweight Among US Boys and Girls From NHANES 1999-2004
Moonseong Heo, Judith Wylie-Rosett, Angelo Pietrobelli, Myles Faith *Bronx, NY*

585-P[DT] The Relationship Between Parental and Child Weight Status in South Korea: 2001-2009
Haeng S. Lee *Seoul, Republic of Korea*; Kiyah J. Duffey, Barry M. Popkin *Chapel Hill, NC*

586-P Soda Consumption During an 'Ad Libitum' Food Intake Assessment Predicts Future Weight Gain
Sarah C. Bundrick, Marie S. Thearle, Colleen Venti, Jonathan Krakoff, Susanne B. Votruba *Phoenix, AZ*

587-P[DT] Dietary Behaviors and Overweight/Obesity: A 5-year Longitudinal Study Among Adolescents of Ho Chi Minh City, Vietnam
Tang K. Hong, Nguyen H. H.D.Trang *Ho Chi Minh City, Viet Nam*; Michael J. Dibley *Sydney, Australia*

588-P Screening For Micronutrient Deficiencies Before and After Bariatric Surgery
Kimberly Gudzune, Mary Margaret Huizinga, Hsien-Yen Chang, Jeanne M. Clark *Baltimore, MD*

589-P Diagnosis of Micronutrient Deficiencies After Bariatric Surgery
Kimberly Gudzune, Mary Margaret Huizinga, Hsien-Yen Chang, Jeanne M. Clark *Baltimore, MD*

590-P Sources of Saturated Fat, Trans-Fatty Acids, and Sugar Consumption in Brazil, 2008-2009
Rosangela A. Pereira *Rio de Janeiro, Brazil*; Kiyah J. Duffey *Chapel Hill, NC*; Rosely Sichieri *Rio de Janeiro, Brazil*; Barry M. Popkin *Chapel Hill, NC*

591-P[DT] Body Mass Index and Body Adiposity Index as Indicators of Percentage Body Fat in Peri-Pubertal Black Children
Noel Cameron, Christopher Watt *Loughborough, United Kingdom*; John M. Pettifor, Shane A. Norris *Johannesburg, South Africa*

592-P Attitudes About Lifestyle Behaviors and Body Weight Among Youth in Georgia
Allison C. Sylvetsky, Monique Hennink, Dawn Comeau, Jean A. Welsh, Hardy Trisha, Deanne W. Swan, Stephanie Walsh, Miriam B. Vos *Atlanta, GA*

593-P Odds of Overweight Among US Children Vary By Type and Source of Dietary Sugar Consumed
Jean A. Welsh, Miriam B. Vos *Atlanta, GA*

594-P Mucosal Adherent Gut Bacteria Association With Body Mass Index
Xuesong Han, June Stevens, Temitope Keku *Chapel Hill, NC*

595-P Scaling Power For Weight-For-Height Indices Maximally Correlated With DXA-Measured Total Body Fat Mass in the US Adult Population From NHANES 1999-2004
Moonseong Heo, Geoffrey C. Kabat, Dympna Gallagher, Thomas E. Rohan *Bronx, NY*

596-P Two-Thirds of Foods Consumed on MyPlate Contain SoFAS
Sibylle Kranz *West Lafayette, IN*; Lisa Jahns *Grand Forks, ND*

597-P Weight Status and Pediatric Asthma: Insights From a Case Control Study
Maria Chondronikola, Georgios Antonogeorgos, Constantina Papoutsakis, Vasiliki Mantziou, Maria Drakouli, Evanthia Konstantaki, Demosthenes Panagiotakos, Konstantinos N. Priftis *Athens, Greece*

598-P Drink Water Instead of Sugary Drinks: A Dietary Strategy For Economically-Disadvantaged Individuals Diagnosed With Obesity-Related Comorbidities?
Brenda M. Davy, Angela Bailey, Clarice Chau, Jamie Zoellner, Jennie Hill *Blacksburg, VA*

599-P[DT] Dietary Intake of African-American Women Living in the Deep South
Monica L. Baskin, Sharonda Hardy, Renee Desmond, Sh'Nese R. Townsend, Jamy Ard, Claudia M. Hardy, Karen Meneses *Birmingham, AL*

600-P Dietary Patterns and Body Fat in Middle-Age Women: A Factor Analytic Study
Larry A. Tucker *Provo, UT*

601-P[DT] Body Weight Status and Its Consequences on Disability and Mortality in Brazil
Flavia Cristina D. Andrade *Champaign, IL*; Maria Lucia Lebrao, Yeda Aparecida O. Duarte *São Paulo, Brazil*; Ahmad Iqmer Nashriq Mohd Nazan *Champaign, IL*

602-P Sugar-Sweetened Beverage Intake Before 6 Years Old and Weight or BMI Status Among Older Children: Systematic Review of Prospective Studies
Maria Eugenia Perez-Morales, Montserrat Bacardi-Gascon, Arturo Jimenez-Cruz *Tijuana, Mexico*

603-P Obesity, Dietary Habits, Physical Activity, and Nutritional Knowledge Among University Students
Najat Yahia, Melyssa Rapley, Daniel Wang, Robert Lee *Mt. Pleasant, MI*

604-P Evaluation of Anthropometric Variables in a Sample of Abandoned Children in Caracas, Venezuela: Does Peripheral Adiposity Matter?
Marianella Herrera *Caracas, Venezuela*; Camella Rising *Raleigh, NC*; Hector A. Herrera, Pablo I. Hernandez, Yngrid Candela, Nora M. De la Fuente, Beatriz E. Gomez *Caracas, Venezuela*

605-P Who Is Using MyPlate?
Brian Wansink *Ithaca, NY*; Sibylle Kranz *West Lafayette, IN*

606-P Both Food Secure and Food Insecure Individuals With Serious Mental Illness May Have Trouble Acquiring and Maintaining a Healthy Food Supply Throughout the Month
Lauren T. Ptomey, Jeannine R. Goetz, Debra K. Sullivan *Kansas City, KS*; Jaehoon Lee *Lawrence, KS*; Rachel Barkley *Kansas City, KS*

607-P Parental Physical Activity and Its Association With Children Weight Status
Marcela Perez-Rodriguez, Norma A. Vega, Elí Gámez, Daniela Barrera, Gerardo Leyva, Frania Pfeffer *Mexico City, Mexico*

608-P Evaluating the Validity of the "Categories" Method: A New Method For Self-Report Assessment of Daily Calorie Intake
Tzachi Knaan *Ramat-Gan, Israel*

Physical Activity Epidemiology

609-P Use of Light Sensors and GPS to Differentiate Indoor vs Outdoor Locations of Physical Activity in Preschoolers at Child Care
Pooja Tandon, Brian E. Saelens, Chuan Zhou *Issaquah, WA*; Jacqueline Kerr *San Diego, CA*; Dimitri Christakis *Issaquah, WA*

610-P[DT] Pregnancy and Changes in Physical Activity in Overweight and Obese, Low Socio-Economic Status, African American and Caucasian Women
Lori A. Portzer, Arun Jeyabalan, Bethany Barone Gibbs, John M. Jakicic, James M. Roberts, Tracey L. Weissgerber *Pittsburgh, PA*

611-P Objectively Measured Sedentary Behavior Predicts Body Fat Percentage in Female Adults
Jared Tucker *Fargo, ND*; Larry A. Tucker *Provo, UT*

612-P[DT] Physical Activity Patterns of Inner-City Elementary School Children
Gary Foster, Tara Alexis McCoy, Stephanie S. Vander Veur, Maurice A. Denton, Meghan L. Duffy, Heather R. Wilson, Giridhar Mallya *Philadelphia, PA*; Stewart G. Trost *Corvallis, OR*

613-P Perceived Barriers to Physical Activity and Exercise Tolerance in the TIGER Study
Danielle N. Hessong *Bimringham, AL*; Rod K. Dishman *Athens, GA*; Matthew P. Herring *Bimringham, AL*; Daniel P. O'Connor, Andrew S. Jackson *Houston, TX*; Molly S. Bray *Bimringham, AL*

614-P[DT] Method of Weight Loss and Mortality Risk
Amanda E. Staiano *Baton Rouge, LA*; Bruce A. Reeder *Saskatoon, Canada*; Susan Elliott *Waterloo, Canada*; Michel R. Joffres *Burnaby, Canada*; Punam Pahwa *Saskatoon, Canada*; Susan A. Kirkland *Halifax, Canada*; Gilles Paradis *Montreal, Canada*; Peter T. Katzmarzyk *Baton Rouge, LA*

615-P Physical Activity During Indoor and Outdoor Recess in School Children
Irene T. Tran, B. R. Clark, Michael J. Kim, Susan B. Racette *St. Louis, MO*

616-P Physical Activity Monitoring in Extremely Obese Adolescents From the Teen LABS Study
Renee M. Jeffreys *Cincinnati, OH*; Molly S. Bray *Birmingham, AL*; Todd M. Jenkins *Cincinnati, OH*; Vedran Oruc, Andrew Douglas *Birmingham, AL*; Thomas Inge *Cincinnati, OH*

617-P Sedentary Activity Pattern in Obese and Nonobese Adolescents and Its Association With Sleep Duration in a Triethnic Population
Mona Eissa, Thong Q. Nguyen, Janet C. Meininger *Houston, TX*

618-P Understanding the Role of Physical and Screen-Activity in Promoting Overweight in Children: An International Perspective
Dario Gregori, Ileana Baldi *Padova, Italy*

619-P Ankle Accelerometry: A Valid, Reliable, and Feasible Method For Assessing Physical Activity Among a Community Samples of Adolescent Girls
Erin R. Hager, Candice Gormley, LaShawna Epps *Baltimore, MD*; Margarita Treuth *Princess Anne, MD*; Soren Snitker, Fallon Rovel-Jones, Maureen M. Black *Baltimore, MD*

620-P[DT] Measures of Physical Activity, Adiposity and CVD Risk in a Rural Population From Nkwantakese, Ghana
Albert Kwansa *Kumasi, Ghana*; Lara Dugas *Maywood, IL*; Jacob Plange-Rhule *Kumasi, Ghana*; Ramon A. Durazo-Arvizu, Amy Luke *Maywood, IL*

621-P Determinants of Physical Activity During and After Pregnancy in Overweight and Obese Women
Zhixian Sui, Lisa J. Moran, Jodie M. Dodd *North Adelaide, Australia*

622-P[DT] Physical Activity, TV Viewing and Obesity in Teenagers of Tijuana, Mexico: A Prospective Study
Ana Lilia Armendariz-Anguiano, Montserrat Bacardi-Gascon, Arturo Jimenez-Cruz *Tijuana, Mexico*

623-P Use of Emails to Improve Medical Controls For Weight Management on Fitness Facilities
Andrea Avila, Camilo Povea, Luisa F. Orjuela *Bogota, Colombia*

624-P Walking Program Improves Both Teacher and Student Activity Level
Jennifer McDuffie, Amanda McMillan, Rebecca Posada, Suzanne Schneider, William S. Yancy *Durham, NC*

625-P[DT] Seasonal Variation in Body Weight in Mexican American Women in Central Texas
Lisa K. Lloyd, Brian K. Miller *San Marcos, TX*

626-P Physical Activity, Obesity and Academic Achievement in School
José C. Ribeiro, Maria P. Santos, Jorge Mota *Porto, Portugal*

627-P Intensity of Physical Activity and Body Composition: A Cross-Sectional Analysis of Young Adult Women
Bruce W. Bailey, Pamela Borup, James D. LeCheminant *Provo, UT*

628-P Detecting Relationships of Cardiovascular Fitness With Percent Body Fat and Body Mass Index
Kimberly P. Truesdale, June Stevens, Amy Roberts, Jianwen Cai *Chapel Hill, NC*

629-P Influence of Cardiorespiratory Fitness and Parental Lifestyle on Adolescents' Abdominal Obesity
Jorge Mota, Luisa Soares Miranda, Rute Santos, Carla Moreira, Ana I. Marques, Paula C. Santos, Susana Vale *Porto, Portugal*

630-P Sedentary Screen Time is Associated With Abdominal Obesity in Adolescents: A Multilevel Analysis
Augusto Cesar F. de Moraes, Heraclito Barbosa Carvalho *Sao Paulo, Brazil*; Luis Gracia-Marco, Juan Pablo Rey-Lopez, Luis A. Moreno *Zaragoza, Spain*; Kurt M. Widhalm *Vienna, Austria*; Laurent Beghin, Fréderic Gottrand *Lille, France*; Anthony Kafatos *Athenas, Greece*; David Jiménez-Pavón *Granada, Spain*; Stefaan De Henauw *Ghent, Belgium*; Jonatan R. Ruiz, Francisco Ortega *Granada, Spain*; Michael Sjöström *Stockholm, Sweden*; Angela Polito *Rome, Italy*; Ascensión Marcos *Granada, Spain*; Fatima Perez de Heredia *Rome, Italy*

631-P Physical Activity and Sleep Patterns in Healthy, Preschool-Aged Children
Rachel M. Ruiz, Josef D. Tracy, Evan C. Sommer, Shari Barkin *Nashville, TN*

632-P Is Bigger Really Better? Obesity and Team Success Among High School Football Players
Asheley C. Skinner, Stephanie Hasty, Jacob A. Lohr *Chapel Hill, NC*

Behavioral and Social Epidemiology

633-P[DT] Socio-Cultural Pressures and Adolescent Eating in the Absence of Hunger (EAH)
Samantha A. Reina, Lauren B. Shomaker, Mira Mooreville, Amber B. Courville, Sheila M. Brady, Susan Z. Yanovski, Marian Tanofsky-Kraff, Jack A. Yanovski *Bethesda, MD*

634-P[DT] Ethnic Differences in Body Mass Index Trajectories From Adolescence to Adulthood: A Focus on Hispanic and Asian Subgroups
Sandra S. Albrecht, Penny Gordon-Larsen *Chapel Hill, NC*

635-P Sleep and Changes in the Body Mass Index Distribution From Age 14 to 18
Jonathan A. Mitchell, Daniel Rodriguez, Kathryn H. Schmitz, Janet Audrain-McGovern *Philadelphia, PA*

636-P Lower Inhibitory Control at Age 7 Predicts Poorer Physical, Cognitive, and Psychological Adolescent Outcomes in a Longitudinal Sample of Girls
Stephanie Anzman-Frasca, Lori A. Francis, Leann L. Birch *University Park, PA*

637-P[DT] Primary Transmission of Risk For Overweight: Association Between Maternal BMI and Accelerated Baby Growth During the First Year of Life
Deborah Young-Hyman, Marlo M. Vernon *Augusta, GA*

638-P[DT] Change in Impulsivity and Subjective Wellbeing in a Residential Camp For Obese Adolescents
Myutan Kulendran, Ivo Vlaev, Colin Sugden *London, United Kingdom*; Paul Gately *Leeds, United Kingdom*; Dominic King, Henry Lee, Paul Dolan, Ara W. Darzi *London, United Kingdom*

639-P Predicting the Dynamics of Obesity in the United States Through Infectious Disease Models
Diana Thomas *Montclair, NJ*; Marion Weederman *River Forest, IL*; Corby K. Martin *Baton Rouge*; Bernard F. Fuemmeler *Durham, NC*; Nikhil V. Dhurandhar, Steven B. Heymsfield, Claude Bouchard *Baton Rouge*

640-P Children's Attention Problems and Depressive Symptoms Relate to Distinct Eating Behaviors
Mira Mooreville, Lauren B. Shomaker, Marian Tanofsky-Kraff, Brittany E. Matheson, Sara Field, Samantha A. Reina, Merel Kozlosky, Sheila M. Brady, Susan Z. Yanovski, Jack A. Yanovski *Bethesda, MD*

641-P *This abstract has been withdrawn.*

642-P Alcohol Use and Abuse Before and One Year After Weight Loss Surgery
Christina C. Wee, Daniel B. Jones, Karen W. Huskey, Caroline Apovian, George L. Blackburn *Boston, MA*

643-P Quality of Life Among Obese Patients Seeking Weight Loss Surgery: The Role of Obesity-Related Social Stigma and Functional Status
Christina C. Wee, Roger Davis, Karen W. Huskey, Daniel B. Jones, Mary Beth Hamel *Boston, MA*

644-P Dishabituating Properties of Cognitive and Interpersonal Stressors
Denise Feda, Leonard H. Epstein, James Roemmich *Buffalo, NY*

645-P The Relationship of Multiple Parent Stressors With Child Obesity and Related Behaviors
Elizabeth P. Parks, Shiriki Kumanyika, Renee H. Moore, Anne E. Kazak *Philadelphia, PA*; Brian Wrotniak *Buffalo, NY*; Nicolas Stettler *Washington, DC*

646-P Maternal Employment and Work Conditions Predict Daughters' BMI
Julia A. Bleser, Jennifer S. Savage, Michele Marini, Leann L. Birch *University Park, PA*

647-P Associations of Obesity With Poor Mental Health Are Not Mediated By Adiposity
Ellen A. Schur, Elizabeth J. Dansie *Seattle, WA*; Kathryn M. Godfrey *San Diego, CA*; Sherry Pagoto *Boston, MA*; Niloofar Afari *San Diego, CA*

648-P[DT] Dietary and Activity Behaviors Associated With Obesity Among Preschool Age Children in Korea
Yuni Choi *Seoul, Republic of Korea*; Zuunnast Tserend *Yongin, Republic of Korea*; Jung Eun Lee, Seungmin Lee *Seoul, Republic of Korea*; Hae-Ryun Park *Yongin, Republic of Korea*

649-P[DT] Maternal Body Size Perception and Infant Weight in a Low-Income African-American Population
Sherika N. Hill, Amanda Thompson, Margaret Bentley *Chapel Hill, NC*

650-P[DT] Relationship Between Poverty, Poor Sleep Hygiene, Shortened Sleep and Obesity in Low-Income Toddlers
Christina J. Calamaro, Erin R. Hager, Kristen M. Hurley, Maureen M. Black *Baltimore, MD*

651-P[DT] Health and Lifestyle Behaviors of Bariatric Surgery Patients After Surgery
Manuel Campa *Los Angeles, CA*; Karen J. Coleman *Pasadena, CA*

652-P Parental Perceptions of Weight-Related Bullying Before and After a Mass Media Campaign to Raise Awareness of Child Obesity in Georgia
Jean A. Welsh, Carolina Cruxent, Hardy Trisha, Miriam B. Vos *Atlanta, GA*

653-P Relation of Overweight to Symptoms of Mental Health Disorder: Analysis of Representative Data From Active Duty Military Personnel
Tracey J. Smith *Natick, MA*; Alan J. White *Durham, SC*; Laura Dotson *Alexandria, VA*; Louise S. Hadden *Cambridge, MA*; Andrew J. Young *Natick, MA*; Bernadette P. Marriott *Durham, SC*

654-P Obese Youths Are Not More Likely to Be Depressed, But Depressed Youths Are More Likely to Be Obese
Robert E. Roberts *Houston, TX*

655-P Cumulative Social Risk, Behavior Problems and Obesity in Early Childhood
Shakira F. Suglia, Cristiane Duarte, Camille Gonzalez *New York, NY*; Earle C. Chambers *Bronx, NY*; Renee Boynton-Jarrett *Boston, MA*

656-P[DT] Associations of Television Watching and/or Internet Using Time With Bone Mineral Density in Chinese Adults
Sunyue Ye, Wei He, Yunjie Zhou, Aihua Song, Sha Zhang, Xinyu Zhao, Shankuan Zhu *Hangzhou, China*

657-P Breakfast Skipping and Obesity in Portuguese School Children Aged 6-11 Years: Associations With Behavioral and Family Characteristics
Cristina Padez, Maria Miguel Ferrão *Coimbra, Portugal*; Augusta Gama *Lisboa, Portugal*; Isabel Mourão *Vila Real, Portugal*; Helena Nogueira *Coimbra, Portugal*; Vitor Marques *Lisboa, Portugal*

658-P Association of Obesity With Sedentary Behaviors and Play Outdoor Among Children
Cristina Padez, Maria Miguel Ferrão *Coimbra, Portugal*; Augusta Gama *Lisboa, Portugal*; Isabel Mourão *Vila Real, Portugal*; Helena Nogueira *Coimbra, Portugal*; Vitor Marques *Lisboa, Portugal*

659-P No Association Between Sleep Duration and Adiposity in a Biracial Sample of Children and Adolescents
Deirdre M. Harrington, Amanda E. Staiano, Stephanie T. Broyles, Alok K. Gupta, Peter T. Katzmarzyk *Baton Rouge, LA*

660-P[DT] Time Spent in Meal-Related Behaviors Among Employed Hispanic Mothers
Sarah Sliwa, Aviva Must, Flavia Perea *Boston, MA*; John Cawley *Ithaca, NY*; Christina D. Economos *Boston, MA*

661-P[DT] Joint Associations of Race and Education With BMI Changes Over 20 Years: The CARDIA Study
Katie Meyer *Chapel Hill, NC*; David R. Jacobs *Minneapolis, MN*; Cora E. Lewis *Birmingham, AL*; Penny Gordon-Larsen *Chapel Hill, NC*

662-P Brief Training in Obesity Counseling Improves Provider Self-Efficacy and Counseling Frequency at Well-Child Check-Ups
Stephanie Walsh, Jean A. Welsh, Holly Sealer, Wendy Palmer, Michael A. DeGuzman, Miriam B. Vos *Atlanta, GA*

663-P[DT] Prevalence of Overweight and Obesity in Indigenous and Non-Indigenous Mexican Population. The Comitan Study
Aida Jimenez-Corona, Rosalba Rojas-Martinez, Ruy Lopez-Ridaura *México City, Mexico*; Maria E. Jimenez-Corona *Mexico, City, Mexico*; Leonardo Jimenez-Corona, Francisco J. Paniagua-Morgan *Comitán, Mexico*

664-P *This abstract has been withdrawn.*

665-P Childhood Temperament as a Risk Factor For Adolescent and Early Adult Overweight/Obese: Results From Two Longitudinal Studies
Kristin N. Javaras, Richard J. Davidson, Nicole Schmidt, Jeffrey M. Armstrong, Marjorie Klein, Marilyn J. Essex, H. Hill Goldsmith *Madison, MA*

666-P Healthy Lifestyles Camp Assessment For Obese Children and Their Families
Karen A. Lindsley *Atlanta, GA*; Cristiana Milone *Atlanta,, GA*; Andrew Muir *Atlanta, GA*; Courtney McCracken, Laura Colbert *Atlanta,, GA*

667-P Making Healthy Changes During Pregnancy: Enablers and Barriers Identified By Overweight and Obese Women
Zhixian Sui *North Adelaide, Australia*; Deborah Turnbull *Adelaide, Australia*; Jodie M. Dodd *North Adelaide, Australia*

668-P Perception of and Satisfaction With Body Image Among Pregnant Women Who Are Overweight or Obese
Zhixian Sui *North Adelaide, Australia*; Deborah Turnbull *Adelaide, Australia*; Jodie M. Dodd *North Adelaide, Australia*

669-P Artificial Sweeteners: Sweet Taste Adaptation
Nicole Minckas, Carla Hirsch, Federico Prina, Rodrigo Nieto *Buenos Aires, Argentina*

670-P Public Awareness of Weight-Related Health Risk and the Effect of Brief Education
Adam G. Tsai *Aurora, CO*; Tracy F. Boyle, Jenny Mayo, James Heichelbech, Karl Weiss *Denver, CO*

671-P[DT] Predictors of Fat Mass Gain in Post-Renal Transplant Recipients
Patricia A. Cowan, Robin Bloodworth, Elizabeth Mulroy, Ann K. Cashion *Memphis, TN*

672-P Choosing Bariatric Surgery: Patient Narratives About the Decision-Making Process
Deborah M. Gregory, Julia Temple Newhook, Laurie K. Twells *St. John's, Canada*

673-P Expectations of Weight Loss, Health Outcomes, and Life Transformation After Bariatric Surgery
Julia Temple Newhook, Hilary I. Price, Deborah M. Gregory, Laurie K. Twells *St. John's, Canada*

674-P "Losing and Gaining:" Bariatric Surgery Candidates Talk About the Road to "Extreme Obesity"
Julia Temple Newhook, Hilary I. Price, Deborah M. Gregory, Laurie K. Twells *St. John's, Canada*

675-P Exploring Bariatric Surgery as a Gendered Phenomenon
Julia Temple Newhook, Hilary I. Price, Deborah M. Gregory, Laurie K. Twells *St. John's, Canada*

676-P Maternal Child Feeding Practices, Parenting Style and Mother-Child Interactions as Predictors of Child Eating Behaviours, Food Intake and Weight: A Prospective Study
Helen Skouteris, Skye McPhie *Melbourne, Australia*

677-P[DT] Gender, Obesity, and Chronic Kidney Disease Among African Americans: The Jackson Heart Study
Marino A. Bruce, Bettina M. Beech, Melicia C. Whitt-Glover *Winston Salem, NC*; Derek M. Griffith *Ann Arbor, MI*; Jamy Ard *Birmingham, AL*; Sean L. Simpson *Winston Salem, NC*; Mario Sims *Jackson, MS*

678-P Prevalence Rates of Obesity in Upper Socioeconomic Primary Care Clinics in Southern California
Tanja V. Crockett, Ken Fujioka *San Diego, CA*

679-P[DT] Differences in Eating Behavior Patterns Between Obese and Normal Weight African American (AA) Women and Obese and Normal Weight European American (EA) Women
Kathryn A. Kaiser *Birmingham, AL*; Susan Franks *Fort Worth, TX*

680-P Poor Perception of Overweight in an Adult Caribbean Population and Risk Factors
Philippe Carrère *Gourbeyre, Guadeloupe*; Michelle Kelly-Irving *Toulouse, France*; André Atallah *Gourbeyre, Guadeloupe*; Thierry Lang, Jocelyn Inamo *Toulouse, France*

681-P Eating Behaviour in Individuals With Psychotic Illnesses
Natasha Park, Sabrina Hassan, Rohan Ganguli *Toronto, Canada*

682-P The Association Between Perception of Weight Status and Weight Control Strategies Among Overweight and Obese High School Students – United States 2010
Allison J. Nihiser, Sherry Everett Jones, Leah Michele Maynard *Atlanta, GA*

683-P Impact of Parental Obesity on Weight Status, Dietary Habits, Body Shape Concerns, and Lifestyle Behavioral Choices of Female University Students
Najat Yahia, Kara Schneider, Phame Camarena *Mt. Pleasant, MI*

684-P To Weigh or Not to Weigh: Associations Between Self-Weighing Frequency and Eating Disorder Symptomology Among Young Adults
Lori A. Klos *Milwaukee, WI*

685-P Predictors of Meeting Physical Activity and Fruit and Vegetable Recommendations in Fifth Grade Students
Jimikaye Beck, Peter DeWitt *Denver, CO*; Janise L. McNally, Scott Siegfried *Greenwood Village, CO*; James Hill *Denver, CO*; Nanette Stroebele *Stuttgart, Germany*

686-P The Impact of Body Mass Index on Constipation Among Community-Dwelling the Elderly
Hyo Jeong Song *Jeju-si, Republic of Korea*

687-P Association of Area, Income, Occupation and Education Levels With Obesity in Jilin Province in China
Hai-yan Chen, Qi Wei, Hai-yan Zhou, Yu-lian Liu, Xing-xing Liu, Jie Sun *Changchun, China*

688-P Diet and Physical Activity Choices and Attitudes of Overweight Women in Rural South Carolina
Moreen Joseph *Orangeburg, SC*

689-P BMI Status and Expectations About Weight Gain and Peer Acceptance of Body Diversity Among Black Female Incoming College Students
Jennifer B. Webb *Charlotte, NC*; Phoebe Butler-Ajibade *Greensboro, NC*; Seronda A. Robinson *Durham, NC*

690-P Effect of TV Exposure and Advertising on Food Intake in Georgia: An Experimental Ad-libitum Study During Snacking Time
Dario Gregori *Padova, Italy*; Irakli Rtskhiladze, Ivane Chkhaidze *Tbilisi, Georgia*

691-P Why Do Moms Eat What They Do? A Qualitative Study of Low-Income Mothers' Eating Patterns During Pregnancy
Naomi R. Reyes, Garrett Gerney, Alicia Klotz, Sharon J. Herring *Philadelphia, PA*

692-P Impact of Winchester Hospital Weight Management Participants on Members of their Households
Nancy Maddox, Ayla Withee *Winchester, MA*

693-P Parent Weight-Related Talk: Helpful or Harmful?
Jerica M. Berge *New Brighton, MN*; Rich MacLehose, Katie Loth, Marla Eisenberg, Dianne Neumark-Sztainer *Minneapolis, MN*

694-P Obesity Has Few Effects on Future Psychosocial Functioning of Adolescents
Robert E. Roberts *Houston, TX*

695-P A Lifestyle and Behavior Properties of the Young-Adult Overweight Students Who Participate Weight-Loss Program
Toshiharu Eto *Miyazaki, Japan*; Keiko Aoishi *Nagoya, Japan*

Genetic Epidemiology

696-P Meta Analysis of MetaboChip SNPs in 210,086 Individuals Identifies 33 Novel Waist Hip Ratio Loci
Kari North *Chapel Hill, NC*; M. Carola Zillikens *Rotterdam, Netherlands*; Joseph Wu, Tsegaseassie Workalemahu *Boston, MA*; Thomas W. Winkler *Regensburg, Germany*; Charles C. White *Boston, MA*; Rona Strawbridge *Stockholm, Sweden*; Elizabeth Speliotes *Ann Arbor, MI*; Dmitry Shungin *Umeå, Sweden*; Lu Qi *Boston, MA*; Karen L. Mohlke *Chapel Hill, NC*; Mark McCarthy *Oxford, United Kingdom*; Reedik Mägi *Tartu, Estonia*; Ruth J. Loos *Cambridge, United Kingdom*; Adam E. Locke *Ann Arbor, MI*; Cecilia M. Lindgren *Oxford, United Kingdom*; Anne Justice *Chapel Hill, NC*; Erik Ingelsson *Stockholm, Sweden*; Iris M. Heid *Regensburg, Germany*; Paul Franks *Malmö, Sweden*; Krista Fischer *Tartu, Estonia*; Teresa Ferreira *Oxford, United Kingdom*; L. A. Cupples *Boston, MA*; Damien C. Croteau-Chonka *Chapel Hill, NC*; Inês Barroso *Cambridge, United Kingdom*

697-P The Importance of Weight Loss For Effecting Molecular Change During Intensive Cardiovascular Risk Reduction
Darrell Ellsworth, Daniel T. Croft, Amy Burke, Mary Jane Haberkorn, Heather Patney *Windber, PA*; Kimberly A. Mamula *Johnstown, PA*; Marina N. Vernalis *Bethesda, MD*

698-P A Systematic Mapping Survey of GWAS Loci For Body Mass Index in More Than 20,000 African Americans Reduces the Number of Potential Functional Variants and Identifies Independent Second Signals: Metabochip Results From the Population Architecture Using Genomics and Epidemiology (PAGE) Study
Jian Gong *Seattle, WA*; Christopher A. Haiman *Los Angeles, CA*; Kari North *Chapel Hill, NC*; Steven Buyske *Piscataway, NJ*; Petra Buzková *Seattle, WA*; Richard S. Cooper *Chicago, IL*; Georg Ehret *Baltimore, MD*; Megan D. Fesinmeyer *Seattle, WA*; C. Charles Gu *St. Louis, MO*; Jeffrey Haessler *Seattle, WA*; Lucia A. Hindorff *Bethesda, MD*; Denise K. Houston *Winston-Salem, NC*; Marguerite R. Irvin *Birmingham, AL*; Charles Kooperberg *Seattle, WA*; Lewis Kuller *Pittsburgh, PA*; Mark Leppert *Salt Lake City, UT*; Unhee Lim *Honolulu, HI*; Tara C. Matise *Piscataway, NJ*; Keri L. Monda *Chapel Hill, NC*; Khanh-Dung H. Nguyen *Baltimore, MD*; Marylyn Ritchie *State College, PA*; Fred Schumacher *Los Angeles, CA*; Lynne R. Wilkens, Loic Le Marchand *Honolulu, HI*; Ulrike Peters *Seattle, WA*

699-P[DT] Acanthosis Nigricans and Its Association With Obesity and Other Metabolic Correlates in Mexican American Children: A Genetic Epidemiologic Investigation
Vidya S. Farook, Sobha Puppala, Sharon P. Fowler, Jennifer Schneider, Geetha Chittoor, Roy G. Resendez *San Antonio, TX*; Kelly J. Hunt *Charleston, SC*; Benjamin S. Bradshaw *Houston, TX*; Rector Arya, Laura Almasy, Joanne E. Curran, Anthony G. Comuzzie, Donna M. Lehman, Christopher P. Jenkinson, Jane L. Lynch, Ralph A. DeFronzo, John Blangero, Ravindranath Duggirala, Daniel E. Hale *San Antonio, TX*

700-P[DT] The Missense Variation Landscape of *MC4R* and *TMEM18* in Obese Children of African Ancestry
Sandra Deliard, Saarene Panossian, Frank D. Mentch, Cecilia Kim, Cuiping Hou, Edward C. Frackelton, Jonathan P. Bradfield, Joseph T. Glessner, Haitao Zhang, Kai Wang, Patrick M. Sleiman, Rosetta M. Chiavacci, Robert I. Berkowitz, Hakon Hakonarson, Jianhua Zhao, Struan Grant *Philadelphia, PA*

701-P Impact of DRD2/ANKK1 Gene Variants on Eating Behaviors and Adiposity in the Quebec Family Study
Louis Pérusse, Francois Chouinard-Decorte *Québec, Canada*; Simone Lemieux, Marie-Claude Vohl *Quebec, Canada*; Claude Bouchard *Baton Rouge, LA*; Angelo Tremblay *Québec, Canada*

702-P Established Obesity Loci and Incident Severe Obesity Risk: Findings From the National Longitudinal Study of Adolescent Health
Penny Gordon-Larsen, Andrea S. Richardson, Mariaelisa Graff, Kristin L. Young, Karen L. Mohlke, Ethan M. Lange, Leslie A. Lange, Kathleen M. Harris, Kari North *Chapel Hill, NC*

703-P Differential Genetic Effects Influence BMI From Birth to Middle Adulthood: The Fels Longitudinal Study
Audrey C. Choh *Dayton, OH*; Ellen W. Demerath *Minnesota, MN*; Miryoung Lee *Dayton, OH*; William Johnson *Minnesota, MN*; Joanne E. Curran, Claire Bellis, Thomas D. Dyer, John Blangero *San Antonio, MN*; Bradford Towne, Stefan A. Czerwinski *Dayton, OH*

704-P[DT] Resequencing of FABP4 and its Association With Adiposity Phenotypes in African Ancestry Men
Iva Miljkovic, Allison L. Kuipers, Clareann H. Bunker *Pittsburgh, PA*; Alan L. Patrick *Scarborough, Trinidad and Tobago*; Joseph M. Zmuda *Pittsburgh, PA*

705-P Obesity Susceptibility Loci and Associations Across the Pediatric Body Mass Index Distribution
Jonathan A. Mitchell, Hakon Hakonarson, Timothy R. Rebbeck, Struan Grant *Philadelphia, PA*

706-P[DT] Polymorphisms in INADL Associated With Adiposity Phenotypes in Hispanic Children: Follow-Up of the Total Energy Expenditure QTL on Chromosome 1p31
V. Saroja Voruganti, Sandra Laston, Karin Haack, Shelley A. Cole *San Antonio, TX*; Nancy F. Butte *Houston, TX*; Anthony G. Comuzzie *San Antonio, TX*

707-P[DT] X-Linked Genetic Effects on Adiposity-Related Phenotypes in Mexican Americans of the San Antonio Family Heart Study
V. Saroja Voruganti, Jack W. Kent, Magalie Leduc, Jean W. MacCluer, Laura Almasy, Joanne E. Curran, John Blangero, Michael C. Mahaney, Anthony G. Comuzzie *San Antonio, TX*

708-P Association of Body Weight With Transcript Abundance Shows Cross-Species Replication in Baboons and Humans
V. Saroja Voruganti, Shelley A. Cole, Laura A. Cox, Joanne E. Curran, Harald H. Göring, Thomas D. Dyer, Matthew P. Johnson, Jean W. MacCluer, John Blangero, Michael C. Mahaney, Anthony G. Comuzzie *San Antonio, TX*

709-P[DT] Burden of Obesity and Its Co-Morbid Conditions, and Their Genetic Determinants in Mexican American Children
Sobha Puppala, Sharon P. Fowler, Vidya S. Farook, Geetha Chittoor, Jennifer Schneider, Roy G. Resendez *San Antonio, TX*; Kelly J. Hunt *Charleston, SC*; Benjamin S. Bradshaw *Houston, TX*; Rector Arya, Laura Almasy, Joanne E. Curran, Anthony G. Comuzzie, Donna M. Lehman, Christopher P. Jenkinson, Jane L. Lynch, Ralph A. DeFronzo, John Blangero, Daniel E. Hale, Ravindranath Duggirala *San Antonio, TX*

710-P Interaction of rsLRP1B and Smoking in Association With BMI in European American Adolescents: Findings From the National Longitudinal Study of Adolescent Health
Kristin L. Young, Mariaelisa Graff, Kari North, Karen L. Mohlke, Leslie A. Lange, Ethan M. Lange, Kathleen M. Harris, Penny Gordon-Larsen *Chapel Hill, NC*

711-P Genetic Linkage and Association of Serum Resistin Levels in the Fels Longitudinal Study
Miryoung Lee, Audrey C. Choh *Dayton, OH*; Ellen W. Demerath *Minneapolis, MN*; Joanne E. Curran, Thomas D. Dyer, John Blangero *San Antonio, TX*; Bradford Towne, Stefan A. Czerwinski *Dayton, OH*

712-P[DT] D2 Dopamine Receptor (DRD2) Taq1a Allele Is Associated With Eating Behavior and Greater Total and Visceral Adiposity in a Racially Diverse Sample of Children
Michelle Cardel, Yann C. Klimentidis *Birmingham, AL*; Dominick Lemas *Fairbanks, AK*; Jose R. Fernandez *Birmingham, AL*

713-P[DT] FTO Genotype Is Associated With Body Mass Index and Waist Circumference in Mexican Young Adults
Margarita Teran-Garcia *Urbana, IL*; Flavia Cristina D. Andrade *Champaign, IL*; Michelle A. Mosley, Itzel Vazquez-Vidal *Urbana, IL*; Celia Aradillas-Garcia, Eduardo Medina-Cerda *San Luis Potosí, Mexico*

714-P Genetic Basis of Postprandial Metabolism: Progress Report From the Genetics of Metabolic Diseases in Mexico (GEMM) Family Study
Raul Bastarrachea *San Antonio, TX*; Esther C. Gallegos-Cabriales, Edna J. Nava-Gonzalez *Monterrey, Mexico*; Karin Haack, V. Saroja Voruganti *San Antonio, TX*; Hugo A. Laviada-Molina *Merida, Mexico*; Juan Carlos Lopez-Alvarenga *Mexico City, Mexico*; Rosa A. Veloz-Garza, Velia M. Cardenas-Villareal, Salvador B. Valdovinos-Chavez *Monterrey, Mexico*; Harald H. Göring, Shelley A. Cole, John Blangero, Anthony G. Comuzzie, Jack W. Kent *San Antonio, TX*

Cardiovascular and Cancer Epidemiology

715-P Post-diagnosis Body Mass Index and Survival After Breast Cancer: The Long Island Breast Cancer Study Project
Patrick T. Bradshaw, Joseph G. Ibrahim, June Stevens, Rebecca Cleveland, Page E. Abrahamson *Chapel Hill, NC*; Susan L. Teitelbaum, Alfred I. Neugut *New York, NY*; Marilie D. Gammon *Chapel Hill, NC*

716-P[DT] Relative Contribution of Obesity and Adiponectin to the Development of Hypertension
Dong Hyuk Jung, Hye-Ree Lee *Seoul, Republic of Korea*

717-P Age at Menarche Is Associated With Blood Pressure and Body Mass Index in Young Adult Women
Holly Gooding, Courtney E. Walls, Tracy K. Richmond, Alison E. Field *Boston, MA*

718-P Added Sugars in the Diet Are Associated With Cardiometabolic Risk Factors in Children
Kenneth Kell, Jose R. Fernandez, Michelle Cardel *Birmingham, AL*

719-P Body Mass Index and Sex Predict Elevated Blood Pressure Among College Undergraduate Students
Ann Y. McDermott, Soma Roy, Shawna Perry, Karen J. McGaughey, Toria Mock, Aydin Nazmi *San Luis Obispo, CA*

720-P Elevated Random Blood Glucose Exacerbates the Effect of Central Adiposity on Risk For Obesity-Associated Cancers in the Framingham Offspring Study
Susan Chadid, Martha R. Singer, Gerald V. Denis, Lynn L. Moore *Boston, MA*

721-P[DT] Assessing the Change in Prevalence of Hypertension Over Twenty Years in an African-American Community
Sean McGrath, Lara Dugas, Regina Harders, Ramon A. Durazo-Arvizu, Richard S. Cooper, Amy Luke *Maywood, IL*

722-P Associations of Serum Lipid Levels With Cancer Mortality in Korean Adults
Kyung Eun Yun, Hye Soon Park *Seoul, Republic of Korea*

723-P Study of Heart Size and BMI, Among 30 and More Years Old Asians in Japan, From the Database of Perioperative Autologous Blood Donation
Naohito Saito, Kimie Kumagai, Kazuyoshi Watanabe, Daisuke Horiguchi, Chieko Matsumoto, Satoru Ozeki *Koshigay, Japan*

Population-Based Studies of Metabolic Diseases

724-P[DT] Obesity and Diabetes in Modernizing China: A Multilevel Analysis to Determine Which Elements of Urbanization Are Most Associated With Diabetes
Samantha Attard, Amy H. Herring, Elizabeth J. Mayer-Davis *Chapel Hill, NC*; James Meigs *Cambridge, MA*; Barry M. Popkin, Penny Gordon-Larsen *Chapel Hill, NC*

725-P[DT] High Prevalence and Racial/Ethnic Disparities in Vitamin D Deficiency Among Overweight US Children
Christy B. Turer, Hua Lin, Glenn Flores *Dallas, TX*

726-P Heritable Epigenetic Modifications of the Heart-Type Fatty Acid-Binding Protein Gene (FABP3) Influence Metabolic Syndrome Phenotypes and interaction With Nuclear Factors From Heart Tissue
Yi Zhang *Milwaukee, WI*; Jack W. Kent *San Antonio, TX*; Adam M. Lee *Rochester, MN*; Diana Cerjak, Omar Ali *Milwaukee, WI*; Robert B. Diasio *Rochester, MN*; Michael Olivier *Milwaukee, WI*; John Blangero, Melanie A. Carless *San Antonio, TX*; Ahmed Kissebah *Milwaukee, WI*

727-P Body Mass Index (BMI) Trajectories in Minnesota: An Analysis of a 35-Year Birth Cohort
Katherine Andrade, J. Michael Oakes *Minneapolis, MN*; Slavica K. Katusic, Cynthia L. Leibson *Rochester, MN*

728-P[DT] China's Burgeoning Hidden Risk: The Obese With Undiagnosed Diabetes?
Shufa Du *Chapel Hill, NC*; Huijun Wang, Bing Zhang *Beijing, China*; Barry M. Popkin *Chapel Hill, NC*

729-P[DT] African Men Have A Lower Waist Circumference of Risk For Cardiometabolic Disease Than African-American Men
Sophia S. Yu *Bethesda, MD*; Peter T. Katzmarzyk *Baton Rouge, LA*; Anne E. Sumner, Charles N. Rotimi *Bethesda, MD*

730-P[DT] Adipokines Are Associated With Adiposity Across the Epidemiologic Transition
Lara Dugas *Maywood, IL*; Pascal Bovet *Victoria, Seychelles*; Estelle Lambert, Naomi Levitt *Cape Town, South Africa*; Jacob Plange-Rhule *Kumasi, Ghana*; Ramon A. Durazo-Arvizu *Maywood, IL*; Ulf Ekelund, Soren Brage *Cambridge, United Kingdom*; Terrence Forrester *Mona, Jamaica*; David A. Shoham, Amy Luke *Maywood, IL*

731-P Predictors of Elevated Liver Fat Content in the Fels Longitudinal Study
Stefan A. Czerwinski, Audrey C. Choh, Miryoung Lee, Keith Wurzbacher, Roger M. Siervogel, Bradford Towne *Dayton, OH*

732-P[DT] Does A1C Over Diagnose Impaired Fasting Glucose in Black Women?
Benjamin M. Leon, Andrea V. Carnie, Richard O. Cannon, Bernard V. Miller *Bethesda, MD*

733-P Association of Fat Pattern With Bone Strength in Young Girls
Deepika Laddu, Vinson R. Lee, Robert M. Blew, Scott B. Going *Tucson, AZ*

734-P Sex-Specific Associations of Maternal Glucose Tolerance During Pregnancy With Offspring Adiposity
Nolwenn Regnault, Matthew W. Gillman, Sheryl L. Rifas-Shiman, Emma M. Eggleston, Emily Oken *Boston, MA*

735-P Investigation of Associations of Phthalate Exposures and Obesity and the Role of Endogenous Sex Hormones Behind Them in Children and Adolescents in China
Hexing Wang, Ying Zhou, Qingwu Jiang *Shanghai, China*

736-P[DT] Effectiveness of the MEND Weight Management Program in Ethnically Diverse Children in the US
Theresa A. Wilson, Laura Laine, Gina Goodgame, Anne L. Adolph, Maurice Puyau, Sarah Barlow *Houston, TX*; Paul M. Sacher, Duncan Radley, Paul Chadwick *London, United Kingdom*; Nancy F. Butte *Houston, TX*

737-P GDM Among Women Who Are Overweight and Obese: The Effect of BMI Category
Kate E. Martin, Rosalie M. Grivell, Jodie M. Dodd *North Adelaide, Australia*

738-P[DT] Interaction Between Maternal Smoking During Pregnancy and Fetal Growth and the Effect of This interaction on Childhood Growth: A Multilevel Analysis
Kohta Suzuki, Miri Sato, Zentaro Yamagata *Chuo, Japan*

739-P Association of Childhood High Body Mass Index and Bronchial Asthma With Perioperative Respiratory Complications
Olubukola O. Nafiu *Ann Arbor, MI*

740-P DXA Visceral Adipose Tissue: Cross-Sectional Association With Cardiometabolic Disease
David L. Ergun *Niskayuna, NY*; Alberico L. Catapano *Milan, Italy*; Jin Xia *Niskayuna, NY*; Cristina Tidone *Milan, Italy*; David L. Ergun *Madison, WI*

741-P[DT] Sarcopenia By Appendicular Skeletal Mass/Trunk Lean Mass as a New Diagnostic Marker Has Associated With Metabolic Syndrome in a Population Study
sangmo Hong, Chang Beom Lee, Yong Soo Park, Dong Sun Kim, You Hern Ahn *seoul, Republic of Korea*; Young Seol Kim *Seoul, Republic of Korea*; Woong-Hwan Choi *seoul, Republic of Korea*

742-P Associations of Skeletal Muscle Mass With Prediabetes in Chinese Adults
Shanchun Zhang, Yunjie Zhou, Longde Wang, Shankuan Zhu *Hangzhou, China*

743-P[DT] Diet Quality Is Associated With Fitness Level But Not With Obesity in Hispanic Children in WI With High Prevalence of Obesity
Margarita Santiago, Tara LaRowe, Jeffrey Sledge *Madison, WI*; Angelica Delgado, Magdalisse Gonzalez *Milwaukee, WI*; Aaron Carrel, David Allen, Dale Schoeller, Alexandra Adams *Madison, WI*

744-P[DT] Prevalence Estimates of Diabetes During Pregnancy in United States Women, 1980 to 2008
Kelly J. Hunt *Charleston SC, SC*; Odette S. Reifsnider, Maria E. Mayorga *Clemson, SC*

745-P Increased Fat-free Mass and Resting Energy Expenditure in Severely Obese Women
James L. Hopkins, Paul N. Hopkins, Eliot A. Brinton, Lance E. Davidson, Ted D. Adams, Steven C. Hunt, M. N. Nanjee *Salt Lake City, UT*

746-P Metabolic Screening Labs For Obese Children Under Five Years of Age
Jeanhee Park, George Datto, Sandra Hassink *Wilmington, DE*

747-P[DT] The Presence of Metabolic Syndrome Is Associated With a More Atherogenic Lipoprotein Cholesterol Distribution in Postpartum Hispanic Women
Giselle A. Pignotti, Colleen Keller, Allison Nagle Williams, Crystal Ramos, Justin R. Ryder, Sonia Vega-López *Phoenix, AZ*

748-P[DT] Obesity-Inflammation Relationships Are Similar in Adolescent and Young Adult African Americans
Scott W. Keith, Stephanie DeLoach *Philadelphia, PA*; Samuel S. Gidding *Wilmington, DE*; Bonita Falkner *Philadelphia, PA*

749-P[DT] Body-Mass Index and Waist Circumference Are Associated With Impaired Glucose Metabolism in Chinese Adults With Normal Body Weight
China National Diabetes & Metabolic Disorder Study Group *New Orleans, LA*

750-P[DT] Overweight, Gestational Weight Gain, Elevated Fasting Glucose in Pregnant Women and their Association With Neonatal Macrosomia in Kunshan, China, 2006-2010
Peng Shi, Weili Yan *Shanghai, China*; Wenhong Yang, Qian Yu *Kunshan, China*; Qian Zhao *Shanghai, China*; Chunying Li *Kunshan, China*

751-P[DT] Prevalence of Metabolic Syndrome in Obese African American Adolescents and the Role of Fast Food Consumption
Yulyu Yeh, Kathryn Brogan, Sylvie Naar-King, Kai-Lin, Catherine Jen *Detroit, MI*

752-P[DT] Associations Between Fasting Glucose and Adiposity For 5 Countries
Ruth Verner, Lara Dugas *Maywood, IL*; Pascal Bovet *Victoria, Seychelles*; Terrence Forrester *Kingston, Jamaica*; Estelle Lambert, Naomi Levitt *Cape Town, South Africa*; Jacob Plange-Rhule *Kumasi, Ghana*; Ramon A. Durazo-Arvizu, Amy Luke *Maywood, IL*

753-P Prevalence of Obesity and Abdominal Obesity From Four to 16 Years Old Children Living in Tijuana, Mexico
Montserrat Bacardi-Gascon, Elizabeth Jones, Arturo Jimenez-Cruz *Tijuana, Mexico*

754-P A Positive Relationship Between Height and Percent Fat in Children Mediated By Insulin-A Potential Antecedent of Health Disparities?
Krista Casazza *Birmingham, AL*

755-P Obesity Incidence and Prevalence in Amerindians
Antonio Arnaiz-Villena, Cristina Areces, Mercedes Enriquez-de-Salamanca, Manuel Algora, Diego Rey *Madrid, Spain*

756-P Is it Truly Effective the Non-Invasive Mechanical Ventilation in Determining Weight Loss In Obese Patients With Obstructive Sleep Apnea Syndrome?
Giuseppe Fiorentino, Mariano Mazza, Anna Annunziata, Rosa Cauteruccio, Gianfranco Scotto Di Frega, Maria Antonietta Mazza, Anna Michela Gaeta, Mario Caputi *Naples, Italy*

757-P Increased Metabollically Obese Normal Weight (MONW) and Cardiometabolic Risks in Normal BMI Body Fat Adults
Sang-Hwan Han *Incheon, Republic of Korea*; Ji Young Kim *Seoul, Republic of Korea*

Policy: Environmental/Economic/Health Policy

758-P[DT] Relationship Between Income and Childhood Overweight: Looking Beyond Prevalence
Eric Finkelstein, Marcel Bilger, Eliza Kruger *Singapore, Singapore*

759-P Association Between State Laws Governing School Meal Nutrition Content and Obesity: A Difference-In-Difference Analysis
Daniel R. Taber, Jamie F. Chriqui, Lisa M. Powell, Frank J. Chaloupka *Chicago, IL*

760-P HOPE2 Nutrition-Focused Policy and Curricula Improve Consumption of Nutrient-Rich Foods By Children, and Dietetic Practices (Menu Creation) in Elementary Schools
Danielle Hollar *Fort Lauderdale, FL*; Michelle Lombardo, Caitlin Heitz *Duluth, GA*; Lucas Hollar *Fort Lauderdale, FL*

761-P Underrecognition and Underreporting of Obesity By Medical Residents
Gitanjali Srivastava, Derek P. Guanaga, Lee M. Kaplan *Boston, MA*

762-P[DT] TV Food Advertisements Address To Younger Than 5y Old Children's Mothers in Mexico and the Consumption of Foods By Mothers and Children
Glenda Díaz-Ramírez, Montserrat Bacardi-Gascon, Maria D. Souto-Gallardo, Arturo Jimenez-Cruz *Tijuana, Mexico*

763-P *This abstract has been withdrawn.*

764-P Assessing Children's Weight Status in Somerville, MA: A Decade Retrospective in an Intervention Rich Community
Virginia R. Chomitz *Boston, MA*; Jaime Corliss *Somerville, MA*; Lisa N. Arsenault *Cambridge, MA*; Nicole Rioles *Somerville, MA*; Christina D. Economos *Boston, MA*

765-P Prioritization and Willingness-to-Pay For Bariatric Surgery: The Patient Perspective
Richdeep S. Gill, Sumit R. Majumdar, Xiaoming Wang, Rebecca Tuepah, Scott W. Klarenbach, Daniel W. Birch, Shahzeer Karmali, Arya M. Sharma, Raj S. Padwal *Edmonton, Canada*

766-P Public Opinions of Responsibility For Obesity and Solutions to the Problem
Adam G. Tsai *Aurora, CO*; Tracy F. Boyle, Jenny Mayo, James Heichelbech, Karl Weiss *Denver, CO*

767-P Quality of Life Among Participants in a Mississippi Bariatric Surgery Pilot Program
Katie S. McClendon, Melissa S. Kay, Jacinda Roach, Whitney Byars, William H. Replogle *Jackson, MS*

768-P Weight Loss Among Participants in a Mississippi Bariatric Surgery Pilot Program
Katie S. McClendon, Annette Low, Micki Johnson, Dena Trusler, William H. Replogle *Jackson, MS*

769-P The Effects of the Food Stamp Program on Energy Balance and Obesity
Joanna C. Parks, Julian M. Alston, Aaron D. Smith *Davis, CA*

770-P[DT] Are Minority Children Getting Enough Sleep?
William W. Wong, Christina L. Ortiz, Debra L. Lathan, Louis A. Moore, Karen L. Konzelmann, Anne L. Adolph, E. O'Brian Smith, Nancy F. Butte *Houston, TX*

771-P Patients' Perceptions of Waiting For Bariatric Surgery
Deborah M. Gregory, Julia Temple Newhook, Laurie K. Twells *St. John's, Canada*

772-P 12-Year Trends in Energy Content of Menu Offerings at Eight Leading Fast Food Restaurants in the U.S
Katherine W. Bauer *Philadelphia, PA*; Mary O. Hearst, Alicia A. Earnest, Simone A. French, J. Michael Oakes, Lisa J. Harnack *Minneapolis, MN*

773-P Taxing and Labeling Unhealthy Food: Making Public Policies More Effective
Brian Elbel, Tod Mijanovich, Beth Dixon, Courtney Abrams, Morgan Hills, Matthew Beyrouty *New York, NY*

774-P Using Tax Credits to Introduce Supermarkets in Low-Income Areas: The Influence on Healthy Eating
Brian Elbel, Tod Mijanovich, Beth Dixon, Courtney Abrams, Kamila Kiszko *New York, NY*

775-P Healthy Eating Design Guidelines For School Architecture
Terry Huang *Omaha, NE*; Dina Sorensen, Stephen Davis *Charlottesville, VA*; Leah Frerichs, Jeri Brittin *Omaha, NE*; Kelly Callahan, Joe Celentano, Matthew Trowbridge *Charlottesville, VA*

776-P The Development of a National Integrated Health Care Standard For Severely Obese Children and Adolescents and Their Families in the Netherlands
Jutka Halberstadt, Jacob C. Seidell *Amsterdam, Netherlands*

777-P Translational Research in Bariatric Care
Laurie K. Twells *St. John's, Canada*; Deborah M. Gregory *St.John's, Canada*; Carla M. Dillon *St. John's, Canada*; Elizabeth Hatfield, Raleen M. Murphy, Rhoda Crawley, David Pace, Darrell Boone, Maria H. Tracey, Elaine Warren, Christopher S. Kovacs, Don M. MacDonald *St.John's, Canada*; Raj S. Padwal, Arya M. Sharma *Edmonton, Canada*; Blair Fleming *St. John's, Canada*

Imaging and Biomarkers

778-P[DT] Optimal Thresholds of Visceral Adipose Tissue For the Identification of Cardiometabolic Risk in White and African American Adults
Peter T. Katzmarzyk, Steven B. Heymsfield, Claude Bouchard *Baton Rouge, LA*

779-P Association of Dysfunctional Adiposity With Incident Pre-diabetes or Type 2 Diabetes Mellitus in Obese Adults: The Dallas Heart Study (DHS)
Ian J. Neeland *Dallas, TX*; Tiffany M. Powell-Wiley *Washington DC, DC*; Colby Ayers, Ramin Farzaneh-Far, Anand Rohatgi, Aslan T. Turer, Jarett D. Berry, Sandeep Das, Gloria L. Vega, Amit Khera, Darren K. McGuire, Scott M. Grundy, James A. de Lemos *Dallas, TX*

780-P Retinal Vascular Changes in Patients With Obesity
Maria Elena Romero Ibargüengoitia, M. Elena Martinez-Perez, Alfredo Arturo Dominguez Mota, Maria Estela Arroyo Illanes, Antonio González Chávez, Maria Santa Juana Quiñones Alvarez, Mireya Leon, Fabiola Serrato *México D.F, Mexico*; Jazmin Chiu-Ugalde *Naucalpan Edo. Mex., Mexico*; Juan Carlos Lopez-Alvarenga *México D.F, Mexico*

781-P Obesity and Total Cholesterol Are Predictors of Ultrasound Vascular Endothelial Abnormalities in Children
Arturo Herrera-Rosas, José Damián Carrillo Ruiz, Esther Ocharan *México D.F., Mexico*; Ana Luisa Sesman Bernal *Mexico City, Mexico*; Joselín Hernández Ruíz, Juan Carlos Lopez-Alvarenga *México D.F., Mexico*; Araceli Arellano-Plancarte *Naucalpan Edo. Mex., Mexico*

782-P[DT] Thigh Intermuscular Fat Predicts Declines in Gait Speed: Results From the Health ABC Study
Kristen M. Beavers, Daniel P. Beavers, Denise K. Houston *Winston-Salem, NC*; Bret H. Goodpaster *Pittsburgn, PA*; Tamara B. Harris *Bethesda, MD*; Trisha F. Hue *San Francisco, CA*; Annemarie Koster *Maastricht, Netherlands*; Anne B. Newman *Pittsburgn, PA*; Eleanor Simonsick *Baltimore, MD*; Stephanie A. Studenski *Pittsburgn, PA*; Barbara J. Nicklas, Stephen B. Kritchevsky *Winston-Salem, NC*

783-P Composition of Oral Microbiota Associated With Obesity in Kuwaiti Children
Jo Max Goodson, Maryann Cugini, Hatice Hasturk, Pramod M. Soparkar, Mary Tavares *Cambridge, MA*; Sabia Al-Mutawa, Jitendra Ariga, Jawad Behbehani, Roula Barake, Osama Alsmadi, Kazem Behbehani *Kuwait City, Kuwait*

784-P Comparison of Percent Body Fat Measurements By DXA in Children in STRONG Kids Program
Anthony Wang, Margarita Teran-Garcia *Urbana, IL*

785-P Serum IL-17, Obesity and Metabolic Risk in Mexican Young Adults
Margarita Teran-Garcia *Urbana, IL*; Diana P. Portales-Perez, Ana Gabriela Cerda-Vessi, Sergio Rosales-Mendoza, Celia Aradillas-Garcia *San Luis Potosí, Mexico*

Statistical Methods

786-P Using Latent Class Analysis to Characterize Infant Feeding Mode and Its Relationship With Infant Weight Status and Demographics
Stephanie Anzman-Frasca *University Park, PA*; Ian M. Paul *Hershey, PA*; Leann L. Birch *University Park, PA*

787-P Two-Method Measurement Design For BMI Estimates in Large Epidemiologic Studies
Keith M. Drake, Meghan R. Longacre, Madeline A. Dalton, Gail Langeloh *Lebanon, NH*; Karen E. Peterson *Ann Arbor, MI*; Linda J. Titus, Michael L. Beach *Lebanon, NH*

788-P The Relationship Between Body Weight and Quality of Life in Older Adults With Medicare Supplement Insurance
Kevin Hawkins, Frank G. Bottone, Shirley Musich, Ronald J. Ozminkowski, Yan Cheng *Ann Arbor, MI*; Richard J. Migliori *Minnetonka, MN*; Charlotte S. Yeh *Washington, DC*

789-P BMI Trajectories From Birth to Early Adulthood: An Analysis of the National Longitudinal Survey of Children and Youth
Andrew Tu, Louise C. Masse *Vancouver, Canada*; Scott Lear *Burnaby, Canada*; Chris G. Richardson *Vancouver, Canada*

Environmental Determinants of Health

790-P[DT] Development of a Rapid Assessment Audit Instrument to Evaluate the Food Environment in Uganda
Mary J. Christoph, Diana S. Grigsby-Toussaint *Champaign, IL*; James M. Ntambi *Madison, WI*

791-P Married With Children: Contributions of Diet, Physical Activity, and Neighborhood Environments to Weight Gain. The CARDIA Study
Janne Boone-Heinonen *Portland, OR*; Cora E. Lewis *Birmingham, AL*; Catarina Kiefe *Worchester, MA*; Penny Gordon-Larsen *Chapel Hill, NC*

792-P Family and Community Predictors of Parental Support For Children's Physical Activity in Low-Income Families
Amy M. Lampard *Boston, MA*; Janine M. Jurkowski *Rensselaer, NY*; Hal A. Lawson *Albany, NY*; Karin Pfeiffer *East Lansing, MI*; Kirsten Davison *Boston, MA*

793-P Predictors of Parent Restriction of Child Screen Use: A Theory of Planned Behavior Framework
Amy M. Lampard *Boston, MA*; Janine M. Jurkowski *Rensselaer, NY*; Kaigang Li *Bethesda, MD*; Kirsten Davison *Boston, MA*

794-P How Should We Find Food Establishments For Longitudinal Research? A Comparison of Data Sources
Jason P. Block, A. James O'Malley, S. V. Subramanian *Boston, MA*

795-P The Influence of Media on Food Intake and Obesity in Young Adults - An Experimental Study
Suman Ahuja *Jefferson City, MO*; Padmini Shankar, Jody Langdon *Statesboro, GA*

796-P Obesity and the Corporation: A New Look at Medical Consequences of Wages and Work Conditions
Maureen A. Scully, Emily J. Jones, Gerald V. Denis *Boston, MA*

797-P *This abstract has been withdrawn.*

798-P Garment Design For Measuring Toddler Physical Activity and Language in Child Care
Bronwyn Fees, Sherry Haar *Manhattan, KS*; Stewart G. Trost *Corvallis, OR*; Linda K. Crowe *Kearney, NE*; Ann D. Murray *Manhattan, KS*

799-P Influence of Household Characteristics and Food Insecurity on the Relationship Between Inflammation and Obesity in Children
Lauren Connell, Lori A. Francis *University Park, PA*

800-P Comparing Prices For Healthier and Less Healthy Entrees on Restaurant Children's Menus
Rebecca A. Krukowski, Delia S. West *Little Rock, AR*

801-P[DT] Family Food Environment and Child Overweight in Low-Income Families
Karen McCurdy, Kathleen S. Gorman, Tiffani Kisler *Kingston, RI*; Elizabeth Metallinos-Katsaras *Boston, MA*

802-P Development of the Childhood Food Rules Scale: Psychometric Properties and Associations With Body Mass Index, Psychopathology, and Family Environment
Christina A. Roberto *New Haven, CT*; Sarah Novak *Hempstead, NY*; Vanessa Milsom, Marlene Schwartz *New Haven, CT*

803-P Do Socioeconomic Inequalities in Body Composition Equalise During Adolescence in Urban South Africa?
Paula L. Griffiths *Loughborough, United Kingdom*; William Johnson *Minneapolis, MN*; Noel Cameron *Loughborough, United Kingdom*; John M. Pettifor, Shane A. Norris *Johannesburg, South Africa*

804-P[DT] Association of the Retail Food Environment With Dietary Energy Density
Stephen J. Onufrak, Sohyun Park, Sophia Greer, Greg Schwartz, Linda J. Schieb *Atlanta, GA*

805-P[DT] Influence of Social-Environmental Supports on Physical Activity and Body Mass Index in Underserved African Americans in the PATH Trial: A Mediation Analysis
Sandra M. Coulon, Dawn K. Wilson, E. R. Siceloff *Columbia, SC*

806-P[DT] Food Availability as a Determinant of Weight Gain Among Renal Transplant Recipients
Robin Bloodworth, Kenneth D. Ward *Memphis, TN*; Ann K. Cashion *Bethesda, MD*; Donna Hathaway *Memphis, TN*

807-P Weighting the Factors Associated With Children Obesity: An International Perspective Toward a Unified Model
Dario Gregori, Ileana Baldi *Padova, Italy*

808-P Short Sleep Duration Is Associated With Greater Alcohol Consumption in Adults
Jean-Philippe Chaput, Jessica McNeil *Ottawa, Canada*; Jean-Pierre Després *Quebec City, Canada*; Claude Bouchard *Baton Rouge, LA*; Angelo Tremblay *Quebec City, Canada*

809-P School Lunch Consumption Among Middle School Students in Boston: Implications For Research, Nutrient Consumption, and Food Waste Costs
Juliana F. Cohen, Scott Richardson, S. Bryn Austin, Christina D. Economos, Eric Rimm *Boston, MA*

810-P The Effect of the Home Environment on Obesity Associated Outcomes in Young Children: Results From KAN-DO
Marissa Stroo, Truls Ostbye, Bernard F. Fuemmeler *Durham, NC*; Rahul Malhotra *Singapore, Singapore*; Rebecca Brouwer *Durham, NC*; Cheryl A. Lovelady *Greensboro, NC*; Nancy L. Zucker *Durham, NC*

811-P Assessing Barriers and Facilitators to Healthy Eating and Physical Activity Behaviors in a Low-Income, Minority Community, Using Photovoice: Preliminary Findings
Jonathan W. Decker *Orlando, FL*

812-P Parents' Perceptions of Residential Neighborhood, Children's Sedentary Behaviors, and Outdoor Play in School Children
Cristina Padez, Maria Miguel Ferrão *Coimbra, Portugal*; Augusta Gama *Lisboa, Portugal*; Isabel Mourão *Vila Real, Portugal*; Helena Nogueira *Coimbra, Portugal*; Vitor Marques *Lisboa, Portugal*

813-P School Social Cohesion Is Associated With Lower Body Mass Index in Teens in the National Longitudinal Study of Adolescent Health
Tracy K. Richmond, Courtney E. Walls, Ichiro Kawachi *Boston, MA*

814-P Associations Between Child's and Parental Obesity Status and Neighborhood Food Store Environment
Hsin-Jen Chen *Baltimore, MD*; James B. Kirby, Lan Liang *Rockville, MD*; Youfa Wang *Baltimore, MD*

815-P Correlation of Environmental Food Outlets and County Health Rankings in Mississippi
Sarah Beth Slinkard, Ronald D. Williams, Barry P. Hunt, Ali Fratesi, Chiquita A. Briley, Diane K. Tidwell *Mississippi State, MS*

816-P Community Mapping and Assessment of Obesity Prevention Resources
Ali Fratesi, Ronald D. Williams, Barry P. Hunt, Sarah Beth Slinkard, Kathleen Ragsdale, Chiquita A. Briley, Diane K. Tidwell, Lynn Burney *Mississippi State, MS*

Population Health and Policy — Other

817-P[DT] Documentation and Diagnosis of Overweight and Obesity in Electronic Health Records of Adult Primary Care Patients
Heather J. Baer, Andrew S. Karson, Jane R. Soukup, David W. Bates *Boston, MA*

818-P Sensitivity and Specificity of Obesity Diagnosis in Pediatric Ambulatory Care in the United States
Carolyn Walsh, Carly Milliren, Henry Feldman, Elsie M. Taveras *Boston, MA*

819-P[DT] Standardized Assessment of Overweight and Obesity in 1st – 6th Graders in Low-Income, Urban Schools
Tara Alexis McCoy, Maurice A. Denton, Meghan L. Duffy, Heather R. Wilson, Stephanie S. Vander Veur, Giridhar Mallya, Gary Foster *Philadelphia, PA*

820-P The Risk of Obesity By Assessing Infant Growth Against the UK-WHO Charts
William Johnson *Minneapolis, MN*; John Wright *Bradford, United Kingdom*; Noel Cameron *Loughborough, United Kingdom*

821-P The Impact of Primary Care Weight Advice
Chris Sciamanna, Andrew Pool, Lindsay A. Cover, Heather L. Stuckey, Jennifer L. Kraschnewski *Hershey, PA*; Kevin O. Hwang *Houston, TX*; Kathryn Pollak *Durham, NC*; Deborah F. Tate *Chapel Hill, NC*; Erik Lehman *Hershey, PA*

822-P The Epidemiology of Weight Counseling in the United States: A Case of Positive Deviance
Chris Sciamanna, Jennifer L. Kraschnewski *Hershey, PA*; Kathryn Pollak *Durham, NC*; Nancy E. Sherwood *Minneapolis, MN*

823-P *This abstract has been withdrawn.*

824-P[DT] Expectations For Weight Loss and Willingness to Accept Risk Among Patients Seeking Weight Loss Surgery
Christina C. Wee, Mary Beth Hamel, Caroline Apovian, George L. Blackburn, Dragana Bolcic-Jankovic, Mary Ellen Colten, Donald T. Hess, Karen W. Huskey, Edward R. Marcantonio, Benjamin Schneider, Daniel B. Jones *Boston, MA*

825-P[DT] Race and Weight Loss One Year After Weight Loss Surgery
Christina C. Wee, Daniel B. Jones, George L. Blackburn, Roger Davis, Donald T. Hess, Karen W. Huskey, Caroline Apovian *Boston, MA*

826-P[DT] Preferences For Weight Loss Surgery Among Primary Care Patients: The Influence of Race and Physician Recommendation
Christina C. Wee, Karen W. Huskey, Dragana Bolcic-Jankovic, Mary Ellen Colten, Roger Davis, Mary Beth Hamel *Boston, MA*

827-P Longitudinal Stability in Night Eating Syndrome Criteria Among Quality Cohort Adults
Annette R. Gallant *Québec, Canada*; Jennifer D. Lundgren *Kansas City, MO*; Kelly C. Allison, Albert J. Stunkard *Philadelphia, PA*; Angelo Tremblay *Québec, Canada*; Jennifer O'Loughlin *Montréal, Canada*; Vicky Drapeau *Québec, Canada*

828-P Wisconsin Farm to School Evaluation: Fruit and Vegetable Access Improved Over One Year of Farm to School Implementation
Andrea B. Bontrager Yoder, Teresa Engel, Suzanne Gaulocher, Amanda Knitter, Janice L. Liebhart, Daniel J. McCarty, Amy M. Meinen, Dale Schoeller, Sara Tedeschi, Camilla Vargas, Tara LaRowe *Madison, WI*

829-P Reduced Lung Function Associated Wth Child Obesity in a Nationally Representative Sample
Asheley C. Skinner, Jessica E. Pittman, Eliana M. Perrin *Chapel Hill, NC*

830-P Longitudinal Relationships of Maternal Body Weight Up to 2 Years Postpartum With Psychosocial, Behavioral and Sociodemographic Factors
Leah Lipsky *Bethesda, MD*; Myla S. Strawderman, Christine M. Olson *Ithaca, NY*

831-P[DT] Determinants of Neonatal Body Adiposity Assessed By Dual Energy X-ray Absorptiometry
Edwina Yeung, Cuilin Zhang, Nansi Boghossian *Bethesda, MD*; Winston Koo *Shreveport*

832-P[DT] Does Obesity Associate With Mortality Rate Among Hispanic Adults? Results From Multiple Epidemiologic Datasets
Tapan Mehta, Raymond McCubrey *Birmingham, AL*; Nicholas Pajewski *Winston-Salem, NC*; Scott W. Keith *Philadelphia, PA*; Carlos J. Crespo *Portland, OR*; David B. Allison *Birmingham, AL*; Kevin R. Fontaine *Baltimore, MD*

833-P "Eat Less and Exercise More!" Follow Up at Six Weeks Versus Six Months
Alexander W. Kennon, Christina L. Baldwin *Sarasota, FL*; Robert L. Dubin *New Orleans*

834-P Mortality Risk of Metabolically Healthy Obese Depends on Definition of Metabolic Health Used
Carrie M. Durward, Sharon M. Nickols-Richardson *University Park, PA*

835-P Using the Web to Deliver a Weight Control Intervention Among Urban, Low-Income Mothers: Will They Come?
Danielle R. Shapiro, Justin Yu, Alicia Klotz, Gary Foster, Sharon J. Herring *Philadelphia, PA*

836-P Association of Short Sleep With Obesity, Energy Intensive Activities, and Secondary Eating and Drinking Behavior
Gabriel Tajeu, Bisakha Sen *Birmingham, AL*

837-P[DT] Relationships Between Regional Body Volume Ratios and Obesity Measures
Jane J. Lee, Ming Yao, Bugao Xu, Jeanne H. Freeland-Graves *Austin, TX*

838-P[DT] Interventions For Preventing Obesity in Mexican Children: A Systematic Literature Review
Luz Maria Sanchez Romero *Cuernavaca, Mexico*; Christina M. Eisenberg *San Diego, CA*; Simón Barquera *Cuernavaca, Mexico*; Christina K. Holub, John P. Elder, Elva Arredondo *San Diego, CA*

839-P[DT] Weight Status, % Body Fat and Lifestyle Behaviors in JROTC Students
Janice D. Key, Coleen T. Martin, Lydia B. King, Sabra Slaughter *Charleston, SC*

840-P Variability in Bariatric Surgery Criteria in 11 US Centers
Sarit Polsky *Aurora, CO*; Michael Shainline, Elizabeth A. Bayliss *Denver, CO*; Kristine L. Funk *Portland, OR*; Rebecca J. Williams *Honolulu, HI*; Jennifer D. Portz *Denver, CO*; Thomas E. Elliott *Duluth, MN*; William T. Donahoo *Denver, CO*

841-P Infant Growth and Adiposity Between 6 and 18 Months of Age: What Are the Maternal and Infant Determinants?
Lindsey Sjaarda, Christina Scifres, Lisa Bodnar, Hyagriv Simhan, Silva Arslanian *Pittsburgh, PA*

842-P[DT] Association Between Maternal BMI and Breastfeeding: Infant Feeding Practices Survey II
Jenny McManus, Wendy L. Bennett *Baltimore, MD*

843-P Temptation and Alienation: Two Sides of 'The Biggest Loser', Australian Audience Experiences of Obesity-Related Reality Television
Catriona Bonfiglioli *Broadway, Australia*; Simon Chapman *Sydney, Australia*; Ben Smith *Melbourne, Australia*

844-P[DT] Comparisons of Percent Body Fat Derived by Existing Bioelectrical Impedance Analysis Equations with DEXA in Chinese Adults
Aihua Song, Sunyue Ye, Xinyu Zhao, Sha Zhang, Shankuan Zhu *Hangzhou, China*

845-P Evidence of Differential Susceptibility in an Interaction Between Food Reinforcement and the Serotonin 2A Receptor
Katelyn A. Carr, Henry Lin, Kelly D. Fletcher, Lara Sucheston, Prashant Singh *Buffalo, NY*; Robbert Salis *Niagara Falls, NY*; Richard W. Erbe, Jennifer L. Scheid *Buffalo, NY*; Myles Faith *Chapel Hill, NC*; David B. Allison *Birmingham, AL*; Leonard H. Epstein *Buffalo, NY*

846-P FTO Polymorphisms Moderate the Effect of Food Reinforcement on Energy Intake
Jennifer L. Scheid, Katelyn A. Carr, Henry Lin, Kelly D. Fletcher, Lara Sucheston, Prashant Singh, Richard W. Erbe, Leonard H. Epstein *Buffalo, NY*

847-P Changes in Life Expectancy After Gastric Bypass For Severely Obese Patients With Diabetes: Bigger is Not Better
Daniel Schauer *Cincinnati, OH*; David Arterburn *Seattle, WA*; Edward Livingston *Dallas, TX*; Karen J. Coleman *Pasadena, CA*; Steve Sidney *Oakland, CA*; Patrick O'Connor *Bloomington, MN*; David Fischer, Mark H. Eckman *Cincinnati, OH*

848-P Gestational Weight Gain…Does Knowledge Really Matter?
Erica Rauff, Danielle S. Downs, Jennifer S. Savage *University Park, PA*

849-P Fit and Fat? Exploring Fitness Among Overweight and Non-Overweight Adolescents
Christy Greenleaf, Scott B. Martin, Trent Petrie, Jacob Tucker *Denton, TX*

850-P Clinical Utility of Whole Genome Prediction For Personalized Obesity Treatment
Emily J. Dhurandhar, Ana I. Vazquez, David B. Allison *Birmingham, AL*

851-P Effect of TV Exposure and Advertising on Food Intake in India: An Experimental Ad-Libitum Study During Snacking Time
Dario Gregori *Padova, Italy*; Achal Gulati *New Delhi, India*

852-P[DT] Differences in Health-Related Behaviors and Weight Status in a Racially Diverse Sample of Young Adults
Debra A. Hoffmann *Bowling Green, OH*; Stephanie R. Polito, Angela M. Pinto *New York, NY*

853-P Social Influences on Health and Lifestyle Behaviors in Young Adults
Debra A. Hoffmann *Bowling Green, OH*; Stephanie R. Polito, Angela M. Pinto *New York, NY*

854-P Diet Quality of Adults With Intellectual and Developmental Disabilities as Measured By the Healthy Eating Index-2005
Lauren T. Ptomey, Jeannine R. Goetz, Joseph E. Donnelly, Debra K. Sullivan *Kansas City, KS*

855-P Parental Awareness and Recognition of Obesity in Pre-Adolescents
Jennifer S. Laurent *Burlington, VT*

856-P Influence of Parity on Bone Mineral Density in Pre- and Postmenopausal Chinese Women
Sha Zhang, Wei He, Sunyue Ye, Aihua Song, Shanchun Zhang, Shankuan Zhu *HangZhou, China*

857-P Are We Reporting Data of Prevalence in Childhood Obesity Adequately?
Raul Pesquera Cabezas, Ricardo Lanza Saiz, Jose Antonio Riancho Moral, Jesus Lino Alvarez Granda, Domingo Gonzalez Lamuño, María Jesus Cabero Perez, Trinidad Dierssen Sotos, Luis Gaite Pindado, Miguel García Fuentes *Santander, Spain*

858-P Relative Impact of Body Mass Index and Physical Activity on Inflammatory Markers in the MIDUS Cohort
Kelley Strohacker, Rena R. Wing, Jeanne M. McCaffery *Providence, RI*

859-P[DT] Contribution of Physical Activity, Sedentary Time, Sleep and Cardio-Respiratory Fitness to the Metabolic Syndrome Score in Danish Children
Mads F. Hjorth *Frederiksberg, Denmark*; Jean-Philippe Chaput *Ottawa, Canada*; Camilla T. Damsgaard, Stine-Mathilde Dalskov, Arne Astrup, Kim F. Michaelsen *Frederiksberg, Denmark*; Inge Tetens *Søborg, Denmark*; Anders M. Sjödin *Frederiksberg, Denmark*

860-P Exploring Long-Term Eating Behaviors in Post-Gastric Bypass Patients: A Pilot Study
Sue Benson-Davies *Brookings, SD*; Michael L. Davies *Washington, DC*

861-P[DT] Associations of Visceral and Intermuscular Adipose Tissue With CVD Risk Factors in Chinese Adults
Xinyu Zhao *Hangzhou, China*; ZiMian Wang *New York, NY*; Shankuan Zhu *Hangzhou, China*

862-P[DT] Value of Provider Advice on GWG and Exercise During Pregnancy
Michael Stengel, Cynthia H. Chuang, Jennifer L. Kraschnewski *Hershey, PA*

863-P Psychological Barriers to Cervical Cancer Screenings in Overweight and Obese Women
Megan Lavery *Cleveland, OH*; Kelly C. Allison, Sharon Lee Armstrong, Jacqueline Spitzer, Rebecca Dilks *Philadelphia, PA*

864-P[DT] Relationship Between Depression and Weight Gain Six Months Post-Kidney Transplant
Ansley G. Stanfill, Donna Hathaway, Ann K. Cashion *Memphis, TN*

865-P Characteristics of Health Care Providers Who Counsel Adolescents on Sports and Energy Drink Consumption in the United States, 2011
Nan Xiang, Holly Wethington, Stephen J. Onufrak, Brook Belay *Atlanta, GA*

866-P Effects of Phenotype on Child Obesity Prevention Program Outcomes: The Pathways Trial
Mary Ann Pentz, Nathaniel R. Riggs, Hee-Sung Shin, Adam Leventhal *Los Angeles, CA*

867-P Role of Hyperandrogenemia in Heritability of Body Mass Index in Polycystic Ovary Syndrome
Priyathama Vellanki, Loren L. Armstrong *Chicago, IL*; Richard S. Legro *Hershey, PA*; Andrea Dunaif, M.Geoffrey Hayes *Chicago, IL*

868-P *This abstract has been withdrawn.*

869-P[DT] Why Greater Prevalence of Obesity For Boys Than Girls in China
Le Shan Zhou, Guo ping He, Si Yuan Tang *Changsha, China*

870-P[DT] Factors Associated With Overweight Fourth-Grade Japanese Children
Yumi Yaegashi, Toshiyuki Onoda, Kiyomi Sakata *Shiwa-gun, Japan*

871-P Association of Preterm Birth With Weight Status and Waist Circumference in Mexico City Youth
Tiffany Yang, Karen E. Peterson, Eduardo Villamor *Ann Arbor, MI*; Martha M. Téllez-Rojo *Morelos, Mexico*; Brisa Sanchez *Ann Arbor, MI*

872-P Evaluation of Body Composition and Exercise Capacity in Women After Bariatric Surgery
Marcela C. Barbalho-Moulim *Cariacica, Brazil*; Flavia S. Leite *São Paulo, Brazil*; Eli Maria Pazzianotto-Forti *Piracicaba, Brazil*; Luciana M. Sampaio Jorge, Dirceu Costa *São Paulo, Brazil*

873-P The Joint Association of the Home Environment and Neighborhood Built Environment on Youth Dietary Intake and Weight
Jerica M. Berge *New Brighton, MN*; Mlaniee Wall *New York, NY*; Nicole Larson *Minneapolis, MN*; Katherine W. Bauer *New York, NY*; Dianne Neumark-Sztainer *Minneapolis, MN*; Ann Forsyth *New York, NY*

874-P Parental Encouragement of Weight Loss Promotes Daughters' Dieting
Katherine N. Balantekin, Jennifer S. Savage, Michele Marini, Leann L. Birch *University Park, PA*

875-P Adverse Childhood Experiences and BMI in Young Adult Women: Is the Association Explained By Depression and Binge Eating?
Alexis E. Duncan, Michaela Eschenbacher *Saint Louis, MO*; Melissa A. Munn-Chernoff, Andrew C. Heath *St. Louis, MO*

876-P A Survey of Food Provision Practices in Texas Child Care Centers
Courtney Byrd-Williams, Sara J. Sweitzer *Austin, TX*; Cindy Robert-Gray *Galveston, TX*; Christa Potratz, Margaret E. Briley, Deanna M. Hoelscher *Austin, TX*

877-P Is There a Correlation Between Degree of Obesity and Severity of Obstructive Sleep Apnea in Children?
Zarlasht Amini, Seema Kumar, Suresh Kotagal, Robin M. Lloyd, Chirstine M. Lohse *Rochester, MN*

878-P Buckle Up For Patient Safety: Seat Belt Usage in Extremely Obese Patients
Robert L. Dubin, Kamran Rasul, Angela L. Charron, Timothy D. Allerton, William T. Cefalu, Gabriel Uwaifo *New Orleans, LA*

Friday, September 21, 2012
8:00 AM – 9:30 AM
Plenary Oral Abstract Presentations

1-OR[DT]
The Joint Role of Moderate to Vigorous Physical Activity and Established Obesity Genetic Variants With Body Mass Index in a Large and Ethnically Diverse Cohort of US Adolescents

Andrea S. Richardson, Kari North, Mariaelisa Graff, Kristin L. Young, Leslie A. Lange, Ethan M. Lange, Kathleen M. Harris, Penny Gordon-Larsen *Chapel Hill, NC*

Background: Recent Genome Wide Association (GWA) studies have identified several well-established body mass index (BMI) candidates for adults, yet little is known about the adolescent period and less is known about gene-environment interactions with modifiable behaviors, such as moderate to vigorous physical activity (MVPA). **Methods:** Measured height and weight, reported MVPA, and 43 well-established obesity SNPs were examined in 8,816 respondents from the US National Longitudinal Study of Adolescent Health (Wave II 1996; ages 12-21). Multi-level models with random intercepts for school and family clusters assumed an additive genetic model and were stratified by race: European Americans (EA; N=5,233), African Americans (AfA; N=1,792), Hispanic (HA; N=1,344), and Asian (AsA; N=347) and controlled for age, sex, current smoking, region and hours of TV/video viewing. When interaction was detected (likelihood ratio tests, α=0.05), estimated effects of SNPS were examined in stratified models <5 and ≥ 5 bouts MVPA/week. **Results:** : Of the 43 SNP x MVPA interactions in association with BMI, 15 were statistically significant within race/ethnic groups: EA: rs2890652, rs2605100, rs10938397, rs987237, rs10968576, rs11847697; AfA: rs6548238, rs887912, rs13107325; HA: rs13078807, rs543874; and As: rs12970134, rs4788102, rs1514175, rs10146997. The joint role of MVPA and SNPs indicates a relatively larger estimated effect on BMI in adolescents with comparatively lower MVPA. For example, in EA, TFAP2B (rs987237) was associated with a 0.77 unit higher BMI in adolescents with < 5 (b=1.037, CI: 0.6-1.5) versus ≥ 5 (b=0.271, CI: -0.001-0.3) bouts MVPA/week. **Conclusions:** These results suggest that higher levels of MVPA may attenuate the influence of selected obesity susceptibility variants on BMI during adolescence, a high risk period for obesity.

2-OR
B Lymphocytes Are Master Regulators of a Pro-inflammatory T Cell Balance in Obesity and Glucose Intolerance

Jason DeFuria, Anna C. Belkina, Jennifer Snyder-Cappione, Madhumita Jagannathan-Bogdan, Jordan Carr, Douglas J. Markham, Jessica Allen, Jacqueline Bouchard, Yanina Nersesova, Amanda A. Watkins, Gianluca Toraldo, Ravi Jasuja, Marie E. McDonnell, Caroline Apovian, Gerald V. Denis, Barbara Nikolajczyk *Boston, MA*

Background: Lymphocytes play key roles in the chronic inflammation critical for T2D pathogenesis. Our work showed B cells from T2D patients secrete a pro-inflammatory balance of cytokines, and complements recent work that indicated B cells secrete auto-antibodies responsible for insulin resistance. We found no evidence of auto-antibodies in diet-induced obesity (DIO) mice. We therefore tested the hypothesis that B cells regulate T2D and DIO inflammation through direct and indirect cytokine-mediated mechanisms. **Methods:** To identify roles for B cells in obesity, we measured B cell cytokine production in DIO and lean mice and compared metabolic parameters in B cell-null and WT mice subjected to DIO. We tested the functional effect of B cells on T cell-mediated inflammation in DIO mice and in B cell/T cell co-cultures from T2D or BMI-matched non-diabetic subjects. **Results:** DIO B cells secrete a pro-inflammatory balance of cytokines, similar to our findings in B cells from T2D patients. Metabolic studies showed that B cell-null μMT mice have improved glucose tolerance in response to DIO, despite weight, fasting glucose, and RER that is similar to WT mice. Total adiposity was similar, but adipocytes were smaller in μMT mice. Although μMT and WT mice on low fat diet have similar percentages of regulatory T cells (Tregs), Tregs expand specifically in DIO μMT. These data support new studies showing B cells from T2D subjects promote inflammatory T cell function through multiple mechanisms, and indicate clinical relevance of studies showing decreased Th1 function in DIO B cell-null vs. WT mice. **Conclusions:** We conclude B cells are critical regulators of inflammation in T2D due to 1. Secretion of a pro-inflammatory cytokine balance; and 2. An ability to promote pro-inflammatory T cell function. Thus B cell depletion may represent a valuable tool in the T2D clinic.

3-OR
Co-agonism of GLP1 and Glucagon Receptors Through Glucagon/Exendin-4 Analogues Provides a Potentially Valuable Treatment For Obesity

James Plumer, James Minnion, Stephen R. Bloom *London, United Kingdom*

Background: Exendin-4 is a potent and long-acting GLP-1 receptor agonist and is currently licensed as a diabetes therapy. It acts at GLP-1 receptors to promote satiety and insulin secretion. Glucagon is best known for opposing the actions of insulin to increase blood glucose levels in response to hypoglycaemia. Glucagon also increases energy expenditure, but the mechanism for this is poorly understood. Studies into oxyntomodulin, a naturally-occurring dual-agonist at these receptors, suggest that promoting satiety through GLP-1 receptors while increasing energy expenditure through glucagon receptors could be valuable in fighting obesity. **Methods:** This work aims to investigate the actions of chimeric peptides of glucagon and exendin-4 at GLP-1 and glucagon receptors *in vitro* and *in vivo*. **Results:** The fusion of the C-terminal 10 residues of exendin-4 to the full-length glucagon peptide neither dramatically reduced glucagon receptor potency nor improved GLP-1 receptor potency. As C-terminal glucagon residues were sequentially replaced with the corresponding residues of exendin-4, the *in vitro* potency at GLP-1 receptor improved. These substitutions only caused significant disruption to potency at the glucagon receptor after nearly half the original glucagon residues had been replaced. The dual-agonist GX7 activated both receptors with potencies 2-fold greater than GLP-1 and 5-fold lower than glucagon. In rodents, this peptide caused a potent inhibition of food intake and 10 day daily injection caused 10.5% weight loss compared to vehicle, 3% of which due to increased energy expenditure as determined by pair-fed controls. **Conclusions:** If the results were reproduced in man, a dual agonist could prove to be an effective obesity therapy. It will first be important to assess the effect of these molecules on glucose homeostasis to ensure that opposing actions are balanced.

4-OR
High-Satiety Foods: How Robust Are Their Effects in an Obesogenic Environment?

Rachel A. Williams, Liane S. Roe, Barbara J. Rolls *University Park, PA*

Background: Foods that enhance satiety could be an important component of weight management programs. Satiety is determined by measuring the effects of a fixed amount of food (a preload) on subsequent intake of a test meal. Little is known about the role that test meal properties play in satiety assessment. We hypothesized that satiety depends not only on characteristics of the preload but also on those of the test meal. **Methods:** We compared the effects on meal energy intake of varying the energy density (ED) and portion size of a test meal, consumed after a large, low-ED salad preload (300g, 0.33 kcal/g). Previous studies have found such salad preloads to promote satiety. In a crossover design, 46 women were provided with lunch on 4 separate days. On each day participants received a standard low-ED salad preload prior to a pasta test meal that was consumed ad libitum. The test meal was varied in both ED and portion size between a standard level (600g, 1.66 kcal/g) and a reduced level (75%). **Results:** Following the salad preload, varying the ED and portion size of the test meal had independent and additive effects on energy intake at the meal ($p<0.02$). Reducing the ED by 25% significantly decreased meal energy intake by a mean of 26% (153±19 kcal) and reducing the portion size by 25% significantly decreased meal energy intake by 7% (40±16 kcal). Simultaneously reducing the ED and portion size of the test meal significantly decreased meal energy intake by 30% (187±24 kcal). **Conclusions:** Thus, the ability of a low-ED salad to affect satiety as assessed by total intake at a meal differed according to the ED and portion size of the test meal. These findings indicate that the effectiveness of high-satiety foods could be influenced by an environment in which large portions of a variety of high-ED foods are readily available. (DK039177 & DK059853)

5-OR
The Influence of the Children's Food and Beverage Advertising Initiative: A 2006-2011 Comparison of Food and Beverage Advertising on Television in Canada

Monique Potvin Kent, Alissa Wanless, Margaret de Groh *Ottawa, Canada*

Background: In 2007 in Canada, 16 large food/beverage companies initiated the self-regulatory Canadian Children's Food and Beverage Advertising Initiative (CAI). The purpose of this study was to examine the influence of the CAI by comparing children's exposure to food/beverage advertising on television between 2006 and 2011. **Methods:** Data on 11 advertised food/beverage categories (candy, chocolate bars, cookies, portable snacks, cheese, yogurt, cereal, juices, soft drinks, diet soft drinks and fast food) were purchased from Neilson Media for May 2006 and 2011 for Vancouver and Toronto. The number of advertisements aired (spots) on 27 television stations and the number of times food/beverage spots were seen (gross impressions) by children 2-11 years old were determined. The percentage change between 2006 and 2011 was then calculated. **Results:** The total number of spots aired on all stations increased by 36% in Toronto and 39% in Vancouver, with 30% and 77% increases in gross impressions for 2-11 year olds in Toronto/Vancouver. On children's specialty channels, a 5% decrease in total spots aired was observed in Toronto and Vancouver, with a 38% (Toronto) and 34% (Vancouver) decrease in gross impressions. Spots aired on generalist stations increased by 44% and 77% in Toronto and Vancouver, with a 272% and 348% increase in gross impressions. **Conclusions:** Food/beverage advertisers have reduced their advertising on children's specialty channels but have increased their presence on generalist stations. The net effect is that children's total exposure to food/beverage advertising has increased since 2006 despite the initiation of the CAI. Alternatives to self-regulation are needed.

6-OR
Does Behavioral Intervention in Pregnancy Prevent High Postpartum Weight Retention? 12 Month Outcomes in the Fit For Delivery Study

Suzanne Phelan *San Luis Obispo, CA*; Maureen G. Phipps *Providence, RI*; Barbara Abrams *Berkeley, CA*; Angelica Adams *Providence, RI*; Andrew Schaffner *San Luis Obispo, CA*; Rena R. Wing *Providence, RI*

Background: This randomized trial tested whether a behavioral intervention to prevent excessive gestational weight gain (GWG) could increase the proportion of women who returned to pregravid weight by 12 months postpartum. **Methods:** We randomly assigned 401 women (28.8 y, 13.5 wk gestation, 66% non-Hispanic White; 50% normal weight [NW]; 50% overweight/obese [OW/OB]) into the intervention or control group. The intervention targeted appropriate GWG, healthy eating, and exercise during pregnancy and was discontinued at delivery. **Results:** Excluding women with miscarriages (n = 6), gestational diabetes (n = 32), or subsequent pregnancies (n = 5 at 6 months, n = 36 at 12 months), 89% (320/358) completed the 6 month and 80% (261/327) completed the 12 month assessments. In intent-to-treat (ITT) analyses, the intervention was effective in decreasing the percentage of NW who exceeded IOM recommendations (40.2% vs. 52.1%; p<.003) but not OW/OB (66.7 vs 61.1%) and increased the percentages of both NW and OW/OB who returned to pregravid weight by 6 months postpartum (N = 358; 30.6 vs 18.7%; p < .005; previously reported). At 12 months, the intervention continued to increase percentages of both NW and OW/OB who reached pregravid weight in completer (N = 261; 45.3% vs. 35.3% vs; p = 0.047) but not ITT (n = 327; 35.4 vs. 28.1%; p = 0.19) analyses. Throughout the study, in both NW and OW/OB, the intervention was associated with significantly higher dietary restraint (p = 0.005) and more frequent self-monitoring of body weight (p < 0.005). The effect of the intervention on postpartum weight was removed after adjusting for these variables (ps > 0.051), suggesting a potential mediating effect. **Conclusions:** Behavioral intervention during pregnancy improved dietary restraint and self-weighing and prevented high postpartum weight retention.

4:45 PM – 6:15 PM

Adipose Regulation

7-OR
Dynamic Regulation of IGF-1 in Adipose Tissue

Hye Rim Kang, Xiaoyuan Xu, Anthony Ferrante *New York, NY*

Background: Adipose tissue macrophages (ATMs) elaborate inflammatory, catabolic cytokines in obesity. However, the anabolic factors produced by ATMs have been less well studied. Adipose tissue is a significant source of IGF-1, which locally regulates adipocyte development and metabolism. The cellular source and regulation of IGF-1 in adipose tissue remains poorly defined. We hypothesize that ATMs are significant source of anabolic factors including IGF-1. **Methods:** To identify anabolic factors produced by ATMs, the transcriptional profile of individual macrophage populations from lean and obese adipose tissue was studied. To study the contribution of ATMs to adipose tissue Igf1 expression, we depleted ATMs by pharmacologic and genetic means. To examine whether the Igf1 expression from ATMs was altered by obesity, we studied adipose tissue from lean and obese mice. **Results:** The expression of Igf1 was unaltered in obesity, despite changes in the cellularity of adipose tissue. Purified CD11c- and CD11c+ ATMs express Igf1 at levels comparable to primary hepatocytes and obesity induces Igf1 expression by 2 fold in CD11c+ ATMs. ATM content is 10 fold higher in obese compared to lean mice, arguing that with obesity ATMs contribute disproportionately to adipose tissue IGF-1. Indeed, depletion of ATMs from lean adipose tissue had little effect on adipose tissue expression of Igf1. However, depletion of ATMs from obese adipose tissue reduced Igf1 expression by 80%. **Conclusions:** In lean animals ATM IGF-1 contributes minimally to adipose tissue IGF-1 but with the development of obesity ATMs become the dominant source of IGF-1. These data argue that another cell-type is the primary source of IGF-1 in lean adipose tissue but switches to ATMs in the obese state. Therefore, ATMs have a dynamic phenotype contributing both to the anabolic and catabolic function of adipose tissue.

8-OR
G-Protein Coupled Estrogen Receptor (GPER) Regulates Adiposity in Mice By Modulating Glucose Uptake

Geetanjali Sharma, Che-Lin Hu, Helen J. Hathaway, Eric R. Prossnitz *Albuquerque, NM*

Background: Estrogen plays an important role in controlling the amount and location of fat in the body. Traditionally, estrogen is thought to act via nuclear receptors ERα and ERβ; however, in recent years evidence suggests that a G-protein coupled estrogen receptor (GPER/GPR30) also mediates important functions of estrogen. **Methods:** To study the role of GPER in adiposity, we compared GPER null (knockout, KO) mice and wild-type (WT) C57Bl/6 mice. Mouse body weights and perigonadal body weights were determined by physical measurements whereas abdominal fat content was analyzed with MRI. Glucose uptake was determined by uptake of tritiated-deoxy glucose. Activation of 5' adenosine monophosphate-activated protein kinase (AMPK) was detected by western blotting. Glucose tolerance was determined by measuring glucose levels in blood at regular intervals following an i.p. injection of glucose. **Results:** One year old GPER KO male mice exhibited increased body weight compared to their WT counterparts that was accompanied by increased abdominal fat as determined by MRI imaging, increased perigonadal adipose weight and increased adipocyte size. Furthermore, basal and insulin-stimulated glucose uptake in perigonadal adipose tissue were higher in GPER KO mice. These mice also displayed glucose intolerance. Cellular studies demonstrated that the GPER-selective agonist G-1 decreased insulin-mediated glucose uptake in differentiated 3T3-L1 adipocytes and also activated AMPK. **Conclusions:** Together, these results suggest that GPER regulates multiple aspects of adipose physiology, including glucose uptake, AMPK activation and ultimately adipose mass. Thus targeted activation of GPER by selective compounds such as G-1 may have therapeutic implications in the treatment of obesity and related complications, without the deleterious effects that estrogen exerts on reproductive organs.

For author conflict of interest information, see page S250

9-OR
An E2 Ubiquitin-Conjugating Enzyme Controls Lipolysis and Triglycerides Stores in Adipocytes

Genevieve Marcelin, Shun-Mei Liu, Gary J. Schwartz, Streamson Chua *Bronx, NY*

Background: Mouse genome scanning represents a powerful strategy to detect linkage between genetic loci and phenotypic traits. We have shown that the BALB/c genome carries alleles protecting against obesity as compared to C57BL6/J (B6) strain and the BALB/c leanness is related to the QTL Lipq1 (for lipolytic line QTL 1) on Chr2. The control of adiposity in BALB/c relied on enhanced ATGL-mediated lipolysis. Here, we further characterized the genetic determinants underlying the obesity resistance of BALB/c strain. **Methods:** We produced a line of congenic mice by introgression of a fragment of B6 Chr2 in BALB/c background to assess whether Lipq1 could act autonomously to modify obesity susceptibility. Moreover, we narrowed the critical interval and investigated the function of a candidate gene in 3T3 adipocytes. **Results:** Mice inheriting 2 BALB/c alleles of Lipq1 were resistant to obesity compared to mice harboring a single copy of the B6 alleles. The principal mechanism involved was increased fatty acid oxidation secondary to enhanced adipose lipolysis. Within the 9.8-Mb critical interval, we identified a non-synonymous coding SNP in the gene producing the ubiquitin-conjugating enzyme E2L6 (Ube2l6). Interestingly, we showed that the Ube2l6 BALB/c allele is a hypomorph and Ube2l6 variation correlates with ATGL half-life in adipose tissue. Moreover, Ube2l6 knock-down in adipocytes enhances lipolysis as well as blocking adipogenesis, thereby limiting triglyceride accumulation in lipid droplets. **Conclusions:** Overall, a loss-of-function mutation in Ube2l6 contributes to the Lipq1 obesity resistance observed in BALB/c strain and, for the first time, we show that UBE2L6 is a key regulator of adipocyte biology and might be a novel obesity susceptibility gene. (RO1DK057621, PO1DK26687, HD058155 and DK020541 (EINSTEIN DRTC) and DK 026687 (NYORC).

10-OR
The Ubiquitin Ligase Siah2 Regulates PPARγ Protein Levels and Insulin Sensitivity

Gail Kilroy, Heather Kirk-Ballard, Lauren Carter, Elizabeth Floyd *Baton Rouge, LA*

Background: Obesity is characterized by excess adipose tissue and is a major risk factor for developing insulin resistance and type 2 diabetes. Formation of adipocytes depends on the peroxisome proliferator-activated receptor gamma (PPARγ), a protein that functions as the "master switch" in regulating the production of other proteins needed for lipid and carbohydrate metabolism in adipocytes. Activation of PPARγ is coupled to posttranslational modification of PPARγ by ubiquitin, followed by proteasome-dependent reductions in PPARγ protein levels. Thus, modification of PPARγ by ubiquitin is an integral component of PPARγ transcriptional activity. **Methods:** To identify enzymes of the ubiquitin-proteasome system that regulate PPARγ activity, we screened over 225 ubiquitin ligases in 3T3-L1 mature adipocytes and found that the mammalian homolog of Drosophilia seven-in absentia, Siah2, regulates ligand-mediated changes in PPARγ activity and protein levels. **Results:** Siah2 expression increases during adipogenesis and stably expressed Siah2 shRNA inhibits adipogenesis while overexpression of Siah2 in nonprecursor cells stimulates adipogenesis, indicating Siah2 is sufficient to promote adipogenesis. Adipocytes in Siah2 -/- mice fed a high fat diet are larger and fewer in number compared to wild-type mice, consistent with impaired adipogenesis and enhanced expansion of adipocytes in the absence of Siah2. **Conclusions:** This correlates with increased levels of PPARγ protein in adipose tissue and improved insulin sensitivity, suggesting Siah2-mediated regulation of PPARγ protein levels in adipose tissue is an important determinant of PPARγ activity and systemic insulin sensitivity in obesity.

11-OR
Angiotensinogen Gene Silencing in Adipocytes Reduces Markers of Lipogenesis and Inflammation

Naima Moustaid-Moussa, Wenting Xin, Nishan S. Kalupahana, Suzanne Booker, Nalin Siriwardhana *Knoxville, TN*

Background: The adipose tissue Renin Angiotensin System (RAS) has been linked to obesity, inflammation and insulin resistance. We have previously shown that overexpression of the RAS precursor, Angiotensinogen (Agt), in mouse adipose tissue increased insulin resistance, adipose and systemic inflammation. **Methods:** Accordingly, we tested whether inactivation of Agt in adipocytes will limit triglyceride synthesis and inflammation. We used 3T3-L1 adipocytes stably transfected with Agt-shRNA or control/scrambled-shRNA sequences. Total RNA and proteins were extracted from these cells and used to determine specific metabolic pathways altered by inactivation of adipose Agt, using protein/cytokine and gene expression profiling. **Results:** As expected, our results confirmed that Agt gene silencing significantly reduced the expression of both Agt and Angiotensin II (Ang II) in adipocytes. Agt-shRNA transfected cells also accumulated less triglycerides and expressed lower levels of lipogenic and adipogenic genes including Srebf1, Pparg, Cepb, Adig, and Fabp4 and. Adipose Agt silencing also down-regulated the production of several pro-inflammatory cytokines such as IL-6, TNF-α, and MCP-1. Furthermore, microarray analyses identified several genes involved in lipid metabolism and immune function which were down-regulated by Agt inactivation. These included Acad10, Gpd1, Nod1, Saa3, Stat1, Cxcl12 and others whose expression patterns were further validated by real time PCR. In summary, our results demonstrate a direct role for adipose Agt in inflammation and lipid metabolism. **Conclusions:** In conclusion, our findings further support an important role for adipose RAS in adipose tissue expansion and obesity-associated metabolic complications.

12-OR[DT]
Dedifferentiation of Human Mature Adipocytes From Subcutaneous and Omental Fat Depots Using Ceiling Culture

Julie Lessard, Mélissa Pelletier, Laurent Biertho, Picard Marceau, Andre Tchernof *Quebec, Canada*

Background: Mature adipocytes have recently been found to have the capacity to dedifferentiate into fibroblast-like cells through a technique called ceiling culture. These cells showed a long term culture potential as well as a multipotent capacity. Little is known about the dedifferentiation process, especially in human cells. Our research objectives were to determine if patient characteristics have an impact on the ability of adipocyte preparations to undergo dedifferentiation, and to characterize the resulting cells. **Methods:** Adipose tissue samples were obtained from patients undergoing gynaecological (n=4) or bariatric surgery (n=16). They were digested with collagenase and cell suspensions were cultivated in ceiling culture using DMEM/F12 supplemented with 20% serum. **Results:** The process was observed with mature adipocytes from lean, obese and morbid obese subjects, and was also achieved with mature adipocytes from women and men. We observed dedifferentiation with subcutaneous and omental mature adipocytes from all these categories of subjects, indicating that cells from various depots known to have distinct properties can be equally dedifferentiated. Dedifferentiated fibroblast-like cells can be cultivated over several passages and they can be induce to re-differentiate when cultivated with an adipogenic cocktail, which we determined by Oil Red O staining. Both subcutaneous and omental dedifferentiated cells expressed embryonic stem cell markers: Nanog, Oct-4, Rex-1, Sox-2, Tbx5 and Meox-1. **Conclusions:** The dedifferentiation process reflects an intrinsic property of mature adipocytes to revert from lipid-storing cells to fibroblast-like cells indicating that lipid-storage may not necessarily be a terminal event in their life cycle. The process is independent of the patient characteristics and fat depot.

4:45 PM – 6:15 PM

Reward Circuits and Related Topics

13-OR
Central μ-opioid System Response to Feeding in Obesity

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Background: The adverse impact of obesity on general health is well established, and yet a substantial proportion of the population is currently obese. In addition, the success rate of maintaining weight-loss over the long-term is very low. Endogenous opioid μ-receptor (MOR) mediated reward processing is thought to regulate both the homeostatic and hedonic aspects of food consumption and may play a role in the maintenance of weight-loss. **Methods:** We examined MOR availability (MOR BP_{ND}) in obese human volunteers following an overnight fast and the change in MOR occupancy (i.e., endogenous opioid release) following the consumption of a standardized meal using Positron Emission Tomography imaging with the MOR-selective radiotracer

[11C]carfentanil. Additionally, obese individuals were retested following weight-loss (≥15%) with a Very Low Calorie Diet. **Results:** In our preliminary sample of 7 obese men, significant decreases in MOR binding (7.2±2.1%) were found following a standardized meal in the nucleus accumbens (NAC) indicating release of endogenous opioids in response to the meal. In addition, MOR BP_{ND} in the fed state was negatively correlated with the change in the desire to eat something fatty (r=-0.95, p=0.001) or sweet (r=-0.82, p=0.02). A trend existed for weight-loss to increase NAC MOR availability in the fasted state **Conclusions:** This is the first demonstration relating endogenous MOR system function in the NAC to craving for fats and sweets in humans. Increased MOR availability in the NAC, through diet-induced weight-loss, is suggestive of a resensitization of the MOR system during abstinence of normal consummatory behavior.

14-OR
The NMDA Feceptor NR2B Subunits in the Parabrachial Nucleus Mediate Compensatory Feeding

Qi Wu *Iowa City, IA*; Ruimao Zheng, Stanley McKnight, Richard Palmiter *Seattle, WA*

Background: Diphtheria toxin-mediated acute deletion of hypothalamic AgRP neurons in adult mice leads to severe starvation within 7 days, while chronic infusion of a GABAA receptor agonist into the post-synaptic parabrachial nucleus (PBN) for 10 days permanently restores appetite. **Methods:** Because the glutamatergic NMDA receptors are involved in various synaptic-based behavioral modifications, we hypothesize that a reorganization of NMDA receptor profiles, namely the NR2A and NR2B subunits, on the PBN neurons contributes to the adaptive mechanism underlying the reinstatement of normal feeding. **Results:** Here we discovered that ablation of AgRP neurons results in an imbalanced ratio of NR2A and NR2B within the PBN; expression level of NR2B is drastically increased while NR2A level reduced moderately. Prior to the ablation of AgRP neurons, chronic treatment of lithium chloride (LiCl) within a critical time window completely abolished anorectic response. Pretreatment of LiCl significantly suppresses NR2B level in the PBN and ameliorates local Fos induction. Moreover, chronic infusion of RO25-6981, a selective NR2B inhibitor, into the PBN recapitulates the protective role of LiCl to maintain feeding in AgRP neuron-ablated mice. **Conclusions:** We suggest that the abundance of NR2B subunits in the PBN underlies occurrence of a compensatory mechanism that plays a critical role in control of food intake at the downstream level of AgRP neurons. Therefore, NR2B subunits of the NMDA receptors may serve as an appreciable target for the treatment of eating disorders.

15-OR
Global and Intra-Network Functional Connectivity in Overweight Middle-Aged and Older Adults With Insulin Resistance

Jason Hassenstab, Dana M. Gredysa, Jewell Thomas, Beau Ances, Tammie L. Benzinger, Anne Fagan, John C. Morris *St. Louis, MO*

Background: Middle-aged and older adults with metabolic dysfunction are at increased risk of developing significant cognitive decline. Little is known about the functional connectivity of networks underlying cognitive functions and food intake behaviors in this population. **Methods:** 97 non-diabetic adults (age 63 +/- 8 years) completed a fasting blood draw, a battery of cognitive tests, a 12-minute resting state BOLD MRI scan, and [11c]PiB amyloid-β imaging as part of their participation in ongoing studies at the Knight Alzheimer's Disease Research Center. Insulin sensitivity was determined from fasting plasma levels using the HOMA-IR method. All participants were cognitively-normal (Clinical Dementia Rating of 0) and PIB-negative (mean cortical binding potentials of <0.10). We examined global and intra-network connectivity in five temporally synchronous brain networks associated with cognitive functioning, food intake, and reward sensitivity using ROI-based correlation analyses. **Results:** Abdominal girth, BMI, and insulin resistance were associated with reduced intra-network connectivity in several networks including the default mode, dorsal attention, reward sensitivity and motor sensory networks. The most pronounced effects were seen in the cognitive control network, where poor insulin sensitivity was associated with reduced connectivity and poorer performance on working memory and executive functioning tasks. Global connectivity was reduced in the insulin resistant group compared to normals, which was also reflected in a subtle difference in an overall composite of cognitive functioning. **Conclusions:** Among middle aged and older adults, a 'pre-diabetic' state associated with central obesity may manifest in subtle cognitive decline and alterations in functional connectivity in brain networks associated with cognitive control and sensitivity to reward.

16-OR
The Role of Obesity in Chemotherapy-Induced Malaise

Bart C. De Jonghe, Laura E. Rupprecht, Scott E. Kanoski, Matthew R. Hayes *Philadelphia, PA*

Background: Greater than 1.6 million cases of cancer are diagnosed yearly. To cure the disease, it is critical that patients follow prescribed treatment without interruption or discontinuation. While many treatments exist, ~1 million patients in the USA annually undergo chemotherapy. Cisplatin drug treatment, commonly used to combat solid cancerous tumors, is accompanied by severe side effects [e.g. chemotherapy-induced nausea and vomiting (CINV), appetite suppression, and weight loss] which greatly diminish quality of life and leads to treatment attrition. Approx. 80% of chemotherapy patients experience CINV, which is strongly attributed to the non-compliance, refusal, or delay of chemotherapy: increasing patient morbidity and mortality. Anti-emetic drugs have greatly reduced the severity of CINV; however, the vast majority of patients still exhibit treatment-induced nausea. It is surprising given the enormous risk of obesity with many cancers, the potential impact of obesity on chemotherapy-induced nausea and anorexia is virtually unknown. **Methods:** Therefore, this study sought to determine whether obese rats experience greater nausea-like behaviors [e.g. greater suppression of body weight and food intake, as well as enhanced pica (ingestion of non-nutritive kaolin clay)] following cisplatin treatment than normal weight rats following acute injection. **Results:** Our results show that obese rats ingest more kaolin, and show greater weight loss and anorexia than normal weight rats following cisplatin. **Conclusions:** Taken together, these findings suggest that obesity leads to greater adverse side effects following chemotherapy. To ensure successful treatment of obese human cancer patients, determining the mechanisms by which obesity exacerbates the side effects of anti-cancer chemotherapy is essential.

17-OR
Roux-en-Y Gastric Bypass Increases Alcohol Reward in Dietary Obese Rats and Altered Ghrelin Signaling Is a Plausible Mechanism

Andras Hajnal, Alevtina Zharikov, Jonathan Tomasko *Hershey, PA*; Panayotis K. Thanos *Upton, NY*; Ann M. Rogers *Hershey, PA*

Background: Roux-en-Y gastric bypass (RYGB) is one of the most successful therapies for obesity and associated comorbidities. One potential adverse outcome, however, is increased risk for alcohol use. In a previous study, we found increased preference for and intake of dilute alcohol solutions in outbred dietary obese (DIO) rats following RYGB (SFN Abstracts 2010).The present study tested whether RYGB also alters motivation to self-administer alcohol in DIO rats, and investigated the involvement of ghrelin signaling. **Methods:** High fat (60 %kcal from fat) DIO, non-diabetic male SD rats underwent RYGB (n=10) or sham operation (SHAM, n=9) and were tested 4 months after surgery on a progressive ratio-10 (PR10) schedule of reinforcement lick task for 2, 4, and 8% ethanol. In addition, the effects of the ghrelin-1a-receptor (GHS-R1A) antagonist D-Lys3-GHRP-6 (50, 100 nmol/kg, IP) were tested on PR10 responding for 4% ethanol. **Results:** Compared to SHAM, RYGB rats emitted significantly more licks on an empty spout to obtain access, and in turn, to consume 3-4-times more ethanol. Pretreatment with a single peripheral injection of the GHS-R1A antagonist at either dose was ineffective in altering appetitive or consummatory responses to 4% ethanol in the SHAM group. In contrast, RYGB rats demonstrated ~40% reduced operant performance ("brake-point") to earn alcohol reward on 2 days following the drug compared to vehicle injections. **Conclusions:** This increased sensitivity to subthreshold doses of GHS-R1A antagonist suggests that augmented ghrelin signaling may contribute to increased alcohol reward in this RYGB model. Further research is warranted to confirm applicability of these findings to humans.

 For author conflict of interest information, see page S250

18-OR

Amylin Receptor Signaling in the Ventral Tegmental Area Reduces Food Intake By Suppressing Meal Size

Elizabeth G. Mietlicki-Baase, Laura E. Rupprecht, Diana R. Olivos, Matthew R. Hayes *Philadelphia, PA*

Background: Amylin is an anorectic hormone secreted from pancreatic β-cells in response to nutrient ingestion/absorption. While previous research has shown that peripheral or intracerebroventricular (ICV) administration of amylin decreases food intake by reducing meal size and intake of palatable foods, the neuroanatomical substrate(s) mediating these specific effects remain largely unexplored. Given the critical role of the mesolimbic reward system (MRS) in regulating within-meal palatable food intake, and that the ventral tegmental area (VTA) shows robust binding of amylin receptor agonists, we examined the food intake and body weight regulatory effects of VTA amylin receptor signaling. **Methods:** The amylin receptor agonist salmon calcitonin (sCT) was administered unilaterally to the VTA of chow-fed rats. **Results:** Intra-VTA administration of sCT (0.004, 0.04, 0.4μg/100nl) dose-dependently reduced cumulative food intake beginning 1h post-administration and persisting for 24h. Meal pattern analysis revealed that this effect was due primarily to a sCT-mediated reduction in meal size. In contrast to previous findings using ICV amylin, there was no effect of sCT on the size of the first meal. Importantly, intra-VTA administration of sCT was able to significantly reduce food intake for the 24h period of recording at a dose (0.04μg) that only had short-lasting, transient effects on food intake at 1hr following 3rd ICV delivery. **Conclusions:** Ongoing studies are examining whether amylin receptor signaling in the MRS controls for food intake by potentially modulating the rewarding value of food. These findings highlight a novel role for VTA amylin receptor signaling in the regulation of food intake. NIH-DK085435.

4:45 PM – 6:15 PM

Exercise, Metabolic Disease Risk, and Obesity

19-OR

Why Do Individuals Not Lose More Weight From an Aerobic Exercise Intervention at a Defined Dose? An Energy Balance Analysis

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Background: Weight loss resulting from exercise interventions tends to be lower than predicted. Less than predicted weight loss can arise from four potential mechanisms: an increase in energy intake (EI); physiological reductions in resting energy expenditure; an increase in lean tissue mass; or a decrease in non-exercise activity. Lower than expected weight loss could also arise from weak and invalidated assumptions within predictive energy balance models. **Methods:** These mechanisms were systematically investigated by evaluating studies that monitored compliance to exercise prescriptions and measured exercise-induced change in body composition. Changed body energy stores were calculated to determine the deficit between total daily EI and energy expenditures. **Results:** The information was obtained from 14 studies (N=673) using pre-selected evaluation criteria, was combined with available measurements to critically evaluate hypothesized mechanisms for low exercise induced weight loss. Application of dynamic energy balance models with this compiled database firmly established that the small magnitude of weight loss observed from the majority of evaluated exercise interventions is primarily due to low levels of prescribed exercise energy expenditures or a concomitant increase in caloric intake. **Conclusions:** These observations have important public health implications on exercise prescriptions aimed at promoting weight loss and maintenance.

20-OR

Aerobic Exercise Training Differentially Affects Autonomic Function in Obese Individuals With Either Low or High Parasympathetic Modulation

Tracy Baynard *Chicago, IL*; Jill Kanaley *Columbia, MO*; Styliani Goulopoulou *Augusta, GA*; Ruth M. Sosnoff *Urbana, IL*; Bo Fernhall *Chicago, IL*

Background: Obesity is associated with lower parasympathetic modulation (PSM). Yet, variation exists in that there are obese individuals with autonomic responses that are not different from their normal weight counterparts. It is unknown if exercise training differentially affects autonomic function in obese individuals classified with either high or low parasympathetic modulation. Purpose: To determine if 4 months of moderate aerobic exercise training would differentially affect heart rate variability (HRV) in a group of obese subjects classified retrospectively as having either high or low PSM. **Methods:** 57 obese individuals (32 women/25 men; BMI = 36.1 kg/m2) were studied in the fasted state. ECG recordings were obtained while seated for 3 min, prior to and after 4 mo of exercise training (4 d/wk, 65% VO2peak). The ECG recording was analyzed for HRV in the spectral domain. Groups were split on a marker of cardiac parasympathetic modulation (PSM) (normalized high frequency (HFnu)) at the 50th percentile (0.33 HFnu) as either high (H) or low (L) PSM. **Results:** The LPSM group observed a decrease in sympathetic modulation (0.792 to 0.708, low frequency nu) and increased HFnu (0.208 to 0.292) after training ($p<0.05$); whereas the HPSM group had the opposite effect (0.484 ± to 0.567 LFnu; 0.516 to 0.433 HFnu; $p<0.05$). BMI decreased with training (36.1 to 35.8 kg/m2, $p<0.05$), but was similar between groups. Body weight decreased more so in the HPSM group vs. the LPSM (103.3 to 101.8 vs. 105.6 to 105.2), but was not significant. **Conclusions:** Positive changes in HRV in obese individuals with LPSM can occur following a moderate intensity exercise training program. It is possible that pre-training cardiac PSM may partially determine the effects of aerobic exercise training on cardiac autonomic function in a cohort of sedentary obese men and women.

21-OR

Effect of Physical Activity on Energy Balance During Weight Loss Intervention

James P. DeLany, John M. Jakicic, Kazanna Hames, Bret H. Goodpaster *Pittsburgh, PA*

Background: A negative consequence of diet induced weight loss is a decrease in energy expenditure. The addition of physical activity has often been shown to blunt some of the decrease in energy expenditure. However, the effect of exercise on changes in specific components of energy expenditure and dietary intake are not clear. **Methods:** To address these issues, we examined changes in energy expenditure and intake in response to weight loss through diet alone (DO) or diet plus physical activity (D-PA) in 116 severely obese (BMI 43.6±5.4 kg/m2) individuals. In addition to comparing results by group assignment (DO vs. D-PA), we compared quartiles of objectively-assessed increases in physical activity based on wearable activity monitors. **Results:** In response to 6 month intervention (-9.6±6.8 kg), all EE components decreased (TDEE -188±296 kcal/d). Adjustments for decreases in fat mass and FFM explained some, but not all of the decrease. There was no blunting of the decrease in TDEE in the D-PA (-209±284) compared to the DO group (-167 ± 308). Since we had anticipated that the decrease in TDEE would be blunted in the D-PA group, we examined compliance to the physical activity prescription. While a higher percentage of D-PA (58%) subjects were in the highest 2 quartiles of increase in steps/d, a significant proportion of the DO group were also in the highest 2 quartiles (41%). Comparison of the highest and lowest quartiles of increase in steps/d showed greater weight loss (-13.0±7.0 vs -8.2±6.3 kg; $p<0.01$) and a blunting ($p<0.05$) of the decrease in TDEE (-122±319 vs -376±305 and AEE (83 ± 279 vs -211 ± 284 kcal/d). **Conclusions:** In conclusion, these results suggest that interventions need to target the adoption and maintenance of higher levels of physical activity to improve weight loss and offset the decrease in TDEE typically observed with weight loss.

22-OR

Silent Coronary Atherosclerosis in Metabolically Healthy and Unhealthy Obese People From Families With Premature Coronary Disease

Rochelle Brown, Brian G. Kral, Lisa R. Yanek, Dhananjay Vaidya, Lewis C. Becker, Diane M. Becker *Baltimore, MD*

Background: A subset of obese people have been called "metabolically healthy" due to lower levels of cardiovascular risk factors. However, the extent to which metabolically healthy obesity (MHO) demonstrates a lower risk of subclinical coronary atherosclerosis in an obese African American and White population at high risk for cardiovascular disease remains unknown. **Methods:** Obese (BMI ≥ 30) siblings and offspring of patients with premature coronary artery disease (CAD) < 60 years of age underwent a full risk factor evaluation including anthropometric measures. CT coronary angiography was used to determine the presence of both calcified and uncalcified coronary plaque. MHO was defined as having 2 or less of the following: fasting plasma glucose > 100 mg/dL, waist circumference > 102 cm (men) or > 88 cm (women), blood pressure > 130 mmHg systolic and 85 mmHg diastolic, HDL < 40 mg/dL (men) or < 50 mg/dL (women), or triglycerides > 150 mg/dL. **Results:** The sample (N=211) was 44% African American and 66% female, with 63% meeting criteria for MHO. Metabolically healthy individuals were younger than the unhealthy obese (MUO) (48.2 + 9.5, versus 53.6 + 9.7 years), p=0.0006. Coronary plaque was significantly less frequent in MHO (30.2% versus 60.3%), p<.0001. In multiple regression analysis, coronary plaque was less likely to occur in MHO subjects (p=0.03) even when adjusting for other risk factors including age (p<.0001), race (p=0.30), sex (p<.0001), BMI (p=0.28), LDL cholesterol level (p=0.57), and current smoking (p=0.02). **Conclusions:** Among obese subjects with a family history of premature CAD, metabolically healthy status protects against silent preclinical atherosclerosis in the heart, independent of BMI.

23-OR

Differential Hemoglobin A1c and Antiglycemic Medication Effects of Two Interventions Commensurate For Weight Loss

Stéphanie B. Mayer, Amy S. Jeffreys, Maren K. Olsen, Jennifer McDuffie, Mark Feinglos, William S. Yancy *Durham, NC*

Background: A dilemma in type 2 diabetes (DM2) management is that many antiglycemic agents hinder weight loss, which is crucial to maintaining or improving diabetic control. **Methods:** We analyzed 46 patients with DM2 within a larger trial (n=146) of 48 weeks of intense weight loss intervention. Participants were randomized to a low carbohydrate (20g for induction) (N=22) or to a low fat (<30% daily energy) diet + orlistat 120 mg thrice a day (N=24). Outcomes examined were changes in antiglycemic medications, BMI, and glycemia. **Results:** At baseline, mean age was 55.6 years (SD 7.9), BMI 39.5 kg/m2 (SD 6.5), and mean A1c 7.6% (SD 1.3); 87% were male, 54 % were black, and 32.6% were taking insulin. A diabetes medication effect score (MES), based on medication potency and total daily dose, decreased by -1.24 vs. -0.82 over 48 weeks in LoCarb vs. LoFat+O participants, respectively (p= 0.27). Of the 40 patients (N=17 LoCarb; N=23 LoFat+O) with complete medication data, 70.6% of LoCarb vs. 30.4% LoFat+O participants decreased their MES by ≥50% (p=0.01). Estimated BMI, adjusted in a linear mixed effects model, decreased similarly between the two groups: 2.4 kg/m2 in LoCarb vs. 2.7 kg/m2 in the LoFat+O group (difference 0.3, 95%CI -1.5, 2.2, p= 0.7). Estimated A1c, however, fell to a greater degree in the LoCarb group (-0.7% vs. 0.1%, difference -0.8, 95% CI -1.6, -0.02, p=0.045). No significant differences between groups occurred in GFR, microalbuminuria, or serum lipids (all p>0.05). **Conclusions:** Both the LoCarb and the LoFat diet + orlistat achieved similar, substantial BMI reductions. Reductions in antiglycemic medications and A1c were greater in the LoCarb group. Additionally, the medication effect score used in this study is a novel strategy for assessing the full impact of interventions expected to reduce weight and antiglycemic medications on glycemic control.

24-OR

Excess Fall in Blood Pressure Predicts Negative Outcomes in Overweight High Cardiovascular Risk Patients – Findings From SCOUT

Arya M. Sharma *Edmonton, Canada*; Ian D. Caterson *Sydney, Australia*; Nick Finer *London, United Kingdom*; Walmir Coutinho *Rio de Janeiro, Brazil*; Luc F. Van Gaal *Antwerp, Belgium*; Aldo P. Maggioni *Florence, Italy*; Christian Torp-Pedersen *Hellerup, Denmark*; Philip W. James *London, United Kingdom*

Background: Weight loss is widely recommended as a measure to reduce elevated blood pressure (BP) in patients with increased cardiovascular risk. We examined whether or not reduction in BP seen with weight management is associated with improved cardiovascular outcomes in patients from the Sibutramine Cardiovascular OUTcomes (SCOUT) trial. **Methods:** 9804 overweight/obese patients (≥ 55 years) with known cardiovascular disease ± type 2 diabetes were treated with sibutramine and individualised weight management programmes for 6 weeks and then randomised to either placebo or sibutramine with continued weight management programmes and with adjusted therapy for hypertension, dyslipidaemia and hyperglycaemia. **Results:** During the Lead-in Period, systolic BP decreased in proportion to weight loss (-6.6±10.1 mmHg with <1.5 kg weight loss to -9.8±11.2 mmHg with ≥3.1 kg weight loss) with markedly greater decreases in those with high blood pressures. Systolic BP further decreased with additional weight loss throughout the post-randomization period and the placebo group experienced a greater fall in systolic BP than the sibutramine group at every level of weight loss. Paradoxically, participants in the quartile with the greatest reduction in systolic BP (≥11.5mmHg) over the first 12 months post-randomisation had the highest absolute risk for primary outcome events (including nonfatal myocardial infarction, nonfatal stroke, cardiovascular death and resuscitated cardiac arrest). This relationship was particularly apparent in the sibutramine group. **Conclusions:** In obese, cardiovascular vulnerable patients, weight loss associated with an exaggerated fall in systolic BP may increase risk for cardiovascular outcomes, particularly in those treated with sibutramine.

4:45 PM – 6:15 PM

Food and Beverage Consumption in Children and Adolescents

25-OR

How School Meal Nutrition Laws May Offset Disadvantages in Healthy Food Availability Within the Home

Daniel R. Taber, Jamie F. Chriqui, Frank J. Chaloupka *Chicago, IL*

Background: Federal school meal nutrition standards were recently updated for the first time since 1995. Critics argue that nutrition promotion should focus on the home, where students consume most of their calories, but many students have limited access to healthy foods at home. Our objective was to determine if state laws that promote healthy school meals offset at-home disadvantages and reduce disparities in intake. **Methods:** Student data on food availability at home and overall daily intake were obtained from the National Youth Physical Activity and Nutrition Study (n=10642). Linear models were used to estimate differences in fruit/vegetable intake between students who usually had access to fruits/vegetables at home and those who did not, and determine whether such differences were smaller in states that required schools, by law, to provide a minimum number of fruits/vegetables in meals. Laws were obtained from legal research databases as part of the Bridging the Gap research program. Models were weighted to account for the sample design and controlled for race, sex, age, fast food intake, and school lunches consumed per week. **Results:** In states with no fruit/vegetable requirements, students with limited fruit/vegetable access at home consumed 0.58 fewer cups of fruit and 0.42 fewer cups of vegetables per day, on average, than students with access at home. Disparities were significantly smaller in states with requirements, where the adjusted differences were -0.28 (p-value for interaction<0.001) and -0.11, respectively (p=0.02). Disparities were eliminated (adjusted differences=-0.06 and 0.02) among students who obtained a school lunch 4-5 days per week. **Conclusions:** Laws that require schools to provide fruits/vegetables in meals benefit students with limited access to healthy foods at home and may reduce socioeconomic disparities in nutrient intake.

26-OR[DT]

Underestimation of Calories Purchased at Fast-Food Restaurants For School-Age Children—Who and How Much?

Jason P. Block, Suzanne K. Condon, Ken Kleinman, Stephanie Linakis, Matthew W. Gillman *Boston, MA*

Background: We previously found that adults and adolescents underestimate calories they purchase at fast-food restaurants, but no data exist for school-age children. **Methods:** We randomly selected 3 McDonald's, 3 Burger Kings, 2 Subways, 1 Wendy's, and 1 KFC in each of 4 New England cities, for a total of 40 restaurants. During April-August in 2010 and 2011, we interviewed parents about 1 of their accompanying children outside the restaurant. We asked demographic and behavioral information and for the parent to estimate the calorie content of their child's meal. We calculated the actual calorie content of food purchased for the child using the receipt and nutritional information from restaurant websites. Using multivariable regression, we examined the relationship between estimated and actual meal calorie content. **Results:** We interviewed parents of 329 children age 3-15 years. Mean age was 7.9 years (SD 3.2). 47% were male; 34% were Black, 30% Hispanic, and 19% White. Mean actual calorie content of meals was 731 calories (SD 355), and the mean underestimation was 171 calories (SD 591). 24% underestimated the child's meal by ≥ 500 calories. In multivariable models, we found that underestimation was nil at low calorie content but large when the meal was big, e.g., 750 underestimate for a 1500-calorie meal. Compared with McDonald's, dining at KFC was associated with 52% greater likelihood of overestimating calorie content (relative accuracy 1.52 [95% CI 1.01, 2.27]), whereas dining at Subway suggested underestimation (0.73 [0.47, 1.15]). Underestimating the total daily calorie requirement was associated with underestimating actual meal calorie content (relative accuracy 0.49, [0.38 to 0.64]). **Conclusions:** Parents tend to underestimate the calorie content of meals they buy for their children at fast-food restaurants, especially if the meal is large.

27-OR

Consumption of Sports Drinks Prospectively Associated With Greater Weight Change Among Adolescents

Alison E. Field, Alan Flint, Kendrin R. Sonneville, Holly Gooding, Jennifer Falbe *Boston, MA*; Jess Haines *Guelph, Canada*; Bernard Rosner, Carlos A. Camargo *Boston, MA*

Background: Soda has been found to predict weight gain, the association with diet soda is less clear. Research is lacking on the independent association of sports drinks with weight gain. **Methods:** A prospective study of 5995 girls and 4906 boys, aged 9 to 16 years at baseline, who are part of the ongoing Growing Up Today Study II. Information on beverage intake, weight and height was collected via questionnaires in 2004, 2006, 2008, and 2011. Information on dieting was assessed in 2008. **Results:** At baseline the participants consumed an average (S.D.) of 1.1 (1.6) servings/week of sports drinks, 2.5 (3.4) servings/week of sugar-sweetened soda, and 1.3 (3.0) servings/week of diet soda. BMI was modestly correlated with diet soda intake (Males: r=0.26; Females: r=0.23), but unrelated to intake of regular soda or sports drinks. Independent of gender, age, Tanner stage, time spent watching TV, and physical activity, intake of sports drinks (0.03 kg/m2 per serving/week, p=0.002) and diet soda (0.03 kg/m2 per serving/week, p<0.0001) were associated with greater increase in BMI. To investigate whether dieting was confounding the association with diet soda, we restricted the analysis to BMI change between 2008 and 2011 and further adjusted for dieting. The results showed that the association with diet soda disappeared (-0.00 kg/m2 per serving/week, p=0.9) and the associations with sports drinks (0.10 kg/m2 per serving/week, p=0.02) and regular soda (0.05 kg/m2 per serving/week, p=0.05) were stronger after adjusting for dieting. **Conclusions:** Although sports drinks were not included in the negotiations between the Alliance for a Healthier Generation and the American Beverage Association to remove soft drinks from schools, our data shows that sports drinks are independent predictors of weight gain and should be limited similar to other sugar-sweetened beverages.

28-OR

A Decrease in Diet Quality Occurs During Pregnancy in Overweight and Obese Women Which Is Maintained Post-Partum

Lisa J. Moran, Zhixian Sui, Courtney S. Cramp, Jodie M. Dodd *North Adelaide, Australia*

Background: Ensuring optimal dietary intake during pregnancy has important implications for optimising maternal and fetal health. It is not known whether diet quality is altered over pregnancy and the post-partum period. The aim of this study was to perform a comprehensive assessment of diet quality in overweight and obese women during pregnancy and post-partum. **Methods:** This is a prospective cohort study in n=301 overweight or obese pregnant women. Women completed a food frequency questionnaire at study entry (10-20 weeks gestation), 28 weeks gestation, 36 weeks gestation and 4 months post-partum to assess macronutrient and micronutrient intake and diet quality as assessed by the Healthy Eating Index (HEI). **Results:** The HEI was of below average quality in 53.6% of women at baseline. This decreased from week 28 (P<0.001) and was maintained at a lower lever through to post-partum such that HEI levels were lower compared with study entry (54.3±10.0 versus 59.6±8.6, P<0.001). The decrease in HEI occurred in association with decreases in the score of milk (P<0.001), meat (P<0.001) and unsaturated oil (P=0.028) components and increases in the proportion of energy from solid fats, alcohol and added sugars (P=0.021). The decrease in HEI was independently predicted by the socioeconomic indexes for areas score (β=-0.018, SE=0.008, P=0.029). **Conclusions:** We report for the first time that dietary quality decreases across pregnancy and is maintained at a lower level in the early post-partum period in overweight and obese women. Dietary interventions aimed at improving diet quality should be targeted early pregnancy and post-partum.

29-OR

Associations of Parental Control of Feeding With Overeating and With Food Sneaking, Hiding, and Hoarding Among Young Overweight Children

Kendrin R. Sonneville, Sheryl L. Rifas-Shiman, Steven Gortmaker, Kathleen F. Mitchell, Matthew W. Gillman, Elsie M. Taveras *Boston, MA*

Background: Overweight children as young as 5 years are at risk for disordered eating behaviors including dietary restraint and disinhibited overeating. **Methods:** Among 422 participants in High Five for Kids, a randomized controlled trial of behavior change among overweight and obese children enrolled at age 2-6 y, we estimated the prevalence at 2-year follow up of 2 outcomes: 1.) overeating (Does your child ever eat large amounts of food when he or she is not hungry?), and 2.) food sneaking, hiding, hoarding (Does your child ever sneak, hide, or hoard food?). We defined parental control of feeding as agreeing or strongly agreeing (v. disagreeing/strongly disagreeing) with the statement, "I have to be careful that my child does not eat too much." To examine cross-sectional associations of parental control of feeding with the 2 outcomes, we used logistic regression models adjusted for parental education; child sex, age, body mass index, race/ethnicity; and household income. **Results:** Mean (SD) age was 7.1 (1.2) y; 49% were female; 16% were healthy weight, 35% were overweight, and 49% were obese. Based on parental report, 16.4% of children were overeating and 27.0% were sneaking, hiding, or hoarding food; 57.1% of parents reported parental control of feeding. In adjusted models, children exposed to parental control of feeding were more likely to (OR 3.45 [95% CI 1.70, 7.00]), but not to sneak, hide, or hoard food (OR 1.43 [95% CI 0.87, 2.34]). **Conclusions:** Overeating and food sneaking, hiding, or hoarding are common behaviors among overweight children. Parental control of feeding is associated with overeating.

30-OR

Association of Emotional and Externally-Induced Eating With Weight Status Among Adolescent Males and Females in the United States

Victoria Macias, Kendrin R. Sonneville, Alan Flint, Holly Gooding *Boston, MA*; Jess Haines *Guelph, Canada*; Kirsten Davison, Carlos A. Camargo, Alison E. Field *Boston, MA*

Background: Non-hunger related eating, such as eating induced by external cues or emotions, may contribute to the high prevalence of overweight and obesity in the United States. **Methods:** Data from the 2011 Growing Up Today Study II questionnaire were used to estimate the cross-sectional asso-

ciations between emotional and externally induced eating, assessed by the Dutch Eating Behavior Questionnaire, and overweight and obesity among 16-23 year old males (n=1085) and females (n=1977) from throughout the United States. Generalized estimating equations were used to estimate the odds ratios (OR) and 95% confidence intervals (CI) in ordinal logistic regression models. Analyses were stratified by gender and controlled for age, dieting behavior, binge eating, and screen time. **Results:** In 2011, approximately 22% of males and 16% of females were overweight, and an additional 9% of males and 6% of females were obese. When emotional and external eating were evaluated in the same model, emotional eating was positively associated with overweight and obesity among males [OR 1.90, 95% CI 1.45-2.49] and females [OR 1.22, 95% CI 1.02-1.47], while externally induced eating frequency was negatively associated with overweight and obesity among males [OR 0.60, 95% CI 0.47-0.78], but was not associated with weight status among females. **Conclusions:** Our data suggest that emotional eating may be a risk factor for overweight and obesity. More research is needed to understand the association between externally induced eating and weight status.

For author conflict of interest information, see page S250

Saturday, September 22, 2012
3:15 PM – 4:45 PM

Metabolic Mechanisms of Gastric Bypass

31-OR
Prehepatic Insulin Secretion Rate 3 Years After GBP in Patients With T2DM

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Background: The mechanism of sustained improved glucose metabolism after gastric bypass (GBP) is not fully understood. **Methods:** We report change in beta-cell glucose sensitivity (BCGS) in response to oral glucose in 9 obese patients with T2DM (DM, BMI= 44.6±5.9 kg/m2, followed for 3 y after GBP, and in 2 control groups: 7 lean (LN, BMI=23.2±2.5 kg/m2) and 9 obese patients without T2DM (OB, BMI=45.4±7.1 kg/m2). Prehepatic insulin secretion rates (ISR, pmol/kg/min) were calculated by deconvolution of C-peptide concentrations. BCGS, or the slope of the insulin secretion/plasma glucose relationship was calculated for each subject during the OGTT. The disposition index (DI) calculated as BCGS/HOMA-IR. ANOVA and mixed model regression analysis were performed to assess group differences and changes after GBP. **Results:** Pre-GBP, BCGS of DM was 31% lower than LN and 42% lower than OB (p=.011). DM had lower early phase ISR (ISRAUC0-60min/ISRAUC0-180min) (.014) and DI (.002) than LN and OB and higher HOMA-IR (8.3±3.7) than OB (6.4±4.4) and LN (3.3±2.4) (p=.042). In DM after GBP, WT loss was 14.2±4.9 kg (P<0.0001) at 1 M, 38.4±12.8 kg (P<0.0001) at 1 y, sustained at 3 y (BMI 30.8±3.5 kg/m2). DM became glucose tolerant at 1M and remained so up to 3 y. As early as 1 M after GBP, DI and BCGS were no longer significantly different between DM and the 2 control groups, but early ISR remained higher in DM (p=0.03). These results persisted up to 3y. Time and wt, but neither GLP-1 nor T2DM duration were predictors of change of DI and BCGS after GBP **Conclusions:** ISR and BCGS improve rapidly (1 M) after GBP in patient with T2DM, to reach values of non diabetic individuals (lean or obese) and remain at 'healthier' levels up to 3 y after GBP, in parallel with T2DM remission. Change of weight seems to be the best predictor of improved beta cell function.

32-OR
Changes in Insulin Sensitivity and Secretion in Patients With T2DM After Weight Loss Induced By Roux-en-Y Gastric Bypass or Equivalent Caloric Restriction

Clifton M. Jackness, Wahida Karmally, Gerardo J. Febres, Irene M. Conwell, Donald J. McMahon, Judith Korner *New York, NY*

Background: Improvement in glycemic control in patients with T2DM has been demonstrated after Roux-en-Y gastric bypass (RYGB) often before the majority of the weight loss occurs. It is unclear whether the changes are mainly attributable to caloric restriction and weight reduction or whether there are additional contributory factors unique to the surgical procedure. The objective of this study is to determine if RYGB causes greater improvement in insulin sensitivity and secretion in the short-term post operative period as compared to equivalent weight loss achieved over the same period of time in an inpatient setting. **Methods:** Subjects were placed on a 500 kcal/day very low calorie diet (VLCD) of similar macronutrient content as those who had RYGB. Frequently sampled intravenous glucose tolerance test was performed before and after RYGB (n=11) and VLCD (n=11). MINMOD analysis was used to determine insulin sensitivity (Si), acute insulin response to glucose (AIRg) and disposition index (DI). **Results:** Mean baseline parameters were similar in the two groups: duration of T2DM of 5.7 years; BMI of 41.4 kg/m2; fasting glucose 195 mg/dl; and HbA1c 8.4%. Pre-intervention values for Si, AIRg, and DI were 1.4, 19.8, and 8.2, respectively in RYGB group and 1.3, 13.0, and 12.9 respectively, in VLCD group. After a mean reduction of 8.0% in body weight over a 3.4 wk period there were significant increases (P<0.05) in values for Si, AIRg, and DI which were respectively, 2.2, 86.9, and 195.8 in RYGB group and 2.2, 84.8, and 172.6 in the VLCD group. None of these values were significantly different between groups and fasting levels of GLP-1 were similar. **Conclusions:** There were significant and similar improvements in glucostatic parameters after VLCD and RYGB. Additional subjects are currently being studied to confirm these findings.

33-OR
Up-Regulation of Fatty Acid Uptake into Adipocytes Persists After Major Bariatric Surgical Weight Loss

Paul D. Berk, Fengxia Ge, Harrison Lobdell, Chunguang Hu, Shengli Zhou, Jose L. Walewski, Gregory Dakin, Alfons Pomp, William B Inabnet, Marc Bessler *New York, NY*

Background: Dietary weight loss is often followed by weight re-gain, which may also be seen after bariatric surgery. The mechanisms leading to weight re-gain are unclear, but persistence of obesity-promoting patterns of gene expression and hormone secretion has been documented. We showed that up-regulation of facilitated long chain fatty acid (LCFA) uptake by adipocytes is common in obesity, and that regulation of adipocyte LCFA transport is a key control point for adiposity. We here report on studies of LCFA uptake kinetics in omental adipocytes obtained during bariatric surgery in obese patients and other intra-abdominal procedures in non-obese patients. **Methods:** Three groups (5 men and 5 women in each) were studied: Non-obese (NO: age 48 ± 11yrs, BMI 24.2 ± 2.3 kg/m2 BSA); Obese (O: age 47 ± 8, BMI 49.8 ±11.9); and Super-obese (SO: age 45 ± 3, BMI 62.6 ± 2.8). The SO patients underwent fat biopsies during an initial sleeve gastrectomy and were re-biopsied during a 2nd bariatric operation ~ 1 yr later, after a mean weight loss of 55 kg. Adipocyte sizes and [^{3}H]-LCFA uptake kinetics were determined from the biopsies obtained at all operations. **Results:** Vmax for facilitated LCFA uptake by omental adipocytes increased exponentially from 5.1 ± 0.95 to 21.3 ± 3.20 to 68.7 ± 9.45 pmol/sec/50,000 cells in the NO, O, and SO groups, respectively, and was highly correlated with BMI ($r = 0.99$, $p < 0.001$). By the 2nd operation in the SO group, the mean BMI had fallen significantly ($p<0.005$) to 44.4 ± 2.4 kg/m2, similar to that in the O group. However, Vmax (40.6 ± 11.5 pmol/sec/50,000 cells) in these weight-reduced SO patients remained almost twice that predicted from the BMI:Vmax regression among the NO, O, and SO patients. **Conclusions:** Facilitated adipocyte LCFA uptake remains up-regulated after surgical weight loss, and may contribute to weight re-gain.

34-OR
Changes in Gut Morphology and Gut Hormone Gene Expression Following Roux-en-Y Gastric Bypass

Frederik Hansen, Thomas A. Lutz, Niels Vrang, Jacob Jelsing *Hørsholm, Denmark*

Background: Gastric by-pass surgery is presently the only effective anti-obesity treatment available. However, aside from the powerful effects on body-weight, gastric bypass surgery also exerts potent anti-diabetic effects. Although the secretion of known gut incretins is increased following gastric-bypass it has been speculated that other gut peptides could be involved. In order to get a complete and unbiased view of the gene expression and morphological changes that occurs after RYGB, we have developed a stereological sampling method that completely covers the gastrointestinal tract (GI). **Methods:** Three groups of rats were included: sham, sham weight-matched or RYGB. Five months post surgery the GI was dissected and divided into the biliopancreatic limb, alimentary limb, common channel and colon. From each region, 8-10 transverse biopsies were obtained for stereological analyses (volume and epithelial surface area, total L-cell and endocrine cell number) and qPCR analyses against a number of gut hormones including preproglucagon, cholecystokinin (CCK) and peptide YY (PYY). **Results:** The stereological analyses revealed a near 100% increase in epithelial volume of the alimentary limb following RYGB, coupled with an increase in epithelial surface area and cell number. Regional gene expression analyses revealed a marked and highly regional effect on preproglucagon, CCK and peptide YY expression being nearly 3-fold when including gut hypertrophy. **Conclusions:** In conclusion, we provide a complete quantitative assessment of cellular changes in the rat GI tract with a corresponding regional assessment of gene expression differences following RYGB surgery. The study provides not only novel insight about gut endocrinology but also important information about potential gastro-intestinal hot spots in human RYGB patients.

35-OR
miRNA-Regulated Gene Expression in Subcutaneous Adipose Tissue From Severely Obese Subjects Before and After Bariatric Surgery

Carmela Nardelli, Maddalena Ferrigno, Laura Iaffaldano, Giuseppe Labruna, Andreina Alfieri, Vincenzo Pilone, Pietro Forestieri, Lucia Sacchetti, Pasqualina Buono *Naples, Italy*

Background: Obesity is a multifactorial disorder influenced by the interaction of genetic, behavioral and environmental factors, such as fetal programming, control of appetite and energy expenditure, and the availability of high-calorie food. Bariatric surgery is an effective treatment for severe obesity. Substantial weight loss leads to alterations in inflammation and insulin sensitivity, and in many metabolic and physiologic pathways. To assess the impact of weight loss on the changes in microRNA-(miRNA) regulated gene expression and in secretion of biochemical markers, we evaluated miRNAs expression and several adipokines levels in subcutaneous adipose tissue (SAT) and serum, respectively, collected during gastric banding (T0) and after the achievement of a significant weight loss (T1) [excess weight loss (EWL) >30%]. **Methods:** We measured miRNAs expression in SAT from 4 severely obese subjects [BMI (kg/m2)±SD: T0=42.5±5.3 and T1=33±5.6] by the TaqMan Human MicroRNA Array Panel A. Serum adipokines were measured on a BioRad Multiplex Suspension Array System (Bio-Rad, Hemel Hempstead, UK). **Results:** We found that 62% of miRNAs screened was differently expressed in T1 vs T0, of these 35% was up-expressed and 21% was down-expressed. Bioinformatic analysis of deregulated miRNAs showed several target genes which were involved in metabolic pathways. Statistically significant differences between T0 and T1 were also found for serum ghrelin, GLP-1, TNFα and leptin. **Conclusions:** Our preliminary data indicate that in severely obese subjects the reduction of calorie intake, consequent to bariatric surgery, influences the epigenetic regulation of genes in SAT and circulating levels of adipokines and gastro-intestinal peptides. Grant: CEINGE - Regione Campania (DGRC 1901-2009) and MinSal-RF-SDN-635809.

36-OR
Gene Expression Profiling Reveals Widespread, Weight Loss-Independent Changes in Cytoskeletal Signaling After RYGB in Mice

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Background: Roux-en-Y gastric bypass (RYGB) surgery leads to substantial and durable weight loss (WL) by altering the physiological regulation of energy balance. To assess the system-wide effects of RYGB, we examined gene expression (GE) profiles in RYGB-treated and weight-matched diet-induced obese mice. **Methods:** We randomized mice to RYGB or sham operation with weight matching by food restriction. After ten weeks, we determined GE of 38,385 transcripts (TS) in 15 tissues, including 8 segments of small intestine (SI); colon; liver; muscle; subcutaneous and epididymal fat; hypothalamus; and brainstem. Fold-change (FC) and p-values from one-way ANOVAs were calculated for each TS, with an absolute FC >1.2 and p < 0.001 deemed significant. For each tissue, differentially expressed genes were analyzed for enrichment of canonical pathways. **Results:** RYGB significantly affected GE of 14,395 TS in the 15 tissues, representing 7600 unique TS and 7086 unique genes. The greatest changes in GE were observed in the surgically altered Roux limb of the SI, with 4517 TS altered. There were also substantial effects of RYGB in the common limb of the SI, colon and liver with 906, 799 and1633 TS significantly regulated, respectively. Among the TS selectively altered by RYGB, the signaling pathways most enriched were cytoskeleton remodeling (p=3.4 x 10-11) and chemotaxis (p=7.5 x 10-8).The greatest cytoskeletal changes were seen in the colon, the small intestine, and the liver. **Conclusions:** RYGB induces profound changes in GE independent of WL, underscoring the widespread physiological effects of this procedure. GE related to cytoskeleton remodeling was most profoundly altered by RYGB compared to diet-induced WL. These observations suggest that RYGB induces changes in cellular and tissue remodeling that likely contribute to the powerful therapeutic effects of this operation.

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Appetite and Eating Behaviors

37-OR
Does Increasing the Variety of Vegetables and Fruits at a Snack Influence Intake in Preschool Children?

Samantha M. Kling, Leann L. Birch, Jennifer S. Meengs, Liane S. Roe, Barbara J. Rolls *University Park, PA*

Background: Encouraging consumption of low-energy-dense snacks such as vegetables and fruits may help to moderate energy intake in preschool children. Although offering a variety of foods has been shown to increase intake, this effect has not been well studied for healthy low-energy-dense foods. **Methods:** We tested whether increasing the variety of vegetables and fruits served to preschool children led to increased selection and intake. In a crossover design, 61 preschool children ate a snack in their childcare facility on 8 afternoons over 4 weeks. At 4 snacks the children were offered vegetables (cucumber, yellow pepper, tomato, or a variety of all 3 types) and at 4 snacks they were offered fruits (apple, peach, pineapple, or a variety of all 3 types). Uniform-size pieces were served family style and children selected and ate as much as they wanted. **Results:** The results showed that offering a variety of vegetables or fruits increased the likelihood that children would select some pieces for their snack rather than not taking any (p<0.0001); children took some pieces at 94% of snacks with variety and 70% of snacks without variety. Adding variety also increased the amount that children selected and consumed (p<0.0002); the magnitude did not differ for vegetables and fruits. The increased intake of 31±5 g was equivalent to one-sixth of the recommended daily amount for either vegetables or fruits. Independent of the variety effect, children were less likely to select and eat vegetables than fruits (p<0.0001) and overall intake was substantially lower for vegetables (22±1 g) than fruits (84±3g). **Conclusions:** Serving a variety of vegetables or fruits at a snack is an effective strategy for increasing intake in preschool children. These results demonstrate that variety can enhance consumption of healthy low-energy-dense foods. Supported by NIH Grant DK082580.

38-OR
Restrained Eating Is Associated With Acquired Differences in the Response of Plasma Ghrelin to a Milkshake Preload

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Background: Genetic, physiological, and psychological factors can affect food intake, but twin studies can distinguish inherited vs. environmental contributors. We examined the influence of cognitive control of eating (restrained eating) on energy intake and levels of appetite-regulating hormones. **Methods:** 16 female, monozygotic twin pairs, discordant for Restraint Scale score, were selected from the Univ. of Washington Twin Registry. *Ad-libitum* food intake and serial plasma ghrelin levels were monitored for one day. **Results:** Body weight, BMI, resting energy expenditure, and fasting leptin levels did not differ between restrained and unrestrained twins. In a preload study, twins ate similar amounts of *ad-lib* ice cream after drinking identical milkshakes (mean±SD; restrained 238±135 vs. unrestrained 229±156 kcals; P=0.86). Despite equivalent voluntary caloric intake, serial peri-prandial monitoring of the appetite-stimulating hormone ghrelin demonstrated significantly (P<0.01) higher post-preload ghrelin concentrations among restrained-eating twins (401±129 pg/ml) compared to unrestrained-eating twins (328±112 pg/ml). A larger percent increase in pre-prandial ghrelin levels was found among restrained-eating twins prior to the preload study (33.7±17.5 vs. 28.2±22.5 %; P<0.05). Higher noon ghrelin levels were associated with greater ice cream intake among unrestrained eaters (r =0.51; P<0.05) and were similarly related among restrained eaters (r=0.48, P=0.06). **Conclusions:** Restrained-eating twins voluntarily ate similar amounts as their unrestrained-eating co-twins, despite higher endogenous ghrelin levels, consistent with exertion of cognitive control relative to their state of appetite stimulation. Independent of genetic and familial factors, restrained eaters have higher ghrelin levels, which may place them at risk for disinhibited eating.

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39-OR
Children's Ad Libitum Intake of High-Fat Foods and Body Composition Predict Level of Parental Weight Concern

Kathleen Keller, Laura Kuilema *University Park, PA*; Annemarie Olsen *Copenhagen, Denmark*

Background: Parental concern over child weight is an important predictor of the likelihood to seek treatment, but few studies have investigated the factors that predict weight concerns. The objective of this study was to determine the extent to which children's eating behaviors and body composition predict parental weight concerns. **Methods:** 67 children (mean ± SD age = 5.04 ± 0.74 years, mean BMI z-score: 1.04 ± 0.98) from diverse ethnic backgrounds attended 4 laboratory sessions where test-meals were consumed and parenting styles were measured using the Child Feeding Questionnaire. The first meal consisted of a variety of healthful and unhealthful foods. The second and third meals were high- and low-fat versions of the same foods, macaroni and cheese, pudding, and milk. The final meal was a buffet of highly palatable sweet and savory options. Body composition was assessed using dual X-ray absorptiometry (DXA). Multiple linear regressions were created to determine the best predictors of parental weight concern. Independent variables included parental body mass index (BMI), and children's test-meal intake and body composition. **Results:** The best regression model explained 74% of the variance in parental weight concern ($p<0.005$). Significant predictors included children's intake at the high-fat meal ($p=0.007$), android/gynoid ratio ($p=0.001$), and parental BMI ($p=0.009$). While not a significant predictor, there was a trend for child age to be negatively associated with weight concern ($p=0.12$). **Conclusions:** Parental concern over child weight was largely explained by parent's own weight status, and children's intake of high-fat foods and level of upper body obesity.

40-OR
Eating in the Absence of Hunger and Caloric Compensation: A Study of Weight-Discordant Siblings

Tanja V. Kral *Philadelphia, PA*; David B. Allison *Birmingham, AL*; Leann L. Birch *University Park, PA*; Virginia A. Stallings, Renee H. Moore *Philadelphia, PA*; Myles S. Faith *Chapel Hill, NC*

Background: An impaired ability to compensate for calories and increased eating in the absence of hunger (EAH) have been associated with increased calorie intake and weight gain in unrelated children, but few studies have directly compared normal-weight and overweight/obese ('obese') children on both of these eating traits. The aim of this study was to compare weight-discordant siblings, between 5 and 12 years of age, in caloric compensation (%COMPX) and EAH. **Methods:** In a cross-over, behavioral genetics design, 47 same-sex sibling pairs (53% female, 55% full siblings) were served dinner once a week for 3 weeks. Across conditions, siblings were served the same dinner, but, 25 min before dinner, they either consumed or did not consume in full one of two preloads that varied in energy density (ED; 0.57 or 0.97 kcal/g). On the day when no preload was consumed, EAH was assessed after dinner and defined as the number of calories consumed from snacks. **Results:** Obese siblings under-compensated (%COMPX -47.8 ± 56.3) and therefore over ate after the high ED preload, whereas normal-weight siblings showed accurate compensation (%COMPX 101.3 ± 51.9; $P = 0.03$). Further, obese siblings consumed 34% more calories (93 kcal) in the absence of hunger than normal-weight siblings ($P = 0.01$). Within-pair resemblances for %COMPX and EAH were stronger for full siblings than for half siblings. **Conclusions:** These data suggest that an impaired ability to regulate short-term energy intake, which includes adhering less to internal cues of hunger and fullness and eating when satiated, may represent a behavioral phenotype for obesity in children.

41-OR
Visual Illusions and Plate Design: The Effects of Plate Rim Widths and Designs on Perceptions of Food Portions

Arianna D. McClain, Wouter van den Bos, Donna Matheson, Manisha Desai, Sam McClure, Thomas Robinson *Palo Alto, CA*

Background: Prior research finds direct relationships between perceived food portion size (FPS) and intake. The Delboeuf Illusion affects perceptions of the relative sizes of concentric shapes. This study applied this illusion to food on a plate, testing the effects of varying rim widths and designs on perceived FPS. **Methods:** Within-subjects experimental design. Participants recruited via Amazon's Mechanical Turk observed photographic images of paired, side-by-side plates containing the same or different amounts of food. From each pair, participants were asked to select the plate that contained more food. In Study 1, 338 participants completed 42 trials each (7 FPS X 6 rim widths; no rim and 1/8, 2/8, 1/3, 3/8, and 4/8 rim width to plate radius ratios). In Study 2, 251 participants completed 28 trials each (7 FPS X 4 rim designs; no design, solid blue rim, line around inner edge of rim, lines around inner and outer edge of rim). Multivariable logistic regression examined the effects of depicted FPS and rim characteristics on perceived FPS. **Results:** Participants overestimated FPS on plates with wider rims and rim designs. Study 1: rim width ($P<0.0001$) and depicted FPS ($P<0.0001$) had significant effects on the odds of perceiving larger FPS. Study 2: confirmed findings from Study 1 and found a significant rim design X depicted FPS interaction ($P=0.0002$). On plates with rim designs, perceived FPS overestimation increased when depicted FPS decreased. **Conclusions:** The Delboeuf illusion applies to food on a plate. Manipulating plate rim sizes and designs affect perception of FPS. Wider rims and rim designs create visual illusions that exaggerate the perceived amount of food on the plate. The effects of rim designs are greater with smaller FPS. These findings may be used to design plates to influence perceptions of FPS.

42-OR[DT]
Individual Differences in Susceptibility to Large Portion Sizes Among Obese and Non-Obese African American Children

Jennifer O. Fisher, Issa Zakeri *Philadelphia, PA*; Leann L. Birch *State College, PA*; Tanja V. Kral *Philadelphia, PA*

Background: Individual differences in children's susceptibility to overeat when presented with large portion sizes are not well characterized. **Methods:** This research was designed to evaluate the association of child weight and appetite with observed susceptibility to portion size among 34 obese and 66 non-obese African-American (AA) children aged 5 to 6 y. Child susceptibility to portion size was assessed across 4 laboratory-based conditions at which portion sizes of a standard dinner menu (i.e. pasta entrée, corn, cookies, and applesauce) were systematically increased (100%, 150%, 200%, and 250% of reference portions). Susceptibility was defined for each child as the slope of energy intake across portion size conditions, using random slope mixed effects linear models. Child obesity was categorized using standard cut-offs with height and weight measurements made at entry to and 6 months following the study. Mothers completed questionnaires on children's satiety responsiveness, food responsiveness, and enjoyment of food. **Results:** Mixed model analyses revealed that children, on average, showed susceptibility to portion size by increasing their energy intakes across the 4 conditions in which portion sizes were systematically increased (slope= 0.54, SE=0.12; $p<0.0001$). Obese children showed greater increases in intake than those children with healthy weights ($p<0.05$). Greater susceptibility to was also seen among older children ($r=0.37$, $p<0.001$), and those rated as having lower satiety responsiveness ($r=-0.41$, $p<0.001$), greater food responsiveness ($r=0.41$, $p<0.001$), and greater enjoyment of food ($r=0.29$; $p<0.01$). **Conclusions:** These provide new evidence that heavier AA children and those with diminished appetite control are susceptible to overeating when presented with large food portion sizes. Support: R01 DK071095.

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Children

43-OR
Important Improvements in Nutrition and Physical Activity Habits in Young Children Attending MEND 2-4 in the UK: A Community-Based Healthy Lifestyle Program For the Prevention and Management of Childhood Obesity

Maria Kolotourou, Paul Chadwick, Duncan Radley, Michelle Ball, Paul M. Sacher *London, United Kingdom*

Background: Targets of primary and secondary obesity prevention within pre-school years are largely the same, suggesting it may be possible to simultaneously address the needs of at-risk healthy weight (HW) and overweight/obese (OV/OB) children within the same intervention. In this study we hypothesized that the MEND 2-4 program would significantly improve a number of heath related indices whilst having a larger effect on zBMI in OV/OB children. **Methods:** MEND 2-4 is a 10-week, family-based intervention consisting of weekly 90 minute group sessions including positive

parenting, active play, nutrition education and behavior change strategies. The program is delivered in community venues by community health and childcare staff. In the period to 2011, 1978 children (54% boys; mean age 2.8 years, 22% OV/OB) participated in 301 programs across the UK. Of these, 1261 (64%) were measured at baseline and 10 weeks. **Results:** Group by time interaction revealed a differential (4-fold) positive treatment effect on zBMI between HW and OV/OB children (p<0.0001). The percentage of children and parents consuming more than five portions of fruit and vegetables per day increased in both groups (HW children +17%, parents of HW children +13%, OV/OB children +21%, parents of OV/OB children +15%). Benefits were also observed in the time spent in outdoor play (+2.4 and +3.5 hours/week for HW and OV/OB children) and sedentary activities (-2.9 and -4.2 hours/week for HW and OV/OB children) (p<0.0001). Parent self-efficacy improved in both groups (p<0.0001). Attendance and retention rates were 82% and 92% respectively. **Conclusions:** Findings indicate that completion of MEND 2-4 was associated with short-term improvements in key indices of health for all children. This suggests it is possible to create programs combining primary and secondary obesity prevention in the pre-school years.

44-OR
Childhood Obesity Prevention: A Significant Decrease of Overweight Prevalence in Two Pilot Towns of the VIASANO Programme After 2 Years of Intervention

Jean-Michel Borys *Paris, France*; Mireille Roillet, Julie Beysens, Nèle Jacobs, Jean Nève *Brussels, Belgium*

Background: VIASANO is a Community Based Programme in Belgium adapted from the EPODE methodology. It is a coordinated, capacity-building approach for communities to implement effective and sustainable strategies to prevent childhood obesity. This methodology enables the entire community to be empowered and contribute to create a healthier environment facilitating social norm changes and healthier behaviours. **Methods:** The interventions involved the whole population of these pilot towns (families and children) in whole-of-community actions targeting physical activity and nutrition. The national coordination team using social marketing and organizational techniques trained and coached a local project manager nominated by the local authorities. The project manager was provided tools to mobilize local stakeholders through a steering committee and local network. The BMI of the children was assessed in 2008 and then 2 years later (in 2010) in the two pilot towns and in the French Community as comparator. **Results:** Over 1300 Children aged 3-6 were assessed in VIASANO towns in 2008 and 2010. There was a significant 22% reduction in the prevalence of overweight in these pilot towns between 2008 and 2010 (p<0,04) and between these pilot towns and comparison towns of the French Community. **Conclusions:** The results of this whole community programme are supporting the encouraging results of EPODE methodology which show that the involvement of the whole community is necessary to reduce the prevalence of childhood obesity.

45-OR
Loss of Control Over Eating, Weight/Shape Concern, and Treatment Response Among Overweight Treatment-Seeking Children

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Background: Loss of control (LOC) eating is associated with worsening obesity, development of an eating disorder, and related problems. However, data are limited—and have not used gold-standard interview assessment—regarding the potential negative impact of LOC on overweight children's treatment response. We examined the predictive utility of LOC and related eating pathology for weight outcomes within family-based pediatric obesity treatment. **Methods:** Prior to a 4-month family-based weight loss treatment, overweight children (*N*=241, age 7-11y, 63% female) were assessed for LOC in the past 3 months, via the abbreviated Child Eating Disorder Examination (EDE), and weight/shape concern via the Youth EDE Questionnaire. Weight/shape concern and percent overweight (%OW) were reassessed at post-treatment (*n*=175). Linear regression tested LOC, weight/shape concern (baseline and change), demographics, and baseline %OW, on %OW change from pre- to post-treatment. **Results:** At entry, 62 children (26%) reported LOC. On average, children lost 13.2±8.2 in %OW. Weight/shape concern decreased from pre- to post-treatment (p<.001). The final model's factors accounted for 15.3% of the variance in %OW change (p<.001), including baseline weight/shape concern (β=.24, p<.01) and the LOC X sex interaction (p=.02). Children with and without LOC had comparable %OW changes (-13.5 vs. -13.1, p=.72), but boys *with* LOC had the greatest %OW decrease (-19.1), compared to boys without LOC (-14.0) or girls with or without LOC (-11.5). **Conclusions:** LOC and higher weight/shape concern may not impede children's weight loss treatment success; further, boys with LOC may be even more successful in intensive family-based treatment than boys without LOC. Long-term follow-up is needed to examine how eating pathology influences children's treatment response and sustained weight control.

46-OR
Changes in Parent Feeding Practices Are Associated With Positive Weight Outcomes for Obese Preschoolers

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Background: The literature suggests permissive parenting and restrictive feeding practices are promising targets of weight management programs for preschoolers given their association with increased obesity risk within this age group. We tested this hypothesis by exploring whether changes in parenting and feeding were associated with changes in child weight in families participating in a preschool obesity treatment outcome study. **Methods:** Families were randomized to an enhanced pediatrician counseling session(PC; n=20) or 18-session, clinic and home-based behavioral program that included child behavior management training(BI; n=14). Mothers(M_{BMI}=34.70; 85% Caucasian) of preschoolers(M_{BMIz}=2.34; 56% girls) completed the Child Feeding Questionnaire, Parenting Styles and Dimensions Questionnaire, and About Your Child's Eating Questionnaire at baseline and post-treatment(6 months). **Results:** Mothers in both groups endorsed a primarily authoritative parenting style at pre/post-treatment. BI demonstrated greater decreases in BMIz(difference in M_{Δ}=0.35, p<.001), restrictive feeding(difference in M_{Δ}=0.46, p<.05), and child resistance to eating(differences in M_{Δ}=0.41, p<.01) compared to ESC. Only changes in restrictive feeding practices were associated with changes in BMIz(r=0.39, p<.05). Significant decreases in pressuring children to eat(M_{Δ}=-0.66), mealtime challenges(M_{Δ}=-0.51), and authoritarian parenting(M_{Δ}=-0.19) were also observed for BI(all p<0.01); no significant changes in parenting or feeding were noted for ESC. **Conclusions:** Our study provides additional evidence linking decreases in restrictive feeding practices to improved weight outcomes for obese preschoolers. Maternal endorsement of an authoritative, not permissive, parenting style at baseline suggests treatment-seeking families may already exhibit parenting styles that support positive weight management.

47-OR
Parity Predicts Excessive Gestational Weight Gain and Higher Infant Birth Weight Among Women Intending to Breastfeed

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Background: Excess gestational weight gain (GWG) increases maternal risk for postpartum weight retention and puts infants at risk for elevated birth weights. The present research focuses on how these relations differ by parity status. **Methods:** A cohort of 1154 mothers intendeding to breastfeed, delivering singleton newborns, 34 weeks gestation or later, were enrolled in a randomized trial evaluating postnatal care delivery models at a single academic center. Parity was collapsed into a dichotomous variable (primiparous or multiparous). Infant birth weight for gestational age z-scores were calculated according to the WHO standards. The 2009 IOM guidelines were used to calculate excessive GWG. **Results:** 931 women (80.7%) had data collected on both pre-pregnancy BMI and GWG. Mean BMI was 25.76 kg/m2 ± 6.2 kg/m2 and mean GWG was 15.0 kg ± 6.7 kg. Primiparous mothers were significantly more likely than multiparous mothers to gain excessive GWG when controlling for mother's age, income, smoking at all during pregnancy, diabetes (type I, type II, or gestational), and pre-pregnancy BMI (p<.01). Multiparous mothers had significantly greater pre-pregnancy BMIs than primiparous mothers (p<.01). Multiparous mothers had significantly higher infant birth weights than primiparous mothers (p<.0001) when controlling for the covariates listed above, GWG, and whether or not they met GWG recom-

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mendations. Parity still had a significant effect on both infant birth weight and excessive GWG when controlling for all these covariates. **Conclusions:** Both high GWG and high pre-pregnancy BMI are risk factors for high birth weight and adverse outcomes among mothers and their offspring and these data suggest that parity may be an important covariate when examining behaviors prior to and during pregnancy. Identifying these different behaviors may be key for future prevention efforts.

48-OR

Active Video Gaming Compared to Unstructured, Outdoor Play in Children: Measurements of Estimated Energy Expenditure and Percent Time in Moderate-to Vigorous-Intensity Physical Activity

Susan B. MacArthur, Hollie Raynor *Knoxville, TN*

Background: Active video games (AVGs) may be a source of physical activity (PA) for young children. This study compared AVGs to unstructured outdoor play (OP) via accelerometery and direct observation (DO) in estimated energy expenditure (EE) and percent time engaged in moderate-to vigorous-intensity physical activity (% MVPA) in two, 15-minute sessions. **Methods:** Sixteen, normal-weight, school-aged children (6.4 +/- 0.8 yrs, 62.5 % male, 100% white, standardized body mass index (zBMI) = -0.18 +/- 0.66) completed two 15-minutes sessions of either AVG, (Xbox 360 Kinect®, Kinect Adventures! River Rush! video game), or OP, where children engaged in unstructured outdoor play in a playground with at least one other child. Sessions were counterbalanced and conducted in the morning. A 5 minute "warm-up" period was provided, followed by 15 minutes of measured activity. An Actical accelerometer on the left hip measured estimated EE and %MVPA. DO was conducted using the Children's Activity and Rating Scale (CARS) from which %MVPA was coded. **Results:** Controlling for session order and percent relative humidity, no difference was found in estimated EE between OP (15.5 +/- 7.8 kcals) and AVG (17.0 +/- 7.1 kcals). For %MVPA, AVG was significantly greater than OP as assessed by accelerometer (74.6 +/- 31.1% vs. 67.5 +/- 32.2%, $p < 0.05$) and DO (23.8 +/- 12.4% vs. 13.2 +/- 13.0%, $p < 0.05$). **Conclusions:** These findings suggest that AVGs and OP are comparable physical activities, and that AVGs may be a source of PA for children.

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Advances in Genetics

49-OR

Sedentary Behavior May Interact With Some Obesity Genes, Independent of Physical Activity, to Influence BMI: Findings From a US, Ethnically-Diverse Adolescent Cohort

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Background: Adolescence is a high risk period for weight gain that can be further intensified by increased sedentary behavior, such as leisure screen time, including TV, video viewing, and computer games. An underlying genetic predisposition for obesity may be exacerbated with higher screen time. **Methods:** Using 8813 participants of the National Longitudinal Study of Adolescent Health, (Add Health; ages 12-21 years, 52.6% female), we assessed the interaction of screen time (h/wk) and 43 established obesity SNPs (Speliotes et al. 2010) with BMI (measured height and weight) across four ancestrally diverse US subpopulations; 5,232 European American (EA), 1,792 African Americans (AfA), 1,343 Hispanics (HA), and 446 Asians (AsA). We assumed an additive genetic model, stratified by race and adjusted for age, sex, self-reported BMI, physical activity, current smoking, and region, allowing a random intercept for school and family clusters. **Results:** Of 43 SNP-by- screen time interactions, 3 (KCTD15, NEGR1, NUDT3) were significant ($p<0.05$) in EA, 5 (GNPDA2, NEGR1, PTER, SH2B1, TNNI3K) in AfA, 1 (MSRA) in HA, and 4 (FAIM2, MTCH2, PRL, SH2B1) in AsA. In general, each copy of the variant allele resulted in higher BMI in those with ≥30 screen time h/wk compared to those with ≤14 screen time h/wk. For example, in EA adolescents there was no association between KCDT15 and BMI (beta=0.10, CI:-0.20, 0.20). However, when we interrogate EA adolescents by screen time, those with ≥30 screen time h/wk show a larger estimated effect per KCDT15 G allele on BMI (beta=0.71 kg/m2, CI: 0.22, 1.22) compared to those with ≤14 screen time h/wk (beta=-0.14, CI:-0.44, 0.08). **Conclusions:** Findings suggest that, independent of physical activity, sedentary behavior may exacerbate an underlying genetic risk for obesity. R01HD057194

50-OR

Meta-Analyses of Genetic Associations in Up to 339,224 Individuals Identify 61 New Loci For BMI, Confirming a Neuronal Contribution to Body Weight Regulation and Implicating Several Novel Pathways

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Background: Large-scale genome-wide association studies (GWAS) have identified >50 loci unequivocally associated with obesity-susceptibility traits, including BMI, WHR, body fat%, and extreme obesity. Of these, 32 loci were reported to be associated with BMI in our most recent meta-analysis, including 123,865 individuals at the discovery stage and 125,931 individuals at the follow up stage. **Methods:** To identify additional loci for overall adiposity, we expanded the GIANT consortium to include 236,231 individuals from 82 GWAS as well as 103,046 individuals from 43 studies that genotyped the Metabochip, a custom-designed array comprising SNPs with prior evidence of suggestive association with metabolic traits. Summary statistics of the study-specific SNP-BMI association analyses were combined using fixed-effects meta-analyses. **Results:** We confirmed 30 established loci and identified 61 new loci associated with BMI ($P<5x10^{-8}$). Conditional analyses show that seven (*MC4R, BDNF, GIPR, FANCL, PRKD1, GPRC5B, ADCY9*) of the 91 BMI loci harbor secondary signals (including *MC4R* V103I), suggesting genetic heterogeneity or the presence of a variant not genotyped but tagged by both signals. Consistent with previous GWAS, the majority of the BMI loci contain genes that have a potential neuronal role. However, this extended analysis also reveals loci with genes in pathways that were previously less apparent, such as those related to glucose and insulin homeostasis (*TCF7L2, GIPR, IRS1*), mitochondrial processes (*MTCH2, MTIF3, SLC39A8, BCKDK*), lipid metabolism (*APOE/APOC1/APOC4, NPC1, NR1H3*), and the immune system (*TLR4, IFNGR1*). Formal pathway-analysis is ongoing. **Conclusions:** This large-scale meta-analysis more than doubled the number of obesity-susceptibility loci, highlighting implicated pathways more clearly and further elucidating the complex biology of body weight regulation.

51-OR

Secular Trends in the Effect of an Obesity Genetic Risk Score on Adulthood BMI and Adiposity

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Background: Genome-wide association studies have identified a number of common single nucleotide polymorphisms (SNPs) associated with human variation in adiposity-related traits. It is likely that environmental context modifies the influence of these and other variants, as BMI has increased greatly in just the past two decades while genotype frequencies are relatively stable over time. The present study examined evidence for a gene-by-time interaction by testing the hypothesis that the effect of an obesity genetic risk score (GRS), composed of 32 well-replicated SNPs, varied in a family study of individuals born across a wide range of birth years. **Methods:** The study sample included up to 907 related, White, non-Hispanic adults aged 25-64.99 years (474 females; 433 males) in the Fels Longitudinal Study with both genotype (GRS) and phenotype data (BMI, waist circumference (WC), and the sum of four subcutaneous skinfolds (SKF)), and who were born between 1901 and 1986. Maximum likelihood-based variance components analysis (SOLAR) was used to estimate trait heritabilities, main effects of GRS and year of birth (YOB), the GRS-by-YOB interaction, and other covariates (sex,

age). **Results:** As expected, significant positive main effects were observed for both GRS and YOB for all adiposity traits, and significant positive GRS-by-YOB interaction effects were found for BMI (p=0.0012), WC (p=0.0074), and SKF (p=0.0052). For example, each 1 allele increase in GRS was estimated to result in a 0.17 kg/m^2 increase in BMI among males born in 1929 compared with an 0.57 kg/m^2 increase in BMI among males born in 1986. **Conclusions:** These novel findings support the hypothesis that the influence of common obesity susceptibility variants has increased over the 20th century.

52-OR
Sex-Stratified Genome-Wide Association Studies Including 270,000 Individuals Show Evidence For Sexual Dimorphism in Genetic Loci For Anthropometric Traits

Tuomas O. Kilpeläinen, Joshua C. Randall *Cambridge, United Kingdom*; Thomas W. Winkler *Regensburg, Germany*; Zoltán Kutalik *Lausanne, Switzerland*; Sonja Berndt *Bethesda, MD*; Anne U. Jackson *Ann Arbor, MI*; Keri L. Monda *Chapel Hill, NC*; Tõnu Esko *Tartu, Estonia*; Reedik Mägi *Oxford, United Kingdom*; Shengxu Li *Cambridge, United Kingdom*; Tsegaseassie Workalemahu *Boston, MA*; Mary F. Feitosa *St Louis, MO*; Lu Qi *Boston, MA*; Ruth J. Loos *Cambridge, United Kingdom*; Cecilia M. Lindgren *Oxford, United Kingdom*; Kari North *Chapel Hill, NC*; Iris M. Heid *Regensburg, Germany*

Background: Height, adiposity, and fat distribution differ substantially between men and women. Follow-up of loci identified in genome-wide association studies (GWAS) for these traits have revealed sex differences in the associations, but no GWAS specifically for sexually dimorphic associations have yet been performed. We conducted GWAS for sexually dimorphic associations with 6 anthropometric traits, including height, weight, body mass index (BMI), waist circumference, hip circumference, and waist-hip ratio within the GIANT consortium. **Methods:** Sex-specific GWAS were performed in 46 studies (60,586 men, 73,137 women) and strongest signals followed-up in 48 independent studies (62,395 men, 74,657 women). To maximize power to detect sexually dimorphic signals, we scanned both for sex-specific associations, optimized to detect associations with more pronounced effect in either sex, and for sex-differences, optimized to detect associations with discordant direction of effect between the sexes. **Results:** We identified 348 independent signals showing sex-specific association at 5% false-discovery-rate (FDR). No loci were identified at 5% FDR for sex difference. Follow-up of the 348 loci from the sex-specific scans confirmed 7 loci as sexually dimorphic: 6 female-specific loci without any effect in males, including 3 novel (near-MAP3K1, HSD17B4, PPARG) and 3 previously established (near-GRB14/COBLL1, LYPLAL1/SLC30A10, VEGFA) loci; and one previously published locus (near-ADAMTS9) with a less pronounced effect in males. We found that sex-differences were more often driven by pronounced associations in females for waist-related traits, whereas no enrichment was seen for female associations of BMI or height. **Conclusions:** Our results demonstrate the value of sex-stratified analyses to unravel sexually dimorphic genetic underpinning of complex traits.

53-OR
Meta-Analyses of Genome-Wide Association Studies Including Up to 263,486 Individuals Identifies 12 Novel Loci For Height, Overweight, and Clinical Classes of Obesity

Anne Justice *Chapel Hill, NC*; Erik Ingelsson *Stockholm, Sweden*; Reedik Magi *Oxford, United Kingdom*; Stefan Gustafsson, Andrea Ganna *Stockholm, Sweden*; André Scherag *Essen, Germany*; Mary F. Feitosa *St. Louis, MO*; David Meyre *Hamilton, Canada*; Kari North *Chapel Hill, NC*; Cecilia M. Lindgren, Andrew P. Morris *Oxford, United Kingdom*; Elizabeth Speliotes *Cambridge, MA*; Ruth J. Loos *New York, NY*; Mark McCarthy *Oxford, United Kingdom*; Sonja Berndt *Bethesda, MD*

Background: Recent studies have hypothesized that the extremes of complex traits are enriched for genetic loci and may have a distinct genetic architecture. Here we examine the genetic determinants of anthropometric phenotypes from the tails of the distributions (upper and lower 5% of BMI, WHRadjBMI and height) and clinical classes of obesity (overweight, obesity classes I, II, and III) using studies within the GIANT consortium. **Methods:** Our discovery stage consisted of meta-analyses of the associations between ~2.8 million SNPs and individuals from the tails of phenotypic distributions of 51 studies with up to 158,855 individuals of European descent. SNPs of the most significant loci ($p<5x10^{-6}$) were taken forward for replication in 12 GWAS and 24 Metabochip studies, including up to 104,631 individuals. We combined the results of the discovery and replication stages and compared these with meta-analyses of the full distribution. **Results:** After the combined analysis of the tails, 165 independent SNPs reached $p<5x10^{-8}$. Of these, 12 loci had not previously been associated with anthropometric traits, including 4 for height (IGFBP4, H6PD, RSRC1/SHOX2, PPP2R2A), 2 for overweight (HNF4G, RPTOR), 4 for obesity class 1 (GNAT2, HNF4G, ZFP64, ADCY9), and 3 for obesity class 2 (OLFM4, HS6ST3, ZZZ3). Of the loci for BMI-related traits, many are located near biologically relevant genes related to glucose and lipid metabolism. The comparison with previous meta-analyses shows that the genetic determinants in the tails and overall distributions of BMI are similar, but that the effects of common variants from the tails are larger than expected. **Conclusions:** These new loci add to our understanding of the genetic variation of anthropometric traits supporting the hypothesis that including the tails may be a cost-effective way to assess novel genetic determinants of complex traits.

54-OR
Associating Rare-Coding Variants With Body Mass Index: The NHLBI Exome Sequencing Project

Paul Auer, Chris Carlson *Seattle, WA*; Rebecca D. Jackson *Columbus, OH*; Leslie A. Lange, Kari North *Chapel Hill, NC*; Nancy L. Heard-Costa *Boston, MA*; David Siscovick *Seattle, WA*; James Meigs *Boston, MA*; James G. Wilson *Oxford, MS*; Li Hsu *Seattle, WA*; Donald W. Bowden *Winston-Salem, NC*; L. A. Cupples *Boston, MA*; Danyu Lin *Chapel Hill, NC*; Cristen Willer *Ann Arbor, MI*; Charles Kooperberg *Seattle, WA*; Myron Gross *Minneapolis, MN*; Jay Shendure, Ulrike Peters *Seattle, WA*; Yun Li *Chapel Hill, NC*; Guillaume Lettre *Montreal, Canada*; Nora Franceschini, Keri L. Monda *Chapel Hill, NC*; Jerome Rotter *Los Angeles, CA*; James S. Pankow *Minneapolis, MN*; Nik Krumm *Seattle, WA*

Background: Obesity is an increasingly prevalent risk factor for a number of common diseases. Although environment plays an important role, there is substantial evidence of a genetic component underlying obesity. Genome-wide scans have identified over 30 common variants that have small associations with body mass index (BMI). We used exome-sequencing and imputation to investigate the impact of rare variants [minor allele frequency (MAF) ≤ 5%] on BMI. **Methods:** We hypothesized that obesity related rare-variants would demonstrate larger effect sizes than the common variants that have been previously identified. In addition to identifying and testing for association with single-nucleotide polymorphisms (SNPs), the exome-sequencing data allowed us to impute coding variants into a population of over 15,000 African Americans. **Results:** Analyses of coding SNPs in over 20,000 imputed or directly genotyped samples did not produce an exome-wide significant result. Through extensive simulations tailored to BMI, we show that for variants with MAF < 0.05 sample sizes in excess of 20,000 are needed to establish an association with 80% statistical power. As a result, we are currently genotyping (on the Illumina Exome-Chip) over 20,000 samples that will be used for association testing with BMI. **Conclusions:** Our results provide guidance for the design of future large-scale sequencing studies aimed at elucidating the role of rare variants in the genetics of obesity.

For author conflict of interest information, see page S250

Sunday, September 23, 2012
8:00 AM – 10:30 AM
Ethan Sims Young Investigator Finalists' Presentations

55-OR
Liver Fat Not Visceral Fat Drives Insulin Resistance Among Obese African American and Hispanic Youth With a Greater Impact of Liver Fat in African Americans

Tanya L. Alderete, Claudia Toledo-Corral, Preeya Desai, Marc J. Weigensberg, Michael Goran *Los Angeles, CA*

Background: Visceral adipose tissue (VAT) and hepatic fat fraction (HFF) are related to insulin resistance but correlation between fat depots makes it difficult to identify independent effects on metabolic risk. We examined obese African Americans (AA) and Hispanics who were contrasted for high/low VAT and high/low HFF to examine their separate effects on insulin resistance and beta-cell compensation. **Methods:** Obese AA (n=134; 15.5±3.3 yrs) and Hispanics (n=239; 14.7±3.0 yrs) were phenotyped for subcutaneous abdominal adipose tissue (SAAT), VAT, and HFF by MRI. Insulin sensitivity (SI), acute insulin response (AIR), and disposition index (DI) were determined by FSIVGTT. Participants were classified into 1 of 4 groups based on: high/low HFF and high/low VAT. Three-way ANCOVA was used to examine the effects/interactions of ethnicity, high/low HFF, and high/low VAT on outcomes (covariates: age, sex, and total fat). **Results:** For SI there was no effect of high/lowVAT but a significant effect of highHFF, which was more pronounced in AA (Pinteraction<0.05; 49% lower SI in AA versus 24% lower in Hispanics). In Hispanics, highHFF and highVAT were associated with a 31% and 28% higher AIR (P<0.01) with no effects of either fat depot on DI indicating adequate beta-cell compensation. In AA, there were no effects of HFF or VAT on AIR, while highHFF was associated with a 42% lower DI (P<0.01) indicating poor beta-cell compensation. **Conclusions:** These results demonstrate that liver fat drives insulin resistance in AA and Hispanics, with a more pronounced effect in AA, especially given the failure of beta-cell compensation to liver fat induced insulin resistance in this group.

56-OR
Neural Responsivity to Coca-Cola® Advertisement Exposure and Receipt in Habitually Consuming Adolescents: A Pilot fMRI Investigation

Kyle S. Burger, Eric Stice *Eugene, OR*

Background: Millions of dollars are spent on advertisements of soft drinks towards youth each year. Consumption of these beverages has been linked to increased risk of obesity, diabetes, sleep dysfunction, dental carries and a decrease in diet quality, however little is known about the neural consequences of habitually consuming these beverages. Growing evidence suggests that frequent consumption of energy-dense, palatable foods elicit brain responses that mimic those of addictive substances theoretically contributing to repeated consumption of those foods, specifically: 1) a hyper-responsivity of attention and reward valuation brain regions to food cues, and 2) a reduced gustatory and dopamine mediated reward responsivity to food receipt. **Methods:** Using functional MRI, we tested for neural differences between adolescents (BMI=22.5±3.8; age=15.3±0.8y) who were habitual Coca-Cola Classic® consumers (n=7) and those that do not consume sugar-sweetened beverages (n=7) during exposure to Coke versus neutral advertisements and in response to receipt of fully carbonated Coke versus a tasteless solution. **Results:** Habitual Coke consumers, relative to non-consumers, showed greater activity in the bilateral caudate (L: Z=3.93, k=114; R: Z=3.02, k=35) in response the Coke advertisements. During Coke receipt, habitual Coke consumers showed reduced activation in gustatory regions (bilateral anterior insula/frontal operculum; L: Z=3.40, k=24; R: Z=3.56, k=88) compared to their non-consumer counterparts, however no difference in dopamine target regions was observed in this contrast. **Conclusions:** These results provide novel evidence that habitual soft drink consumers show brain responsivity patterns to soft drink advertisements and during consumption that are akin to those seen in addiction processes.

57-OR[DT]
Greater Consumption of Polyunsaturated Fatty Acids Are Related to Increased Lean Mass and Decreased Total and Visceral Adiposity in a Racially Diverse Sample of Children

Michelle Cardel *Birmingham, AL*; Dominick Lemas *Fairbanks, AK*; Jose R. Fernandez *Birmingham, AL*

Background: Consumption of polyunsaturated fatty acids (PUFA) is related to BMI and adiposity in adults but the extent to which PUFA intakes influence pediatric body composition remains unknown. **Methods:** We examined whether PUFA intakes were associated with adiposity and lean mass (LM) in a racially diverse sample of peripubertal children ages 7-12. Body composition, abdominal fat distribution, and dietary intakes were assessed by dual energy x-ray absorptiometry, Computed Tomography scans, and two 24-hour recalls, respectively. Multivariate linear regression analyses examined the independent associations of total PUFAs, n-3 PUFAs, n-6 PUFAs, and the ratio of PUFA: Saturated fatty acids (SFA) dietary consumption with child body composition. All analyses were adjusted for total energy intake, socioeconomic status, pubertal stage, sex, and race/ethnicity. **Results:** Of the 315 subjects, 53% were male, 39% were white, 34% were black, and 27% were Hispanic. Mean total PUFA intake was 13.54 grams/day (SD 6.74) and greater total PUFA consumption was associated with more LM (p=0.0090) and less intra abdominal adipose tissue (IAAT) (p=0.0464). Increased n-3 PUFA and n-6 PUFA intake was positively associated with LM (p=0.0196 and p=0.0373, respectively) and n-6 PUFA was marginally related to lower IAAT (p=0.0599). A higher PUFA: SFA ratio was associated with increased LM (p=0.0334), lower total fat mass (p=0.0181), and was marginally related to decreased IAAT (p=0.0560). **Conclusions:** In racially diverse children, decreased saturated fat intakes and increased consumption of PUFA, n-3 PUFA, and n-6 PUFA is associated with higher lean mass and decreased total and visceral adiposity. These results suggest that replacement of saturated fats with consumption of PUFA may increase lean mass and have anti-obesity effects in children.

58-OR
Leptin Signaling in the Nucleus Tractus Solitarius Suppresses Motivation to Obtain Rewarding Food

Scott E. Kanoski, Samantha Fortin, Harvey Grill *Philadelphia, PA*

Background: Leptin signaling in the medial nucleus tractus solitarius (mNTS) reduces food intake by reducing meal size via amplification the intake suppressive effects of gastrointestinal-derived satiation signals. Here we examine the hypothesis that mNTS leptin signaling also suppresses feeding by reducing appetitive behaviors directed towards obtaining palatable food. **Methods:** Rats were trained in a conditioned place preference (CPP) paradigm to associate one location with rewarding food (high fat/sucrose diet); a separate location was not associated with food. Leptin (0.5 μg) was delivered intra mNTS 3hr before CPP testing. To assess whether mNTS leptin signaling also influences willingness to work for palatable food, rats were trained in an operant paradigm so that each lever press yielded access to a sucrose reward. Leptin (or vehicle) was delivered intra mNTS 3hr before progressive ratio reinforcement (PR) testing in which the number of lever presses needed to obtain a sucrose pellet progressive increased. **Results:** Vehicle-treated rats learned a preference for the food-paired location, whereas this preference was blocked by mNTS leptin delivery. mNTS leptin delivery also reduced rats' willingness to work for sucrose in the PR test. Follow-up studies are employing double immunohistochemistry to pursue the hypothesis that leptin responsive mNTS neurons monosynaptically project to nuclei that control rewarding aspects of feeding (e.g., ventral tegmental area, nucleus accumbens). **Conclusions:** These findings deepen understanding of the contribution of leptin signaling to feeding control – they reveal that mNTS leptin signaling suppresses feeding not only by amplifying satiation signals, but also by reducing appetitive, motivated behaviors directed towards obtaining rewarding food.

59-OR
Robust Increases in Extracellular Matrix Remodeling in Adipose Tissue and Skeletal Muscle After 8-Week Overfeeding in Healthy Subjects

Charmaine S. Tam, Jeffrey D. Covington, Yourka Tchoukalova, David H. Burk, Krisztian Stadler, Sudip Bajpeyi, Darcy L. Johannsen, Eric Ravussin *Baton Rouge, LA*

Background: Extracellular matrix (ECM) remodeling is essential for adipose tissue (AT) growth and expansion in mice and humans. The role of the ECM in skeletal muscle (SM) is unknown. **Methods:** In this study, we examined the effect of 8-week overfeeding (40%) on ECM gene expression (COL1a1, COL3a1, COL4a1, COL5a1, COL6a3, SPARC, fibronectin, VEGF, TGFβ) in AT and SM in 29 healthy subjects (24 males; 26.8 ± 5.4y; BMI= 25.4 2.3kg/m2). **Results:** Overfeeding resulted in 7.5±2.5 kg weight gain (9.7±2.8%) and significant decreases in insulin sensitivity (P=0.003) and insulin responsiveness (P=0.03; hyperinsulinemic-euglycemic clamp). In AT, overfeeding resulted in significant increases in COL1a1 (4x; P=0.005) and COL3a1 (4x; P=0.001), SPARC (2x; P=0.02) and TGFβ (2.5x; P=0.01) gene expression. Changes in TGFβ expression were positively associated with changes in plasma insulin (P=0.03, r=0.45) and LDL (P=0.05, r=0.39) concentrations after overfeeding. Similarly, in SM, overfeeding resulted in robust increases in ECM gene expression of COL1a1 (9x; P=0.005), COL3a1 (20x; P=0.03), COL4a1 (3x; P=0.05), COL5a1 (5x; P=0.05), SPARC (4x; P=0.01) and COL6a3 (3x; P=0.02). **Conclusions:** Taken together, our findings suggest for the first time that ECM remodeling occurs in skeletal muscle in response to 8 week overfeeding in healthy subjects. Whether this reflects a fibrotic response or a physiological compensation in SM to accommodate excess lipid remains to be determined. Ongoing studies will examine protein levels and immunohistochemistry of the collagen subtypes and potential mechanisms of this ECM response.

4:00 PM – 5:30 PM

Skeletal Muscle and Lipid Metabolism

60-OR
Dietary Fatty Acids Modulate Visceral Fat Adipokine Secretion and Induce Skeletal Muscle Inflammation Without Affecting Insulin Responsiveness, Ex Vivo

Justine Tishinsky, Anna A. De Boer, David Dyck, Lindsay Robinson *Guelph, Canada*

Background: Adipokines communicate with skeletal muscle to regulate inflammation and insulin response, yet their role in adipose tissue-whole muscle crosstalk, as well as the influence of dietary fat, is not known. We determined if (1) high fat diets modulate visceral adipose tissue (VAT) adipokine secretion and (2) this affects skeletal muscle inflammation and insulin response. **Methods:** Rats were fed a (1) low fat (LF), (2) high saturated fatty acid (SFA), or (3) high SFA with n-3 polyunsaturated fatty acid (SFA/n-3 PUFA) diet for 4 weeks. VAT was cultured for 72 hours to determine secreted adipokine concentrations in adipose conditioned media (ACM). A second experiment used a newly developed adipose-muscle crosstalk model to test direct effects mediated by the adipokine profile. To this end, soleus muscle from LF fed rats was incubated for 8 hours in: (1) control buffer (CON), (2) CON with 2 mM palmitate (PALM, positive control), (3) ACM from LF, (4) ACM from SFA, or (5) ACM from SFA/n-3 PUFA. **Results:** ACM from SFA and SFA/n-3 PUFA fed rats contained more ($P \leq 0.05$) IL-6 (+26-37%) and MCP-1 (+30%). Adiponectin was decreased (-29%, $P \leq 0.05$) in ACM from SFA compared to LF, and this was prevented in SFA/n-3 PUFA fed animals. TLR4 gene expression was increased ($P \leq 0.05$) in PALM incubated soleus (+356%) and all ACM groups (+175-191%). MCP-1 gene expression was increased ($P \leq 0.05$) in soleus incubated in PALM (+163%,) and ACM from SFA (+159%) and SFA/n-3 PUFA (+151%) fed animals. Insulin-stimulated glucose transport was impaired in PALM soleus (-13%, $P \leq 0.05$), but preserved in ACM groups. **Conclusions:** Overall, SFA and n-3 PUFA modulate VAT adipokine secretion and acute exposure to such factors induces skeletal muscle inflammation, without affecting insulin responsiveness.

61-OR
Skeletal Muscle Specific Deletion of CPT1b Improves Insulin Sensitivity Despite Suppressed Mitochondrial Fatty Acid Oxidation

Kimberly R. Haynie, Bolormaa Vandanmasgar, Shawna Wicks, Jingying Zhang, Robert C. Noland, Randall Mynatt *Baton Rouge, LA*

Background: Recent studies have proposed that obesity-associated insulin resistance develops as a result of mitochondrial overload, meaning that fatty acids are shuttled into the skeletal muscle mitochondria in excess of the capacity of the mitochondria to completely oxidize the lipids. The resultant accumulation of incompletely oxidized lipid intermediates is thought to disrupt intracellular insulin signaling cascades. **Methods:** Given that carnitine palymitoyl transferase-1b (CPT1b) primarily regulates fatty acid transport into the mitochondria, our laboratory generated skeletal muscle specific CPT1b-/- mice to assess the influence of CPT1b deletion on fatty acid oxidation and insulin sensitivity. **Results:** CPT1b deletion reduced palmitate oxidation in isolated mitochondria and reduced muscle and serum long-chain acyl-carnitines. CPT1b-/- mice displayed lower body fat, higher RER, elevated pyruvate oxidation, and lower serum glucose and insulin levels than WT controls. Furthermore insulin sensitivity was improved as determined by ITT and GTT analyses, compared to WT littermates. It appears as though CPT1b-/- mice attempt to compensate for the lack of CPT-1b activity with elevated transcription of pyruvate dehydrogenase, peroxisomal fatty acid oxidation enzymes, fatty acid binding and transport proteins and UCP3. It is interesting to note that while palmitate oxidation is significantly reduced in isolated mitochondria of CPT1b-/- mice compared to WT controls, when palmitate oxidation is measured in whole skeletal muscle homogenate complete palmitate oxidation is in fact higher in CPT-1b-/- animals. **Conclusions:** Further investigation into the adaptive mechanisms utilized by the CPT1b-/- mice to metabolize fatty acids will enhance our understanding of the complex relationship between skeletal muscle lipid metabolism and insulin sensitivity.

62-OR
Contribution of SCD1 Expression to Exercise Capacity, Muscle Lipid Composition, and PPARδ Expression

Arwa Aljawadi *Lubbock, TX*; James M. Ntambi *Madison, WI*; Chad M. Paton *Lubbock, TX*; Matthew Flowers *Madison, WI*

Background: Stearoyl-CoA desaturase (SCD1) converts saturated fatty acids into monounsaturated fatty acids. Using muscle knockout and transgenic models, we sought to determine the role of SCD-1 expression in contributing to both basal (untrained) and exercise induced remodeling of muscle metabolism and its effects on PPARδ in vitro. **Methods:** Wild type (WT) and mice with skeletal muscle specific overexpression of SCD1 (SCD1 Tg) were studied for acute exercise capacity, tissues were collected for protein, mRNA, and lipid analysis and body weights. Glucose tolerance tests were conducted as well as ex vivo glucose and oleate uptake and oxidation. C2C12 myocytes were used for the in vitro model. **Results:** SCD1 Tg mice displayed higher SCD1 protein in both white and red muscle. The increase in SCD1 expression dramatically affected white gastroc lipid composition to increase triglyceride (TG) content (52.3±15 vs. 111.4±24 mg/μg protein WT vs. SCD1 Tg). The fatty acid composition of the muscle revealed a striking increase in PUFA content of TG. Untrained SCD1 Tg mice also displayed significantly increased exercise capacity (> 2.5 fold vs WT). SCD1 Tg mice had decreased fasting plasma glucose, increased glucose tolerance and fatty acid oxidation, and increased PPARδ expression. In vitro studies investigating the mechanism of SCD1 mediated increases in PPARδ revealed that treating C2C12 myocytes with oleate caused a > 9-fold increase in CPT1. **Conclusions:** The present model suggests that increasing desaturase activity of muscle improves metabolic function, exercise capacity, glucose tolerance, and lipid oxidation likely through PPARδ. Continuing studies will be conducted to clearly delineate the contribution of de novo oleate synthesis in enhancing muscle lipid metabolism and metabolic flux.

 For author conflict of interest information, see page S250

63-OR

Overexpression of Mitochondrial Fatty Acyl-Coenzyme A Thioesterase-2 in Heart Produces Lean Body in Mice

Mohammed A. Matlib, Lamar K. Gerber, Harvey Hahn, Patrick Tso, Roy Lynch *Cincinnati, OH*

Background: Mitochondrial acyl-coenzyme A thioesterase-2 (ACOT2) breaks down long-chain fatty acyl-CoA to free fatty acid and CoA-SH. ACOT2 overexpresses in heart with fasting and exercise, but its contribution to overall fat utilization is unknown. We postulate that ACOT2 activation increases fatty acid breakdown and reduces body fat content. **Methods:** Myosin heavy chain-alpha gene promoter was used to drive ACOT2 overexpression in mouse heart. The ACOT2 overexpressing mice and their littermate wild-type cohorts were examined to determine the level of ACOT2 overexpression and changes in serum lipid profile, body fat content, fatty acid utilization, and cardiac function. **Results:** Five-fold targeted overexpression of ACOT2 gene accompanies similar increases in ACOT2 protein level and thioesterase activity in heart mitochondria. This activation of ACOT2 in the heart causes decreased serum non-esterified fatty acids, triglycerol and leptin levels. The rate of O2 consumption (VO2) is increased more than the rate of CO2 production (VCO2) indicating more fatty acid utilization in these mice. Body weight and fat mass content is decreased in ACOT2-OE mice. The heart of ACOT2-OE mice is bigger and heavier. The left ventricular wall is thicker and circumferential shortening velocity is higher in these mice. There is no detectable expression of pathologic cardiac hypertrophy marker genes in ACOT2-OE mice. **Conclusions:** We conclude that targeted overexpression of ACOT2 produces a larger and hyperfunctioning heart, enhances fatty acid utilization and produces a lean body. This study implies that moderate activation of ACOT2 in the whole body may be an effective approach to prevention of obesity.

64-OR

Myotubes Derived From Obese Non-Diabetic Subjects With a Family History of Type 2 Diabetes Present Mitochondrial Defects With No Sign of Insulin Resistance

Celine Aguer, Melissa R. Pasqua, Rui Zhang, Robert Dent, Ruth McPherson, Mary-Ellen Harper *Ottawa, Canada*

Background: Due to its mass, skeletal muscle is the primary site of insulin resistance (IR) during type 2 diabetes mellitus (T2DM) development. One supposed cause of muscle IR is muscle lipid accumulation, which is linked to increased oxidative stress and mitochondrial malfunction. However, it is still not known whether mitochondrial dysfunction is the cause or the consequence of muscle IR. **Methods:** Since healthy subjects with a family history of T2DM are susceptible to develop IR they are ideal for studies of the early development of IR. By using primary muscle cells derived from obese non-diabetic people with (FH+) or without (FH-) a family history of T2DM (n=6), we aimed to better understand the link between mitochondrial function, oxidative stress and insulin resistance development. **Results:** Insulin sensitivity, measured as insulin-stimulated glucose uptake, was not affected in FH+ myotubes, whereas basal glucose uptake was decreased. FH+ showed alterations in mitochondrial function. First, mitochondrial content was decreased in FH+ myotubes. Second, even if basal oxygen consumption rate was not different between groups, state 4 respiration (uncoupled respiration) was higher in FH+ myotubes. This was associated with lower ATP content and a trend for decreased membrane potential in FH+ myotubes. There was no difference in UCP3 (uncoupling protein 3) level. Reactive oxygen species emission was lower in FH+ myotubes, with higher SOD2 (superoxide dismutase 2) level. **Conclusions:** Myotubes derived from non-diabetic subjects with a family history of T2DM showed mitochondrial defects before insulin resistance and oxidative stress development. Mitochondrial defects could thus be one of the early signs for the development of muscle insulin resistance and T2DM. (Funding: CIHR Institute of Nutrition, Metabolism and Diabetes)

65-OR

Impact of SIRT3 and p65 Subunit of NFκB (RelA) on Muscle Mitochondrial Function After an 8-Week High-Fat 40% Overfeeding

Jeffrey D. Covington, Darcy L. Johannsen, Zhengyu Zhang, Charmaine Tam, Sudip Bajpeyi, Eric Ravussin *Baton Rouge, LA*

Background: During cellular stress, sirtuin 3 (SIRT3) and RelA (NFκB p65 subunit) translocate to the mitochondria and influence mitochondrial function. SIRT3 regulates the activity of the electron transport chain (ETC), whereas RelA mediates the transcriptional activity of mitochondrial DNA. **Methods:** We performed 8-weeks of high-fat (44% Fat) overfeeding (+40%) in 34 healthy, young individuals (29m/5f, Age: 27±5 yrs, BMI: 25.5±2.2 kg/m2) and performed measurements in skeletal muscle before and after overfeeding of: SIRT3 and RelA gene expression; in vivo mitochondrial capacity (ATPmax by 31P-MRS); ex vivo mitochondrial respiration (Oxytherm, Clark electrode), and ex vivo reactive oxygen species (ROS) production (flurometric PHPA assay). **Results:** The overfeeding resulted in 7.5±1.9 kg weight gain and a 23% and 59% increase in SIRT3 ($p = 0.01$) and RelA ($p = 0.04$) gene expression, respectively. The increase in SIRT3 was positively associated with changes in maximal mitochondrial capacity (ATPmax; $r = 0.35$, $p = 0.05$) and negatively with changes in ROS production ($r = -0.65$, $p = 0.006$). In contrast, changes in RelA were negatively related to changes in the ratio of State 3 oxygen consumption to State U maximum oxygen consumption, representing maximal oxygen consumption efficiency ($r = -0.53$, $p = 0.02$). **Conclusions:** Our data shows that those who upregulated SIRT3 had increased mitochondrial capacity and lower mitochondrial ROS production after 8-weeks of overfeeding, whereas RelA is associated with lower mitochondrial oxygen consumption efficiency. This suggests that SIRT3 may be related to protection of mitochondrial function, while RelA may contribute to mitochondrial dysfunction, in response to dietary excess.

4:00 PM – 5:30 PM

Neuropeptides that Regulate Feeding Behaviors and Related Topics

66-OR

Salivary PYY Regulates CNS Nuclei Involved in Feeding Behavior and Taste Perception

Maria D. Hurtado, Andres Acosta, Oleg Gotbaryuk *Gainesville, FL*; Valery G. Sergeyev *Udmurt, Russian Federation*; C. Shawn Dotson, Sergei Zolotukhin *Gainesville, FL*; Herbert Herzog *Darlinghurst, Australia*

Background: PYY is a peptide released by gut L-endocrine cells into the bloodstream in response to food intake (FI) and induces satiety upon interaction with its cognate Y2R receptor. Recently, we demonstrated the presence of PYY in saliva and the expression of the Y2R in murine lingual epithelial and taste cells. We additionally showed that augmentation of salivary PYY through genetic and/or pharmacological approaches reduces FI and body weight (BW) in mice. **Methods:** In this report we use cFos immunoreactivity to describe the activation of CNS nuclei in response to acute pharmacological augmentation of salivary PYY in mice. We support this data with taste preference and conditioned taste aversion behavioral studies. **Results:** In fasted mice, hypothalamic satiety centers were activated significantly in response to orally applied PYY, similar to the fed control group and the peripherally injected PYY group. Activated areas in the nucleus of the solitary tract (NST) were markedly different for the rostral and caudal NST in response to systemic vs. local oral PYY treatment. This distinctive pattern suggests that salivary PYY impact on FI and BW may be mediated, at least in part, by the modulation of taste responsiveness. In fact, through behavioral studies we showed that (1) orally applied PYY, while inducing a strong anorexigenic response, did not induce taste aversion as the circulating form does and that (2) salivary PYY modulated behavioral responsiveness to bitter-tasting stimulus as well as to a fatty acid emulsion. **Conclusions:** We provide evidence for novel functions of PYY, supporting the existence of a metabolic circuit that is initiated in the oral cavity by salivary PYY and extends through brain stem nuclei into hypothalamic satiety centers. This report suggests a potential simple and efficient alternative therapeutic approach for the treatment of obesity.

67-OR
Peripheral CB1 Receptor Blockade Reverses Obesity-Induced Leptin Resistance By Decreasing Leptin Secretion and Increasing Leptin Clearance

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Background: Diet-induced obesity (DIO) is associated with leptin resistance and increased activity of the endocannabinoid system. Cannabinoid-1 receptor (CB1R) inverse agonists reduce body weight and the associated metabolic complications. CB1 blockade also attenuates obesity-related hyperleptinemia, but its effects on the associated leptin resistance and its underlying causes remain unknown. **Methods:** We treated DIO mice with a potent, orally bioavailable, peripherally restricted CB1R inverse agonist (JD-5037) and analyzed its pharmacological, behavioral and metabolic profile, including its effect on leptin pharmacokinetics and sensitivity. **Results:** Chronic treatment of DIO mice with JD-5037 does not result in central CB1R occupancy, as verified in vivo by CB1 PET, and does not elicit related behavioral responses. Yet, it reduces food intake, body weight and adiposity to the same extent as does its brain-penetrant parent compound SLV-319. JD-5037 treatment rapidly normalizes plasma leptin levels and restores the ability of exogenous leptin to reduce food intake and to stimulate STAT3 phosphorylation in the hypothalamus. JD-5037 reduces leptin gene expression in adipose tissue in vivo, and inhibits CB1 agonist-induced leptin secretion in cultured 3T3-L1 adipocytes. In DIO mice, JD-5037 increases leptin clearance by reversing the obesity-related reduction of glomerular filtration rate and suppression of renal levels of megalin, a multiligand endocytic receptor implicated in leptin uptake and metabolism by proximal tubular cells. **Conclusions:** Peripheral CB1 inverse agonism causes anorexia and weight loss by restoring leptin sensitivity through rapid reversal of obesity-related hyperleptinemia via decreased production and increased clearance of leptin. These findings highlight the therapeutic potential of peripheral CB1 inverse agonists in obesity.

68-OR
Altered Central GLP-1 Signaling Does Not Account For Weight Loss After Roux-en-Y Gastric Bypass in Mice

Jill Carmody, Melissa Paziuk, Huali Yin, Rodrigo Munoz, Lee M. Kaplan *Boston, MA*

Background: Roux-en-Y gastric bypass (RYGB) causes profound weight loss (WL) and remission of type 2 diabetes. Physiologically, it causes an increase in glucagon-like peptide-1 (GLP-1), which promotes satiety and enhances insulin secretion. Previously we showed that signaling via peripheral GLP-1 receptors (GLP-1R) is critical for improved glucose homeostasis, but not WL, after RYGB. Because GLP-1 also signals in the brain to influence energy balance and glucose homeostasis, we sought to determine whether central GLP-1 signaling mediates weight or glucose regulatory effects of RYGB. **Methods:** Diet-induced obese C57BL/6 mice underwent RYGB or sham surgery and were implanted with an intracerebroventricular (ICV) cannula connected to an osmotic pump for chronic delivery of GLP-1R antagonist Exendin(9-39) (Ex9) or vehicle (Veh). Energy balance and glucose homeostasis parameters were measured to assess the contribution of central GLP-1 signaling to RYGB outcomes. **Results:** Body weight (BW) and fat mass (FM) were reduced in RYGB (R) vs. Sham (S) controls (BW: R-Veh 30.0±0.6g vs. S-Veh 47.9±2.6g; FM: R-Veh 2.8±0.4g vs. S-Veh 14.7±2.8g; $p<0.01$). Food intake (FI) was unchanged. Chronic ICV infusion of Ex9 did not influence BW, FM, or FI in RYGB mice (BW: R-Ex9 30.4±1.1g; FM: R-Ex9 2.3±0.6g). In contrast, as with peripheral Ex9, ICV Ex9 treatment trended toward a reversal of improved glucose tolerance (GT) after RYGB. **Conclusions:** Despite elevated GLP-1 levels after RYGB, neither peripheral nor central GLP-1 signaling appears to be required for RYGB WL. These data suggest that while enhanced GLP-1 signaling is necessary for RYGB improvements in GT, other neurohumoral factors are responsible for the altered weight regulation. Identification of these factors will facilitate the development of novel therapies for obesity that replicate the powerful weight loss effects of RYGB.

69-OR
Orexin A Reduces Body Weight Gain and Obesity Resistant Rats Have Elevated Non-Resting Energy Expenditure

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Background: Orexin terminals densely innervate noradrenergic locus coeruleus (LC) neurons that project to the prefrontral cortex, which modulates arousal and may influence spontaneous physical activity (SPA) and energy balance. Due to the higher expression of orexin receptor (OXR) mRNA in the LC and lower adiposity in obesity resistant (OR) rats compared to obese rats, we hypothesized that 1) brain OXR expression pattern differentiates OR and Sprague-Dawley rats, 2) OR rats have greater non-resting energy expenditure, SPA, LC-orexin A (OXA) stimulated SPA and less body fat 3) LC-OXA would be more effective at stimulating SPA relative to feeding and 4) daily OXA treatment would reduce body weight gain. **Methods:** To test this, a principal component (PC) analysis was performed with OXR mRNA data from 12 brain sites from male OR and Sprague-Dawley rats. Orexin A-induced feeding and SPA was determined in a separate group of LC-cannulated OR and Sprague-Dawley rats. Body weight gain was determined in a separate group of rats given a single dose of OXA (50-500pmol / d / 8 d) into the LC and dorsal raphe. Body composition, basal SPA and energy expenditure were also determined. **Results:** PC analysis revealed OXR brain expression pattern was sufficient to separate the OR and Sprague-Dawley rats. Lower adiposity in OR rats paralleled greater non-resting energy expenditure and SPA. SPA responsivity to LC-OXA was greater in OR rats compared to Sprague-Dawley rats, however, OXA in the LC failed to stimulate feeding in both groups. Daily OXA infusion reduced body weight gain. **Conclusions:** These data suggest enhanced non-resting energy expenditure and OXA-stimulated SPA confers lower adiposity in OR rats and underscores the significance of LC-orexin signaling for obesity treatment.

70-OR
BDNF Reduces Ceramide-Induced Neurodegeneration in Hypothalamic Cells

Tammy A. Butterick-Peterson, Morgan Little, Claudio E. Perez-Leighton, Catherine Kotz, Charles J. Billington, ChuanFeng Wang *Minneapolis, MN*

Background: We have demonstrated, high fat diet (HFD) induces, while chronic BDNF reduces obesity and hypothalamic neurodegeneration. Rats pair–fed HFD to control caloric intake developed hypothalamic neurodegeneration, suggesting fat, not calories, contributes to neurodegeneration. Ceramides, lipid metabolites derived from palmitic acid, are reported to induce inflammation, insulin resistance, mitochondrial dysfunction, and apoptosis. We determined whether: 1) HFD consumption increases ceramide levels in hypothalamus; 2) ceramide increases neurodegeneration and caspase-3 activity in a hypothalamic cell line; and 3) if BDNF reduces ceramides-induced neurodegeneration in hypothalamic cells. **Methods:** Sprague Dawley male rats consumed HFD (45% fat, n=6) or control diet (15% fat, n=6) for 10-wk, and their hypothalami were dissected for ceramide analysis. In the first in vitro experiment, a mouse hypothalamic cell line was incubated with short-chain (C2 or C6) or long-chain (C16, C20 or C24) ceramides. In the second in vitro experiment, hypothalamic cells were pre-incubated with BDNF followed by ceramides. Viability and casepase-3/7 activity were measured. **Results:** 1) HFD significantly increased hypothalamic C18, C20 and total ceramides. 2) Short-chain and long-chain ceramides dose dependently induced neurodegeneration and caspase-3/7 activity in the hypothalamic cells. 3) BDNF pretreatment significantly reduced ceramide induced neurodegeneration and caspase-3/7 activity in the hypothalamic cells. **Conclusions:** HFD consumption increases hypothalamic ceramides and ceramides induce neurodegeneration, possibly via caspase signaling. BDNF exerts a neuroprotective effect on HFD/ceramide-induced neurodegeneration. Further studies will determine direct effects of ceramide-induced hypothalamic neurodegeneration on obesity, and BDNF's therapeutic potential.

For author conflict of interest information, see page S250

71-OR
Molecular Basis of Melanocortin 4 Receptor Responsible For Ligand-Biased Signal Transduction

Yingkui Yang, Min Chen, Vinod K. Mishra, Reed Dimmitt, Carroll M. Harmon *Birmingham, AL*

Background: Melanocortin-4 receptor (MC4R) plays a key role in obesity development. Our previous results indicate that MC4R couples to G proteins, Gs, Gi/o, and Gq. α-MSH can activate cAMP, calcium and MAPK pathways, whereas MC4R synthetic agonist THIQ can only activate cAMP pathway. We hypothesize that MC4R conformations can be stabilized by different MC4R agonists and result in ligand-biased signal transduction. The goal of this study is therefore to determine the molecular basis of the MC4R responsible for agonist mediated different signaling events. **Methods:** A single MC4R mutation was constructed. The entire coding region of the mutated receptors was sequenced to confirm that the desired mutation sequences were present. Standard ligand binding and cAMP assays were performed. One-way ANOVA was used for statistical analysis, with $p < 0.05$ considered to be statistically significant. **Results:** Ten amino acid residues at the intracellular loop 1 and 3 (IL1 and IL3) of the MC4R were mutated which are R146, Y147, F148 and I150 in IL1 and G243, A244, I245, T246, L247 and T248 in IL3. Our results indicate that these mutations did not significantly alter NDP-MSH binding affinity and potency. However, mutations of the MC4R A244, T246, L247, and T248 in IL3 abolished THIQ mediated receptor signaling although NDP-MSH is able to stimulate cAMP production at these mutations. **Conclusions:** Our results indicate that mutations at IL3 of the MC4R differentially blunt synthetic MC4R agonist mediated receptor signaling; suggesting that the IL 3 of the MC4R is responsible for ligand-biased signal transduction.

4:00 PM – 5:30 PM

Intervention

72-OR
Comparing Three Ways to Reduce Energy Density: Does Daily Energy Intake Differ?

Rachel A. Williams, Liane S. Roe, Barbara J. Rolls *University Park, PA*

Background: Energy intake varies with the energy density (ED) of the diet, but it is not known if the way ED is reduced influences intake. It is possible that dilution of the diet with water has transient effects on energy intake while the effects of alterations in macronutrient content are maintained over multiple meals. **Methods:** We compared the effects of 3 methods of reducing ED (decreasing fat, increasing fruit and vegetables, or adding water) on energy intake over a day. In a crossover design, 59 adults were provided with breakfast, lunch, dinner, and evening snack on 4 separate days. On each day participants were served the same menu, which included entrées that were either standard in ED or reduced in ED by 20% using one of the methods. Participants received the entrées and unmanipulated side dishes at each meal plus an unmanipulated evening snack; all foods were consumed ad libitum. **Results:** Reducing the ED of entrées significantly decreased energy intake at all 3 meals and across the day ($p<0.0001$). Compared to the standard-ED entrées, consuming reduced-ED entrées decreased daily energy intake by a mean of 15% (396±44 kcal) when fat was decreased, 11% (307±41 kcal) when fruit and vegetables were increased, and 9% (230±35 kcal) when water was added. The differences in intake of the reduced-ED entrées could be related to palatability and eating rate, which were significant predictors of energy intake ($p<0.04$). The results suggest that reducing ED by decreasing fat was not more satiating than adding water since no significant differences in hunger or fullness ratings were found across the methods. **Conclusions:** Thus, consumption of reduced-ED entrées decreased daily energy intake regardless of the way ED was reduced. These findings indicate that a variety of methods can be used to reduce dietary ED to help moderate energy intake. (DK039177 & DK059853)

73-OR
Internet Behavioral Weight Loss Program and Optional Group Sessions Improve Outcomes in a Community-Based Weight Loss Campaign

Tricia M. Leahey, Graham Thomas, Brad Weinberg, Rajiv Kumar, Rena R. Wing *Providence, RI*

Background: Given their reach, statewide campaigns provide an excellent opportunity to disseminate behavioral weight loss interventions. We tested whether adding an Internet-based behavioral weight loss program (IBWL) only or IBWL plus optional group sessions to Shape Up Rhode Island (SURI), an annual statewide wellness campaign, would enhance outcomes and whether these effects were sustained following treatment. **Methods:** SURI 2011 was a 3-month Internet-based program that attracted 5,169 individuals to the weight loss component. From those, we recruited 230 participants (84% Female; 89% White; age=47±11; BMI=34±7) and randomly assigned them to: 1) SURI alone; 2) SURI + IBWL; or 3) SURI + IBWL + weekly, optional group sessions. IBWL included weekly Internet lessons, weekly submission of self-monitoring data, and automated feedback. The optional group sessions, led by a dietitian, involved weigh-ins and interactive presentation of supplemental material. **Results:** Retention was 93% at post-treatment and 91% at 3 month follow-up. At post-treatment, weight losses were significantly different among all 3 conditions (SURI: -0.9±2.4 kg, SURI+IBWL: -3.1±6.7 kg; SURI+IBWL+Group: -4.9±4.6 kg; p's≤.02). In the enhanced conditions, adherence measures (viewing videos, self-monitoring) were associated with weight loss (r's>.34; p's<.001), and those in the highest tertile of optional group attendance had the best results (1-4 classes: -2.4kg, 5-9 classes: -5.3kg, 10-12 classes: -8.3kg, p's<.01). Moreover, weight losses were maintained at 3-month follow-up (SURI: -0.8±3.7kg, SURI+IBWL: -3.1±4.9kg; SURI+IBWL+Group: -4.8±5.9kg; p's≤.02). **Conclusions:** Adding both Internet-based BWL and optional group sessions to a statewide campaign substantially improves outcomes. Twelve month weight loss data and cost-effectiveness data will be presented at the meeting.

74-OR
Effect of the Time-Based Intervention Enhancements on 18-Month Weight Loss in Overweight and Obese Adults

John M. Jakicic, Amy D. Rickman *Pittsburgh, PA*; Wei Lang *Winston-Salem, NC*; Kelliann Davis, Bethany Barone Gibbs *Pittsburgh, PA*; Rebecca Neiberg *Winston-Salem, NC*

Background: Behavior interventions (SBWI) involving lifestyle modification is the cornerstone for weight loss. However, long-term maintenance of weight loss has been less than optimal. An alternative would be to enhance SBWI by adding additional strategies during the initial weight loss phase (ADOPT) or to add strategies at predetermined times over the entire intervention period (MAINTAIN) to enhance weight loss outcomes. **Methods:** Participants (n=195; age: 43.2±8.6 yrs; BMI: 33.0±3.4 kg/m2) were randomized to either SBWI, ADOPT, or MAINTAIN and were prescribed standard energy intake and physical activity goals. All groups were prescribed group intervention sessions throughout the 18 month intervention. ADOPT also received supervised exercise (months 1-6), additional phone contact (months 1-3), and incentive campaigns (months 4-9). MAINTAIN received additional phone contact (months 4-6), supervised exercise (months 7-12), and incentive campaigns (months 13-18). Weight was assessed at 0, 6, 12, and 18 months. **Results:** Intention-to-treat analysis was performed using multiple imputation methods for missing data. There was a significant Group X Time interaction for weight loss ($p=0.0032$). Weight loss (mean ± SEM) for SBWI at 6, 12, and 18 months was 9.3±0.9, 7.8±1.1, and 5.9±1.2 kg, respectively. Weight loss for ADOPT at 6, 12, and 18 months was 8.9±0.9, 7.6±1.2, 5.8±1.2 kg, respectively. Weight loss for MAINTAIN at 6, 12, and 18 months was 9.7±0.9, 11.0±1.2, 9.0±1.2 kg, respectively. There was a significant Group X Time interaction for the comparison of SBWI vs. MAINTAIN ($p=0.0033$) and ADOPT vs. MAINTAIN ($p=0.0075$). **Conclusions:** MAINTAIN improved 18-month weight loss compared to both SBWI and ADOPT. These findings may provide valuable information regarding how to improve long-term weight loss in behavioral interventions. Supported by NIH (HL067826)

75-OR
Preliminary Outcome Data For a Weight Management Program Designed to Help Obese Women Minimize Weight Gain During Pregnancy: The Healthy Moms Trial

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Background: Observational studies suggest that minimal or no gestational weight gain (GWG) may reduce the risk of adverse pregnancy outcomes for obese women. The Healthy Moms Study is a randomized controlled trial testing whether a weight management intervention is effective in limiting GWG to ≤3% of weight at randomization in a sample of English-speaking obese women. **Methods:** Participants (BMI ≥30 kg/m^2) were recruited as soon as possible after their first prenatal visit up to a maximum of 20 weeks' gestation, and were randomly assigned to either a weight management intervention (IG) or usual care control group (CG). Intervention participants received an individualized calorie intake goal and were advised to follow the Dietary Approaches to Stop Hypertension diet without sodium restriction. They attended weekly group intervention meetings until they gave birth. Blinded research staff assessed outcomes at 34 weeks' gestation. GWG was calculated as weight at 34 weeks gestation minus weight at enrollment. Analyses were performed using logistic regression and ANCOVA. **Results:** We present preliminary results for 93 (47 IG, 46 CG) of the randomized 118 women. Mean BMI (36.2 kg/m^2), weight (97.9 kg), and gestational age (15 weeks) at enrollment did not differ significantly between groups. Attendance rate at IG weekly meetings was 77%. At 34 weeks' gestation, the adjusted mean BMI was less in the IG (37.9 kg/m^2) than CG (39.3 kg/m^2), difference=1.4 kg/m^2, 95% CI [0.7, 2.0], p<.001. After adjusting for randomization weight, GWG of ≤3% occurred in 28% of the IG and 10% of the CG (OR=3.7, 95% CI [1.1, 12.6], p=.04). The adjusted mean GWG was less in the IG (4.5 kg) than CG (8.3 kg), difference=3.7 kg, 95% CI [2.0, 12.2], p<.001. **Conclusions:** A weekly, group-based weight management intervention led to lower GWG among obese women.

76-OR
Long-Term Green Tea Extract Consumption May Reduce Body Weight in Healthy Postmenopausal Women Independent of Other Diet/Lifestyle Interventions

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Background: Green tea consumption has been associated with reduced adiposity, an independent risk factor for postmenopausal breast cancer. This pilot study assessed the effects of green tea extract (GTE) on body mass index (BMI) in postmenopausal women at high risk for breast cancer, and determined if these effects varied by catechol-O-methyl transferase (COMT) genotype, the primary enzyme responsible for metabolizing green tea catechins. **Methods:** An interim analysis was performed on 205 women who completed the 12-month randomized double blind, placebo-controlled study. Women were given GTE containing 800 mg epigallocatechin gallate (EGCG) or placebo capsules. Women were instructed to maintain usual dietary/lifestyle behaviors. BMI was assessed at baseline and at the end of the study. **Results:** At baseline, the means ± SD of age and BMI of the 205 women were 58.4±5.4 years and 25.4±5.5 kg/m2, respectively. Overall, there was no statistically significant difference in BMI between women in GTE (n=100) and placebo (n=105) arms. When stratified by COMT genotype, women in the A/A (low activity) genotype in the GTE arm (n=27) decreased BMI by 0.36±0.82 kg/m2, whereas women in the placebo arm (n=28) increased BMI by 0.05±0.80 kg/m2 compared to baseline (P=0.06). In contrast, women with the COMT G/G (high activity) genotype in the GTE arm increased BMI by 0.28±1.62 kg/m2 compared to those in the placebo arm who decreased BMI by 0.49±0.93 kg/m2 (P=0.09). There was no difference in BMI change between groups for the women with the COMT A/G (intermediate activity) genotype. The interaction between COMT genotype and GTE on BMI was statistically significant (P = 0.03). **Conclusions:** These data suggest that the effect of GTE on the change of BMI in postmenopausal women may be dependent on COMT genotype.

77-OR
Dropout Associated With VLCD and LCD in Commercial Weight Loss: Observational Cohort Study

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Background: Dropout associated with VLCD (<800 kcal/d) and LCD (800-1500 kcal/d) during commercial weight loss is unclear. **Methods:** Observational data on weight loss and dropout from the commercial weight loss company Itrim (Sweden) were linked with national health registers. The cohort consisted of consecutively-enrolled participants on a 1-year weight loss program (cost approximately $1300). Weight loss was induced by a 500 kcal/d VLCD for 6-10 weeks (n=3773; BMI 34±5kg/m2, 80% women; age 45±12y) or a 1200-1500 kcal/d LCD (n=4588; BMI 30±4kg/m2, 86% women, age 50±11y), followed by a diet and exercise maintenance program. Multivariable logistic regression was used to identify predictors of dropout (defined as missing data from the 1 year follow-up). **Results:** Crude weight change for the VLCD group (intention to treat analysis with baseline substitution) was -11.4±9.1 kg and -6.8±6.4 kg for the LCD group. Dropout was 18% and 23%, respectively (multivariable adjusted odds ratio: 1.4, 95% CI: 1.2-1.6). Low age (<40 y vs ≥60 y, OR: 4.1, 2.6-6.5), low initial weight loss after three months (<5% vs ≥15%, OR: 3.4, 2.3-5.0), and drug dispensations for depression (OR: 1.4, 1.1-1.9) and psychosis (OR: 2.6, 1.1-6.3) predicted increased dropout within the VLCD group. Low age (<40 y vs ≥60 y, OR: 2.7, 2.0-3.5), low baseline BMI (<30 kg/m2 vs ≥40 kg/m2, OR: 3.0, 1.6-5.8), and low initial weight loss (<5% vs ≥15%, OR: 5.0, 3.3-7.6) predicted increased dropout within the LCD group. Gender, history of treatment for CVD or cancer, or dispensing of drugs for hypertension, dyslipidemia, and diabetes were not associated with dropout. **Conclusions:** Dropout was significantly lower in the VLCD group than the LCD group. Low age, low initial weight loss, drug dispensations for depression and psychosis (VLCD only), and low baseline BMI (LCD only) were associated with increased dropout.

4:00 PM – 5:30 PM

Pregnancy and Early Life

78-OR^{DT}
Trends in the Prevalence of Obesity and Extreme Obesity Among US Low-Income, Preschool-Aged Children, 1998-2010

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Background: Our study objective was to examine trends in the prevalence of obesity (BMI-for-age and sex≥ 95th percentile) and extreme obesity (BMI-for-age for sex≥ 120%*95th percentile) among low-income, preschool-aged children during 1998-2010. **Methods:** We included participants in federally-funded maternal and child health and nutrition programs from 30 states and DC with all 13 years' data. Children's weights and heights were measured; missing, miscoded, or biologically implausible values were excluded, yielded a sample of 26.7 million. Trends were analyzed using Joinpoint Regression. The best fitting points where significant changes in trends occurred were identified. The annual percentage changes (APC) were then computed. **Results:** From 1998 to 2003, the prevalence of obesity and extreme obesity increased from 13.0% to 15.2% and from 1.8% to 2.2%, respectively. From 2003 to 2010, there was no significant change in overall prevalence of obesity; however, the prevalence of extreme obesity significantly decreased (APC -1.1%). In recent years, obesity prevalence significantly decreased in following subgroups (year, APC [%]): aged 2 year, 2003-2010, -0.8; boys, 2004-2010, -0.5; non-Hispanic whites, 2004-2010, -0.5; non-Hispanic blacks, 2003-2010, -0.8; and Hispanics, 2003-2010, -0.6. Significant decreases in the prevalence of extreme obesity were: aged 2 year, 2002-2010, -2.5; aged 3 year, 2003-2010, -1.2; boys, 2003-2010, -1.3; non-Hispanic blacks, 2003-2010, -2.0; Hispanics, 2003-2010, -1.8; and American Indians/Alaska Natives, 2002-2010, -3.2. **Conclusions:** Our study found that in recent years, the overall prevalence of extreme obesity declined, and the prevalence of obesity and extreme obesity decreased in many population subgroups. Evaluation research may aid assessment of childhood obesity initiatives that helped contribute to these observed declines.

 For author conflict of interest information, see page S250

79-OR
Maternal Obesity Influences Fat Patterning in Offspring at Birth

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Background: The aim was to investigate whether central versus peripheral fat distribution in infants is related to total body fat mass (FM) and to explore the interaction of infant FM location with maternal obesity. **Methods:** Infant body composition was assessed using air displacement and skinfolds (SKF) (subscapular, biceps and triceps) measured at 1-3 days. Linear regression was used to examine the relationship between FM location (central vs. peripheral) and total FM. Peripheral FM was calculated as the sum of biceps and triceps SKF/2 and central FM was represented by the subscapular SKF. Covariates included maternal obesity, race, gestational weight gain, infant gender and gestational age. Interactions between maternal obesity and both central FM and peripheral FM were included. **Results:** Peripheral FM, central FM, and maternal obesity were significant predictors of infant FM ($p< 0.05$). There were significant interactions between maternal obesity and central FM (β=81.42; p=0.04) and peripheral FM (β=-105.14; p=0.018). When holding all predictors constant for infants born to obese mothers, a 1 mm increase in peripheral SKF related to a 27.1 g greater total FM, whereas a 1 mm increase in central SKF related to a 111.4 g greater total FM. For infants born to normal weight mothers, a 1 mm increase in peripheral SKF related to a 132.2 g greater total FM, whereas a 1 mm increase in central SKF was related to a 29.9 g greater total FM. **Conclusions:** A greater central fat pattern is associated with greater total fatness in infants born to obese mothers.

80-OR
Modifiable Determinants of Four Components of Gestational Weight Gain

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Background: We previously showed the 4 components of gestational weight gain (GWG), i.e. fetus, placenta, fluid, and maternal tissue, are differentially associated with mothers' postpartum weight retention and offspring's 7-y BMI. No study has compared their determinants. **Methods:** Among 21,622 singleton pregnancies in US Collaborative Perinatal Project, medical staff measured maternal weight before delivery and 1-7 days after delivery, and fetal and placental weights at birth. We estimated fluid weight as (pre-delivery - 7-day post-delivery - fetus -placenta); and maternal tissue weight as (total GWG - fetus - placenta - fluid). We fit separate multivariable linear regression models for each GWG component to examine their modifiable determinants, adjusting for family SES, maternal race, marital status, parity, child sex and gestational age. **Results:** Mean (SD) GWG was 3.15 (0.56) kg for fetus, 0.43 (0.10) kg for placenta, 3.20 (1.53) kg for fluid, and 2.86 (4.58) kg for maternal tissue. Higher prepregnancy BMI was associated with higher fetal (0.04 SD [95% CI, 0.03 to 0.04] for 1 kg/m^2 increment in BMI), placental (0.04 SD [0.03 to 0.04]), and fluid weight (0.04 SD [0.03 to 0.04]), but with lower maternal tissue weight (-0.07 SD [-0.07 to -0.07]). Elevated maternal age was associated with higher fetal and placental weight, but with lower fluid and maternal tissue weight. Heavy smoking during pregnancy was associated with lower fetal and maternal tissue weight, but not with placental or fluid weight. Chronic hypertension was associated with lower fetal and placental weight, but with higher fluid weight. Preeclampsia-eclampsia was associated with higher placental, fluid, and maternal tissue weight. **Conclusions:** The 4 GWG components are differentially impacted by some modifiable determinants, i.e. maternal age, prepregnancy BMI, smoking, and hypertensive conditions.

81-OR
Mother-Infant Interactions at 9 Months of Age Predict Obesity Risk at Age 5.5 Years

Sarah E. Anderson, Stanley Lemeshow *Columbus, OH*; Robert C. Whitaker *Philadelphia, PA*

Background: Previously, we found that poor quality emotional relationships between mothers and preschoolers increased the risk of later obesity. Here, we assess interactions of mothers with their 9-month-old infants and the risk of obesity at 5.5 years of age. **Methods:** We analyzed data (n=5650) from the Early Childhood Longitudinal Study, Birth Cohort, a representative study of US children born in 2001. At 9 months of age, the Nursing Child Assessment Teaching Scale (NCATS) was used to assess interactions between mothers and infants. Mothers were videotaped in their homes, and trained raters scored the videotapes for 73 aspects of mother-infant interaction (50 items for the maternal score, 23 for the infant score). Higher scores indicate a more adaptive and responsive pattern of interaction. At 5.5 years of age, children's height and weight were measured. Obesity was defined as a sex-specific BMI-for-age ≥95th percentile of the CDC growth reference. **Results:** At 5.5 years, 17.3% of children were obese. There was a relationship between lower maternal NCATS score and increased prevalence of obesity (p=0.001), but infant NCATS score and obesity were not associated (p=0.42). Adjusted for child age, gender, birth weight, maternal BMI, maternal smoking, breast feeding duration and age starting solid foods, the odds (95% confidence interval) of obesity at age 5.5 years was 1.55 (1.14 - 2.10) times higher in children whose maternal NCATS scores were in the lowest quartile compared to those whose maternal NCATS scores were in the highest quartile. Further adjustment for SES attenuated this association. **Conclusions:** Lower quality maternal interaction with 9-month-old infants was associated with an increased risk of obesity at 5.5 years of age. Infants' engagement and responsiveness toward their mother was not related to obesity risk.

82-OR
Change in Maternal Beverage Intake and Weight Gain From the First to Second Trimester of Pregnancy

Matthew W. Gillman, Sheryl L. Rifas-Shiman, Emily Oken, Ken Kleinman, Elsie M. Taveras *Boston, MA*

Background: Previously we found that higher intake of sugar-sweetened beverages in pregnancy was associated with *lower* subsequent weight gain (and more diet soda with *greater* weight gain), but we did not examine change in beverage intake. Our objective was to examine associations of change in maternal beverage intake from the 1st to 2nd trimester of pregnancy with weight gain during the same time period. **Methods:** In 1483 mothers in the pre-birth cohort Project Viva, we assessed intake of sugary soda, fruit drinks, and diet soda in the 1st (mean 12 wk) and 2nd (mean 29 wk) trimesters using a validated food frequency questionnaire. The outcome was change in weight from the 1st to 2nd assessment. We used linear regression models, adjusted for maternal age, race/ethnicity, education, smoking, parity, and pre-pregnancy BMI; household income; gestational age at 1st assessment and days between assessments. **Results:** Mean (SD) age was 32.4 (4.7) y; 25% of mothers were non-white, 72% were college graduates, and 11% smoked during pregnancy. In the 1st trimester, mean (SD) intake of sugary soda, fruit drinks, and diet soda were 2.3 (4.0), 2.0 (3.7), and 1.7 (3.6) servings/wk. From 1st to 2nd trimester, 21%, 23%, and 7% increased intake by ≥1 serving/wk, respectively. In adjusted models, increasing intake of sugary soda by ≥1 serving/wk (v. decreasing or staying the same) was associated with higher weight gain (0.49 kg [95% CI 0.13, 0.86]), but increasing intake of fruit drinks (-0.08 kg [95% CI -0.43, 0.27]) or diet soda (-0.18 kg [95% CI -0.75, 0.39] was not. **Conclusions:** Increasing sugary soda intake from the 1st to 2nd trimester of pregnancy was associated with higher weight gain during the same time period. Assessing only baseline diet with subsequent weight gain can yield biased results, sometimes even in the wrong direction.

83-OR[DT]
Infant Feeding and Growth During the First Year of Life in GDM Offspring: SWIFT Offspring Study

Erica P. Gunderson, Vicky Chiang, Susana L. Matias, Shanta Hurston, Charles Quesenberry *Oakland, CA*

Background: Infant feeding in GDM offspring has almost never been assessed prospectively. Conflicting findings relate to heterogeneity in maternal diabetes, retrospective behavioral assessment, or small sample size. One study found a lower risk of overweight at age 2 to 8 yr for offspring breastfed >3 mos (retrospective data), but only for obese GDM mothers. We hypothesized that breastfed (BF) GDM offspring would have slower postnatal growth than formula fed (FF) offspring. **Methods:** The SWIFT Offspring study enrolled GDM offspring delivered ≥35 wks gestation at a Kaiser Permanente Northern Califonia (KPNC) hospitals from 2009-2011. Eligible offspring were intensively breastfed or intensively formula fed. We assessed BF intensity and duration from birth, obtained birth weight and length from electronic medical records, and measured weight and length at ages 6-9 wks and 6 mos

via research methodology. Repeated measures linear regression examined time-dependent BF or FF, and change in weight for length z-scores (WLZ) to 6 mos of age adjusted for covariates. **Results:** Of 463 infants, 75% were BF through 7 wks, and 57% were BF through 6 mos of age. Mothers tended to be obese (49%), multiparous (67%), and 28% were WIC participants. Race/ethnicity was 35% Hispanic, 8% Black, 25% Asian, and 32% White. Adjusted slope WLZ increased for BF and FF GDM offspring from birth to 7 wks: +0.56 and +0.71, p=0.41, but slowed for BF vs FF offspring from 7 wks to 6 mos: - 0.05 vs +0.24, p=0.14. Overall, WLZ slope was lower for BF vs FF from birth to 6 mos; +0.49 vs +0.95, p=0.02. **Conclusions:** Intensive breastfeeding compared to intensive formula feeding slows growth of GDM offspring from birth to 6 mos. Ours is the first evidence that formula feeding has similar growth accelerating effects for GDM offspring as consistently observed for non-GDM populations during 3 to 6 mos.

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Monday, September 24, 2012
8:00 AM – 9:30 AM

Energy Balance: Predictive Factors

84-OR
Using Empirical Observations to Update Theoretical Predictions of the Effects of Manipulations on Components of Energy Balance

Kathryn A. Kaiser, Emily J. Dhurandhar, David B. Allison *Birmingham, AL*

Background: Weight change (WC) estimation methods based on a prescribed kcal/day have been used for decades. The +/-3500 kcal/wk to gain/lose ~1lb. of weight has been a standard, almost without question, but better mathematical methods are now available (KD Hall, 2011; DM Thomas, 2011). The estimates from such models are calculated under the assumption that no active (only passive) compensation occurs for the direct effect on energy intake or expenditure induced by the manipulation. We compare mathematical predictions to actual WC observed in controlled trials to offer a basis for empirically informed predictions that consider prior knowledge, allowing for the possibility of passive effects. **Methods:** We analyzed 28 arms (2-36 mos) of 15 adult randomized trials (8 wks+, N >30) where food/caloric supplementation to add to or reduce normal intake by a specified amount was reported, or had supervised exercise with a reported amount of energy burned. Estimations from the Hall method were compared to actual WC using non-parametric tests. **Results:** In the weight loss (WL) and energy supplementation (ES) studies combined, the absolute WC actually observed were significantly smaller than WC based on mathematical predictions (p=.003), suggesting a degree of energy compensation. In 15 WL study arms, the Hall estimates averaged higher than observed WL, but were not significantly different, p = .454. In 13 ES studies, actual weight gain (WG) < calculated estimates (p = .0005). **Conclusions:** Accuracy of this estimator appears greater for WL than for WG, suggesting that upward shifts in energy balance are defended differently than downward shifts. Compilation of data and generation of mapping functions from predictions not accounting for active compensation to empirically observed changes may allow formal methods to better predict the effects of proposed future manipulations.

85-OR
Carbohydrate vs. Fat Restriction For Body Fat Loss: An Inpatient Metabolic Balance Study

Bernard V. Miller, Stephanie K. Goodwin, Mario Siervo, Carla M. Prado, Nicolas D. Knuth, Amber B. Courville, Kevin D. Hall *Bethesda, MD*

Background: Outpatient comparison of low carbohydrate vs. low fat diets is confounded by inadequate methods to assess diet adherence. Previous inpatient studies have only examined situations where multiple dietary macronutrients were altered compared to baseline. Therefore, we performed an inpatient metabolic balance study in obese volunteers examining the effect of selective isocaloric reduction of dietary carbohydrate (LC) vs. fat (LF) on body weight, energy expenditure, fat oxidation, and fat loss. **Methods:** Five women and three men were fed an energy balanced diet (50% carbohydrate, 35% fat, 15% protein) for 5 days followed by random assignment to removal of 60% of dietary carbohydrate or 85% of dietary fat for 6 days. Both diets led to a 30% reduction of baseline calories and the other dietary macronutrients were held at baseline. Volunteers were readmitted after a 2-4 week washout period to repeat the 5-day balanced diet followed by the alternate 6-day LF or LC diet. Macronutrient balance was assessed using a metabolic chamber on days 2 and 5 of the baseline diet and days 1, 4, and 6 of the reduced energy diets. Body fat change was calculated as the cumulative fat imbalance. The mean treatment difference for the two diets was compared using a two-sample paired t-test. **Results:** Both diets led to similar reductions of weight and energy expenditure. Fat oxidation increased in the LC diet, but was only 22±19 g/d higher than fat intake (101±18 g/d), whereas fat oxidation was unchanged from baseline in the LF diet and the oxidation rate was 61±16 g/d greater than fat intake (15±3 g/d). Thus, the LF diet led to greater body fat loss than the LC diet (367±92 g vs. 114±95 g, respectively; p<0.001). **Conclusions:** Our results show how the body adapts to LC vs. LF diets and suggests that cutting dietary fat has a more potent effect on body fat loss in the short term.

86-OR
Vitamin D- and Ca2+-Sensing Receptor Single Nucleotide Polymorphisms and Resting Energy Expenditure in Adolescents

Lynae J. Hanks, Krista Casazza, Ambika P. Ashraf, Sasanka Ramanadham, Jamy Ard, Molly S. Bray, T. M. Beasley, Jose R. Fernandez *Birmingham, AL*

Background: Calcium absorption, transport and excretion are influenced by single nucleotide polymorphisms (SNPs) in the vitamin D receptor (VDR) and calcium-sensing receptor (CASR). Calcium availability potentially affects resting energy expenditure (REE), as calcium homeostasis is tightly linked to energy-utilizing pathways. **Methods:** Analyses were performed using a sample of 273 children (52% male), 7-12 years of age. SNPs were genotyped using the Illumina Golden Gate assay and REE was assessed via indirect calorimetry. Body composition was measured by DXA and diet was obtained from two 24-hour recalls. Multiple linear regression models were used to determine the association between SNPs and REE using non-additive models. Additionally, the model including VDR was evaluated by ethnicity and adiposity, and the model including CASR was evaluated by sex and median calcium intake. **Results:** Presence of the 'A' allele of VDR was positively associated with REE in AA (p=0.02) and among children categorized as having normal body fat (p=0.04). For CASR, there was an association of the 'A' allele presence and greater REE in females (p=0.01); however, in males this relationship was inverse (p=0.06). Presence of the 'A' allele was associated with greater REE in those with high levels of calcium intake (p=0.05). **Conclusions:** These findings support the notion that components of the calciotropic network influence REE through genetic variation, with potential mediation by dietary calcium, adiposity, sex, and/or ethnicity. Future studies are warranted to replicate these findings in order to understand the influence of calcium regulation genes on REE during influential periods in body composition trajectory.

87-OR[DT]
Invariance of the Thermic Effect of Food After Long-Term Weight Change

Paolo Piaggi, Jonathan Krakoff, Marie S. Thearle *Phoenix, AZ*

Background: The thermic effect of food (TEF) represents the increase in energy expenditure (EE) in response to food intake. The putative contribution of a thermogenic defect in the etiology of obesity remains controversial. **Methods:** Data were available from 107 non-diabetic subjects (70M/37F, 100 Native Americans/7 Caucasian, Age 25.8±6.4 yrs, BMI 32.3±7.3 kg/m^2, %body fat 30.6±8.4%, 24-h EE 2352±396 kcal) who underwent two measurements of 24-h EE during eucaloric feeding by indirect calorimetry within a metabolic chamber, with a minimum time period of 6 months between assessments (mean follow-up time: 4.7±3.6 yrs). After correction for physical activity, TEF was calculated as the difference between 24-h EE and sleeping EE, and expressed as % of total caloric intake. Deviation from energy balance (EBAL), i.e. the difference between total energy intake and 24-h EE, was also derived. **Results:** TEF in the follow-up chamber (12.4±5.9%) was not significantly changed from baseline values (11.7±5.7%, p=0.342) and showed a modestly significant inter-individual consistency (ICC=0.27, p=0.002). At the time of follow-up assessment, mean body weight had significantly increased (5.1±11.1 kg, p<0.001), as had %body fat (1.7±4.9%, p=0.001) and fat free mass (1.9±6.2 kg, p=0.002), resulting in an increase in 24-h EE (95±237 kcal, p<0.001). TEF was not correlated with follow-up weight change (p=0.878). However, TEF was the most significant predictor of EBAL in both initial and follow-up chambers and was inversely related with the deviation from EBAL (r=–0.43, p<0.001), even after adjustment for age, gender, race, body size, sleeping EE and physical activity. **Conclusions:** Although TEF appears to be an innate and stable trait and explains a large proportion of the deviation in estimated vs. observed 24h EE, it was not correlated with long-term weight change in this study population.

88-OR
Changes in Energy Balance and Substrate Utilization Identified From Breath Carbon Stable Isotope Ratios

Leah D. Whigham *Grand Forks, ND*; Daniel E. Butz *Madison, WI*; LuAnn K. Johnson *Grand Forks, ND*; Dale Schoeller, David H. Abbott, Warren P. Porter, Mark E. Cook *Madison, WI*

Background: Rapid detection of shifts in substrate utilization and energy balance is a useful research tool but has not yet been used as a biofeedback

tool to monitor energy balance in individuals attempting to lose weight. We tested if the natural abundance of carbon stable isotope ratios (delta values) measured by cavity ring-down spectroscopy could be used to detect a shift from negative to positive energy balance. **Methods:** Volunteers (n=5) consumed a controlled diet that was 40% energy-restricted for 6 days followed by 50% excess of baseline energy balance on day 7 (beginning with breakfast). Breath was sampled prior to and at 1 and 2 hr after breakfast, lunch, and dinner on days 1-7. Exhaled breath carbon isotope ratios were measured by cavity ring-down spectroscopy. Using ANOVA followed by Dunnett's contrasts, pre-breakfast breath delta values on days 2-6 were compared to day 1 and postprandial day 7 time points were compared to pre-breakfast day 7. **Results:** Energy restriction resulted in decreased breath delta values by day 3 (pre-breakfast days 3-6 were significantly reduced compared to day 1, $P < 0.05$). On day 7, a shift from negative to positive energy balance was first detectable at the pre-dinner time point. The breath delta values on day 7 at pre-breakfast and pre-dinner, respectively, were -23.8 ± 0.3 and -21.9 ±0.3, P=0.002 (means ± SE). Breath delta values remained elevated at both post-dinner time points on day 7. **Conclusions:** When shifting from a hypocaloric to hypercaloric diet, breath delta values became isotopically heavier. Although additional research is needed to determine specificity and robustness, this method may prove useful as a rapid biomarker for shifts in energy balance and substrate utilization.

89-OR
Improving Accuracy of Energy Expenditure Measurements From Room Calorimetry in Youth

Lauren Whitaker *Nashville, TN*; Erica Wohlers *St Louis Park, MN*; Ashley Shoemaker, Mac Buchowski *Nashville, TN*; Jon Moon *St Louis Park, MN*

Background: Indirect calorimeters (IC) measure metabolic rate (MR) and relative substrate utilization for a variety of activities (rest to exercise) for periods from 20 min to 24 h or longer. Time spent in sedentary behaviors has increased among youths, underscoring need for precise MR measurements. Appropriate data processing can limit bias and distinguish behaviors, leading to optimal thresholds for physical activity intensity cut points. This study compared data processing methods during "dynamic rest" periods in IC. **Methods:** Data were collected from 44 obese youth (7-18 y old) who spent ~ 3 h in the IC. Participants viewed TV, used a tablet device and ate a meal while seated. Data analyzed in real time with a backward derivative (BD) and no filter (RT) were compared with data post-processed with a centered derivative (CD) with (FC) and without (UC) smoothing with a bidirectional infinite impulse response (IIR) filter. BD can delay data by the span of the derivative. CD eliminate this delay by incorporating forward and backward data. Total MR, average MR and average respiratory quotient (RQ) were compared for all methods. **Results:** The average differences RT-UC and RT-FC for total MR, average MR and average RQ were 3.5±2.9 kCal ($p<0.001$), 0.016±0.013 kCal/min ($p<0.001$) and -0.0001±0.01 ($p>0.2$) and 4.05±2.97 ml/min ($p<0.001$), 0.019±0.014 ml/min ($p<0.001$) and -0.0006±0.016 ($p=.8$), respectively. Average differences between FC and UC were 0.54 ± 0.78 ml/min ($p>0.001$), 0.003 ± 0.004 ml/min ($p>0.001$) and -0.0005±0.013 ($p=.8$). **Conclusions:** Applying derivative and smoothing functions can improve low level measures from the high-precision data recorded by an IC. Investigators should evaluate bias of of processing method transform characteristics. All three methods provided unbiased estimates of RQ, so smoothing may be applied to this very sensitive ratio calculation.

8:00 AM – 9:30 AM

Drugs/Surgery

90-OR
Association Between FTO rs9939609 Genotype and Response to Orlistat in Obese African American and Caucasian Adolescents

Lindsay Hunter, Joan C. Han, Seo Yoon Chung, Zongyang Mou, Sheila M. Brady, Marian Tanofsky-Kraff *Bethesda, MD*; Jennifer McDuffie *Durham, NC*; Van S. Hubbard, Jack A. Yanovski *Bethesda, MD*

Background: The A allele of FTO rs9939609 is associated with higher BMI and percentage body fat (%BF). Children with AT or AA genotypes more frequently report loss of control over eating and preferentially select high fat food at a buffet meal. No prior studies have examined the interaction between rs9939609 and response to weight-loss medication. We therefore determined if rs9939609 genotype alters response to orlistat, a lipase inhibitor that decreases intestinal absorption of dietary fat. **Methods:** 200 obese adolescents (66% female, 62% African American), were randomized to receive 120mg orlistat or placebo 3 times daily for 6mo. All subjects received a 3mo lifestyle intervention (LI). %BF was measured by air displacement plethysmography. rs9939609 was genotyped in 187 subjects with available DNA. ANCOVAs (adjusting for age, sex, race, socioeconomic status, and baseline BMIz or %BF) compared change in BMIz or %BF between groups by genotype. **Results:** Orlistat+LI was associated with greater decreases in BMIz ($p=0.01$) and %BF ($p=0.005$) compared with placebo+LI. In the orlistat group, rs9939609 genotype was associated with change in BMIz (TT vs. AT+AA: -0.21±0.03 vs. -0.09±0.02, $p=0.008$) and %BF (-5.4±0.8% vs. -2.2±0.4%, $p=0.005$). However, within the placebo group, genotype was not associated with change in BMIz (-0.03±0.03 vs. -0.06±0.02, $p=0.36$) or %BF (-0.6±0.8% vs. -1.4±0.4%, $p=0.34$). **Conclusions:** AT and AA subjects had a less favorable response to orlistat+LI but not to placebo+LI, suggesting a potential pharmacogenomic interaction. Orlistat may serve as a beneficial adjunct to behavioral LI by reinforcing avoidance of fat by causing side effects when excess fat is consumed. A allele carriers have been shown to prefer high fat foods; we hypothesize that this underlying predisposition to consume more fat might attenuate the therapeutic effect of orlistat.

91-OR
Different Changes in Fasting and Early Meal Responses of Plasma Insulin Within Two Months Following Laparoscopic BAND and Gastric Bypass Surgery

Joy C. Bunt *Phoenix, AZ*; Robin Blackstone *Scottsdale, AZ*; Susanne B. Votruba, Jonathan Krakoff *Phoenix, AZ*

Background: Early improvement in plasma glucose (GLU) regulation reported after gastric bypass (GBP), but not BAND, surgery may be due in part to changes in plasma fasting and early phase insulin (INS) responses to a meal. **Methods:** Changes in plasma fasting (fx) and early meal responses of GLU, c-peptide (C-PEP) and INS were compared in patients without diabetes within 2 months before and after GBP (n=10 F) or BAND (n=8; 1M/7F) surgery. Changes in calculated fx hepatic insulin extraction (%HIE= ((1-(INS/C-PEP)x 100) were also compared.. Patients ingested a 200 kcal 'bariatric-compatible' solid breakfast meal (7g CHO, 9g PRO, 15g FAT) over 20 minutes. Plasma samples were collected (iv) before and at completion of the meal (meal=0-20 min). Results are presented for changes within and between groups (paired and Student's t tests, respectively). **Results:** PRE-surgery, groups were similar in all plasma fx and meal responses. Groups were similar weight before (BAND: 118 ± 17kg; GBP: 123 ± 10kg, $p=0.28$) and after surgery (BAND: 109 ± 17kg; GBP: 111 ± 8kg, $p=0.83$). After BAND, fx plasma C-PEP decreased (2.3 ±-0.7 to 1.6± 0.7ng/mL, $p=0.01$) with no changes in fx INS, %HIE or meal responses. In contrast, after GBP, fx INS (13.6 ±5.1 to 6.2 ±1.5 uU/mL, $p=0.0003$) and GLU (100 ± 6 to 89 ± 9 mg/dL, $p=0.0002$) decreased with no change in C-PEP, resulting in increased fx -%HIE (84 ±6 to 92 ±3%, $p=0.004$). Meal responses of both GLU (0.1 ± 3.8 to 4.9 ± 4.7 mg/dL, $p=0.01$) and INS (3.9 ± 4 to 9.9 ±8.7 uU/mL, $p=0.02$) increased after GBP. **Conclusions:** Despite similar weights between groups, GBP resulted in significant decreased fx plasma INS levels (along with increased %HIE), and increased early INS meal responses. These changes may partly explain the early improvements in GLU regulation seen after GBP, but not BAND, surgery.

92-OR
Resting Metabolic Rate and Fat Free Mass, Not Diet or Exercise, Predict Weight Regain Six Years after Gastric Bypass Surgery

Lance E. Davidson, Ted D. Adams *Salt Lake City, UT*; Michael J. LaMonte *Buffalo, NY*; Sheldon E. Litwin *Augusta, GA*; Steven C. Hunt *Salt Lake City, UT*

Background: Bariatric surgery offers severely obese individuals an opportunity to lose weight quickly and adopt healthy lifestyle habits to prevent weight regain. Whether lifestyle factors such as diet, exercise, and fitness after weight loss predict long-term weight maintenance or whether regain is governed by innate metabolic rate is still unclear. **Methods:** In a prospective study of 140 gastric bypass surgery patients from the Utah Obesity Study (age 46.3±10.3 years, 81% female, 88% Caucasian) who lost > 20% of their pre-operative weight and were assessed 2 and 6 years post-operatively, we ran a regression model to predict weight regain over this 4-year period using lifestyle factors such as fitness (maximal treadmill test), physical activity and

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dietary intake (both by questionnaire) in addition to resting metabolic rate (indirect calorimetry) and body fat percent (bioelectrical impedance). No formal dietary or exercise intervention was issued other than post-operative recommendations. **Results:** Using a general linear model in this sample and adjusting for age, sex, and 2-year post-surgical weight loss, none of the lifestyle measures (diet, physical activity or fitness) at 2 years after surgery predicted 6-year weight change (P>0.2). Two-year fat free mass independently predicted weight regain (β=0.34±0.14(SEM), P=0.01). Resting metabolic rate was an independent predictor of weight maintenance (β=-0.015±0.005, P<0.005). **Conclusions:** Attempts to prevent weight regain through lifestyle means after bariatric surgery-induced weight loss may be difficult, possibly due to a reduced metabolic rate in some patients. More intense intervention may be necessary for long-term maintenance.

93-OR[DT]

Race and Ethnic Differences in Weight Loss After Gastric Bypass Surgery

Wendy A. Anderson, Megan Ruth, Caroline Apovian, Brian Carmine, Donald T. Hess, Nawfal W. Istfan *Boston, MA*

Background: We previously reported that African American (AA) women lose significantly less weight than White women who underwent gastric bypass surgery (RYGB). Therefore, our objective was to determine racial and ethnic differences in weight loss after RYGB within a larger cohort of patients. **Methods:** All RYGB (N=919) patient records were reviewed from 2004-2010. Outcome measures included lowest weight and body mass index post-RYGB, age, sex, race/ethnicity, co-morbidities, psychotropic medications, diet and exercise compliance and socio-economic status. Patients with at least 18 months of follow-up data were included in the analyses. **Results:** Cluster analyses revealed four distinct groups based on percent weight loss and race/ethnicity. Hispanic (n=122) and AA (n=121) patients had similar weight loss patterns, 32.3 ± 8.7% and 32.6 ± 9.3% respectively. However, there were two distinct weight loss groups within the White patient group. One of these clusters (n=219) lost significantly less percent weight relative to all groups, 26.9 ± 6.4%; while the other cluster of White patients (n=173) lost significantly greater percent weight, 43.2 ± 5.9%. Further analyses revealed that the cluster of White patients with less weight loss were more likely to be older men with more co-morbid conditions. **Conclusions:** Examination of this larger cohort of RYGB patients revealed distinct weight loss disparities among and within race/ethnic groups.

94-OR

Characterization of a Novel, Selective MCHR1 Antagonist in Rodents and Humans

Brian J. Murphy, William N. Washburn, Christine Huang, Brian Gemzik, Timothy P. Reilly, Nico Pannacciulli, Stephen Griffen, Chunyu Wu *Princeton, NJ*; William T. Cefalu, Corby K. Martin, Jennifer C. Rood, Steven R. Smith *Baton Rouge, LA*; James Devenny, Mary Ann Pelleymounter *Princeton, NJ*

Background: Very little data exists regarding the effects of melanin concentrating hormone receptor-1 (MCHR1) antagonists in humans. Here we report the effects of a novel, potent (Ki=10nM) and selective MCHR1 antagonist on energy balance in rodents and humans. **Methods:** BMS-819881 was administered orally as a phosphate prodrug (BMS-830216) to rats, cynomolgus monkeys and humans to determine its pharmacokinetic characteristics. Efficacy after oral administration of BMS-830216 was characterized in lean and diet-induced obese (DIO) male Sprague-Dawley rats (0.3-30mg/kg), as well as in obese non-diabetic (BMI 30-40 kg/m2) humans (10-600 mg; N=24/arm). Study durations were 10, 30 and 28 days, respectively. **Results:** BMS-819881 had a plasma half life of 5.7-13 h in rodents, 14 h in monkeys and 120-200 h in humans. Brain to plasma ratios of BMS-819881 were 0.66 in rats and 3-8 in monkeys. Occupancy of MCHR1 receptors by BMS-819881 in rats was 40-60% six hours after administration of a single 3 mg/kg dose of BMS-830216, which was the minimal effective dose for weight loss in rats. Weight loss at this dose was 5.5% in lean rats and 4.9%-6.0% in DIO rats. In obese subjects, the plasma exposure achieved at the top dose level was approximately 3 times that required to demonstrate efficacy in rodents. BMS-830216, however, failed to reduce food intake, body weight, or have beneficial effects on a battery of exploratory metabolic endpoints in these subjects. **Conclusions:** These data suggest that the preclinical effects of MCHR1 antagonism may not translate effectively to obese humans.

95-OR

Are Medical vs. Surgical Randomized Controlled Trials Feasible? Results of the STAMPEDE Trial Recruitment

Philip R. Schauer, Sangeeta Kashyap, Kathy Wolski, Stacy A. Brethauer, John P. Kirwan, Claire E. Pothier, Chytaine Hall, Beth Abood, Beth Abood, Steven E. Nissen *Cleveland, OH*; Deepak L. Bhatt *Boston, MA*

Background: Randomized controlled trials (RCT's) comparing metabolic (bariatric) surgery to medical therapy are limited due in part to challenges with recruitment. **Methods:** We performed a three-arm randomized single center trial (N=150) to assess the efficacy of intensive medical therapy alone vs. medical therapy plus Roux-en-Y gastric bypass or sleeve gastrectomy in patients with BMI 27-43 and T2DM (HbA1c >7.0%) –the STAMPEDE trial (Surgical Treatment and Medications Potentially Eradicate Diabetes Efficiently). The primary endpoint was the percentage of patients achieving a glycosylated hemoglobin (HbA1c) level ≤6.0% 12 months after treatment. **Results:** Anticipated enrollment was 18 months but required 46 months (2.5 times longer). Recruitment sources for the 150 patients included electronic medical record (118), physician referral (15), newspaper (8), internet (7), and friend (2). Overall, 3,950 (41%) of 9,589 patients met inclusion criteria and were contacted. Of these, 3,732 (94%) declined or did not respond. The main reason for declining enrollment was reluctance to accept the perceived risks of surgery. Ultimately, 218 patients (6%) consented to enroll in the study. Of the enrollees, 68 (31%) failed the screening process because: 1) exclusion factors were identified, 2) could not accept work absence, 3) did not pass psychological evaluation, 4) other personal issues. **Conclusions:** Although ample patients met preliminary inclusion criteria, recruitment was challenged by patients' reluctance to be randomized to therapies perceived to have disparate risk/benefit ratios. Medical vs. surgical RCT's for diabetes and obesity treatment are feasible but require a large recruitment pool, robust recruitment resources, and a prolonged recruitment period.

8:00 AM – 9:30 AM

Epidemiological Trends and Methods

96-OR[DT]

Prevalence and Trends of Extreme Obesity in New York City Public School Children Grades K-8, Ages 5-14 For School Years 2006-07 through 2010-11

Sophia E. Day, Kevin Konty, Magdalena Berger, Cathy Nonas *Long Island City, NY*

Background: Extreme obesity has been increasing and is associated with higher risk of disease. New York City (NYC) children with extreme obesity have worse outcomes in absenteeism, fitness, and academics. As efforts continue to address childhood obesity, it is important to distinguish this vulnerable population to ensure that public policy is making strides in all strata. **Methods:** We evaluated trends of extreme obesity in 947,765 unique NYC public school students (grades K-8, ages 5-14) from school years 2006-2010 using height and weight measurements obtained during physical education classes. Extreme obesity was defined as a body mass index (BMI) more than 1.2 times the 95th percentile, based on 2000 CDC growth charts. Multivariate logistic regression models that included a linear term for school year along with other individual- and school-level covariates were used to test for trends. All models and prevalence estimates were adjusted for clustering by school and student. **Results:** During the study period, the prevalence of extreme obesity significantly decreased among children overall (9.5%: from 6.3% to 5.7%, p<.0001) and in all age, race, and poverty sub-groups (p<.01). The decrease was largest in children aged 5-6 years (14.0% vs. 7.1% in 11-14 years) and among white (17.8%) and Asian (14.8%) vs. black (5.8%) and Hispanic (7.7%). Students who received free lunch (a proxy measure of poverty) showed a much smaller decline (5.8%) in extreme obesity compared to those not receiving free lunch (20.0%), which was seen among all subgroups by race as well. **Conclusions:** NYC public school children experienced a significant decrease in extreme obesity; however, further work is needed to identify children at risk of becoming extremely obese, eliminate disparities by race and poverty, and continue reduction efforts as children age.

97-OR[DT]
Body Mass Index and Mortality Risk in US Blacks Compared to Whites

Chandra Jackson, Moyses Szklo, Nae-Yuh Wang, Hsin-Chieh (Jessica) Yeh, Frederick L. Brancati *Baltimore, MD*

Background: The relationship of body mass index (BMI) to mortality risk appears to differ across some race/ethnicity groups. Few studies have directly compared BMI-related mortality risk in Blacks vs. Whites. **Methods:** We pooled a series of cross-sectional surveys of nationally representative samples consisting of 5,815 Non-Hispanic Black and 27,160 Non-Hispanic White never smokers aged 35-75 in the National Health Interview Survey (NHIS) from 1997-2002 with no history of cardiovascular disease or cancer. Mortality follow-up was available through 2006. BMI was calculated from self-reported height and weight. We used adjusted Cox regression analysis to adjust for potential confounders. **Results:** Mean BMI was 27.0 kg/m^2 for Whites, 28.9 kg/m^2 for Blacks; Over 9 years of follow-up, there were 1,205 deaths. Age-adjusted mortality rates overall were higher in Blacks compared to Whites at BMI < 25 kg/m^2 and showed no increase at higher levels of BMI. In men, the fully adjusted hazard ratio for all-cause death rose in a similar fashion across upper BMI quintiles in Blacks and Whites. In women, however, BMI was positively associated with mortality risk in Whites, but inversely associated in Blacks (p interaction=0.01). Compared to BMI quintile 2, Black women had an adjusted mortality hazard ratio of 1.11 for quintile 1, 0.44 for quintile 3, 0.78 for quintile 4 and 0.64 for quintile 5. These risk patterns were robust in analyses that accounted for possible race, sex, and age-related differences in the accuracy of self-reported body weight. **Conclusions:** The relationship of elevated BMI to mortality is weaker in US Blacks than in Whites, especially among women. Current recommendations for optimal BMI in Black women may require modification.

98-OR[DT]
Dynamics in Purchases and Consumption of Soft Drinks By Sweetener Type in U.S. Households, 2000-2010

Carmen Piernas, Shu Wen Ng, Barry M. Popkin *Chapel Hill, NC*

Background: Consumption of non-nutritive sweeteners (NNS) in products is increasing in the U.S., including a new industry trend to blend nutritive sweeteners (NS) and NNS to reduce the energy density of beverages. We examined overall trends in purchases and consumption of soft drinks containing NNS, NS, both or neither sweetener and also differential trends by gender, race and age. **Methods:** We studied adults >19 y-old from the Nielsen Homescan Longitudinal dataset from 2000-2010 (n=385,695 households), which includes daily scanned purchases of all products from sample households; and the National Health and Nutrition Examination Surveys (NHANES) (n=16,665) from 2003/04, 2005/06 and 2007/08, which include 2 days of dietary intake data. For each soft drink containing NNS, NS, both or neither sweetener, we estimated per-capita and per-consumer purchases (ml/day) from Homescan using a regression-based marginal consumer approach. We calculated average daily intake (ml/day) of diet and regular soft drinks from each NHANES survey. **Results:** From 2000-10, overall per capita purchases of NS-drinks decreased by 24% (p<0.05) whereas those containing NNS increased until 2006 by 16% (p<0.05) and then decreased to the initial point in 2010. Soft drinks containing both NNS and NS increased by 49% (p<0.05). Among whites, per capita purchases of NNS-drinks increased by and became the major source of soft drinks in 2010. Among African-Americans and Hispanics, NS-drinks are the major sources of soft drinks although per capita purchases decreased. NNS-drinks increased among adults >40-y old. Similar trends in consumption of diet and regular soft drinks were found in NHANES 2003-08. **Conclusions:** Over the last decade, consumption and purchases of NS-soft drinks decreased whereas NNS- soft drinks increased, especially among white adults and older age groups.

99-OR
EPODE Methodology: Community-Based Intervention Approaches to Prevent Childhood Obesity

Jean-Michel Borys, Hugues Ruault du Plessis, Pauline Harper, Lea Walter *Paris, France*

Background: EPODE is a coordinated, capacity-building approach for communities to implement effective and sustainable strategies to prevent childhood obesity. **Methods:** At central level, a coordination team using social marketing and organizational techniques trains and coaches a local project manager nominated in each EPODE town by the local authorities. The local project manager is provided with tools to mobilize local stakeholders through a local steering committee and local networks. The added value of the methodology is based on a strong scientific input, institutional endorsement, evidence-base and social marketing techniques, sustainable resources, brand dynamics and evaluation. **Results:** The EPODE methodology is now implemented in more than 350 towns in 8 countries (France, Belgium, Spain, Greece, The Netherlands, South Australia, Mexico and Romania) and concerns more than 20 million people. At child level the prevalence of overweight and obesity in children aged 5 to 12 is monitored. In the 8 French pilot towns, the prevalence of children overweight including obesity decreased between 2005 and 2009 (from 20.6% to 18,8%, P<0.0001). In the 2 Belgium pilot towns, the prevalence of children overweight significantly decreased between 2008 and 2010 (p<0,04). Following a European project, the EPODE European Network, a book of recommendations has been published to enrich the methodology and facilitate the implementation of similar initiatives in other countries. **Conclusions:** Childhood obesity is a complex issue and requires multistakeholder involvement at all levels to foster healthier lifestyles in a sustainable way, as demonstrated in France and Belgium. The EPODE methodology contributes to this approach.

100-OR
Forty-Year Changes in the Fat and Fat-Free Components of Childhood Body Mass Index

William Johnson *Minneapolis, MN*; W. Cameron Chumlea, Stefan A. Czerwinski *Dayton, OH*; Ellen W. Demerath *Minneapolis, MN*

Background: The secular trend in increasing childhood BMI is well documented. If BMI trends reflect increases in both fat mass and fat-free mass, our interpretation of the long-term consequences of childhood obesity could be altered. Here, we decomposed the secular trend into its fat and fat-free components. **Methods:** For 488 participants in the Fels Longitudinal Study, body composition was assessed using hydrodensitometry and weight and height measured serially (2208 assessments) between ages 8-17.9 years. Weight, fat mass, and fat-free mass were divided by height (m)^2 to obtain BMI, fat mass index (FMI), and fat-free mass index (FFMI). Generalized estimating equations were fitted; the exposure was birth year cohort: 1958-1970, 1971-1983, 1984-1995. All models were stratified by sex and adjusted for age at measurement. **Results:** BMI in boys increased across birth cohorts, with those born 1984-1995 being 2 kg/m^2 larger than those born 1958-1970 (p = 0.001), and increases in FMI were highly significant (p-values < 0.001). FFMI did not differ by birth cohort (p > 0.25). In girls, there were no significant associations of birth cohort with any outcome. **Conclusions:** Because the trend in childhood BMI appears to be driven by an increase in total body adiposity (at least in boys), we provide evidence to support current knowledge on the predicted long-term consequences of the childhood obesity epidemic. Childhood BMI appears to be a consistent indicator of adiposity from the 1960's onward, thereby advocating the use in epidemiological research of pooled BMI data collected over the past 40 years.

101-OR
Comparative Study of Four Growth Models Applied to Weight and Height Data From Birth to 8 Years in a Cohort of US Children

Nolwenn Regnault, Matthew W. Gillman, Ken Kleinman, Sheryl L. Rifas-Shiman, Emily Oken *Boston, MA*; Jeremie Botton *Villejuif, France*

Background: Early life patterns of change in weight and height predict later chronic diseases, but most longitudinal studies have limited numbers of these measures. Using observed measures to create continuous growth trajectories can overcome this limitation. We compared 4 previously published equations to model weight and height growth between birth and 8 years. **Methods:** Among 986 children in the cohort study Project Viva, mean (sd) numbers of measures from birth to 8 y were 15.2 (6.4) for weight and 9.6 (2.3) for length/height. We compared the goodness-of-fit of 2 linear (1st and 2nd order Reed—R1 & R2) and 2 non-linear (Jenss [J] and modified Jenss [J2]) equations. We defined all the coefficients as both fixed and random effects, with an unstructured variance-covariance matrix of the random effects. For model comparisons we used Residual Standard Deviation (RSD), Akaike Information criterion, and log likelihood ratio test for nested models. **Results:** All 3 indicators showed that J2 performed the best for weight growth (e.g., RSD [smaller is better]: 0.51, 0.61, 0.70, 0.71 kg for J2, R2, R1, & J, respectively).

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R2 was the best for height growth (RSD: 1.36, 1.32, 1.35, 1.44 cm, respectively). The Intraclass Correlation Coefficient between measured and predicted values at the same age was 0.99 for weight and 0.91 for height. **Conclusions:** Growth models can turn a rather limited number of weight and height measures into an individual growth trajectory from which one can accurately estimate predicted weight and height, and calculate BMI, at ages for which measures were not initially available. This approach provides reliable estimates to use as outcomes or determinants in population-based obesity research.

8:00 AM – 9:30 AM

Physical Activity Epidemiology

102-OR[DT]

Time Use and Physical Activity: A Shift Away From Movement Across the Globe

Shu Wen Ng, Barry M. Popkin *Chapel Hill, NC*

Background: Technology linked with reduced physical activity (PA) in occupational work, home/domestic work, and travel and increased sedentary activities, especially television viewing, dominates the globe. **Methods:** Using detailed historical data on time allocation, occupational distributions, energy expenditures data by activity, and time-varying measures of metabolic equivalents of task (MET) for activities when available, we measure historical and current MET by four major PA domains (occupation, home production, travel and active leisure) and sedentary time among adults (>18 years). We present trends by domain for the United States (1965–2009), the United Kingdom (1961–2005), Brazil (2002–2007), China (1991–2009) and India (2000–2005). We also project changes in energy expenditure by domain and sedentary time (excluding sleep and personal care) to 2020 and 2030 for each of these countries. **Results:** Our forecasts are bleak. For instance, by 2020 the average American adult will only expend 142 MET hours per week while awake. The British are only slightly better but will reach that level by 2030. The Chinese and Brazilians continue on their steeper downward trend, reaching the US and UK total PA levels by 2030. The situation in India appears less severe, but this average masks the stark dichotomy that will likely continue in India. **Conclusions:** The use of previously unexplored detailed time allocation and energy expenditures and other datasets represents a useful addition to our ability to document activity and inactivity globally, but also highlight existing data gaps in monitoring physical activity and sedentarism. Given the potential impact on weight gain and other cardiometabolic and chronic health risks, the differential declines in MET of activity and increases in sedentary time across the globe represent a major threat to global health.

103-OR[DT]

Marginalization Orientation of Acculturation Predicts Activity Levels in Young Latina and African American Females: A Three-year Observational Study

Ya-Wen Hsu *Tainan, Taiwan*; Chih-Ping Chou *Los Angeles, CA*; Britni R. Belcher *Bethesda, MD*; Selena Nguyen-Rodriguez *Long Beach, CA*; Marc J. Weigensberg *Los Angeles, CA*; Arianna D. McClain *Stanford, CA*; Donna Spruijt-Metz *Los Angeles, CA*

Background: Acculturation to US culture impacts obesity-related behaviors. Acculturation process includes four dimensions: Assimilation (oriented toward US culture), Separation (toward culture of origin), Integration (toward both cultures), and Marginalization (neither culture). It is unclear if acculturation orientations are related to the pubertal decline in physical activity experienced by minority females. The objective of this study is to evaluate the influence of acculturation orientations on objectively measured activity in minority female youth over 3 years. **Methods:** Participants were 60 females (75% Latina, Mage=9.4±0.9). Body composition was examined by BodPodTM. Moderate-to-vigorous physical activity (MVPA) and sedentary behavior (SB) were measured by accelerometry on a quarterly basis. Acculturation was assessed by the Acculturation, Habits, and Interests, Multicultural Scale for Adolescents (AHIMSA) questionnaire. Mixed models assessed the longitudinal effects of baseline acculturation on activity levels, adjusting for pubertal maturation, ethnicity, and body composition. **Results:** Marginalization is the only acculturation orientation related to activity levels. Cross-sectional findings at baseline: Marginalization positively associated with MVPA (p=0.003) and inversely associated with SB (p=0.024). Longitudinal findings: Girls who felt more marginalized at baseline showed sharper increases in MVPA (p=0.045) and greater decreases in SB (p=0.012) over 3 years. MVPA declined by 1.97 min/day (p<0.001) and SB increased by 8.43 min/day (p=0.002) across 3 years. **Conclusions:** Marginalization orientation of acculturation seems to be protective of the pubertal decline in activity levels among minority females. Future research is needed to understand how cultural attitudes and norms influence activity behaviors among acculturating young females.

104-OR

Influence of Familial Support and School Sports Opportunities on Adolescent Sports Participation

Keith M. Drake, Meghan R. Longacre, Todd Mackenzie, Linda J. Titus, Michael L. Beach *Lebanon, NH*; Andrew G. Rundle *New York, NY*; Madeline A. Dalton *Lebanon, NH*

Background: Objective: To examine the extent to which familial support and school sports opportunities influenced high school students' sports participation. **Methods:** We conducted longitudinal telephone surveys with 1244 New Hampshire and Vermont children and their mothers. Children self-reported their sports team participation at two time points: baseline (elementary school) and follow-up (high school). Mothers reported their opinion of the importance of children's sports at baseline and their own sports participation and aerobic physical activity at follow-up. We surveyed high schools to assess sports opportunities, including the number of sports offered and whether they restricted team sport participation. **Results:** After controlling for children's baseline sports participation and other covariates, mothers' opinion of the importance of children's sports positively predicted boys' and girls' sports team participation in high school (p=0.002, p < 0.001, respectively). Mothers' sports participation was positively associated with boys' sports team participation (p=0.003), but not girls' participation (p=0.26). At the school level, boys' played on more sports teams if their school did not restrict participation in the most popular sports (p<0.001); in contrast, girls played on more sports teams if they had a wider variety of sports to choose from (p<0.001). **Conclusions:** Both familial support and school opportunity independently influenced adolescent sports participation. In addition to encouraging parental support, public health efforts to increase physical activity among youth should consider both access and choice in school athletic programs. Schools may need to use different strategies to increase sports participation in boys and girls.

105-OR

Contextual Differences Influence Association Between Physical Activity Energy Expenditure and Adiposity in Five Young Adult Populations

Amy Luke *Maywood, IL*; Pascal Bovet *Victoria, Seychelles*; Terrence Forrester *Kingston, Jamaica*; Jacob Plange-Rhule *Kumasi, Ghana*; Estelle Lambert *Cape Town, South Africa*; Dale Schoeller *Madison, WI*; Lara Dugas, Ramon A. Durazo-Arvizu, Richard S. Cooper *Maywood, IL*; Ulf Ekelund, Soren Brage *Cambridge, United Kingdom*

Background: The relationship between physical activity energy expenditure (PAEE) and adiposity is not known for most populations worldwide, lending uncertainty as to the efficacy of public health recommendations to increase PAEE in order to minimize excess weight gain. The Modeling the Epidemiologic Transition Study seeks to define the association between PAEE and obesity in 5 populations of African origin: Seychelles, South Africa, Ghana, Jamaica and the US (suburban Chicago). **Methods:** Baseline measurements of PAEE using accelerometry, anthropometrics and body composition by bioelectrical impedance analysis were completed on 500 adults, aged 25-45 years, in each site (total n = 2500). Participants wore Actical monitors for 7 consecutive days and PAEE was calculated using all recorded movement; files were flagged for non-wear using the 90-min 0-string criteria. **Results:** Mean BMI ranged from 22.2 to 29.8 (men) and from 25.5 to 34.0 (women)(Ghana and US, respectively). In contrast, the highest PAEE for both men and women was observed in Seychelles (39.9 and 35.8 J/kg/min); the lowest PAEE in men was in Jamaica (26.1 J/kg/min) and in women in South Africa (21.4 J/kg/min). Cross-sectional correlations between PAEE and BMI, waist circumference, or percent body fat varied by site and gender; in men, significant inverse associations were observed among PAEE and adiposity-related variables only in Ghana (r=-0.13 to -0.36) and Seychelles (r=-0.13 to -0.21) and in women, only in Ghana (r=-0.09 to -0.15) and Jamaica (r=-0.14 to -0.18) (all p<0.05). No associations were identified in other gen-

der-site groups. **Conclusions:** Physical activity patterns likely differ in terms of occupation, transportation and leisure between the five study populations, potentially influencing observed associations with adiposity; longitudinal studies will be necessary to determine causality.

106-OR[DT]
Gene-by-Physical Activity Interaction Effects on Cardio-metabolic Risk Factors in Mexican American Children

Rector Arya, Vincent P. Diego, Sharon P. Fowler, Sobha Puppala, Vidya S. Farook, Geetha Chittoor, Jennifer Schneider, Roy G. Resendez *San Antonio, TX*; Kelly J. Hunt *Charleston, SC*; Benjamin S. Bradshaw *Houston, TX*; Laura Almasy, Joanne E. Curran, Anthony G. Comuzzie, Donna M. Lehman, Christopher P. Jenkinson, Jane L. Lynch, Ralph A. DeFronzo, John Blangero, Daniel E. Hale, Ravindranath Duggirala *San Antonio, TX*

Background: Although genetic influences on cardio-metabolic risk factors (CMRFs) in children have been established, elucidation of the influence of genetic and environmental interactions on variation in CMRFs is very limited. We have examined the impact of gene-by-physical activity (G x PA) interactions on CMRFs in 670 non-diabetic Mexican American children (ages 6-17 years; females=49%, obese=34%), who participated in our SAFARI Study. **Methods:** PA patterns were measured using Harvard physical fitness score (fitness) and by sedentary activity (SA) recalls, for activities engaged in both "yesterday" [SAy] and "usually" [SAu]. CMRFs examined included BMI, waist circumference (WC), fat mass (FM), insulin resistance (HOMA-IR), high-density lipoprotein cholesterol (HDL), triglycerides (TG), systolic (SBP) and diastolic (DBP) blood pressure, and hsC-Reactive Protein (hsCRP, a measure of inflammation). We used the variance components approach to examine heritability (h^2) of all fitness, SA, and CMRFs, and extended it to examine G x PA interaction effects on CMRFs. **Results:** We found high h^2s for CMRFs [0.37 (hsCRP) to 0.80 (TG); P<0.0001]. Fitness also exhibited high h^2(0.61), while sedentary activity showed low but significant h^2s (SAu=0.19 and SAy=0.24; P<0.05). Significant G x PA interactions were identified for five traits: BMI, FM, WC, HOMA-IR and hsCRP. Of these, fitness showed significant interactions with BMI, WC, FM, HOMA-IR, and hsCRP. SAu exhibited significant interaction with FM and HOMA-IR, while SAy showed significant interaction with BMI, FM and HOMA-IR. **Conclusions:** These findings provide evidence that genetic factors interact with physical activity patterns to influence variation in CMRFs. Establishment of such interactive influences underscores the need to implement new intervention strategies to reduce or prevent cardio-metabolic risk in children.

107-OR
Longitudinal Relationship Between Screen Time and Change in Body Mass Index Among Adolescents Participating in the Growing Up Today Study II

Jennifer Falbe, Bernard Rosner, Walter C. Willett, Kendrin R. Sonneville, Frank Hu, Alison E. Field *Boston, MA*

Background: Total screen time has been identified as a contributor to childhood obesity, but few studies have examined the independent relationships between separate forms of screen time—video games, computers, DVDs, and television (TV)—and gains in adiposity. **Methods:** We analyzed data from three waves of the Growing Up Today Study II, a prospective cohort of adolescent girls and boys. Based on questionnaire data from 4,335 girls and 3,480 boys, linear regression was used to estimate the relationship between screen time and 2-year change in BMI. Screen time was examined as hours/day at the beginning of the 2-year period and as 2-year change in hours/day over the same period. Models were stratified by gender, included all forms of screen time simultaneously, and adjusted for age, baseline BMI, height change, Tanner stage, race/ethnicity, menarche (for girls), physical activity, and perceived neighborhood safety. **Results:** Among girls, TV watching and video game playing at the beginning of the 2-year period and 2-year increase in TV watching were associated with larger 2-year increases in BMI (0.06 kg/m2 per hour/day of TV, p<0.05; 0.25 kg/m2 per h/d of video games, p<0.0001; 0.08 kg/m2 per h/d increase in TV, p<0.001). Among boys, only 2-year increase in TV watching was associated with a larger 2-year increase in BMI (0.10 kg/m2 per h/d increase in TV, p<0.001). The magnitude of the association between TV watching and BMI was significantly (p<0.05) stronger among overweight girls and boys. **Conclusions:** Time spent watching TV among girls and boys and time spent playing video games among girls were associated with larger gains in BMI, particularly among overweight adolescents.

9:45 AM – 11:15 AM

Update on the Dissection of Neural/Endocrine Pathways Important in Obesity

108-OR
Shared and Separate CNS Sympathetic Circuits Innervating Visceral and Subcutaneous White Adipose Tissue

Ngoc Ly Nguyen, Timothy Bartness *Atlanta, GA*

Background: There is a strong link between increased visceral white adipose tissue (WAT) and the metabolic syndrome with decreases in visceral WAT of as little as 10% causing marked improvement. By contrast, subcutaneous WAT provides a site for lipid storage that is relatively innocuous or even beneficial. The sympathetic nervous system (SNS) is the principal initiator for lipolysis in WAT for humans and rodents. Nothing is known, however, about the CNS origins of the SNS circuitry innervating visceral WAT. In rodents, only mesenteric WAT (MWAT) is true visceral WAT. It is of interest whether the SNS outflow to subcutaneous WAT [e.g., inguinal WAT (IWAT)], versus visceral WAT (MWAT) is separate or shared. Differential SNS drive across WAT depots suggests some separation at some point, but those studies did not include MWAT. **Methods:** To test whether the SNS outflow from brain to IWAT and MWAT was shared or separate, we used isogenic strains of the pseudorabies virus, a retrograde viral tract tracer that travels transneuronally labeling a hierarchical chain of functionally connected neurons from brain to WAT in a backward manner. Each strain replicates a unique reporter allowing tracing of SNS connections between two WAT depots within the same animal. **Results:** There was considerable overlap (~65% doubly-infected neurons) between the two circuitries across the neural axis (e.g., preoptic area, suprachiasmatic and hypothalamic paraventricular nuclei, zona incerta, lateral hypothalamic area) with some separate outflow. **Conclusions:** These data provide neuroanatomical evidence of considerable shared CNS sympathetic outflow to visceral and subcutaneous WAT, but also some unshared outflow.

109-OR
A Paradoxical Inhibition of Palatable Food Preference By Melanocortin-4 Receptor Deletion

Brandon L. Panaro, Roger D. Cone *Nashville, TN*

Background: The central melanocortin system has long been implicated as a key regulator of energy homeostasis. Mutations causing haploinsufficiency of the MC4R gene are responsible for up to 5% of severe early-onset obesity cases in humans, making it the most common monogenic form of obesity. The most notable differences caused by MC4R deficiency are hyperphagia and decreased energy expenditure, both of which contribute to the obesity observed in humans and mice. There is substantial evidence that MC4R deficient mice overconsume high-fat diets compared to obese controls, though previous studies have investigated this feeding behavior only in single-diet paradigms. **Methods:** Wild-type and MC4R deficient mice were provided a variety of 1-choice and 2-choice diets consisting of standard chow, high-fat, and high-sucrose diets. Consumption levels of each diet were monitored for several days to obtain chronic preference measurements. **Results:** Surprisingly, under two-choice diet paradigms featuring a high-fat or high-sucrose diet paired with standard chow, MC4R deficient mice invariably have a low preference for palatable high-fat and high-sucrose diets compared to wild-type littermates. Furthermore, while dietary preference for fat or sucrose seems to be attenuated in the MC4R deficient mice, the drive for hyperphagia is consistently enhanced by dietary variety due to overconsumption of standard chow. **Conclusions:** Together, these observations suggest a role for MC4R in the processing of food-directed behaviors, with reduced MC4R signaling leading to additional hyperphagia in an environment presenting a variety of foods. The mechanisms that guide these behaviors are largely uncharacterized, though we hypothesize that MC4R regulates dietary behaviors and energy homeostasis through its central and peripheral contributions to gut-brain communication.

For author conflict of interest information, see page S250

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Adipose Tissue Biology

110-P
Local Adrenergic Innervation of Omental Fat Depot Is an Important Link between Visceral Obesity and Metabolic Disorders in Dogs

Ana Valeria B. Castro, Orison O. Woolcott, Darko Stefanovski, Cathryn M. Kolka, Viorica Ionut, Malini S. Iyer, Morvarid Kabir, Erlinda L. Kirkman, Richard N. Bergman *Los Angeles, CA*

Background: Abdominal obesity is accompanied by several metabolic and autonomous nervous system abnormalities. Considering the importance of the sympathetic innervation in modulating lipolysis differentially accross different fat depots, we developed a model of local and selective adrenergic denervation of the omental fat depot, and assessed its impact on metabolic outcomes. **Methods:** Experiments were performed in 11 male mongrel dogs, kept on a weight maintaining diet for the duration of the study. The denervation was carried out under general anesthesia, by injecting 6-hydroxydopamine (6-OHDA;2.0±0.2 mg/Kg) in the greater and lesser omental fat depot (denervated group, n=8). The control group received vehicle microinjections (saline+vit. C, n=3). Assessments were performed before (Wk0) and 2 weeks (Wk2) after denervation. **Results:** In contrast to the vehicle group, the 6-OHDA animals showed a significant increase of visceral fat depot (assessed by abdominal MRI, macroscopic inspection and omental fat weight) but not of abdominal subcutaneous fat. Fasting blood levels of FFA, leptin, insulin and adiponectin were not different after denervation. Assessment of insulin sensitivity by the intravenous glucose tolerance test or euglycemic hyperinsulinemic clamp showed no significant changes in whole body, peripheral or hepatic insulin sensitivity after denervation. **Conclusions:** Thus, despite increased omental fat depot similarly to what was observed in our historical data after a high fat diet, the dogs with denervated omental fat did not show significant changes in fasting blood metabolic profile and insulin sensitivity. These findings suggest that local sympathetic innervation of the omental fat depot might be an important link between visceral obesity and metabolic disorders. ADA 7-08-MI-0; NIH EK029867

111-P
VLDL-Triglyceride Storage in Liver, Visceral, and Upper Body Subcutaneous Adipose Tissue in Obesity

Nikki C. Bush, Jessica M. Triay, Nicola W. Gathaiya, James M. Swain, Michael L. Kendrick, Florencia G. Que, Michael D. Jensen *Rochester, MN*

Background: There is little information on the fate of VLDL-triglyceride (TG) storage into adipose tissue and reuptake by the liver. We measured VLDL-TG turnover and 24-hr storage of VLDL-TG into adipose tissue and liver to better understand the contribution of VLDL-TG to fat storage and fatty liver in obese adults. **Methods:** Sixteen volunteers (12 women, 4 men) scheduled for bariatric surgery donated a blood sample one week prior to surgery for ex-vivo VLDL-TG labeling with [1-14C]triolein. The [14C]-VLDL-TG was re-infused the day before surgery to measure VLDL-TG turnover. 24-hr VLDL-TG storage in visceral (VAT) and upper body subcutaneous (UBSQ) adipose tissue as well as liver was determined from biopsy material obtained at surgery. VAT and UBSQ mass were measured using DXA and CT. Liver weight was estimated using a previously published formula. **Results:** VLDL-TG turnover averaged 96 ± 42 (μmol/min). After 24-hrs, 2.7 ± 1.4% of VLDL-TG was stored in VAT, 18.6 ± 8.8% was stored in UBSQ, and 6.6 ± 3.5% was stored in liver. Adipose lipid specific activity (SA) in VAT and UBSQ was 112 ± 41 and 137 ± 75 (dpm/g lipid), respectively. Liver tissue SA was 803 ± 405 (dpm/g tissue). Liver stored significantly greater amounts of VLDL-TG (1.2 ± 0.7 μmol/g tissue) compared to VAT and UBSC after a 24-hr period (0.15 ± 0.11 and 0.19 ± 0.09 μmol/g lipid, respectively, $P < 0.001$). There was a significant, positive association between liver fat content (% lipid/g liver) and liver storage of VLDL-TG ($r = 0.52$, $P < 0.05$). **Conclusions:** These findings suggest that among obese individuals undergoing bariatric surgery, UBSQ fat and liver serve as significant storage sites for VLDL-TG even after a 24-hr period, whereas visceral fat is less important.

112-P
AdiposeENPP1-Tg Mouse: A Novel Animal Model of Systemic Insulin Resistance Induced By Adipose Tissue Dysfunction

Nicola Abate, Manisha Chandalia *Galveston, TX*

Background: We have recently described a new animal model of metabolic syndrome, the AdiposeENPP1-Tg mouse. This transgenic mouse has adipose tissue specific overexpression of Ectonucleotide Pyrophosphatase/Phosphodiesterase-1 (ENPP1) and manifests increased plasma fatty acid, increased hepatic fat deposition, and systemic glucose intolerance. **Methods:** In this study we have performed hyperinsulinemic-euglycemic clamps in 12 animals of age 24 weeks (6 transgenics and 6 wild-type siblings), after 12 weeks of high fat diet. **Results:** Body weight was 28.4 ± 1 and 29.0 ± 1.6 grams for AdiposeENPP1-Tg and wild-type, respectively ($p=0.4$). Plasma insulin concentrations at baseline were 0.53 ± 0.25 and 0.89 ± 0.26 ng/mL in AdiposeENPP1-Tg and Wild-type, respectively ($p=0.04$). After insulin infusion rate of 8 mU/kg/min, plasma insulin concentrations were 10.7 ± 2 and 11.1 ± 1.4 ($p=0.7$). We observed a significant decrease in glucose uptake not only in adipose tissue (both omental and subcutaneous; $p=0.004$ and $p=0.04$, respectively) but also in skeletal muscle of AdiposeENPP1-Tg mice ($p=0.015$). **Conclusions:** Our results support the view that the adipose tissue-specific changes induced by ENPP1 over-expression determine significant changes of glucose metabolism of skeletal muscle, thus affecting systemic insulin-mediated glucose disposal. Since we have also reported association between increased adipose ENPP1 and systemic insulin resistance in humans, our data strengthen the translational validity of this new model.

113-P
Fasting and Leanness Are Associated With Enhanced Fat Oxidation in Adipose Tissue of the Domestic Chicken

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Background: The domestic chicken is an attractive animal model for studies of obesity: 1.) like humans, chickens rely mainly on liver for de novo lipogenesis; 2.) quantitative trait loci (QTLs) linked to fatness in chickens contain genes implicated in human obesity and diabetes; 3.) chickens are naturally hyperglycemic and insulin resistant; and 4.) a broad selection of genetic models exhibiting a range of fatness are available. To date, however, little is known about regulation of adipose metabolism in this model organism. **Methods:** Affymetrix arrays and QPCR were used to characterize the response of chicken abdominal adipose tissue to an acute (5 hr) fast, and to compare expression profiles in lean vs. fatty lines. Western blotting was used to evaluate effects on signaling proteins. **Results:** A total of 1780 genes were differentially expressed in fasted vs. ad libitum fed tissue ($p<0.05$; FDR <5%). Gene Ontology and pathway analyses, combined with Western blot validation, indicated significant effects on pathways related to metabolism, stress signaling and adipogenesis. In particular, fasting upregulated key genes in both the mitochondrial and peroxisomal pathways of beta-oxidation, which was confirmed by increased tissue content of beta-hydroxybutyrate. Surprisingly, fasting upregulated expression of inflammatory adipokines. Expression signatures associated with fasting vs. fed were also present in abdominal adipose tissue of genetically lean vs. fatty lines of chickens. **Conclusions:** Collectively, these data suggest that leanness in chickens is associated with increased fat metabolism, which, given the similarities between avian and human adipose tissue, may have relevance for humans. These results also highlight chicken as a useful model in which to study the dynamic relationship between food intake and adipose development, metabolism, and cell stress.

114-P
Intra-Abdominal Transplantation of Subcutaneous Adipose Tissue in Mice Improves Glucose Tolerance and Promotes Browning of Intact Subcutaneous Adipose Depots

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Background: We and others have reported that intra-abdominal transplantation of subcutaneous adipose tissue improves glucose tolerance and reduces adiposity in mice. However, the underlying mechanisms are not well under-

stood. Recently, (white) subcutaneous fat has been found to be prone to 'browning' (expression of brown fat-specific genes, reduced adipocyte size) in response to exercise and cardiac natriuretic peptides. **Methods:** In 7-wk old male C57Bl6/J mice, additional inguinal (subQ) and epididymal (vis) depots were sutured onto the inner surface of the abdominal wall (subQ→vis and vis→vis mice, respectively). Mice (n=7-9/group) were then placed on a high-fat diet (45% by energy) for 17 wks. Energy expenditure was measured at 12 wks post-transplant. Adipocyte size was measured in tissue sections, and gene expression was assessed using Affymetrix microarrays (n=5/group). **Results:** Improved glucose tolerance was observed in subQ→vis mice from 6 wks post-transplant onwards. SubQ→vis mice gained less fat between 6 and 10 wks post-transplant (P<0.05 vs sham), but there were no differences in body weight. 24-hour energy expenditure was 2% higher in subQ→vis mice (P=0.24, corrected for body composition). At 17 wks, subQ→vis mice had lower hepatic TG content than sham and vis→vis mice (P=0.043). In the intact subcutaneous adipose tissue of subQ→vis mice, mean adipocyte size was reduced by 20% (P<0.0001) relative to sham-operated mice. Similarly, mRNA expression of the brown adipocyte-specific genes *Otp1, cidea, ucp1, cox8b*, and *prdm16* were increased relative to sham mice (all P<0.05 after FDR correction), while several white adipocyte-specific genes (*resistin, psat1, ccl6, fads3*) were downregulated. **Conclusions:** SubQ→vis transplantation may exert its beneficial effects on glucose tolerance and adiposity in mice by browning endogenous subcutaneous adipose depots.

115-P
Leucine Supplementation in High-Fat Induced Insulin Resistant Rats Increased Adiposity and Lipogenesis on Subcutaneous Adipocytes

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Background: Body-weight and adiposity control are a challenge especially in obesity. Several studies indicate leucine supplementation as therapeutic role to reduce these components. The present work evaluated the effect of leucine supplementation on adiposity, insulin resistance (IR) and the ability of adipocytes to incorporate D-[U-14C]-palmitate. **Methods:** Male Wistar rats were fed with high-fat [HF, n=10] or control diets [CON, n=10] for 10 weeks. Later, they were divided at random into four subgroups: i) CON (n=5); ii) CON+Leucine (CON+LEU, n=5); iii) HF (n=5) and iv) HF+LEU (n=5), for six more weeks. In this second phase, an insulin tolerance test was performed, and animals were euthanized, the subcutaneous (SC), periepididymal (PE) and mesenteric (MS) fat pads were excised, weighed and the adipocytes were isolated. **Results:** The glycemic decay (KITT) was less sharp in HF than in CON rats (P=0.0002), indicating lower insulin responsiveness in HF diet. There was no significant difference with LEU supplementation (P=0.408) and no interaction between LEU and diet (P=0.102), for KITT. Considering the three fat pads, we noticed that LEU supplementation accentuated adiposity in HF rats, characterizing a significant interaction between diet and supplementation (P=0.004). Besides, isolated adipocytes (PE and SC) from HF fed animals presented higher capacity to incorporate D-[U-14C]-palmitate (P=0.003 for PE and P=0.0001 for SC). LEU supplementation significantly interfered in cell response, independently of diet in SC (P=0.033) but not in PE adipocytes (P=0.448). **Conclusions:** LEU and HF diet interacted to induce IR and adiposity expansion in obese animals. Similarly, LEU exerted lipogenic effects in adipocytes of animals with IR.

116-P
CTRP3 Reduces Hepatic Triglyceride Accumulation in High Fat Fed Mice

Jonathan M. Peterson *Johnson City, TN*; Marcus M. Seldin, G.William Wong *Baltimore, MD*

Background: C1q TNF-Related Protein 3 (CTRP3) is a novel adipokine that is dysregulated with obesity. The purpose of this study was to determine the metabolic effects of elevated circulating CTRP3 protein in prevention and/or treatment of high fat diet mediated metabolic dysfunction. **Methods:** We used in vivo and in vitro approaches to determine the effects of CTRP3. We compared the effects of chronically elevated CTRP3 in attenuating the negative metabolic effects of a high fat (HF) diet (60% calories from fat) through the use of a transgenic mouse that constitutively over-expresses CTRP3. Additionally, we examined the effects of administration of CTRP3 through daily intraperitoneal injection (IP) in HF-diet induced obese mice. **Results:** CTRP3 transgenic (Tg) mice develop normally. Further, there are no differences between Tg and wild type (WT) mice in body weight, food intake, or energy expenditure in response to a HF-diet. On the other hand, Tg mice demonstrate a significant reduction in serum glucose in response to insulin tolerance test. Moreover, there was a significant attenuation of hepatic triglyceride accumulation in Tg mice fed a HF-Diet compared to WT (-36%). Additionally, when HF-Fed mice were given daily injections of recombinant CTRP3 there was a similar reduction in hepatic triglyceride accumulation (-40%). Further, when CTRP3 was administered directly to H4IIE rat hepatoma cells in the presence of excess free fatty acids there was a significant reduction in the accumulation of total lipids. Analysis of the hepatic tissue demonstrated that CTRP3 suppresses the mRNA expression of a number of genes involved in lipid synthesis. **Conclusions:** We conclude that the CTRP3 causes a reduction in hepatic triglyceride accumulation in vivo though a reduction in triglyceride synthesis

117-P
Vasocrine Effect of Local Noradrenaline Synthesis on Abdominal Adipose Tissue Micro Vessels in Diabetes

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Background: The expanding adipose tissue in obesity requires maintenance of effective angiogenesis and vasoreactivity to combat endothelial dysfunction, a potent cardiovascular risk factor. Adipose micro-vessels exhibit impaired vasodilatation in obese patients. Whether vasoconstriction is equally compromised is unclear. De novo catecholamine synthesis from rat adipocytes has been reported. Thus, the aims of this study were to investigate the hypothesis that noradrenaline (NA) synthesis is elevated in omental (OAT), compared to sub-cutaneous adipose tissue (SAT), especially in obese patients with diabetes, leading to insensitivity to NA-mediated vasoconstriction of micro-vessels **Methods:** SAT and OAT was obtained from obese subjects during surgery. Tissue NA was determined by ELISA, tyrosine hydroxylase (TH: rate limiting enzyme of catecholamine synthesis) expression by immunohistochemistry and vasoconstriction to NA (10^{-9} -10^{-6} M) by micromyography. **Results:** In the non-diabetic group: NA concentration and TH immunoreactivity was significantly higher in OAT compared to SAT [SAT: 6.1(0.8-563.6) pg/mg, OAT: 534.8(2.2-2819.2) pg/mg; p=0.03], and micro-vessels from OAT showed higher maximal vasoconstriction (p=0.02), but, lower sensitivity to NA (10^{-8} - $10^{-7.5}$M, p<0.05). However, in diabetics no significant depot differences were seen in NA synthesis or vasoconstriction. Interestingly, SAT micro-vessels from non-diabetics compared to diabetics, showed significantly greater sensitivity to NA (10^{-8} M to $10^{-7.5}$ M, p<0.05) **Conclusions:** Lower local NA synthesis in SAT of non-diabetic subjects may explain the greater sensitivity to NA-induced vasoconstriction. However, greater SAT NA synthesis in diabetics appears to abolish both the depot specific differences and the sensitivity to NA. Therefore, vasoconstrictive responses are also compromised in diabetic micro vessels.

118-P
Abdominal Adipocyte Morphology and Its Relation to Adipose Tissue Metabolism, Gene Expression, Lipolysys and Adipokine Levels

Andréanne Michaud, Suzanne Noël, Gaétan Parie, Andre Tchernof *Quebec, Canada*

Background: We tested the hypothesis that women with adipocyte hypertrophy in either omental (OM) or subcutaneous (SC) adipose tissue, but with similar values of body composition and fat distribution, are characterized by alterations in adipocyte lipolysis and adipose tissue expression of genes coding for proteins involved in adipocyte metabolism or adipokines. **Methods:** OM and SC fat samples were surgically-obtained in 43 women (age: 47.0±5.0 years, BMI: 27.7±5.3 kg/m2). Body composition and fat distribution were measured by DEXA and computed tomography. Gene expression quantification was performed by real-time RT-PCR. Glycerol release by mature adipocytes was measured as an index of lipolysis. In a given depot, women with larger adipocytes than predicted by the regression of adipocyte size vs. computed tomography-measured area of the corresponding depot were considered as having adipocyte hypertrophy, whereas women with smaller adipocytes than predicted were considered as having adipocyte hy-

 For author conflict of interest information, see page S250

perplasia. **Results:** Women with SC adipocyte hypertrophy had lower mRNA expression of GLUT4 and adiponectin in both compartments, lower plasma adiponectin levels as well as higher OM and SC adipocyte isoproterenol and forskolin-stimulated lipolysis compared to women with SC adipocyte hyperplasia ($0.10<p\leq0.05$, for all). Women with OM adipocyte hypertrophy had lower SC GLUT4 mRNA abundance compared to women with OM adipocyte hyperplasia ($p<0.10$ for all). OM adipocyte isoproterenol and forskolin-stimulated lipolysis were significantly higher in women with hypertrophic OM adipocytes. **Conclusions:** Adipocyte hypertrophy in the SC or OM fat compartment is associated with lower adiponectin expression, higher lipolysis and lower SC adipose tissue GLUT4 expression.

119-P
Circulating 5α-Dihydrotestosterone and Abdominal Adipocyte Characteristics in Healthy Women

Julie Anne Côté, Julie Lessard, Jacques Mailloux, Philippe Y. Laberge, Caroline Réhaume, Andre Tchernof *Quebec, Canada*

Background: The association between circulating androgen levels and fat distribution in women has been widely inconsistent among existing studies. We sought to investigate the relationship between plasma adrenal and gonadal androgen levels and body fat distribution, as well as abdominal adipocyte characteristics. **Methods:** Omental and subcutaneous fat samples were obtained surgically in 60 women (age: 47±5 years; BMI: 26±5 kg/m2). Body composition and fat distribution were measured by dual energy x-ray absorptiometry and computed tomography respectively. Adipocyte diameter, basal lipolysis and heparin-releasable lipoprotein lipase activity were measured. Steroids were quantified using high performance gas chromatography and mass spectrometry. **Results:** Significant negative associations were found between plasma DHT levels and total adiposity (BMI: $r=-0.35$, $p<0.05$, fat mass: $r=-0.31$, $p<0.05$) as well as computed tomography assessments of abdominal adiposity ($r=-0.30$, $p<0.05$ for subcutaneous adipose tissue area and $r=-0.44$, $p<0.005$ for visceral adipose tissue area). The association between DHT levels and visceral adipose tissue area was independent of total body fat mass. A significant negative association was also observed between plasma DHT and OM adipocyte diameter ($r=-0.27$, $p<0.05$). When expressed as the omental/subcutaneous ratio, HR-LPL activity and basal lipolysis were negatively and significantly related to plasma DHT levels. DHEA levels were also negatively correlated with the OM/SC ratio of HR-LPL activity. **Conclusions:** Measures of body fatness, omental adipocyte size and adipocyte metabolism were negatively associated with circulating androgens. The assumption that high androgen levels are related to an android body fat distribution pattern in women should be critically re-examined.

120-P
RNAi-Mediated Knockdown of Metabolic Proteins in 3D Coculture of Adipocytes and Endothelial Cells

James K. Sims, Brian Rohr, Esha John, Eric Miller *Medford, MA*; Arul Jayaraman *College Station, TX*; S. P. Walton *Lansing, MI*; Kyongbum Lee *Medford, MA*

Background: One approach to controlling body fat could be to intervene in metabolic processes in adipose tissue (AT) that contribute to lipid accumulation. The esterification of fatty acids into lipids (triacylglycerol, TAG) directly contributes to adipose hypertrophy, because TAG accumulation leads to an increase in cellular volume. Paradoxically, fatty acid retention is a core function of the AT, and loss of control could contribute to the metabolic syndrome. We investigate the balance between TAG synthesis and mobilization by perturbing metabolic enzymes and lipid-droplet proteins. To improve the physiological relevance of the in vitro experiments, we use a 3D coculture model incorporating 3T3-L1 adipocytes and human umbilical vein endothelial cells (ECs). **Methods:** 3T3-L1 preadipocytes were induced to differentiate using a standard protocol, then detached, concentrated, and mixed into a collagen solution with or without ECs. The collagen cell suspensions were gelled in 12-well plates. The cells were exposed to siRNA by lipofection. Gene expression, TAG content, and lipid droplet distribution were quantified using qRT-PCR, enzymatic assay, and image analysis, respectively. **Results:** Knockdown targets included pyruvate carboxylase (PCX) and perilipin (PLIN) based on our previous flux analysis. Individual knockdown of PCX and PLIN reduced the average droplet size and total lipid accumulation in both 3D mono- and coculture. Furthermore, combined knockdown of both enzymes led to an even greater reduction in TAG accumulation, presumably because PCX and PLIN function in different pathways. **Conclusions:** We report the effects of metabolic gene knockdowns in a 3D coculture system. Further work is warranted to quantify the global effects of the knockdowns on cellular metabolism, and to determine optimal combinations of silencing targets.

121-P
Reversal of Visceral Obesity-Induce Liver Pathophysiology in Mice Via Visceral Transplantation of Subcutaneous Fat

Kimberly Cox-York, Michelle T. Foster *Fort Collins, CO*

Background: Obesity-related metabolic disorders occur predominantly in individuals with upper body fat distribution commonly associated with increased visceral fat. A proposed mechanism link is portal spillover/effluent of toxins produced when fat becomes dysregulated. We have demonstrated this effect is mediated by inherent differences in metabolic behavior of fat depots; prospectively lipolytic activity. **Methods:** We hypothesize high fat diet-induced enhancement of fatty acid liver influx and subsequent increased liver triglyceride can be reduced if fat storage is enhanced within the visceral fat depot, thus reversing glucose intolerance and insulin resistance. High fat diet-induced obese mice (~30 grams) were sham operated or received autologous (excision of adipose tissue and subsequent relocation within animal) subcutaneous fat transplantation to the visceral cavity. Glucose tolerance was performed pre-surgery and 4 weeks post-surgery, while fat, liver and portal blood were collected terminally. **Results:** Though animals remained on high fat diet post-surgery autologous transplantation significantly improved glucose tolerance and significantly decreased portal triglycerides and fatty acid concentration. We also investigated individual components of autologous transplantation, specifically subcutaneous fat removal vs. transplantation in the visceral cavity and determined only transplantation significantly improved glucose tolerance, increased hepatic insulin sensitivity and decreased circulating portal lipids and liver triglyceride storage. In addition, transplantation of subcutaneous fat restored insulin and leptin concentrations to chow control levels, but did not alter adiponectin or resistin concentrations. **Conclusions:** These experiments demonstrate portal lipid delivery plays a role in the metabolic complications of visceral obesity.

122-P
APP Gene Expression Is Upregulated By Diet-Induced Obesity in Mice

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Background: Mid-life obesity (OB) increases the risk for Alzheimer's Disease (AD). In previous studies, we have demonstrated that human amyloid precursor protein (APP), from which the beta-amyloid fragments implicated in AD derive, is expressed in adipocytes, up-regulated with OB and correlated with adipokine exp (expression). In this study, we aimed to determine whether APP gene also dysregulated in murine models of OB and diabetes. **Methods:** 200 male C57BL/6 mice at 6 weeks of age were divided and fed a normal (ND) or high-fat diet (HFD) for 10, 20, 30, 41, or 71 weeks. Plasma and blood levels of glucose and insulin, gene exp levels of APP and adipokines in adipose tissue (AT) depots and brain, and area under the glucose curve (AUC) during the glucose tolerance test (GTT) were measured. **Results:** We confirmed significantly increased APP exp in subcutaneous AT (SC-AT) in all groups of diet induced obese (DIO) mice. APP exp in SC-AT was correlated with AUC ($p<0.0001$), non-fasting plasma insulin levels ($p<0.0001$), and the exp of inflammatory cytokines such as TNF-α ($p=0.002$), IL-6 ($p=0.0005$), and MCP-1 ($p<0.0001$). APP exp in SC-AT was decreased 11% with caloric restriction (CR) (p = NS), whereas thiazolidinedione (TZD) treatment significantly reduced APP exp in AT depots by 54% ($p<0.0001$). APP exp in SC-AT and brain of streptozotocin (STZ) treated DIO and ND mice was significantly reduced ($p<0.05$), indicating an important role of insulin sensitivity and/or insulin levels in the regulation of APP exp. **Conclusions:** In summary, APP gene exp in SC-AT was increased in OB, correlated with glucose levels and gene exp of adipokines, and decreased by STZ, TZD and CR. These results confirm our previous findings in human individuals. Insights into APP regulation and processing in adipose tissue may improve our understanding of the increased risk for AD in obese individuals.

123-P
FAS and Malic Enzyme Activities in HFD-Induced Obesity Are Increased By Treatment of Rats With Croton Zehntneri Essential Oil or Anethole, Its Main Constituent

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Background: The Croton zehntneri is widely used in folk medicine in Northeastern Brazil. We evaluated the effect of chronic treatment with OECz or anethole on weight gain and WAT metabolism of obese animals. **Methods:** Male Wistar rats were divided into 6 groups: control diet (C); high fat diet (HFD); HFD + OECz 100mg/kg (OECz100) or 300mg/kg (OECz300) and HFD + anethole 80 mg/kg (A80) or 240 mg/kg (A240). Obesity was induced by feeding a HFD for 8 weeks and the rats were treated for 8 weeks more with OECz or anethole. After 16 weeks, the animals were sacrificed and body weight and some lipogenic enzymes [ATP citrate lyase, malic, fatty acid synthase (FAS) (Bazin & Ferre, 2001) and G6PDH (Bernet & Bergmeyer, 1974)] activities of the retroperitoneal (RP) fat were assessed. **Results:** OECz and the anethole at all doses decreased weight gain compared to HFD (C:48.56±4.37g;HFD:73.76±9.13g; OECz100:24.52±14.74g; OECz300:-4.45±8.03g, A80:18.06±9.73g and A240:-8.72±9.37g). The RP fat pad weight of groups control, OECz300, A80 and A240 was lower than in the HFD group (C:2.38±0.27g;HFD:5.04±0.71g;OECz100:4.38±0.55g; OECz300:2.62±0.58g;A80:2.71±0.27g;A240:2.78±0.44g). The malic enzyme activity was increased in the group OECz300 compared to other groups ($p<0.05$), except for the A240 group (C:27.22±3.32;HFD:24.62±5.04;OECz100:22.97±4.25; OECz300:62.50±10.46, A80:30.57±9.22;A240:32.41±7.99). FAS activity was increased in the group OECz 300 vs HFD ($p<0.05$) (HFD:0.001911±0.0001133, OECz300:0.0039980±0006300). ATP citrate lyase and G6PDH enzymes showed no statistical difference. **Conclusions:** Rats treated with the OECz and anethole showed a decrease in weight gain and retroperitoneal fat pad weight, the highest dose of OECz (300mg/kg) increased the activity of FAS and malic lipogenic enzymes.

124-P
Acute Estradiol Treatment in Postmenopausal Women Modulates Postprandial Triglyceride Clearance and Adipose Tissue Cellularity

Kimberly Cox-York, Daniel H. Bessesen, Christopher B. Erickson, Teri L. Hernandez, Matthew R. Jackman, Molly A. Krause, Hong Wang, Rachael E. Van Pelt *Aurora, CO*

Background: After menopause, adipose tissue (AT) accumulation increases and shifts from femoral (FEM) to abdominal (AB) subcutaneous deposition. This may be due, in part, to changes in postprandial triglyceride (TG) clearance and regional AT storage of meal-derived fatty acids. **Methods:** To identify the role of circulating estradiol (E2) per se on this shift, 10 postmenopausal women (56 + 2y; BMI 24 + 3kg/m2) consumed a labeled (14C-oleic acid) liquid test meal after random, cross-over assignment to two weeks of transdermal E2 or placebo (P). Following the test meal, serum TG was measured for 6hrs to assess postprandial lipemia (incremental area under the curve, TGIAUC). 24hrs after the test meal, aspiration biopsies were collected from FEM and AB AT and analyzed for fasting 14C specific activity (SA), lipoprotein lipase (LpL) activity and cell size. **Results:** TGIAUC was decreased with E2 treatment ($p = 0.02$), suggesting increased TG clearance. E2 treatment did not change AB or FEM AT TG storage (14C SA), whereas FEM fasting LpL activity decreased ($p=0.03$), as did FEM cell diameter. Moreover, there was a strong inverse correlation between AB and FEM AT for cell diameter and LpL activity ($p<0.01$). **Conclusions:** Together these data indicate a shift in lipid metabolism at the cellular level that, over time without E2, contributes to the detrimental shift in AT deposition to the abdomen after menopause.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

125-P
Differential Response to Thiazolidinedions in Leptin Deficient Lepmkyo/Lepmkyo Rats and Lepob/Lepob Mice

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Background: Development of animal models for human diseases promotes translational medicine. However, it is critical to consider species differences in translating the findings of disease-model animals into human pathophysiology. Leptin plays an important role in regulating energy homeostasis. Although much has been learned from genetically obese leptin deficient ob/ob mice, some flaws have been noted in mice as animal models for human diabetes. Due to the unavailability of technologies for inducing homologous recombination in mammals other than mouse, there had never been leptin deficient rat. **Methods:** Using the method with N-ethyl-N-nitrosourea (ENU) mutagenesis, we developed a leptin deficient mkyo/mkyo rat, which had a nonsense mutation (Q92X) within the leptin gene. We compared metabolic phenotype and its response to thiazolidinediones (TZDs) between mkyo/mkyo rat and ob/ob mouse. **Results:** mkyo/mkyo rats showed morbid obesity, glucose intolerance, hypertriglyceridemia and fatty liver, which are comparable to ob/ob mice. Meanwhile, treatments with TZDs disclosed the marked difference in their effect between ob/ob mice and mkyo/mkyo rats. TZDs deteriorated fatty liver in ob/ob mice, while TZDs improved fatty liver in mkyo/mkyo rats as in human rpatients. Besides, TZDs decreased triglyceride content in skeletal muscle but had no effect on adipose tissue weight in Lepob/Lepob mice, while TZDs had no effect on triglyceride content in skeletal muscle but increased adipose tissue weight in mkyo/mkyo rats as in human patients. Hepatic peroxisome proliferator-activated receptor gamma (PPARγ) mRNA expression was differentially regulated between mice and rats. **Conclusions:** These results demonstrate the superiority of mkyo/mkyo rats over ob/ob mice as a model of obesity and its complications.

126-P
Implication of Klotho Gene in Obesity Related Aging - Studies in WNIN Obese Rats

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Background: Obesity, aptly called as the metabolic syndrome also reduces one's life span as it accelerates aging, shown by latest epidemiological reports. Aging perse can be either due to inbuilt genetic determinants or it can be due to inability of the organisms to cope up with increased oxidative stress. WNIN obese mutant rats i.e., WNIN/Ob (with euglycemia) and WNIN/GR-Ob (with impaired glucose tolerance) developed at our institute has all the metabolic abnormalities associated with obesity and their life span is reduced to half. These mutants were investigated for evidences for oxidative stress and for candidate genes of aging. **Methods:** Oxidaative stress is analysed in males of both the mutant strains at 35,90,180 and above one year of age in plasma,adipose tissue,and hypothalamus, in terms of protein and lipid oxidation and levels of antioxidant enzymes. Candidate genes like SIRT1,FOXO1 AND KLOTHO were analysed for expression by real time PCR. **Results:** The animals showed protein oxidation as early as 35 days and lipid oxidation from 90 days on wards and brain seems to be aging first.All antioxidant enzymes were elevated with age and a weak anti oxidant system was seen as the age progressed. Among the genes,there was no change in the expression of SIRT1 and FOXO1,while Klotho was up regulated in the tissues examined as early as 35 days,when obesity is physically visible in these animals. **Conclusions:** The accelerated aging seems to be due to increased oxidative stress in these animals and klotho seems to be involved in aging as it is directly responsible for the increased adiposity in these animals.The animals being leptin resistant has no control on fat deposition which accounts for up regulation of koltho.This is the first study which implicates klotho in the obesity related aging and these obese rat models are ideal to explore this lead further.

127-P
MRI-Measured Bone Marrow Adipose Tissue (BMAT) Is Inversely Related to DXA-Measured Volumetric Bone Mineral Density (BMD) in Postmenopausal Women

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Background: Recent studies discovered an inverse relationship between magnetic resonance imaging (MRI)-measured BMAT and dual-energy X-ray absorptiometry (DXA)-measured BMD. In an effort to overcome DXA technical limitations, the present study tested the relationship between pelvic BMAT and pelvic volumetric BMD (vBMD) as a replacement to areal BMD (aBMD). **Methods:** In 27 postmenopausal Caucasian women (age = 55.2 ± 3.3 yrs, BMI 24.2 ± 4.9 kg/m2), pelvic BMAT was quantified by whole-body contiguous T1-weighted MRI and aBMD was measured by DXA. Pelvic or femoral neck vBMD was calculated by using bone mineral content measured by DXA and bone volume measured by MRI in these regions. **Results:** There was an inverse association between pelvic BMAT and pelvic vBMD (r = -0.566; P = 0.003) and this association was stronger than the correlation between pelvic BMAT and pelvic aBMD (r = - 0.566 vs – 0.478, all P<0.05). BMAT measured at the trochanter and femoral neck region also showed a stronger association with total hip vBMD than with total hip aBMD (r = – 0.623 to -0.640 vs. – 0.398 to – 0.414, all P<0.05). **Conclusions:** Pelvic BMAT is inversely correlated with pelvic vBMD. The vBMD method with combined DXA and MRI may be an improved BMD measure over areal BMD. Further studies are needed to examine whether the inverse relationship between BMAT and vBMD is causal. (NIH P30 DK26687 - Pilot grant of New York ONRC)

128-P
Relationship Between Serum Resistin Concentrations and Insulin Resistance in Obese Patients With Chronic Hepatitis C

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Background: The aim of the current study is to determine the circulating resistin levels obtained from patients with CHC and to correlate them with insulin resistance and hepatic histological features. **Methods:** We selected 176 patients who were divided in 2 groups: group A - 105 patients with chronic hepatitis C without obesity (CHC-O) and group B - 71 patients with chronic hepatitis C with obesity (CHC+O). Body mass index (BMI) was calculated for all subjects, and serum resistin, insulin, C-peptide, and lipoprotein levels were also measured. IR was determined using Homeostasis model assessment (HOMA-IR). **Results:** Resistin levels were higher in CHC patients with obesity (p=0.0001). Serum resistin levels increased parallel with increasing body mass index. Resistin correlated positively, but not very strong with BMI (r=0.288, p=0.003) and HOMA-IR (r=0.36, p=0.0001). In patients with CHC and obesity increased level of resistin was risk factor for hepatic steatosis (OR=5.4, CI95% 1.9-14.9, p=0.001). Resistin level was higher in patients who have more severe liver inflammation, irrespective of the degree of obesity (30.3±20.2 ng/dl versus 30.2±11.6 ng/ml, p=0.042). In CHC obese patients, resistin was correlated with histological activity, increasing with its increase (p=0.038) and with severity of fibrosis (p=0.0001). **Conclusions:** This study demonstrated the relationship between resistin and IR and resistin and hepatic steatosis in obese patients with CHC. There is an explanation for this finding, as resistin is related to IR, it was suggested that resistin may contribute to hepatic steatosis by promoting IR and insulin signal changes in hepatocytes.

129-P
Differential Impact of Obesity on Endothelium-Dependent Relaxation of Omental vs. Subcutaneous Adipose Small Vessels From Young Morbidly Obese Female Qataris

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Background: The incidence of obesity amongst young people in the Middle East has reached an all-time high, resulting in serious health implications. Obese individuals can suffer from endothelial dysfunction, a potential risk factor for vascular disease. This can be made worse by increasing insulin resistance. Recent reports have shown that there are depot-specific differences in the impact of obesity on endothelial vasomotor function with the visceral environment considered more pathogenic. It is, however, unclear how severe the impact would be on a relatively young obese population. **Methods:** Here, we measured endothelium-dependent relaxation to acetylcholine (Ach) in small vessels obtained from omental (OM) and subcutaneous (SC) adipose depots of younger and more insulin-resistant (HOMA=4.3±1.4) morbidly obese female Qataris (BMI 43.7±3.16 SEM, age 28±4, n=10) undergoing bariatric surgery. The arteries (normalized internal diameter ~255 μM for OM and ~ 234 μM for SC) were cut into segments (~2 mm) and mounted on a dual wire myograph for measurement of isometric tension. Cumulative concentration-response curves were constructed for Ach in noradrenaline-contracted segments. Contractile responses to potassium chloride and noradrenaline were also recorded **Results:** Relaxation to Ach was significantly reduced in the OM vessels (Emax 60.28±8.12%) compared with the SC (Emax 95.73±0.26, p<0.05). The OM vessels were also less sensitive to noradrenaline than the SC vessels. **Conclusions:** These results demonstrate that not only is endothelium-dependent relaxation impaired in the omental compared to subcutaneous adipose small vessels from young highly insulin-resistant morbidly obese female Qataris, but that sensitivity to noradrenaline is also reduced.

130-P
Potential Candidate Genes For Obesity in the TALLYHO Mouse

James Denvir, Donald Primerano, Goran Boskovic, Jun Fan, Jung Han Kim *Huntington, WV*

Background: The TALLYHO/Jng (TH) mouse is a polygenic model for obesity and type 2 diabetes. Previously, we identified a quantitative trait locus linked to obesity, tabw2 on mouse chromosome 6 in TH mice and confirmed it by congenic mice. Subsequently, using subcongenic mice strategy we fine mapped the locus to approximately 8-Mb interval, explaining most of the tabw2 effect on chow. The objective of this study was to identify potential susceptibility variants within the tabw2 interval. **Methods:** We performed whole genome sequencing of the TH genome in two paired end read strategies using an Illumina HiSeq1000 next generation sequencer. Libraries were prepared and sequenced using standard Illumina protocols. We generated ~60 Gb of TH sequence with an average coverage of ~25X. Seventy five percent of the readout aligned to the mouse reference C57BL/6 (B6) genome (Build 37). **Results:** We compared the TH genome to the B6 genome using CASAVA and identified 4,749,554 SNPs. Among the SNPs, 38,147 mapped to the tabw2 interval. To refine this set, we compared the TH variant set (whose members may be derived from Swiss ancestors) to variants from three Swiss-derived non-obese, non-diabetic strains. We identified 17,360 SNPs within tabw2 that were not found in the three strains. Further systemic filtration of these SNPs identified 34 genes with nonsynonymous SNPs. **Conclusions:** We applied a whole-genome sequencing strategy in combination with genetic mapping information to identify a set of candidate genes for the tabw2 obesity locus. These findings will facilitate identification of the causal genes and variants.

131-P
Upregulation of the Complement System and Its Association With Local Insulin Resistance in Subcutaneous Adipocytes From Non-Obese, Hypertriglyceridemic Subjects

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Background: Dysfunctional adipose tissue plays an important role in the etiology of a large number of cardiometabolic disorders, independent of obesity. These include the metabolic syndrome, type 2 diabetes, and dyslipidemia. However, the molecular mechanisms underlying adipocyte dysfunction, especially in metabolically stressed non-obese subjects, are incompletely understood. **Methods:** Whole genome expression profiling was conducted on stroma-free subcutaneous adipocyte fractions from 13 marginally overweight subjects with familial combined hyperlipidemia (FCHL) and 8 unrelated controls of comparable body sizes. FCHL served as a model of familial insulin resistance in the presence of dyslipidemia. **Results:** Gene set enrichment and co-expression network analysis identified a general downregulation of metabolic pathways (such as the tricarboxylic acid cycle) and a general upregulation of immune-inflammatory pathways in adipocytes from FCHL subjects. In particular, the complement and complement regulators was identified as

one of the top upregulated pathways in FCHL (FDR<1E-30). Complement gene expression was associated with plasma triglycerides and adipocyte insulin resistance markers, and this association was independent of sex or disease status. However, complement pathway upregulation was most likely not driven by hypertriglyceridemia since a 40% pharmacologic reduction in triglycerides did not affect complement expression. **Conclusions:** These findings point to an upregulation of complement related transcriptome in subcutaneous adipocytes under metabolically stressed conditions, even in the absence of obesity. Such upregulation can subsequently influence downstream processes including macrophage infiltration into adipose tissue, insulin resistance, adipocyte apoptosis and cardiovascular risk.

132-P
Control of Non-Genetic Variation Enhanced the Survival of an Obesity QTL Within Three Congenic Strains

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Background: Genes and their variants that contribute to differences in body fatness have been difficult to study because the effects are often lost while attempting to confine them to a congenic strain. In the present study, we reduced the risk of loss by controlling for sources of non-genetic variation. **Methods:** The QTL was identified in an intercross cross between the C57BL/6ByJ (B6) X 129P3/J (129) mouse strains and accounted for 5.5% of the variance in adiposity. From these strains, chromosome substitution mice were bred and used for the creation of congenic mice, which are now in their N11 generation. Steps to reduce non-genetic sources of variation included the study of mice of a single sex (male) and a single age (180 days). To reduce variation due to imprinting and maternal effects, only fathers transmitted the congenic donor region to their offspring and mothers were genetically uniform. The obesity phenotype was defined as the weight of the dissected gonadal adipose depot adjusted for body weight. **Results:** With these points in mind, three congenic strains retained the phenotype [$F(1,362)=54.4$, $p<0.000001$]. The QTL was isolated into 13.5 MB region on mouse chromosome 9 and accounted for 13% of the variance. Fourteen genes within this region differ in predicted function, e.g., deletions or inappropriate stop codons. **Conclusions:** Missing heritability in human genetic studies of obesity may be due to the lack of control over sources of non-genetic variation. Here isolation onto an invariant genetic background and the control of age, sex, imprinting and maternal genotype enhanced the effect of this QTL.

133-P[DT]
Differential Expression of SOCS7, PDIA3, TBRG1 and COL4A2 in Visceral Adipose Tissue of Obese Diabetic African Americans

Ayo P. Doumatey, Hanxia Hang, Adebowale Adeyemo, Charles N. Rotimi *Bethesda, MD*

Background: Obesity and Type 2 diabetes (T2D) are frequent co-morbidities in the United States. Therefore, understanding the molecular changes associated with T2D and obesity is crucial in gaining insight into pathogenesis and the development of new therapeutics. **Methods:** In this study, we evaluate the expression of four genes (SOCS7, COL4A2, TBRG1 and PDIA3) that have been previously studied for their putative roles in diabetes in animal models and in humans. We focus on omental adipose tissue (OAT), an endocrine organ known to play an important role in the development of insulin resistance and T2D. RNA was extracted from the OAT of 20 African-American subjects, 14 of whom were both obese and diabetic ("cases") and 6 obese only ("controls"). RT-PCR was used to determine and compare the expression levels of SOCS7, COL4A2, TBRG1 and PDIA3 between the two groups. **Results:** All four genes were expressed in OAT in both groups of subjects. Comparing cases with controls, SOCS7 and PDIAs were significantly down-regulated whereas TBRG1 and COL4A2 were significantly upregulated. **Conclusions:** The data suggest that these four genes play a role in the pathophysiology of T2D in obese African-Americans.

134-P[DT]
Adipose Tissue 11-Beta Hydroxysteroid Dehydrogenase Type-1 (11βHSD1) Gene Expression, Insulin Resistance, Beta-Cell Function, and Ectopic Fat in Obese African Americans

Lauren E. Gyllenhammer, Tanya L. Alderete, Swapna Mahurkar, Brandon D. Kayser, Hooman Allayee, Michael Goran *Los Angeles, CA*

Background: Adipose tissue 11βHSD1 expression associates with insulin resistance and ectopic fat deposition; however, the exact mechanism is poorly understood. Examining this relationship in minority populations, particularly AA and Latinos (LA) whom are similarly insulin resistant but display different patterns of abdominal fat accumulation may clarify how adipocyte 11βHSD1 expression leads to insulin resistance. **Methods:** Obese AA and LA young adults (N=35; BMI 35.4±3.8 kg/m2, 18-24y) were examined. Visceral (VAT) and subcutaneous abdominal (SAAT) adipose tissue volume and hepatic fat fraction (HFF) were measured by MRI. SAAT gene expression was measured by Human HT-12 microarray and insulin sensitivity (SI), beta-cell function (BCF) by FIVGTT. Partial correlations were used to assess relationships between fat depots, 11βHSD1 expression and outcome measures. Multivariate linear regression was used to examine relationships/interactions of ethnicity and expression of 11βHSD1 on outcomes (covariates: sex and body fat %). **Results:** 11βHSD1 expression associated with HFF independent of ethnicity ($st\beta=0.47$, $p=0.002$), but only significantly associated with metabolic risk in AA ($Pinteraction<0.05$). In AA, 11βHSD1 was negatively related to SI ($st\beta=-0.62$, $p=0.02$), BCF ($st\beta=-0.62$, $p=0.03$) and positively associated with fasting insulin ($st\beta=0.70$, $p<0.01$). Furthermore, in AA, HFF was positively correlated with SI and fasting insulin ($r=-0.66$, $p<0.01$ and $r=0.66$, $p<0.01$). After controlling for HFF we found that 11βHSD1 expression remained associated with BCF, but not SI or fasting insulin. **Conclusions:** These results suggest that expression of 11βHSD1 in adipose tissue is associated with insulin resistance and poor beta-cell function in AA.

135-P
ENPP1 Modulates Fatty Acid-Induced Systemic Insulin Resistance

Nicola Abate, Manisha Chandalia *Galveston, TX*

Background: We have previously reported that Ectonucleotide Pyrophosphatase/Phosphodiesterase-1 (ENPP1) is involved in regulating adipocyte metabolism and its over-expression in adipocytes induces defective triglyceride storage, increased plasma fatty acid, increased hepatic fat deposition, and systemic insulin resistance to glucose disposal. Plasma fatty acid elevation is known to induce skeletal muscle insulin resistance. In this study we explored the hypothesis that fatty acid elevation in plasma could have a more deleterious effect on systemic insulin resistance to glucose disposal in people with higher ENPP1 expression. **Methods:** In 20 normoglycemic volunteers, a baseline hyperinsulinemic-euglycemic clamp and subcutaneous abdominal adipose tissue biopsy was followed by a repeat clamp after 4 hours intralipid/heparin infusion to acutely elevate plasma free fatty acids. **Results:** Higher ENPP1 expression, obtained from needle biopsies of subcutaneous abdominal adipose, was correlated with higher suppression of peripheral glucose disposal rate after 2 hours of intra-lipid/heparin infusion ($r2=0.23$; $p=0.03$). Gene expression data revealed a significant correlation between ENPP1 and Toll-like receptor 4 (TLR4) ($r2=0.33$; $p=0.008$). **Conclusions:** Since TLR4 is known to be activated by fatty acid, increased skeletal muscle TLR4 in persons with high ENPP1 could mediate the larger impact of circulating fatty acid on insulin resistance observed in our study. Our data support the hypothesis that plasma fatty acid elevation induces more severe systemic insulin resistance in persons with high ENPP1 expression.

136-P
ENPP1 and Metabolic Complications of Adipose Tissue Dysfunction in Humans

Nicola Abate, Manisha Chandalia *Galveston, TX*

Background: We have previously reported that a common polymorphism of Ectonucleotide Pyrophosphatase/Phosphodiesterase-1 (ENPP1), the ENPP1 K121Q, associates with increased systemic insulin resistance. However, the strength of this association could be affected by variability in gene expression/protein levels in various tissues, including adipose, and this may play a role in the apparently discrepant genetic literature. In this study we tested the hypothesis that concomitant ENPP1 over-expression and K121Q polymor-

phism contribute to adipose tissue (AT) dysfunction and systemic insulin resistance more than each of the two factors separately. **Methods:** Hundred-thirty-four participants were genotyped, categorized as wild-type ENPP1/K121K or polymorphic ENPP1/121Q carriers, underwent body composition studies, hyperinsulinemic-euglycemic clamps, and AT biopsy. Four subgroups were identified based on genotype and median ENPP1 expression. **Results:** The relationships between body fat and insulin resistance were different in the male subgroups ($p<0.05$ for differences in slopes; highest Rd-value decline in high-ENPP1/121Q). In both genders, ENPP1 over-expression was associated with up-regulation of genes involved in fatty acid metabolism and inflammation in AT ($p<0.05$ for SREBP1c, DGAT, CD36, ASP, HSL, CD68, MAC1 and STAT3, adjusted for total or abdominal fat). Plasma fatty acid was highest in the high-ENPP1/121Q. Increased ENPP1 expression associates with AT dysfunction in both genders. Concurrent 121Q allele identified more severe systemic insulin resistance in the males. **Conclusions:** The findings of this study support the view that adipose tissue ENPP1 is a major determinant of insulin resistance in men but not in women and its effect is mediated both by expression levels and by genotype.

137-P
Biomarker Profile Does Not Predict Weight Loss Success

Sarit Polsky, Lorraine G. Ogden, Paul S. MacLean, Erin D. Giles, Carrie Brill, James Hill, Holly R. Wyatt *Aurora, CO*

Background: Individuals attempting weight reduction have varying degrees of success even when participating in the same weight loss intervention. Identifying physiological factors that are associated with greater weight loss success could improve weight loss outcomes and help individualize obesity treatment. **Methods:** Sixty-one adults (BMI 27 – 30 kg/m^2) participated in a 16-week group-based, cognitive-behavioral control weight loss program. Concentrations of 12 fasting hormones and cytokines related to adiposity, satiety/hunger, and inflammation were measured using the Milliplex human metabolic human panel before and after weight loss. **Results:** Participants were classified into two groups based on a ≥8% or <8% weight loss. 46 subjects (75.4%) made up the successful group (SG ≥8%) and 15 (24.6%) made up the less successful group (LSG <8%). There were no differences in baseline sex distribution, age, weight, BMI, and body composition between groups. In the SG, baseline to 16 week levels decreased significantly for c-peptide (1,030 vs. 891 ng/mL, $p = 0.002$), insulin (665 vs. 541 pg/mL, $p = 0.001$), and leptin (28,382 vs. 16,161 ng/mL/g fat, $p < 0.001$). None of the baseline analytes predicted greater weight loss. **Conclusions:** Successful weight loss (≥8%) was associated with changes in adiposity signals reflecting less fat mass and unfavorable changes in hunger signals. However, there was no baseline biomarker profile that was associated with greater weight loss success. In this cognitive-behavioral weight loss program, baseline behavioral factors or changes of behavioral factors over time may have outweighed the effects of physiological signals for determining successful weight loss. The observed change in leptin however may serve to promote weight regain over a longer period of time and therefore may play a more significant role in long-term weight loss maintenance.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

138-P
Action of Nicotinic Acid on Adiponectin and Leptin Production and Expression in 3T3-L1 Adipocytes Under Oxigen Deprivation

Renata Nakamichi, Erika Prates, Beata M. Quinto, Maria T. Zanela, Marcelo C. Batista *São Paulo, Brazil*

Background: Obesity has been considered one of the major contributors to the current global mortality and morbidity. The aim of this study was to investigate the effect of nicotinic acid on adipokines production and expression in adipocytes before and after hypoxia. **Methods:** The mature adipocytes were pretreated with nicotinic acid(NA) for 24h and induced by hypoxia for different periods 4, 8 and 12h. Levels of adipokines in medium were quantified using immunoassay. Adipokines expression was analyzed by real time PCR. **Results:** Adipocytes treated with NA had lower leptin production comparing with spontaneous production and an increase on leptin production associated with different periods of oxygen deprivation. Adipocytes submitted to 8 and 12h of hypoxia showed an increase on leptin production compared to spontaneous production and a decrease of leptin levels in cells treated with nicotinic acid compared with cells under 12h of hypoxia . NA increased the production of adiponectin comparing to spontaneous production. Treatment increased adiponectin production during hypoxia. Real time PCR showed a raise of adiponectin expression in adipocytes treated with NA in comparison to spontaneous expression, but didn't exert effect on spontaneous leptin. Hypoxia, in all periods, increased the leptin expression and decreased adiponectin expression. **Conclusions:** In adipocytes pre-treatment with nicotinic acid blunted the production of leptin in spontaneous conditions and under hypoxia. Adiponectin production and expression increased under nicotinic acid treatment. The translation of such "in vitro" nicotinic acid benefits to the clinical setting should be object of future studies.

139-P
Activation of Calcium Sensing Receptor in Adipose Tissue and Human Adipose Cells Elevates the Expression of Proinflammatory Factors

Mariana Cifuentes, Elisa L. Villalobos, Marcela Reyes *Santiago, Chile*

Background: An important part of the adverse metabolic and cardiovascular consequences of obesity derive from a dysfunction of adipose tissue, one of the mechanisms being a disordered secretion pattern leading to an excess of proinflammatory cytokines and chemokines. We have previously established that human adipose cells and the human adipose cell line LS14 express the calcium sensing receptor (CaSR) and that its expression is elevated upon exposure to inflammatory cytokines that are typically elevated in obese humans. Given the reported association of the CaSR to inflammatory processes in other tissues, we sought to evaluate its role elevating the adipose expression of inflammatory factors. **Methods:** We exposed adipose tissue and in-vitro cultured LS14 preadipocytes and differentiated adipocytes to the calcimimetic cinacalcet and evaluated the expression of the proinflammatory cytokines IL6, IL1β and TNFα as well as the chemoattractant factor CCL2. **Results:** CaSR activation elicited an elevation in the expression of the inflammatory factors, which was in part reverted by SN50, an inhibitor of the inflammatory mediator nuclear factor kappa B (NFκB). **Conclusions:** Our observations suggest that CaSR activation elevates cytokine and chemokine production through a signaling pathway involving activation of NFκB nuclear translocation. These findings support the relevance of the CaSR in the pathophysiology of obesity-induced adipose tissue dysfunction, with an interesting potential for pharmacological manipulation in the fight against obesity-associated diseases.

140-P
Loss of Regulatory T Cells (Tregs) in Visceral Fat Is Mediated by NADPH Oxidase 2 Activation and Contributes to Sleep Fragmentation-induced Accelerated Weight Gain in Mice

Shelley X. Zhang, Zhuanhong Qiao, David Gozal, Yang Wang *Chicago, IL*

Background: Sleep fragmentation (SF) elicits accelerated weight gain in mice even when fed normal chow. SF-induced obesity is associated with oxidative stress, inflammation, metabolic dysfunction, and adipocyte-progenitor homing and differentiation in visceral fat (VF). Recent studies implicate loss of Tregs in VF in the development of obesity. Thus, we examined whether SF-induced accelerated weight accrual also involves loss of VF Tregs and, if so, whether NADPH oxidase (NOX)-dependent oxidative stress plays a role. **Methods:** Mice were fed normal chow and maintained under 12-h light–dark cycles. SF was applied using custom-made cages that awakened the animals every 2 min by tactile stimulation during the light cycle. VF was collected at various time-points for analyses. **Results:** C57BL/6 mice subjected to SF for 8 weeks gained more body weight and had more VF than controls. SF-exposed mice also had substantially reduced number of CD4+CD25+Foxp3+ Tregs in VF, along with increased number of VF macrophages, especially the M1 subtype, and increased NOX activity. Loss of VF Tregs occurred in mice exposed to SF for only 2 weeks, when body weight and VF mass were still similar among SF and control mice. Furthermore, SF-induced loss of VF Tregs was associated with increased mitochondrial reactive oxygen species and signs of apoptosis in remaining Tregs. gp91$^{phox-/y}$ mice, which lack NOX2 activity, did not develop SF-induced accelerated weight gain, were void of SF-induced loss of Tregs, Treg oxidative stress and apoptosis in VF, and exhibited no activation of macrophages. **Conclusions:** In conclusion, SF induces loss of VF Tregs and VF dysfunction leading to obesity. Current findings further suggest that SF causes Treg loss through Treg mitochondrial dysfunction and apoptosis, which are likely triggered by NOX2 activation.

141-P
Advanced Glycation End Products (AGEs) Promote Adipogenesis of Senescent Preadipocytes through AGE Receptor (RAGE)-Inhibited p53 Function

Chihyu Chen, Allison M. Abell *West Lafayette, IN*; Yang Soo Moon *Jinju, Republic of Korea*; Kee-Hong Kim *West Lafayette, IN*

Background: Visceral obesity accelerates aging process and causes p53-related cell dysfunction. Advanced glycation end products (AGEs) are a heterogeneous group formed by Maillard reaction between reducing sugars and amino acids during thermal processing. While AGEs are known to contribute to the development of aging-related phenotypes and cardiovascular disease, the role of AGEs and its receptor, RAGE, in obesity and adipose aging is unclear. The objective of this study was to determine the role of AGE-RAGE axis in adipogenic potential of senescent preadipocytes. **Methods:** High-passage 3T3-L1 cell line was applied as an *in vitro* aging model of preadipocytes. Bovine serum albumin (BSA) glycated with glucose derivatives (ex. methylglyoxal and glyceraldehyde) was used as an exogenous source of AGEs. **Results:** Replicative senescent preadipocytes exhibited aging characteristics was observed, including increased p53 level, impaired insulin signaling and decreased adipogenic capacity. AGEs promoted restoring the adipogenic potential of senescent preadipocytes. Besides, RAGE expression is required for glycated BSA-induced adipogenesis in senescent preadipocytes. Senescence-induced expression of p53 and p21, a p53 downstream gene, was suppressed by AGEs. We demonstrated that RAGE is activated by AGEs and translocate from the cell membrane to cytosol. This translocation made RAGE directly binding to cytoplasmic p53 and the RAGE-p53 complex inhibits its DNA binding activity. **Conclusions:** The results reveal a novel function of glycated dietary components in restoring adipogenic ability of aged preadipocytes in a RAGE-p53 dependent manner. Together with this knowledge, dietary strategies or alternative method could be developed in terms of reduced AGE consumption to manage obesity, especially for elderly population.

142-P
Lipocalin-2 Expression Increases Adipocyte Fatty Acid Oxidation Through PPARδ

Rogowski P. Rogowski, Amanda L. Kozimor, Jada L. Stevenson, Hui Chang *Lubbock, TX*; James M. Ntambi *Madison, WI*; Jamie A. Cooper, Chad M. Paton *Lubbock, TX*

Background: Recent reports have suggested lipocalin-2 (Lcn2) is a causative factor in the development of obesity due to its positive correlation with fat mass. However, we have observed significant increases in Lcn2 in mice that are resistant to diet induced obesity. We sought to determine the role of Lcn2 in regulating energy expenditure. **Methods:** Lcn2 expression was assessed in lean and obesity resistant mouse models. We also assessed the role of up-regulation of Lcn2 in 3T3-L1 adipocytes using recombinant human lipocain-2 (rhLcn2). The transcriptional mediator of Lcn2 effects were tested using PPARδ (GSK0660) and PPARγ (GW9662) inhibitors. To assess the relationship between Lcn2 and fat oxidation in humans, two groups of women, normal weight (NW) and obese (OB), underwent gas exchange measurements with blood samples following three separate high fat meals. **Results:** Lcn2 treatment increased expression of genes involved in β-oxidation as well as 3H labeled oleic acid conversion to 3H2O, an indicator of β-oxidation. In mature adipocytes, rhLcn2 increased PPARδ target gene expression (UCP2, CPT-1b, and Citrate Synthase) with no effect of GSK0660 on expression. However, target gene induction was ablated in adipocytes co-treated with rhLcn2+GSK0660. GW9662 had no effect on Lcn2 target genes, suggesting Lcn2 functions through PPARδ, not PPARγ. In humans, postprandial Lcn2 levels were significantly correlated with total energy expenditure in NW but not OB females due in part to increased Lcn2 in NW and decreased Lcn2 in OB following the high fat meals. **Conclusions:** Lcn2 has been viewed as an obesogenic factor, yet our results suggest that it may compensate for obesity by promoting β-oxidation. In light of these results, it appears that Lcn2 is a novel adipokine that promotes fat oxidation by increasing PPARδ activity and its function may be impaired in obesity.

143-P
Role of Collagen VI in Human Adipocyte Function

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Background: In adipose tissue, collagen VI is a major component of the extracellular matrix and an important modulator of systemic metabolism. Collagen VI expression has been reported to increase during adipocyte differentiation and with obesity and was identified as a key node in the disease-normal differential by the Berg Interrogative Biology® discovery platform obesity model. **Methods:** We determined the influence of collagen VI on adipocyte function by differentiating human preadipocytes on a collagen VI-enriched extracellular matrix. Following 2 weeks of differentiation, we measured the expression of adipogenesis-related genes, basal and stimulated lipolytic activity, triglyceride accumulation and mitochondrial activity. **Results:** When human preadipocytes were differentiated on a matrix with various concentrations of collagen VI, no change in triglyceride accumulation was observed. Moreover, there were no differences in expression of the adipogenesis-related genes PPARγ, CEBPα, FAS and GLUT4 indicating no alteration of adipocyte differentiation capacity and lipid accumulation. However, when preadipocytes were differentiated on collagen VI, we observed a slight increase in basal lipolysis and a reduction in the lipolytic response after β-adrenergic stimulation. Furthermore, these changes were associated with both a decrease in basal mitochondrial oxygen consumption rate and ATP turnover. In addition, no change was observed in proton leak or maximal mitochondrial respiratory capacity. **Conclusions:** Taken together, these results suggest that collagen VI plays a major role in regulating basal and stimulated lipolysis and mitochondrial activity in adipocytes. These findings demonstrate that collagen VI can directly influence adipocyte function and hence represents a potential novel therapeutic target for the management of obesity and its associated complications.

144-P
Obesity Induced Fibrinogen Formation and Its Effect on Adipocyte Inflammation, Fibrosis, and Glucose Uptake

Minsung Kang, Chad M. Paton *Lubbock, TX*

Background: Obesity and insulin resistance are associated with increased fibrin formation and inflammation, yet the effect of fibrin degradation products (FDP-E) on fibrosis and glucose disposal is completely unknown. We hypothesize that FDP-E will decrease adipocyte glucose disposal by increasing inflammation and cytokine production in macrophages. **Methods:** To establish fibrin and FDP's as mediators of obesity induced morbidities, we determined the effect of 1) fibrinogen expression in chow and high fat fed mice, 2) obesity induced fibrin deposition in adipose tissue, 3) FDP-E induced inflammation in Raw264.7 macrophages and its effect on glucose uptake, and 4) the effect of FDP-E on fibroblast proliferation, differentiation, and fibrosis. **Results:** Fibrinogen mRNA increased with fasting in the liver (8.7 ± 2 fold) and remained elevated after refeeding (7.3 ± 0.5 fold). FDP-E deposition increased 4-fold in obese mice. In vitro fibrinogen was induced with FXR agonist (GW4064) and repressed with PPARγ agonist. GW9662 (PPARγ inhibitor)+GW4064 elevated fibrinogen expression over Tro+GW4064. It appears that coordinated regulation of fibrinogen expression occurs by reciprocal regulation via FXR (increase) and PPARγ (decrease). Lastly, we determined the effect of FDP-E on macrophage inflammation by assessing cytokine production in vitro. We found that treatment of cells with FDP-E caused a significant increase in TNFα, MCP-1, and F4/80 gene expression and likely suppressed adipocyte glucose uptake. **Conclusions:** Fibrinogen expression and deposition is increased with obesity. Dietary regulation of fibrinogen is achieved through coordinated regulation by PPARγ and FXR and FDP-E increases inflammation which suppresses glucose uptake. Ongoing studies are being conducted to determine the effect of FDP-E on proliferation and fibrosis in 3T3-L1 adipocytes and C2C12 myocytes.

 For author conflict of interest information, see page S250

145-P
Increased Adiposity and Altered Glucose Metabolism in Galectin 3 KO Mice

Jingbo Pang, Davina H. Rhodes, Elise Malecki, Karla J. Castellanos, Maria Pini *Chicago, IL*; Mauro Perretti, Dianne Cooper *London, United Kingdom*; Giamila Fantuzzi *Chicago, IL*

Background: Galectin-3 (Gal3) is a lectin with pro-inflammatory activities which also acts as a receptor for advanced glycation end-products. Gal3 levels are markedly elevated in obesity. We hypothesized that Gal3 deficiency leads to reduced inflammation and improved metabolic responses in mice fed a high fat diet (HFD). **Methods:** WT and Gal3 KO male C57BL6 mice (n=10 per group) were fed a low fat (LFD) or HFD for 12 weeks. Body composition was measured by DXA, leptin and serum amyloid A (SAA) by ELISA, mRNA expression by qPCR, and glucose and insulin tolerance tests (GTT and ITT) performed. **Results:** Gal3 KO mice on either LFD or HFD had significantly increased adiposity compared to diet-matched WT mice as measured by % fat mass ($p<0.01$), serum leptin ($p<0.05$) and median adipocyte size ($p<0.01$). Expression of adiponectin in visceral adipose tissue (VAT) of Gal3 KO mice on either LFD or HFD was significantly lower compared to diet-matched WT mice ($p<0.01$). Both LFD and HFD Gal3 KO mice developed more severe glucose intolerance and insulin resistance compared to WT groups as evaluated by GTT, ITT and HbA1c levels ($p<0.05$ WT vs KO). Gal3 KO mice developed systemic inflammation, as indicated by neutrophilia, thombocytosis, microcytic anemia, % of blood Ly6chigh monocytes as well as elevated SAA protein in serum and SAA mRNA expression in liver. However, markers of inflammation in VAT did not significantly differ between WT and Gal3 KO mice. **Conclusions:** Gal3 is an important modulator of adiposity, glucose metabolism and systemic inflammation in mice. Despite its pro-inflammatory activities, Gal 3 deficiency is associated with enhanced systemic inflammation and glucose intolerance.

146-P
MTOR Complexes 1 and 2 Are Involved in the Modulation of the Expression of Coregulators Associated With PPARγ Activation in 3T3-L1

Juliana Magdalon, Thiago B. Oliveira, Vivian A. Paschoal, Rui Curi, William Festuccia *Sao Paulo, Brazil*

Background: Although mTOR activation is essential for adipogenesis and adipocyte maintenance, the role of complexes 1 and 2 of mTOR (mTORC1 and 2) in the control of PPARγ transcriptional activity was not yet investigated. **Methods:** 3T3-L1 adipocytes treated for 72 h with rosiglitazone (RSG – PPARγ agonist) associated or not with rapamycin (RAPA – mTORC1 inhibitor) or torin (mTORC1 and 2 inhibitor) were evaluated for the mRNA content of different PPARγ coregulators and lipogenic enzymes by quantitative PCR. **Results:** RSG increased the mRNA levels of PEPCK and GyK, an effect exacerbated by mTORC1 and 2 inhibition. RSG associated or not with RAPA or torin reduced the mRNA level of E4BP4, a protein involved in the regulation of PPARγ transcription. RSG associated or not with RAPA or torin reduced mRNA levels of the coactivators SRC1, SRC2, SRC3, SRC5 and GCN5 and the corepressors HDAC1, HDAC3, HDAC4 and SUV39H1. Notably, RAPA partially reverted the effects of RSG on the expression of SRC5, whereas torin partially reverted the alterations in HDAC3, SRC3 and SRC5 and completely recovered the HDAC1 and GCN5 expression. The mRNA levels of p300, PCAF and SMRT were not altered by the treatments. The mRNA level of NCoR1 was not altered by RSG but was reduced by RSG associated with RAPA or torin. **Conclusions:** The data suggest that mTORC1 and 2 play an important role in the modulation of gene expression of several histone acetylases and deacetylases that may be involved in the regulation of PPARγ transcriptional activity.

147-P
Annexin A1 Regulates Adiposity and Glucose Metabolism in Mice

Rand Akasheh, Maria Pini, Davina H. Rhodes, Karla J. Castellanos, Cassie L. Kerr *Chicago, IL*; Trinidad Montero-Melendez, Roderick J. Flower, Mauro Perretti, Dianne Cooper *London, United Kingdom*; Giamila Fantuzzi *Chicago, IL*

Background: Annexin A1 (ANXA1) is a glucocorticoid-regulated protein with anti-inflammatory properties. We hypothesized that ANXA1 KO mice would develop increased inflammation in response to high-fat diet (HFD). **Methods:** C57BL6 and Balbc WT and ANXA1 KO mice were fed a low fat (LFD) or HFD. Circulating mediators were measured by ELISA, mRNA expression by qPCR, cell source of ANXA1 by flow cytometry, body composition by DXA. **Results:** Significant induction of ANXA1 mRNA was observed in visceral adipose tissue (VAT) of male WT C57BL6 mice on HFD versus mice on LFD ($p<0.001$). ANXA1 in VAT was produced by infiltrating F4/80+ macrophages. Male C57BL6 ANXA1 KO mice on LFD had larger VAT depots with elevated median adipocyte size and higher serum leptin compared to WT mice on LFD (all $p<0.01$). Feeding a HFD lead to comparably increased adiposity in WT and ANXA1 KO mice, but ANXA1 KO mice were partly protected from HFD-induced alterations of glucose metabolism, as evaluated by glucose and insulin levels, HOMA-IR and HbA1c (all $p<0.05$). No differences between WT and KO mice on either LFD or HFD were observed for serum adiponectin levels or markers of VAT inflammation. In the obesity-resistant Balbc strain, both male and female ANXA1 KO mice on either LFD or HFD developed significantly increased adiposity compared to age- sex- and diet-matched WT mice as evaluated by DXA. **Conclusions:** ANXA1 is an important modulator of adiposity in mice, with ANXA1 KO mice in both C57BL6 and Balbc strains being more susceptible to weight gain. In the obesity- and insulin resistance-prone C57BL6 strain, ANXA1 deficiency partly protects from HFD-induced alterations of glucose metabolism.

148-P
Polyunsaturated Fatty Acids (PUFA) Suppress Adiponectin Secretion By Adipocytes: Involvement of Lipid Peroxidation

Jamie Abbott, Susie O'Conner Butler, Sainath Kotha, Travis Gurney, Shariq Sherwani, Ulysses J. Magalang, Narasimham Parinandi *Columbus, OH*

Background: Circulating adiponectin levels in obese individuals have fallen significantly suggesting a link between fat load in adipose tissue and decrease in adiponectin release by adipose tissue in obese individuals. However, polyunsaturated fatty acids (PUFA) have been established as essential dietary fats and recently n-3 fatty acids (Omega-3) have gained importance in health, nutrition, and disease. **Methods:** We loaded the 3T3 differentiated adipocytes with different PUFAs including linoleic (C18:2), linolenic (C18:3), arachidonic (C20:4), eicosapentaenoic (20:5; EPA), and docosahexaenoic (22:6; DHA) acids for 24 h and then analyzed the secreted adiponectin, intracellular adiponectin, fatty acid composition, triglyceride accumulation, cytotoxicity, and extent of lipid peroxidation (formation of 4-hydroxy-2-nonenal, 4-HNE) in the cells. **Results:** Our results revealed that PUFA loading suppressed both adiponectin release by the cells and intracellular adiponectin, increased cellular PUFA content and triglyceride accumulation, and induced lipid peroxidation (intracellular formation of 4-HNE). **Conclusions:** The essential dietary PUFAs caused suppression of secretion and synthesis of adiponectin in adipocytes apparently through elevated lipid peroxidation and oxidative stress.

149-P
Enhanced Glucose Disposal in Human Adipocyte Progenitors By E4orf1 Protein

Olga Dubuisson, Rashmi Krishnapuram, Vijay Hegde, Jeffrey M. Gimble, Nikhil V. Dhurandhar *Baton Rouge, LA*

Background: Proteins of a human adenovirus Ad36 offer a template to improve glycemic control by bypassing impaired insulin signaling, which is often associated with obesity or diabetes. Ad36 improves hyperglycemia in rodent models and shows association with better glycemic control in humans spontaneously infected with the virus. In vitro studies attribute the anti-diabetic effect of Ad36 to its E4orf1 protein, which enhances glucose uptake in murine cells including preadipocytes and adipocytes. To examine the therapeutic relevance of E4orf1 to hyperglycemia in humans, we determined the ability of E4orf1 to increase glucose uptake in human adipose tissue derived stromal/stem cells(hASC) from subcutaneous lipoaspirates. **Methods:** hASC were transfected with a plasmid expressing E4orf1 protein, or a null vector. The uptake of 2-deoxy glucose was determined 48 h post transfection, and the abundance of selected cellular proteins was determined by Western blot. E4orf1 expression in cells was confirmed by WB. **Results:** Three experiments confirmed that E4orf1 transfection increased cellular glucose uptake by up to 3 fold ($p<0.001$) compared to the null vector expressing group. Also, E4orf1 significantly increased the protein abundance of PPARgamma2, adiponectin, and glucose transporters Glut4 and Glut1 (all $p<0.001$).

Conclusions: This study provides evidence that glucose disposal in human adipocyte progenitors could be enhanced by a single viral protein. A comprehensive understanding of the E4orf1 modulation of cell signaling is required to further ascertain its potential therapeutic application. Nonetheless, this study strengthens the plausibility that a novel drug based on the action of E4orf1 may improve glycemic control in humans with impaired insulin signaling. Funding/Conflict of Interest: Vital Health Interventions/US-Patent:8,008,436B2.

150-P
In Adipocytes E4orf1 Protein Enhances Cellular Glucose Uptake Independent of PPARgamma

Rashmi Krishnapuram, Olga Dubuisson, Vijay Hegde, Nikhil V. Dhurandhar, Vijay Hegde *Baton Rouge, LA*

Background: Reminiscent of the action of the anti-diabetic drugs thiazolidinediones (TZD), Ad36 –a human adenovirus up-regulates PPARgamma in preadipocytes and adipocytes, increases adiposity, and yet improves glycemic control in rodent models. PPARgamma promotes adipogenesis in preadipocytes and lipid accumulation in adipocytes. The adipogenic effect of Ad36 is likely due to the activation of AKT-1 signaling that up-regulates PPARgamma, and the anti-hyperglycemic effect of the virus is likely due to the activation of AKT-2, which enhances cellular glucose uptake. In vitro studies attribute the adipogenic and anti-diabetic effects of Ad36 to its E4orf1 protein. The anti-diabetic effect of E4orf1 would be more attractive for developing a therapeutic approach, if uncoupled from its adipogenic effect. To test this possibility, we determined if E4orf1 can increase glucose uptake in adipocytes, independent of PPARgamma, by down-regulating it with. 2-Aminothiadiazole(ATD), a specific inhibitor of AKT-1 signaling. **Methods:** 3T3-L1 adipocytes were transfected with a null vector, and exposed to 10μM TZD, or transfected with a plasmid expressing E4orf1 protein. Both groups were exposed to 0, 1or 5μM ATD. **Results:** As expected, ATD reduced PPARgamma protein abundance. Increasing concentration of ATD significantly reduced glucose uptake in presence of TZD, but not when transfected with E4orf1. The glucose uptake in adipocytes was PPARgamma-dependent in presence of TZD, but not when induced by E4orf1. **Conclusions:** Thus, by down-regulating AKT-1 signaling E4orf1 may be used to enhance glucose uptake by adipocytes, without further increasing lipid accumulation. These data provide a template to harness the anti-diabetic potential of E4orf1 without its adipogenic effect. Funding/Conflict of Interest: Vital Health Interventions/US-Patent:8,008,436B2.

151-P
Glycogen Synthase Kinase (GSK) May Play a Role in E4orf1-Induced Glut1 Up-Regulation and Glucose Uptake

Soo-Ho Park, Jae-Hwan Nam, Olga Dubuisson, Vijay Hegde, Rashmi Krishnapuram, Na Ha-Na, Nikhil V. Dhurandhar *Baton Rouge, LA*

Background: Proximal insulin signaling in cells is often impaired in obesity or diabetes, which could reduce cellular glucose uptake. Ad36 –a human adenovirus, provides a template to enhance cellular glucose uptake by bypassing proximal insulin signaling pathway. E4orf1 protein of Ad36 is necessary and sufficient for Ad36-induced glucose disposal. Ad36 or E4orf1 up-regulate cAMP and Ras/AKT signaling and cellular abundance of glucose transporter proteins Glut4 and Glut1. Ad36 up-regulates Glut4 via Ras/AKT signaling. Although AKT up-regulation is also known to inactivate glycogen synthase kinase (GSK)-3 by its phosphorylation to up-regulates Glut1, Ras knockdown does not reduce Ad36-mediated Glut1 up-regulation. This suggests that Ad36 or E4orf1 use a Ras/AKT independent pathway to up-regulate Glut1 signaling. To identify the alternative signaling used by E4orf1 to up-regulate Glut1, we first determined if GSK-3 is modulated. **Methods:** 3T3-L1 adipocytes were transfected with a vector expressing E4orf1 protein or a null vector. Cellular uptake of 2-deoxy glucose was determined under basal conditions. Protein abundance was determined by Western blots. **Results:** E4orf1 transfection increased glucose uptake by 3.35 fold in 3T3-L1 adipocytes. As hypothesized, E4orf1 induced significantly greater phosphorylation of both, GSK-3 alpha and beta, normalized to total GSK-3 ($p<0.01$). **Conclusions:** These data suggest that GSK-3 inactivation, may be involved in E4orf1-mediated glucose uptake. The role of cAMP signaling, a known inactivator of GSK, in E4orf1-induced inactivation of GSK and up-regulation of Glut1 should be determined. E4orf1 uses the Ras pathway to up-regulate Glut4 and may use cAMP/GSK signaling to up-regulate Glut1, leading to enhanced cellular glucose uptake. Funding: Vital Health Interventions/US-Patent:8,008,436B2. .

152-P
Effect of Glyburide on Human Mesenchymal Stem Cell Development

Justin J. D'Agostino, Thuy Bach, Narek Perian, Yuanxiang Zhao *Pomona, CA*

Background: Glyburide is a commonly prescribed anti-diabetic medication that has been clinically linked to significant weight gain in patients, a phenomenon termed as obesogenic effect. However, the underlying mechanisms that cause drug induced weight gain are largely unknown. One of the potential cell targets of obesogenic drugs is human mesenchymal stem cells (hMSCs). These cells are important for maintaining adipose tissue homeostasis. The objective of our study is to examine the short-term and long-term effects of glyburide on human hMSCs survival, proliferation, and differentiation. **Methods:** hMSCs were treated short- (≤ 10 days) or long-term (≥ 30 days) with glyburide at two different concentrations (0.2 and 2 uM) within the range of its physiological levels detected in human body, or its corresponding solvent controls. Pretreated cells were then subjected to cell viability and differentiation assays and results are compared between glyburide and control treatment groups. **Results:** At both 0.2 and 2 uM, glyburide significantly promoted osteogenic differentiation of hMSCs after either short- or long-term treatment. Adipogenic differentiation also trended higher ($P \leq 0.1$) in glyburide treated cells vs. control after long-term treatment. The tested concentrations however did not appear to have significant effect on either cell viability based on resazurin assay or cell cycle distribution based on flow cytometry cell cycle analysis, after both short- and long-term treatments. **Conclusions:** Our results indicate that Glyburide could affect both adipogenic and osteogenic differentiation of hMSCs at physiological levels without affecting the cells' viability or proliferation.

153-P
Characterization of Adipose Tissue Myeloid Cell Populations By Flow Cytometry: The Devil Is in the Details

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Background: There has been substantial interest in identifying the leukocyte populations involved in adipose tissue inflammation. **Methods:** We assessed the impact of tissue processing, staining protocol, and normalization strategy on the ability to identify, quantify, and characterize specific adipose tissue leukocyte populations by flow cytometry, with an emphasis on myeloid cells. **Results:** The type of collagenase used to digest adipose tissue, as well as the duration of the digestion, affect the expression of cell surface markers in both myeloid cells and lymphocytes. We also found that the reproducibility of the data largely depends on the normalization strategy and the tissue processing conditions. Specifically, normalizing to the amount of adipose tissue, as is often reported in the literature, shows poor reproducibility if the tissue is under- or overdigested. Using a wide range of myeloid cell markers, we also found that the population typically characterized as adipose tissue macrophages (ATM), CD14+CD206+, contains a distinct CD1c+CD11c+ dendritic cell population, and in some individuals also CD15+CD24+CD16hi neutrophils. Neutrophils are readily distinguishable from ATM in adipose tissue samples from lean and insulin sensitive individuals as they are largely CD14- in that population. However, in obese individuals, neutrophils tend to be CD14loCD206lo, causing this population to frequently overlap with the CD14+CD206+ ATM. **Conclusions:** Tissue processing, staining protocol, and normalization strategy can substantially affect results in flow cytometry studies of adipose tissue leukocytes. We specifically propose that characterization of ATM in adipose tissue should be performed on the CD14+CD206+ population after gating out other myeloid cell populations such as neutrophils and dendritic cells.

For author conflict of interest information, see page S250

154-P
The Metabolic-Immune Interactions Regulate Adipose Tissue Leukocytosis in Obesity

Anthony Ravussin, Ryan W. Grant, Yun-Hee Youm *Baton Rouge, LA*; Yann Ravussin, Rudy Leibel, Charles A. LeDuc *New York, NY*; Vishwa D. Dixit *Baton Rouge, LA*

Background: Several leukocyte populations such as macrophages and lymphocytes infiltrate adipose tissue and contribute to the development of chronic pro-inflammatory state in obesity. The present study was designed to examine whether the adipose tissue "leukocytosis" is coupled with changes in weight and energy expenditure in mice in response to subthermoneutral and thermoneutral conditions. **Methods:** A total of 84 C57BL/6J-male mice were placed on a high fat diet (60% kcal from fat) at 6 weeks of age . The mice were divided into following groups, 48 at 30° and 36 at 22°. After 18 weeks of receiving the high fat diet, two thirds of the mice were then switched to a low fat diet (LFD:10% kcal from fat) to study the impact of weight reduction on resident macrophages in subcutaneous and abdominal adipose tissues at their respective ambient temperatures. The adipose tissue macrophages and T cells were quantified using flow cytometry. **Results:** The frequency of M1- like (pro-inflammatory, F4/80+CD11c+CD206-) macrophages in epididymal fat (e-fat)was reduced in the DIO mice that underwent weight loss by switch to LFD at 22°C. Interestingly, the DIO mice housed at thermoneutral temperature (30°C) did not show significant differences in M1-like or M2-like (anti-inflammatory, F4/80+CD11c-CD206+) macrophages in e-fat after diet switch. Overall, compared to subcutaneous (s/c) fat, the visceral fat pads displayed a higher numbers of M1 and lower numbers of M2-macrophages. There was higher frequency of M2 cells in e-fat of mice maintained in thermoneutral conditions. The M2 cells did not show a significant change in s/c fat of DIO mice that underwent weight-loss at 22°C or 30°C. **Conclusions:** Collectively, these data suggest that adipose tissue macrophages and lymphocyte infiltration in fat depots is differentially regulated and responsive to changes in energy intake .

155-P
Mitochondrial Antioxidant Manganese Superoxide Dismutase (MnSOD) Up-Regulated Human Bone Marrow Derived MSC Reduces Fat Droplets in Adipocytes in a Co-Culture System

Sabyasachi Sen, Cyril Chou, Mary Young, Nagendra Yadava *Springfield, MA*

Background: Primary MSCs is multipotent. In high glucose (HG), we noted increased intracellular fat (Oil Red O) and increased adipogenic gene expression (qRT-PCR). We postulated that HG state leads to increased reactive oxygen species (ROS) accumulation, promotes inflammation and adipogenic differentiation of MSCs. Therefore, intra-cellular antioxidant gene upregulation can reduce ROS accumulation, inflammation and adipogenic differentiation of MSC in HG. **Methods:** We exposed MSCs to HG (25mM) and normal glucose (NG, 5.5 mM). In HG, increased Oil Red O positivity was confirmed. ROS generation was analyzed in cytosol and mitochondria using DCF-DA and Mitosox-Red stain, respectively. We interrogated mitochondrial respiration (Seahorse) and complexes 1 & 2 protein by BN-PAGE and SDS-PAGE. Next, we over-expressed MnSOD, CAT or control gene GFP (green florescent protein) genes (using Adenovirus) prior to HG exposure. To note effect of co-culture, adipocytes and transduced MSCs (3:1 ratio) were set up in NG and HG. **Results:** HG increased fat and increased ROS accumulation in mitochondria. HG increased gene expression of Leptin (8-fold), Perilipin (4-fold), CREBPα (10-fold), PPARG (16 fold) and TNF (Tumor Necrosis Factor), IL6 (interleukin6) and Endothelin1 expressions. SeaHorse analyses indicated impaired MSC oxygen consumption rate and suppressed complex 1 protein expression in HG. Over-expression of MnSOD rather than CAT reduced adipogenic and inflammatory gene expressions, rescued suppressed Complex-1 in HG. Mature adipocytes were reduced on co-culture with MnSOD upregulated MSCs. **Conclusions:** Upregulation of mitochondrial anti-oxidant (MnSOD) effectively reduced inflammation, adipogenic differentiation gene expressions and improved mitochondrial respiration in HG. Currently, diabetic animal studies using MnSOD over-expressing MSCs are being conducted.

156-P
Pro-Inflammatory and Anti-Inflammatory Cytokines Collaborate to Determine Lipid Accretion

Vijay Hegde, Olga Dubuisson, Rashmi Krishnapuram, Jianping Ye, Nikhil V. Dhurandhar *Baton Rouge, LA*

Background: Although obesity is associated with pro-inflammatory (P-INF) and anti-inflammatory (A-INF) cytokines, the interplay of these cytokines is incompletely understood. Our central hypothesis is that in general, P-INF cytokines attempt to limit excess adipose tissue accretion by reducing glucose uptake and lipid accumulation, by reducing adipogenesis and promoting lipolysis. Conversely, the A-INF cytokines promote adiposity by enhancing cellular glucose uptake, and lipid accumulation by reducing lipolysis. This may explain the elevated P-INF and reduced A-INF cytokines levels associated with obesity. We tested this hypothesis in a cellular model by using TNFα and adiponectin as representatives of P-INF and A-INF cytokines, respectively. **Methods:** A) Upon adipogenic induction in 3T3-L1 preadipocytes, four groups were exposed to media control, 20ng/mL TNFα with 0 or 20 ng/mL adiponectin, or 20 ng/mL adiponectin alone. B) Upon adipogenic induction, three groups of 3T3-L1 preadipocytes were exposed to 20 ng/mL TNFα, and either 0, 20, or 100 ng/mL adiponectin. **Results:** A) Compared to the control group, TNFα significantly reduced adipogenesis and lipid accumulation, increased lipolysis as evidenced by glycerol release in media, and reduced cellular glucose uptake. Addition of adiponectin reversed these effects of TNFα. B) Despite the presence of TNFα, adiponectin dose dependently increased lipid accumulation and reduced glycerol released in media by 3T3-L1 cells. **Conclusions:** These results support the hypothesis that a dynamic balance of P-INF and A-INF cytokines controls adipogenesis and lipid accumulation. We postulate that increased P-INF and reduced A-INF cytokines associated with obesity represent body's attempt to reduce existing lipid stores and to control adipose tissue expansion.

157-P
Diet-Induced Obesity Coupled With Stress Accelerates an Increase in Residual Adipose Stem Cells Augmenting a Susceptibility to an Obese Phenotype: Genetic and Epigenetic Implications of the Neuropeptide Y (NPY) System

Amrutesh S. Puranik, Dalay Hrisch, Allison Gurney, Kathryne Oldsberg, Jixia Liu, Jeehye Jung, Caara Hirsch, Patrick Bolan, Zofia Zulowska *Minneapolis, MN*

Background: The recruitment of Adipose Stem Cells (ADSC) to an adipogenic lineage has been implicated in obesity. We hypothesized that chronic stress commits ADSC to an adipogenic lineage via epigenetic modifications in NPY, a sympathetic neurotransmitter activated by stress. We have recently discovered that NPY acts peripherally as an adipokine stimulating adipogenesis, angiogenesis and inflammation through its Y2 receptor leading to accelerated chronic stress-induced accumulation of visceral fat and the development of metabolic syndrome in mice fed a high fat diet (HFD). This study compares genetic and epigenetic changes in NPY within residual ADSCs in C57 (obesity prone) and SV129 (obesity resistant, but stress sensitive) mice in response to stressed and non-stressed conditions. **Methods:** SV129 and C57 were fed a HFD or normal chow for 8 weeks. A separate group of SV129 mice were subjected to both chronic stress and HFD. Energy balance and metabolism were assessed in all animals by changes in fat/lean body mass, energy expenditure, glucose tolerance and insulin. ADSC that were Lin-, CD29+, CD34+, Sca1+, CD24+ were isolated from different fat depots from all groups. **Results:** HFD induced the obese phenotype by impairing glucose tolerance and increasing fat accumulation in both species. However, animals undergoing chronic stress showed increased number of ADSCs indicating that stress-induced accumulation of fat depends on ADSC proliferation and differentiation into adipocytes. **Conclusions:** Chronic stress increases the number of ADSCs in SV129 mice on a HFD leading to an obese phenotype in an obesity resistant strain. However, whether these results are dependent on epigenetic changes within the NPY system is being investigated.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Gonadal Hormones / Pregnancy / Lactation / Childhood

158-P
MRI-Measured Bone Marrow Adipose Tissue (BMAT) Is Inversely Related to DXA-Measured Bone Mineral in 5-17 Year Old Children

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Background: To examine the relationship between MRI-measured BMAT and bone mineral density (BMD) in healthy 5-17 year old children. **Methods:** In 44 boys (age, 11.0 ± 3.1 years, BMI percentile 68.2 ± 25.9) and 28 girls (age, 11.3 ± 3.2 years, BMI percentile 69.2 ± 25.9), pelvic BMAT was quantified by whole-body contiguous T1-weighted MRI and bone mineral content (BMC) was measured by whole body dual-energy X-ray absorptiometry (DXA). Pelvic volumetric BMD (vBMD) was calculated by using pelvic BMC measured by DXA and pelvic bone volume measured by MRI. **Results:** A negative correlation was observed between pelvic BMAT and BMC (Whole body BMC r = -0.313, pelvic BMC r = -0.290, spine BMC r = -0.233, p = 0.008-0.050). A negative correlation was observed between pelvic BMAT and volumetric pelvic BMD (r = -0.318, p = 0.007) and this association remained significant after adjusting for age, weight, total body fat, sex, race, skeletal muscle, subcutaneous adipose tissue and visceral adipose tissue (r = -0.253, P = 0.033). Pelvic BMAT was also negatively related to skeletal muscle (r = - 0.298, P = 0.012). No significant relationship was found between pelvic BMAT and subcutaneous, visceral adipose tissue or total body fat (r = -0.134, 0.025, -0.065, P = 0.265, 0.835, 0.590). **Conclusions:** An inverse relationship exists between MRI-measured pelvic BMAT and volumetric BMD in healthy 5-17 year old children. These observations support the growing evidence that links BMAT with low bone density in young age.

159-P[DT]
Impact of Breastfeeding (BF) in Gestational Diabetes (GDM) Offspring on Adiposity and Metabolic Outcomes in Latino Youth Across Puberty

Jaimie N. Davis *Austin, CA*; Erica P. Gunderson *Oakland, CA*; Michael Goran *Los Angeles, CA*

Background: To examine the impact of BF (no BF vs. BF ≥4 months) in GDM versus non-GDM offspring on adiposity and metabolic parameters in Latino youth across puberty. **Methods:** 210 overweight Latino children with a family history of type 2 diabetes were measured annually (4 ±2 annual measures per child) for: Tanner stage via physical examination, adiposity via dual-energy X-ray absorptiometry and magnetic resonance imaging, glucose/insulin profiles via frequently sampled intravenous glucose tolerance test. Proc mixed modeling estimated the impact of BF and maternal GDM on baseline and changes in adiposity and metabolic parameters in children across puberty. **Results:** Twenty-two percent of offspring were from GDM pregnancies and 41% were BF ≥ 4 months. GDM offspring BF ≥4 months, had a 6.4% increase in fasting glucose across Tanner (p=0.03) compared to a 1% decrease in GDM offspring not BF, no change in non-GDM offspring not BF, and a 2.5% increase in non-GDM offspring BF ≥4 months, although there were no differences in adiposity gains between groups. GDM offspring BF ≥4 months had a 47% decline in acute insulin response across Tanner (p=0.006) compared to a 16-36% decline in other groups. Although the slopes did not significantly differ between BF and GDM groups, GDM offspring BF ≥4 months, had a 74% lower SI and an 11% higher visceral adipose tissue compared to other groups across Tanner (p<0.001). **Conclusions:** These findings suggest that risk of elevated visceral adiposity and type 2 diabetes is magnified in GDM offspring who were breastfed ≥4 months.

160-P
High Fat Diet Increased Hepatic Inflammatory Marker Gene COX-2 Expression Associated With DNA Methylation and Histone Modifications

Dan Zhou, Yuan-Xiang Pan, Hong Chen *Urbana, IL*

Background: Sustained high fat feeding in animals is known to cause liver disease, potentially accompanied by increased oxidative stress, low-grade inflammation and hepatic insulin resistance. Changes caused by low-grade inflammation in liver may later lead to progressive disease and fibrosis. However, the regulatory mechanism of inflammation markers in liver related to epigenetic modification in high fat condition is unrevealed. **Methods:** Timed-preganat Sprague Dawley was fed on high fat diet (45%) during gestation and lactation. Offspring rats were fed with this diet after weaning until they were 12 weeks of age. We examine the chromatin structure at COX-2 gene with Methyl-DNA immunoprecipitation assay (MeDIP) in combination with high-throughput sequencing (HTS) and Chromatin Immunoprecipitation assay in offspring liver. **Results:** Our study showed that life-long feeding of high fat diet led to ectopic deposition of excess triglycerides and induced expression of several inflammation marker genes in the liver of male offspring rats, including Cyclooxygenase-2 (COX-2). Chromatin analysis demonstrated that DNA methylation level of several CpG sites at COX-2 were significantly reduced by life-long high fat dietary treatment while COX-2 promoter region and/or regions with altered DNA methylation level clearly showed upregulated acetylated histone H4, histone H3 and di-methylated histone H3 lysine 4. These results agreed with increased mRNA content, as well as protein abundance of COX-2 examined by Western Blot. **Conclusions:** Life-long high fat dietary treatment induced COX-2 expression in the liver of offspring rats via remodeling its chromatin structure, which comprised of site-specific alteration of DNA methylation and histone modifications.

161-P
Immunophenotyping of Human Mesenchymal Stem Cells From Amnion of Full-Term Placentas Highlights CD13 As a New Obesity Marker in Pregnancy

Laura Iaffaldano, Maddalena Raia, Carmela Nardelli, Elisabetta Mariotti, Maddalena Ferrigno, Filomena Quaglia, Lucio Pastore, Rosa Di Noto, Pasquale Martinelli, Lucia Sacchetti, Luigi Del Vecchio *Naples, Italy*

Background: Maternal obesity could lead to suboptimal intrauterine conditions that could increase the fetal risk for obesity and other metabolic diseases. We isolated human amniotic mesenchymal stem cells (hA-MSCs) from the term placenta of obese and control pregnant women to identify alterations in hA-MSCs that might have important consequences for the growth and intrauterine gene programming of the fetus. **Methods:** Sixteen obese and eight control pregnant women (BMI>30 kg/m2 and BMI<25 kg/m2 before pregnancy, respectively) were recruited at delivery. Thirty-two non-pregnant women (16 obese and 16 control) were also examined. Immunophenotyping of hA-MSC was performed by flow cytometry, while the serum and cord plasma selected antigen measurements by enzyme immunoassay. **Results:** We showed a higher expression of aminopeptidase N/CD13 in hA-MSCs from obese than in those from controls pregnant women (p<0.05). CD13, a widely expressed ectoenzyme, is present in two forms (membrane and soluble aminopeptidase N). The levels of CD13 were significantly higher, both in maternal serum and in cord plasma, in obese than in control pregnant women. Serum CD13 levels correlated significantly with hA-MSC CD13 expression levels. Lastly, serum glucose level was correlated with both hA-MSC CD13 expression and serum CD13 levels. Serum levels of CD13 were also higher in obese than in control non-pregnant women. **Conclusions:** Our preliminary data suggest that serum CD13 may be a marker of obesity in pregnant women; its role as at risk obesity marker in cord plasma for newborns could be hypothesized but it has yet to clarify. Grant: CEINGE – Regione Campania (DGRC 1901-2009) and MIUR-PRIN 2008.

162-P
Metabolic Profile of Obese and Overweight Women During and After Pregnancy

Anne-Sophie Morisset, Marie-Christine Dubé, S John Weisnagel, Andre Tchernof, Julie Robitaille *Quebec City, Canada*

Background: To examine the metabolic profile of overweight and obese women during and after pregnancy. **Methods:** 20 women with gestational diabetes mellitus (GDM) and 28 with a normal pregnancy were tested during pregnancy (26.0±3.7 wks) and 2 months after delivery (8.7±0.8 wks) using a 75g oral glucose tolerance test (OGTT). Plasma IL-6, adiponectin, CRP and lipid profile were also assessed at each time point. Based on self-reported pre-pregnancy body mass index (BMI), women were stratified into severely obese (n=3), obese (n=9) and overweight (n=15) women vs. normal weight (n=22) and lean women (n=2). **Results:** Plasma CRP and IL-6 levels were significantly higher while plasma adiponectin levels were significantly lower in obese/overweight compared to lean/normal weight women both during and

after pregnancy (p≤0.02 for all). Obese/overweight women presented lesser post-partum improvements in total cholesterol, triglycerides and total cholesterol/HDL-cholesterol after pregnancy compared to lean/normal weight women (p≤0.05 for all). During pregnancy, GDM prevalence was not significantly different among obese/overweight (54%) vs. normal/lean (33%) women, but 120 min post-OGTT glucose, insulin and C-peptide levels were all significantly higher in obese/overweight women compared to lean/normal weight women (p≤0.05 for all). HOMA-IR index was significantly higher in obese/overweight compared to lean/normal weight women both during and after pregnancy (p≤0.01 for all). In a multivariate regression model including gestational age at birth, pre-pregnancy BMI remained a significant predictor of birth weight (4.3% variance explained, p≤0.01) independent of the presence of GDM and maternal age. **Conclusions:** Obesity is associated with a deteriorated profile during and after pregnancy as well as with higher infant birth weight.

163-P[DT]
Balancing the Scales: An Examination of the Relationship Between Maternal Body Mass Index and Placental Infection

Karyn A. Stewart *Syracuse, NY*

Background: Obesity is a pandemic with negative consequences for health including poor pregnancy and birth outcomes for mothers and infants. Research has demonstrated that infection of the placental membranes, chorioamnionitis (CA), can lead to preterm birth, fetal brain damage, and fetal death. There is a plausible link between obesity and placental infection via obesity-related metabolic syndrome. Despite this link, there is a paucity of literature demonstrating the relationship between maternal body mass index (BMI) and chorioamnionitis. **Methods:** This research involves logistic regression analyses of data from the prenatal and hospital obstetrical charts of all births at a large teaching hospital of residents in a 9-zip code high risk area in the City of Syracuse from January 1, 2000 to March 31, 2002. Information was collected for a total of 2,909 women. **Results:** These data suggest a relationship between maternal BMI and chorioamnionitis such that the risk of chorioamnionitis increases as maternal BMI increases. The odds ratio values for the risk of chorioamnionitis in overweight, obese, and morbidly obese women compared to underweight and normal weight women was 1.71, 1.90, and 2.13 respectively. Morbidly obese women had the greatest risk of chorioamnionitis. This relationship persisted even after controlling for race and other socioeconomic factors. **Conclusions:** This research suggests obesity is an independent risk factor for infection or inflammation during pregnancy.

164-P
Ovariectomy in Rat Potentializes High-Fat Diet-Induced Hepatic Steatosis: Link to Hepatic Cholesterol Metabolism

Emilienne T. Ngo Sock, Isabelle Côté, Junior S. Mentor, Raynald Bergeron, Jean-Marc Lavoie *Montréal, Canada*

Background: This study was designed to determine how estrogens withdrawal in the middle of a high-fat (HF) diet regimen affects liver fat and cholesterol accumulation in rats **Methods:** Female Sprague-Dawley rats were submitted to a HF (42% energy as fat) or a standard (SD) diet for 6 wk before being either ovariectomized (Ovx) or sham operated (Sham). Thereafter, Ovx and Sham rats were kept on the same diet for another 6 wk leading to euthanasia **Results:** Intra-abdominal fat mass was mostly ($P < 0.01$) increased in the Ovx HF/HF rats. Liver triacylglycerol (TAG) content was increased ($P < 0.01$) by the Ovx but not by the HF diet only. However, the combination of Ovx and the HF diet resulted in greater liver TAG accumulation ($P < 0.001$) than that observed in Ovx SD/SD indicating a synergic effect of the ovariectomy and the HF diet. Measurement of molecular markers of lipid metabolism in liver revealed that transcripts of molecular markers of lipid oxidation (CPT-1, PGC1 and PPAR-α) in liver were increased ($P < 0.05$) by the HF diet in Sham rats but this increase was attenuated ($P < 0.05$) if the rats were Ovx. Liver cholesterol content was mostly increased in the Ovx-HF/HF rats while plasma total cholesterol levels were increased in Ovx and HF fed animals and even more so in Ovx-HF/HF rats. Biliary acids synthesis (CYP7a-1) was reduced by the Ovx and the HF diet and even more so in Ovx-HF/HF rats while cholesterol synthesis (HMGCoA-r) was reduced in Ovx animals only **Conclusions:** Ovx potentializes the effects of a HF diet on liver TAG accumulation possibly through a reduction in hepatic lipid oxidation. On the other hand, liver cholesterol level was maintained in Ovx animals probably through a decrease in cholesterol and bile acid synthesis.

165-P
Prenatal Stress Induced Programming For Adult Obesity: Role of Neuropeptide Y System in Adipogenic Lineage Commitment

Ruijun Han, Xinying Wang *Minneapolis, MN*; Joanna B. Kitlinska, Aiyun Li, Ian G. Gallicano *Washington, DC*; Zofia Zulowska *Minneapolis, MN*

Background: Prenatal stress, psychologically and metabolically, increases the risk of obesity and diabetes in the progeny, while mechanisms are unknown. In adult mice, stress activated NPY and its Y2R in a glucocorticoid-dependent manner, in the abdominal fat. This increased adipogenesis and angiogenesis leading to abdominal obesity and metabolic-like syndrome which were inhibited by intra-fat Y2R inactivation. **Methods:** Here we studied long-term effects of prenatal low protein diets (LPD) stress on the offspring's obesity and effects of NPY system in adipogenic lineage commitment in murine embryonic stem cells (mESC). **Results:** Male offspring of mice stressed by LPD during pregnancy had lower birth weight but quickly caught up during weaning. Male offspring developed abdominal adiposity, elevated circulating NPY levels, Y2R up-regulation specifically in the abdominal fat and impaired glucose tolerance on high fat diets (HFD). To determine whether stress elevates NPY system and accelerates adipogenic potential of embryo, we "stressed" mESC with epinephrine during their adipogenic differentiation. Epinephrine-induced stress dramatically amplified adipogenic differentiation detected by increasing the adipocyte markers FABP4 and PPARγ mRNAs and Oil-red O-staining. Stress markedly up-regulated the expression NPY and the Y1R at the commitment stage, followed by increased Y2R mRNA peaking later at differentiation stage. Epinephrine-induced adipogenesis was completely prevented by antagonists of the NPY receptors (Y1R+Y2R+Y5R). **Conclusions:** Taken together, our data suggested that NPY system mediates stress induced adipogenic commitment in embryo, and thus play an important role in prenatal stress programmed abdominal obesity and metabolic syndrome in offspring.

166-P
Central Obesity Is Detrimental to Bone Health in Postmenopausal Women

Jung-Eun Yim *Changwon, Republic of Korea*; Young-Seol Kim *Seoul, Republic of Korea*; Ryowon Choue *Suwon, Republic of Korea*

Background: Many studies have demonstrated that higher amounts of visceral adipose tissue or metabolic risks having low bone mineral density. This study was performed to investigate the relationship of central adiposity with bone metabolism and reproductive hormone. **Methods:** Cross-sectional analyses of 68 postmenopausal women (Age 53.1±3.4, BMI 23.3±2.6) were conducted. The levels of serum osteocalcin, bone specific alkaline phosphates (BALP), N-terminal telopeptide (NTX), C-terminal telopeptide (CTX) of type I collagen, and urine free deoxypyridinolin (free DPD) were measured. The reproductive hormones of estrone (E1), estradio (E2), follicle stimulating hormone (FSH), and lutenizing hormone (LH) were measured. General linear models identified the independent associations of waist with bone markers and reproductive hormones after covarying for age and height. **Results:** There were no associations of waist circumference with bone formation markers (osteocalcin and BALP). But, bone resorption markers of CTX and free DPD were independently associated with waist circumference after covarying for age and height (p=0.01). The levels of reproductive hormones were not associated with waist circumference. **Conclusions:** The concern that the independent association of waist with bone resorption markers could suggest that central obesity is detrimental to bone health in postmenopausal women.

167-P
Relation of Food Intake Behaviors and Obesity Development in Young Common Marmoset Monkeys (Callithrix Jacchus)

Corinna N. Ross *San Antonio, TX*; Michael L. Power *Washington, DC*; Suzette Tardif *San Antonio, TX*

Background: Prevalence of childhood obesity is a growing concern in the world with current estimates of adolescent obesity being 11.7% in developed nations and occurrence of childhood type II diabetes increasing annually. Factors underlying the development of childhood obesity are complex and an

animal model would be valuable. **Methods:** We studied the growth of fat and lean mass in 33 infant marmosets from birth to 12 months of age. Marmosets are considered weaned at 3 months of age, in early childhood at 6 months, and adolescence at 12 months. We evaluated feeding behaviors throughout development using behavioral observations (age: 14-45 days), solid food intake trials (age: 6, 12 months), and liquid food intake trials using a lickometer (age: 3, 6, 12 months). Infants were also assessed at 1, 2, 6, and 12 months for body composition using QMR. **Results:** The first day the infants were noted to eat solid food had a significant linear relationship with body fat composition both at 6 months (R = 0.36, p=0.04) and 12 months (R = 0.43, p=0.02). Consumption of high fat liquid diet at 6 months was significantly related to body fat at 6 months (R = 0.52, p=0.001). This relationship was also true for solid food intake trials at 6 months (R = 0.39, p=0.03). In the liquid feeding trials at 6 months grams consumed per lick of the lickometer was significantly predictive of the body fat of infants at 12 months of age (R=0.43, p=0.02). **Conclusions:** This study has revealed a number of relationships between early infant feeding behaviors including the time of weaning, food preference, eating style, and overall consumption that are significantly related to body composition and the development of obesity independent of both the maternal obesity status and the infant's own birth weight, variables that are typically attributed to the development of obesity.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Epidemiology and Genetics of Obesity

168-P
The Differences of Age Distribution Among Metabolic Syndrome With or Without Waist Component at Different Ranges of Fasting Blood Glucose Level – A Population Approach

Martin M. Fuh *Taichung, Taiwan*; Peggy Pei-Chin Chen *Hsinchu, Taiwan*; Chia-Ing Li *Taichung, Taiwan*; Hsiu Yueh Su *Taipei, Taiwan*

Background: To evaluate the differences of age distribution among subjects clustering with various metabolic components in metabolic syndrome (MetS) with or without waist at different ranges of fasting blood glucose (FBG) for the ensuing development of the primary diabetes prevention program. **Methods:** From 2005 to 2007, 2359 population-based voluntary participants, age over 40, were randomly and cumulatively recruited in the study. The MetS defined was based on the ATP III criteria. Participants were classified under 4 groups, with metabolic component ≦1 and ≧ 2, both with and without waist. These 4 groups were further categorized by the status of blood glucose component, normal fasting glucose (NFG), IFG, and T2DM. The age distributions were shown by Mean±SD. **Results:** The age distributions in these 4 groups with different ranges of FBG were presented in Table 1. The age difference between means showed significantly increased in these 4 groups as compared with group 1 in NFG.. In IFG, however the difference between means of age distribution was only found between group 1 and 2. Meanwhile, there was statistically significant difference for 3.3-year between means of age distribution in NFG and IFG in group 1. The difference between means of age distribution in NFG and T2DM were significant in all but not in group 3. **Conclusions:** The results would suggest that clustering of components of MetS with/without waist would be going through with time. The time intervals from normal fasting glucose converting to T2DM were shown shorter in groups with MetS especially in MetS with waist components.

169-P
The Abnormalities of HOMA-IR Appear to Japanese College Athletes From 27 or More BMI

Keiko Aoishi *Nagoya, Japan*; Toshiharu Eto *Miyazaki, Japan*; Hisataka Sakakibara *Nagoya, Japan*

Background: We examined the health care of the athletes based on a biochemical test for the purpose of finding the early index of an athlete student's overweight. **Methods:** We intended for 40 students (athletes) and student (non-athletes) for the obese instruction 32. Information collected for each student included physical measurement and blood test and lifestyles such as exercise habit or the anamnesis on athletes and non-athletes teams. BMI was classified into four groups in this study: < 25.0, ≥ 25.0 to < 27.0, ≥ 27.0 to < 30.0 and ≥ 30.0 kg/m2. **Results:** HOMA-R increased approximately 1.7 times in athletes BMI < 25.0 kg/m2 and BMI ≥ 27.0 to < 30.0 kg/m2 ($p<0.05$), and increased to approximately 2 times in BMI ≥ 30.0 kg/m2 ($p<0.01$). As BMI increased, liver function and the means of the carbohydrate metabolism increased, but did not show a similar tendency with the lipids. **Conclusions:** As BMI increased, the tendency that a ratio increased of a mean and the abnormal value was different in results by the presence or absence of exercise. It was predicted that we did not change with a general obese subject when we exceeded constant criteria even if there was the habit of the exercise. From results of this preliminary investigation, it tended to show abnormality in BMI ≥ 25.0 kg/m2 of the non-athlete and BMI ≥ 27.0 kg/m2 of the athlete. Abnormality of HOMA-IR was confirmed early and wanted to determine the obesity criteria of the athletes with glucose metabolism as a main axis.

170-P[DT]
Impact of Gene-Gene Interactions of PPAR Delta, PPAR Alpha and PPAR Gama on Abdominal Obesity Quantitative Trait

Yi Ding, Zhirong Guo *Suzhou, China*; Ming Wu *Nanjing, China*; Zhengyuan Zhou *Changshu, China*; Lijun Zhang *Suzhou, China*

Background: Aim to examine the main effect of 10 single nucleotide polymorphisms (SNPs) of PPARA, PPARD, and PPARG in contribution to abdominal obesity; to study whether there is an interaction in the 10 SNPs of three subtypes in the cause of abdominal obesity. **Methods:** We randomly selected 820 subjects for genetic polymorphism reseach based on the cohort study of Metabolic syndrome (MS) in Jiangsu province China. Selected 10 SNPs of three subtyped of PPARs for polymorphism testing, in which the SNP (rs4253778) was analyzed by using the polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method, the remaining SNPs (rs135539, and rs1800206 of PPARA; rs2016520 and rs9794 of PPARD; rs10865710, rs1805192, rs709158, rs3856806 and rs4684847 of PPARG) were analyzed by using the Taqman fluorescent probe; applying logistic regression to analyze the relations between gene polymorphism and abdominal obesity; Utilizing Generalized multifactoe dimensionality reduction (GMDR) method to analyze the gene-gene interactions. **Results:** Single factor logistic regression analysis showed that the SNP (rs2016520) of PPARD is significant associated with abdominal obesity [OR (95%CI) =0.68 (0.51-0.89)]. After adjustment for smoking, drinking, high-fat diet, low-fiber diet and occupational physical activity, C allele carries (CC+TC) were still significantly higher than that of TT genotype [OR (95%CI) =0.68 (0.52-0.90)]. GMDR analysis detected a significant three-locus model (p=0.0010) involving rs2016520, rs9794 and rs1805192, and a significant five-locus model (p=0.0107) involving rs2016520, rs135539, rs10865710, rs1805192, and rs709158. **Conclusions:** The C allele of rs2016520 was significantly associated with a lower abdominal obesity. Moreover an interaction among rs2016520, rs1805192 and rs9794 on incident abdominal obesity could be demonstrated.

171-P
Influence of Weight Loss, Body Composition, and Lifestyle Behaviors on Plasma Adipokines. A Randomized Controlled Weight Loss Trial in Older Obese Adults

Gary Miller, Monica Jenks, Mandolyn J. Vendela-Meyer, Gloria Muday *Winston-Salem, NC*

Background: Few studies have investigated associations between a number of metabolic, lifestyle, and demographic factors with adipokines in a randomized controlled trial in older adults. We determined the adiponectin, leptin, and soluble leptin receptor (sLR) response to a weight loss (WL) intervention encompassing dietary restriction and exercise training in an older obese population vs. a weight stable control group (WS), and to test the relationships of adipokines with lifestyle behaviors and metabolic measures. **Methods:** A total of 65 older obese adults (> 60 years; BMI > 30.0 kg/m2) were randomized into either WS or an intensive WL group and followed for 6months. WL's weight loss goal was -10% and utilized partial meal replacements (SlimFast®) and an aerobic and strength exercise training program. Measures taken at baseline and 6months included body weight, body composition (dual energy x-ray absorptiometry), blood for leptin, adiponectin, and sLR, dietary intake (3-day food record), physical activity (step counts), and physical fitness (peak METS from graded exercise test). **Results:** There were significant differences in weight loss [-9.3 (1.1)% (mean (SEM)) for WL vs. 0.5 (1.1)%

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for WS] and body fat loss [-5.0 (2.5) kg for WL vs. 0.0 (1.0) kg for WS]. Changes (%) in leptin and leptin free index were correlated with loss in weight and body fat for women, but not men. At baseline, carbohydrate intake was correlated with free leptin index and protein intake was correlated with leptin and leptin:adiponectin ratio. Peak METS were significantly associated with leptin (r=0.386). **Conclusions:** In older adults, there appears to be a gender difference in adipokine responses to weight loss. Demographics, dietary habits, and physical activity may explain marginal levels of the variability in plasma adipokine levels in older obese adults.

172-P
A Randomized Controlled Intervention Study on the Effect of Obesity, Puberty and Physical Activity on Serum Transthyretin and Its Role in the Regulation of Retinol Binding Protein-4

Prabhakaran (Babu) Balagopal, Jose A. Canas, Astrid Altomare, Vicky Funanage, Donald George, Dominique Darmaun *Jacksonville, FL*

Background: Serum transthyretin (TTR), a classic marker of nutritional status, binds serum retinol binding protein-4 (RBP4), which is elevated in obesity and insulin resistance (IR). Since the formation of the TTR-RBP4 complex is crucial for preventing the urinary excretion of RBP4, the availability of TTR for maintaining the stoichiometry of TTR-RBP4 complex likely plays an important role in the regulation of RBP4. However, little is known about the effect of obesity, puberty, inflammation and physical activity on TTR in children. **Methods:** TTR, albumin and RBP4 were determined along with body composition (Dual Energy X-ray Absorptiometry, DEXA), HOMA-IR, free fatty acid (FFA), fibrinogen, c-reactive protein (CRP) and interleukin-6 (IL-6) at baseline in a total of 48 children [21 post-pubertal; Tanner stage>IV and 27 pre-pubertal, Tanner stage<II), 19 were normal weight (NW) and 29 obese (OB)] and in 15 OB post-pubertal children before and after a 3-month randomized controlled physical activity-based lifestyle intervention. **Results:** Age and pubertal stage did not influence either TTR or RBP4. While serum TTR was similar in both NW & OB, RBP4 was higher ($p<0.05$) in the OB vs. NW children. Baseline TTR correlated with RBP4 ($r=0.62$; $p=0.01$), but not with markers of inflammation and IR. Intervention enhanced serum TTR and albumin in the OB subjects where as it decreased fat mass, FFA, RBP4, CRP, IL-6, fibrinogen & IR (all $p<0.05$). **Conclusions:** 1) The rise in TTR & albumin and decrease in RBP4 and inflammatory markers (CRP & fibrinogen) after the intervention suggest that physical activity can favoraby impact liver protein turnover; 2) the physical activity-induced reduction of RBP4, in the setting of enhanced TTR, in obese insulin resistant children is unlikely via its urinary loss; 3) TTR availability is not the sole determinant of TTR-RBP4 complex formation.

173-P
Expression Analyses of the Genes Harbored By the Type 2 Diabetes and Pediatric BMI Associated Locus on 10q23

Jianhua Zhao, Sandra Deliard, Ali R. Aziz, Struan Grant *Philadelphia, PA*

Background: Genome wide association studies (GWAS) have revealed robust signals for both body mass index (BMI) and type 2 diabetes (T2D). In the case of the strongest associated loci with BMI and T2D to date, namely *FTO* and *TCF7L2* respectively, they are the only genes harbored in their respective regions of linkage disequilibrium where the GWAS signal resides, making them obvious candidates for the culprit gene at these given locations. However this is not always the case for the other GWAS loci reported, most notably the multi-gene10q23 T2D locus. We previously investigated in a pediatric setting all the main loci identified by T2D GWAS and reported that only the 10q23 variant allele was also associated with increased BMI in childhood, suggesting that it exerts its influence early on in life. **Methods:** We analyzed the impact of adipogeneis on the mRNA and protein expression levels of these genes in the human adipocyte cell line, SGBS, in order to investigate which could be the culprit gene(s) in this region of linkage disequilibrium. **Results:** Following activation of differentiation with a PPARγ ligand, we observed ~20% decrease in *IDE*, ~40% decrease in *HHEX* and in excess of 80% decrease in *KIF11* mRNA levels when comparing the adipocyte and pre-adipocyte states. We also observed decreases in KIF11 and IDE protein levels, but conversely we observed a dramatic increase in HHEX protein levels. Subsequent time course experiments revealed marked changes in expression as early as three hours after activation of differentiation. **Conclusions:** Our data suggest that the expression of all three genes at this locus are impacted during SGBS adipogenesis and provides insights in to the possible mechanisms of how the genes at this 10q23 locus could influence both adipocyte differentiation and susceptibility to T2D through insulin resistance.

174-P
Caloric Excess and Cardiovascular Risk Escalation in Healthy Adults

Alok K. Gupta, William D. Johnson, Darcy L. Johannsen, Eric Ravussin *Baton Rouge, LA*

Background: Expansion of visceral adipose tissue (VAT) compartment enhances cardiovascular disease (CVD) risks primarily via increased systemic inflammation (sIF) and insulin resistance (IR). Healthy overweight and obese adults with exacerbated sIF and IR (prediabetes) display abnormal circadian blood pressure variability (abn CBPV-loss of BP control) and endothelial dysfunction (ED-a first step in atherosclerosis), both functional correlates of latent CVD risk. We hypothesized that overfeeding mediated weight gain is associated with exacerbated sIF, increased IR and functional CVD risks, ie abnormal CBPV and ED. **Methods:** Healthy men(11) and women(3) provided initial and eight-week post overfeeding (40% over weight-maintenance energy-requirement) anthropometric and laboratory measures. Functional CVD risk assessment: CBPV (7-day automatic ambulatory BP monitoring) and endothelial function [EF: increased test finger peripheral arterial tone (PAT) relative to control and reported as relative hyperemia index (RHI)] were also obtained. **Results:** mean(SEM). Participants increased body weight[+7.4(0.1)kg], fat mass[FM+4.5(0.2)kg], waist circumference[WC+8.2(1.0)cm], VAT[+0.2(0.03)L], and intra hepatic lipid[IHL+0.0004(0.002)L:all $p<0.01$]. Increased subcutaneous adipose cell size[sAC+0.3(0.01)ρL*] accompanied significant sIF[hs-CRP+0.4(0.09)mg/dL*] and IR[FSG+7.0(0.6)mg/dL*, fasting insulin (FI)+5.7(1.4)uIU/ml*, HOMA-IR+1.6(0.5)*]. Abn CBPV {systolic[+5.4(0.8), diastolic[+1.7(0.1) and pulse[+3.5(0.4) pressures mm Hg*} or elevated heart rate[+4.9(0.5)bpm] ensued. RHI declined by 0.47(0.004)* from initial 2.24(0.09) to 1.77(0.1), indicating ED (impaired flow-mediated PAT). *all $p<0.05$ **Conclusions:** This study with controlled caloric excess in healthy human adults prospectively demonstrates association between elevated WC, FM, VAT, IHL, sAC, sIF, IR and increased CVD risk.

175-P
Joint Associations of Visceral Abdominal Fat Quality and Absolute Volume and Insulin Resistance: The Framingham Heart Study

Klara J. Rosenquist *Boston, MA*; Alison Pedley *Framingham, MA*; Joseph M. Massaro, Joanne M. Murabito, Udo Hoffmann, Caroline S. Fox *Boston, MA*

Background: Visceral adipose tissue (VAT) is associated with cardiometabolic risk irrespective of overall adiposity. We have previously shown that lower VAT tissue attenuation on computed tomography (CT), expressed as Hounsfield units (HU), is associated with insulin resistance above and beyond VAT volume. We hypothesized that there is an interaction between VAT quality as measured by HU and VAT volume and insulin resistance. **Methods:** Framingham Heart Study participants (n=2784, mean age 50 years, 47% women) from the CT sub-study with mean VAT HU and absolute VAT volumes acquired by semi-quantitative assessment were studied. Insulin resistance was defined as a HOMA-IR >75th percentile. The interaction between VAT HU and VAT volume on prevalent insulin resistance was assessed for each sex by logistic regression. **Results:** The median VAT volume was 1192 cm3 in women and 2128 cm3 in men. The median HU value was -82.4 in women and -96.4 in men. There was evidence of an interaction between VAT HU and VAT volume among women and men ($p<0.01$ and $p=0.02$, respectively), indicating that the associations between VAT HU and insulin resistance vary by VAT volume. The association between insulin resistance and tertiles of VAT HU within tertiles of absolute VAT volume was examined. Among women, levels of insulin resistance were higher with lower VAT HU within VAT volume tertiles. In the middle and highest VAT volume tertiles, a significant linear trend was observed ($p<0.0001$ and $p<0.001$, respectively) while no difference was observed for the lowest tertile. Among men, there was a similar trend ($p<0.01$) across all tertiles of VAT volume. **Conclusions:** VAT HU is associated with levels of insulin resistance above and beyond that of VAT volume alone. These findings suggest that both fat quality and quantity are important in our understanding of the metabolic sequelae of obesity.

176-P
Association Between the Body Adiposity Index (BAI) and Cardiometabolic Risk Factors (CRFs) Among Normal-Weight (NW), Overweight (OW), and Obese (OB) Men and Women in the CODING Study

Farrell Cahill, Danny Wadden, Peyvand Amini, Yanqing Yi, Edward Randell, Sudesh Vasdev, Guang Sun *St. John's, Canada*

Background: The BAI is a newly proposed method, developed using Mexican-Americans, to predict adiposity. Although BAI has demonstrated some advantages over BMI as a predictor of whole adiposity, there is very little data regarding its association with CRFs in Caucasian populations. The purpose of this investigation was to; 1) evaluate the correlations between BAI with CRFs and 2) compare the predictive power of both BMI and BAI with CRFs. **Methods:** A total of 2883 subjects (Male 758, Female 2125) from our Complex Diseases in the Newfoundland population: Environment and Genetics (CODING) study participated in this investigation. Both anthropometric (height, weight, waist circumference, hip circumference), and biochemical (glucose, insulin, triglycerides, and LDL cholesterol) makers were unitized. Insulin resistance and beta cell function were determined with the homeostasis model assessment (HOMA-IR, HOMA-β). Pearson correlations, from the entire cohort, along with men and women separately, were employed to compare the correlation of both BAI and BMI with CRFs. In addition, the correlation of both BAI and BMI with CRFs were measured among NW, OW, OB groups. Adiposity status was determined by the Bray Criteria according to dual-emission X-ray absorptiometry (DXA) body fat percentage. **Results:** The BAI was more positively associated with glucose, insulin, HOMA-IR, and triglycerides with higher correlation coefficients in men than BMI. However, these same variables had higher correlation coefficients with BMI than BAI in women. This sex difference remained present after women and men were stratified into NW, OW and OB groups. **Conclusions:** Our data suggests that both BMI and BAI have gender specific biases regarding their associations with CRFs in the Caucasian population. However, more studies are required in other populations.

177-P[DT]
Adiponectin is Decreased in Mexican-Americans Compared to Non-Latino Whites Independent of Differences in Adiposity and Diet

Rocio I. Pereira *Aurora, CO*; Daniel H. Bessesen *Denver, CO*

Background: Adiponectin is negatively associated with insulin resistance and predicts type 2 diabetes. We have previously reported decreased adiponectin in hypertensive Mexican Americans (MA) compared to non-Latino whites (W), implicating decreased adiponectin as a contributor to insulin resistance and higher incidence of diabetes in MA. However, environmental factors leading to ethnic differences in adiponectin are unknown. We hypothesized that ethnic differences in intakes of saturated fats and omega-3 fatty acids are associated with decreased adiponectin in MA. **Methods:** We measured adiponectin in otherwise healthy MA and W men and women. Adiponectin was measured by RIA. Adiposity was measured by DEXA scan, and dietary habits were recorded using the Block Food Frequency questionnaire. **Results:** Subjects included 43 participants- 16 MA and 27 W. The two groups were similar in gender distribution (~3:5 M:F) and age (34±9 yrs). MA had higher BMI (28.2±4.0 vs. 25.4±3.9, p=0.03), waist circumference (89.4±8.5 vs. 83.3±8.9 cm, p=0.04), and a trend for higher trunk fat (12,330±2693 vs. 9,941±4532 cm, p=0.06). Adiponectin was lower in MA compared to W (5.8±3.3 vs. 10.4±4.5 μg/ml, p=0.001). Adiponectin was associated with intake of trans fat (Spearman rho= -0.315, p=0.039), vegetables (rho=0.365, p=0.016), grains (rho=-0.360, p=0.18), and average daily glycemic index (rho=-0.486, p=0.001) and load (rho=-0.316, p=0.039). However, adiponectin remained associated with ethnicity (R2=0.39, p=0.008) even after controlling for dietary factors, age, gender, and fat distribution. **Conclusions:** We report that adiponectin is associated with dietary measures. However, ethnic differences in these measures do not account for decreased adiponectin in MA compared to W.

178-P
Genetic Predisposition to Obesity Predicted With Thousands of Single Nucleotide Polymorphisms

Ana I. Vazquez, Emily J. Dhurandhar *Birmingham, AL*; George Argyropoulos *Danville, PA*; Maxine N. Gonzalez *Puerto Rico, Puerto Rico*; Molly S. Bray, Gustavo de los Campos, Yann C. Klimentidis, David B. Allison *Birmingham, AL*

Background: Variation in human adiposity is due to both an obesogenic environment and genetic influences. While some variants (e.g., in LEP, MC4R) are known to cause rare forms of obesity, the variants identified in the general population, even collectively, explain little of inter-individual differences in BMI. Obesity may be, in a majority of cases, a complex phenotype that arises from effects of a large number of genes acting collectively. We hypothesize that whole genome prediction (WGP) may provide a method for more completely accounting for genetic effects in complex traits. **Methods:** Genetic predisposition to obesity (BMI adjusted by age, gender and cohort) were predicted in subjects from Framingham Heart Study. We implemented a Reproducing Kernel Hilbert Spaces WGP regression using the method of Kernel Averaging, with one kernel representing additive effects and one representing non-additive effects. The Kernels include information of 28,000 SNPs. Model performance was evaluated by assessing the proportion of variance explained in a training (n=8,528) and a validation dataset testing dataset (n= 488) in 5 separated sets and averaged. **Results:** In the training datasets the WGP accounted for 60% of interindividual differences in adjusted BMI (which is an estimate of heritability). The correlation between actual and predicted BMI average of the validation sets was 0.27 (R-Squared of 0.073), a predictive ability much higher than the 2% achieved using variants reported to be associated with BMI. The genetic architecture of BMI resembles Fisher's 'infinitesimal model' which postulates that complex traits are modulated by a very large number of small-effect genes. **Conclusions:** In summary, WGP offers opportunities for using highly dimensional genotypes to explain a non-negligible proportion of the genetic predisposition to obesity.

179-P
Obesity in Rhesus and Cynomolgus Monkeys: Adiposity, Human BMI Equivalents, and Comparative Risks

Barbara C. Hansen, Ellen Linden, Jennifer Newcomb *Tampa, FL*; Paul B. Higgins *Kannapolis, NC*

Background: Both rhesus (Macaca mulatta) and cynomolgus (Macaca fascicularis) monkeys are currently being used as animal models for the study of obesity therapeutics and their potential for effective and safe mitigation of obesity in humans. Both species, when overweight, develop a form of diabetes that parallels human obesity-associated middle-aged onset Type 2 diabetes mellitus (T2DM). To enable large scale screening of colonies of macaques for obesity, we have developed a revised BMI calculation proposed to better parallel the human BMI measurement than was possible with prior primate assessment methods and to better predict risk of diabetes in nonhuman primates. **Methods:** In a colony of adult primates (N= 250; rhesus and cyno; males and females; weight range 4 to 30 kg), we have applied dual-energy-X-ray absorptiometry (DXA) and anthropometric measures to determine absolute fat mass and fat mass as a per cent of total mass vs. lean body mass. Because of the sexual dimorphism in nonhuman primates, we applied a multiplier (formula determined separately for males and females) to convert to human BMI units. **Results:** The resulting approximate BMIs, modified from the Singapore revision based on risk, were: 18 to 25 low risk/healthy; >25 for overweight/moderate risk; >30 for obese/high risk, and of >35 for severe obese/very high risk. In addition, we report new measurement standards for abdominal fat, using DXA as a standard. 100% of 20 current monkeys identified as PreDM had BMIs of >30. **Conclusions:** In addition to an improved BMI estimate of obesity risk, we also have detailed approaches to minimize inter-observer variability in "waist" measurement in obese animals to enhance the value of this measurement to validly and consistently identify abdominal obesity and identify the risk of developing overt T2DM under colony conditions.

 For author conflict of interest information, see page S250

180-P[DT]

Infection With a Human Adenovirus Ad36 Is Associated With Longitudinal Changes in Adiposity and Glycemic Control in Men and Women

Nikhil V. Dhurandhar *Baton Rouge, LA*; Wan-Yu Lin *Birmingham, AL*; Olga Dubuisson *Baton Rouge, LA*; Rohina Rubicz *San Antonio, TX*; Nianjun Liu, David B. Allison *Birmingham, AL*; Harald H. Göring *San Antonio, TX*

Background: Ad36, a human adenovirus, increases adiposity and yet, improves glycemic control in animal models. Similarly, spontaneous Ad36 infection is cross-sectionally associated with greater adiposity and better glycemic control in humans. This study compared longitudinal changes in indices of adiposity (body mass index(BMI) and body fat%) and glycemic control (fasting glucose and insulin) in Ad36 infected vs. uninfected adults. **Methods:** We screened sera from Hispanic men and women (N=1,400) for the presence of Ad36-specific antibodies. Age-adjusted indices of adiposity and glycemic control, at baseline and after about 10-year follow-up, were compared between seropositive and seronegative subjects. Glycemic indices were analyzed for non-diabetic subjects and adjusted for baseline BMI. **Results:** The following key differences, which were modest, but statistically significant, were observed. Seropositive subjects (14.5%) had greater adiposity at baseline, compared to seronegative subjects. Over time, this group showed a greater increase in adiposity, yet lesser increase in fasting insulin. BMI subgroup analyses indicated that Ad36 seropositivity was associated with better baseline glycemic control and less increase in fasting insulin levels over time, in the normal weight group (BMI<25kg/M2) and with a greater increase in adiposity in overweight and obese men (BMI 25-30, and >30 kg/M2, respectively). **Conclusions:** This study strengthens the plausibility that in humans, Ad36 increases adiposity and improves glycemic control. Panoptically, the study raises the possibility that certain infections may modulate obesity or diabetes risk. A comprehensive understanding of these underrecognized factors is needed to effectively combat such metabolic disorders.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Exercise and Muscle

181-P[DT]

Effects of Exercise Modality on Abdominal Fat and Skeletal Muscle Composition in Obese Adolescent Girls: A Randomized Controlled Trial

David A. White, Anthony Deldin, SoJung Lee *Pittsburgh, PA*

Background: To examine the effects of aerobic (AE) versus resistance (RE) exercise training without caloric restriction on abdominal fat and skeletal muscle composition in obese adolescent girls. **Methods:** Eighteen obese girls (BMI ≥ 95th, 12-18 years) were randomly assigned to one of three groups for a 3-month period: AE (n= 7, 180 min/week), RE (n=8, 180 min/week), or non-exercise control (NEC) (n=3). Visceral adipose tissue(VAT) was measured by 3T magnetic resonance imaging. Skeletal muscle composition at mid-thigh was determined using computed tomography. Cardiorespiratory fitness (CRF) was assessed using a graded maximal treadmill exercise test **Results:** CRF increased significantly in the AE and RE groups ($p<0.05$), but not in the NEC group ($p>0.05$). Despite no significant changes in body weight ($p>0.05$), VAT decreased significantly in both the AE and RE groups (AE -0.29 ± 0.12 kg; $p<0.05$, RE -0.30 ± 0.24 kg; $p<0.05$) but not the NEC group. Intermuscular fat decreased significantly in the RE (-4.23 ±3.4 cm2; $p<0.05$) but not the AE or NEC groups. Mean attenuation (HU) increased in RE (0.76±0.95; $p<0.06$) only. **Conclusions:** Independent of exercise modality, regular exercise alone, without calorie restriction, is associated with significant improvements in CRF and reductions in VAT in previously sedentary, obese girls. RE is beneficial for improving skeletal muscle composition in these subjects.

182-P

Use of Computed Tomography (CT) to Evaluate the Impact of Calories Received on Body Composition Changes in Obese and Non-Obese ICU Patients

Carol Braunschweig, Patricia Sheean, Sarah Peterson, Zebin Wang, Sally Freels, Karen Troy, Sandra Gomez-Perez, Joy Sclamberg, Omar Lateef *Chicago, IL*

Background: The impact of feeding on changes in lean and adipose tissue compartments in non-obese and obese ICU patients was assessed by exploiting sequential CT scans. **Methods:** Medical records of ICU patients that had a subjective global nutritional assessment (SGA), calorie intake, APACHE II scores and two or more CT scans that included the third lumbar vertebrae (L3) were reviewed (N=42). The mid-point of the L3 region was isolated and analyzed using Hounsfield unit thresholds for skeletal muscles (SKM) visceral (VAT) subcutaneous (SCAT) and intermuscular (IMAT) adipose tissue areas. Mixed effects linear regression was performed to evaluate the effect of energy received on changes in the tissue areas. **Results:** Patients had mean age of 59 yrs, BMI of 28.4, APACHE II score of 26.3 and 2.9 CT scans averaging 15 days between scans. On average patients received 49% of estimated calorie needs; baseline areas for SKM 124 cm2, VAT 165 cm2, SAT 191 cm2 and IMAT 23 cm2. Significant declines occurred for SKM and fat areas over time ($p < 0.0001$). Overall every 1% increase in calorie requirements received reduced the loss of SKM by 0.02 cm2/day ($p = 0.0003$). This influence of energy provision was significantly ($p < 0.0001$) more effective in sparing loss of SKM in non-obese (n = 26, loss of SKM reduced by 0.03 cm2/day) than in obese patients (n = 16, loss of SKM reduced by 0.012 cm2/day). **Conclusions:** Increasing provision of calorie needs significantly reduced the loss of SKM, and was more effective in sparing SKM loss in non-obese than obese patients.

183-P

Research on Weight Loss Effect by Exercise Combined With Massage on Severe Obese Adolescents

Yin Guo, Wen H. Chen, Ren W. Wang *Shanghai, China*

Background: To discuss improvements on severe obese adolescents by weight reduction exercise and massage. **Methods:** 42 severe obese (F%≥40) adolescents from "Weight Loss Camp" (2010, shanghai) have been divided randomly into exercise-massage group and exercise-only group. The subjects measured height, body weight, BMI, waistline, hip circumference, thigh circumference, F%, FINs, FBG, TC, TG, HDL-C and LDL-C. Based on the results of exercise load test and physical test, we determined each individual's exercise intensity. Same measurement and examine have been carried out after 4 weeks. On the first day the exercise-massage group do blood test 3 times that 1.5h after lunch, after massage and after exercise to determine TG. Massage was given on hips and thighs for 1h each day before exercises. According to the working out energy requirement based on the age, weight and BMR, professional dieticians offered reasonable daily calories and nutrition. **Results:** It indicates that after 4-week weight reduction exercise F% has decreased evidently and the blood lipid has improved a lot. Rate of descent in hip circumference and thigh circumference of exercise-massage group were more obvious than exercise-only group(highly significant).The level of serum TG increased after massage, and the TG level decreased after exercises. **Conclusions:** It prompted that 4-week weight reduction exercise with proper diet control can effectively bring down the obese degree and improve their body morphology, as well as improve lipid metabolism, preventing metabolic syndrome. Exercise combine massage was a utility way to increase the fat mobilization rate, and enhanced the effect of weight loss.

184-P

Aerobic Physical Training and Melatonin Acting Together Reduces Adiposity in Rats

André Ricardo G. Proença, Sandra Andreotti, Amanda Baron Campaña, Ariclécio C. de Oliveira, Rennan de Oliveira Caminhotto, Ana C. Silva, Fábio B. Lima *Sao Paulo, Brazil*

Background: As shown previously, melatonin influences energy expenditure, body weight (b.w.) regulation and blood glucose and peripheral insulin secretion and action. Here, we evaluated the effects of aerobic physical training (APT) plus melatonin on b.w., adiposity and sex-related structures (SRS). **Methods:** Twenty adult Wistar male rats were divided into four groups (n=4-

5): control sedentary (CS), melatonin sedentary (MS), control trained (CT) e melatonin trained (MT). Training consisted on one-hour daily running sessions (60% VO2Max) for 8 weeks, 5 days per week. The melatonin treatment (0,2mg/Kg b. w. in drinking water) was given daily at night. At the end, animals were decapitated under anesthesia. Periepididymal (PE), retroperitoneal (RP), subcutaneous (SUB) and mesenteric (MS) fat pads and SRS (testis, seminal vesicles, epididymides, and vas deferens) were weighed. The SUB e RP adipocyte were isolated. **Results:** Initial (CS=346,5±9,1g MS=336,0±9,1g CT=339,2±8,15g MT=344,0±8,2g), and final b.w. (CS=435,5±13,4g MS=382,0±13,4g# CT=388,8±12,0g* MT=363,2±12,0g*#); Percent fat pads weights (CS=2,87±0,33 MS=3,60±0,33 CT=3,62±0,30 MT=2,54±0,30$); and SRS (in g): Epididymides (CS=1,68±0,09 MS=1,23±0,09# CT=1,67±0,08 MT=1,47±0,08#), seminal vesicles (CS=1,16±0,13 MS=0,26±0,13# CT=1,03±0,12 MT=0,43±0,12#) were determined. Adipocyte diameter (μm): SUB (CS=67,2±2,6 MS=65,1±2,6# CT=69,4±2,3 MT=57,4±2,3#) and RP (CS=87,6±4,5 MS=91,1±5,2 CT=94.0±4,5 MT=75,9±4,5$). Statistical analysis: Two-way ANOVA test followed by Bonferroni's post hoc test was used (*p<0,05 T vs S; #p<0,05 M vs C $p<0,05 MT vs CT ou MS). **Conclusions:** APT and melatonin reduced b.w. adiposity and adipocyte size in rats. Parallelly, an hypogonatrophic effect of melatonin was evident as shown by the significant mass reduction of sex-related structures. Financial Support: FAPESP/CNPq/CAPES

185-P
The Combination of Decaffeinated Green Tean Extract and Voluntary Exercise Increases Macronutrient Excretion and Alters the Expression of Lipid Metabolizing Genes in High Fat-Fed Mice

Sudathip Sae-tan, Connie J. Rogers, Joshua D. Lambert *University Park, PA*

Background: Obesity is significant and growing public health problem. Studies suggest that beneficial effects of green tea for weight management. Exercise has been reported as an effective aid for weight loss. We have previously reported that the combination of decaffeinated green tea extract (GTE) and voluntary exercise (Ex) can have greater effects on high fat diet -induced obesity and co-morbidities in male C56BL/6J mice than either treatment alone. **Methods:** We analyzed fecal macronutrient content, the expression of hepatic lipid metabolizing genes by real-time PCR, and in vitro inhibition of trypsin by GTE. **Results:** Here we report the combination treatment of GTE and Ex increases fecal lipid content (132.4% higher) and fecal protein content (79.8% higher) compared to HF control mice. Treatment with either GTE or Ex alone was less effective. We found that GTE dose-dependently inhibited trypsin in vitro (IC50 = 128.9 μg/mL). The expression of genes related to lipid metabolism in liver were also altered by the treatments. Sterol regulatory element-binding protein-1c (SREBP-1c) and sterol-coenzyme A desaturase (SCD-1), genes related in fatty acid synthesis, were increased by 140% and decreased by 50%, respectively by the combination treatment. Carnitine palmitoyltransferase-1α (CPT-1α), a gene related to fatty acid oxidation, was increased by 130% folds by the combination treatment. **Conclusions:** Possible mechanisms of the combination treatment of GTE and Ex to prevent obesity and co-mobilities may be increasing macronutrient excretion and alteration of lipid metabolizing genes. Further analysis of these potential mechanisms of action is ongoing.

186-P
Eight Weeks of Overfeeding Increases PLIN2 and PLIN3 Gene Expression

Sudip Bajpeyi, Jeffrey D. Covington, Charmaine Tam, Eric Ravussin *Baton Rouge, LA*

Background: ADRP (PLIN2) and TIP47 (PLIN3) are major PAT (Perilipin/ADRP/TIP47) proteins expressed in skeletal muscle with an important role in turnover of cellular lipid turnover. We previously showed that higher PLIN3 mRNA in skeletal muscle is associated with obesity/T2DM and exercise training down-regulates PLIN3 in vitro and in vivo. The aim of this study was to determine the effect of 8weeks of overfeeding (40% extra calories with 45% fat) on PLIN2 and PLIN3 skeletal muscle gene expressions. **Methods:** Twenty eight healthy men (25.7 ± 0.4 years; BMI 25.5 ± 0.4kg/m2; mean±SE) participated in this study. PLIN2 and PLIN3 gene expressions were measured by real time PCR. **Results:** Eight weeks of overfeeding resulted in 7.5 ± 0.4 kg (9.5%) weight gain with a significant decrease in peripheral insulin responsiveness (hyperinsulinemic-euglycemic clamp;11.5 ± 0.5 to 10.9 ± 0.5 mg/kg FFM; p=0.04). Overfeeding led to significant increases in both PLIN2 (~33%; 0.73 ± 0.1 to 0.97 ± 0.2 AU; p<0.05) and PLIN3 (~22%; 1.46 ± 0.1 to 1.78 ± 0.2 AU; p<0.01) gene expression. Moreover, high baseline PLIN3 gene expressions were associated with larger decreases in insulin sensitivity in response to overfeeding (r= -0.38; p=0.04). **Conclusions:** For the first time we have shown that 8 weeks of overfeeding up-regulates PLIN2 and PLIN3 gene expression in skeletal muscle, implicating a potential role of the PAT proteins in overfeeding induced insulin resistance. Mechanistic studies in myotubes will investigate the role of PLIN3 on insulin signaling pathway in skeletal muscle.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Gut Hormones

187-P
Vagal Response to High-Caloric Food Presentation and Subsequent Consumption in Obese and Non-Obese Individuals

Tomoko Udo, Carlos M. Grilo, Kelly D. Brownell, Andrea H. Weinberger, Ralph J. DiLeone, Sherry A. McKee *New Haven, CT*

Background: Emotional arousal influences eating behaviors. Since the vagus nerve is involved in regulation of emotional arousal and satiety signaling, it is may play a key role in the emotion-eating relationship. This pilot study compared vagal response to mood induction, food presentation, and high-calorie food consumption between obese and non-obese individuals. **Methods:** Twenty-two obese (n = 9; BMI ≥ 30) and non-obese (n = 13; BMI < 25) individuals without metabolic or eating disorders completed two laboratory sessions (positive vs. negative mood conditions; 40.9% women). Each session consisted of 3-hour food deprivation, followed by a positive or negative mood induction, and a 3-hour ad-lib eating period, where they were allowed to start eating their favorite high-calorie snacks at any time. High frequency heart rate variability (HF HRV) was used to assess changes in vagal activity. **Results:** Mood induction did not affect vagal activity. Obese individuals showed a reduction in HF HRV at 15 min and 45 min after initiating eating in the negative mood condition, and at 15 min and 60 min in the positive mood condition. Non-obese individuals showed reduction in HF HRV at 45 min after initiation of eating, but no other pronounced change was observed. **Conclusions:** This is the first study to demonstrate that the course of changes in vagal activity after high-calorie food presentation and subsequent consumption differed by mood conditions in obese and non-obese individuals. Further investigation on such differential vagal response by emotional valence may have important implications for better understanding emotion-induced eating behaviors.

188-P
Efficacy, Safety and Mode of Action of an Anti-Obesity Vaccine Directed Against Somatostatin

Keith N. Haffer *Garretson, SD*

Background: The utilization of a chimeric-somatostatin vaccine for attenuation of levels of somatostatin to modify metabolic outcome has previously been demonstrated by us in farm animals. Using the same vaccine composition, we studied the effects of vaccination in a diet-induced-obesity (DIO) mouse model and a growing pig model to better understand projected efficacy, safety and mode of action. **Methods:** We utilized a JAX DIO mouse model to monitor the effects of 3 distinct vaccine formulations on body weights, food intake, safety, serum responses and Insulin-like Growth Factor Type 1 (IGF-1) levels. In a separate study we utilized a single vaccine formulation from the DIO study, in a growing pig model. We monitored daily gain, feed intake, serum metabolite and IgG levels over a 12 week period. Initial and final body composition was determined by dual X-ray absorptiometry (DXA) on control and treatment pigs. Adipose samples were removed from visceral and subcutaneous depots. Adipocyte size (diameter and volume units) were computed by image analysis.. Finally, mRNA for IGF-1 was determined from liver and semitendinonsus and longissimus dorsi muscle by qPCR determinations. of IGF-1. **Results:** In the DIO mouse model, all vaccines demonstrated significant body weight reductions due to the vaccination, while food intake remained similar among all groups. In the growing pig, the safety and mode of action of the vaccine were better defined by in-life and

post-mortem evaluations. **Conclusions:** The anti-somatostatin vaccine induced significant body weight loss in the DIO mouse model, while presenting a strong safety profile in the growing pig model. Based on positive results of the studies in these 2 mammalian species, further evaluation of the vaccine in additional obesity models, utilizing escalating vaccine doses, is planned.

189-P
Effects of Regimens For Acute Metabolic Disturbance With a Late Dinner

Mika Ishida, Mitsuhiro Katashima, Hideto Takase, Shinichiro Takashima, Rika Yokoyama *Tokyo, Japan*

Background: Delaying eating dinner till later in the evening, a common practice among business people, is a diet pattern known to cause weight gain. The effects on metabolism however, have not been comprehensively examined, and the mechanisms that lead to obesity are unclear. **Methods:** We compared eight healthy men's one-day energy expenditure and substrate oxidation measured in an indirect calorimeter among each five diet patterns: Late Dinner Pattern (LD:Eating a big portion of dinner two hours until sleep), Early Dinner Pattern (ED:Eating dinner five hours until sleep), Divided-Dinner Pattern (DD:Eat dinner separately in two portions,one of diet regimens proposed by public health specialists in the field),Traditional Japanese Cuisine Pattern (TC:Eating meals adjusted to the nutritional imformation in 1960). Appetite variables were assessed every 1 hour and blood metabolite levels were measured after each meal. **Results:** Total energy expenditure was significantly lower in the LD group compared with the ED group.The hunger and appetite score before dinner was increased in the LD group. Insulin and blood glucose levels were drastically elevated after dinner in the LD group. In the DD,TC, SLD group, energy expenditure was similar to that in the LD group. In the DD group,however postprandial insulin and glucose levels were down-regulated at the same levels as those in the ED group. In the TC group, postprandial incretin (GIP) levels were remarkably lower than touse in the LD group. **Conclusions:** Dining late at night can induce an energy surplus and interfere with glucose metabolism, which might lead to obesity and diabetes over a prolonged period. Eating dinner in two divided portions and Japanese Traditional Diet might be an effective regimen for late diners partially. Combination of multiple regimens with meal-time management would be most effective.

190-P
Dietary Fatty Acid Composition Regulates Acylated Ghrelin Levels in Humans

Bethany J. Klopfenstein, Jonathan Q. Purnell *Portland, OR*

Background: Ghrelin uniquely contains an acyl group that must be present for normal activity, though the origin of this acyl group is not well understood. Rodent studies have suggested that this acyl group can be derived from dietary fatty acids, but this effect has not yet been verified in humans. We therefore studied the effect of altering dietary fat content and composition on acyl and des-acyl ghrelin levels in healthy subjects. **Methods:** 19 healthy subjects consumed isocaloric diets of low fat (LF), high fat (HF) and medium chain triglyceride (MCT) in random order for two weeks each. After each dietary period, plasma was collected every 30 minutes for 13.5 hours for measurement of acyl and des-acyl ghrelin by RIA. AUC acyl and des-acyl ghrelin were calculated by trapezoidal method. **Results:** Fasting acyl and des-acyl ghrelin levels were not different on each diet, but the ratio of acyl / total ghrelin was lowest on LF (P<0.05). AUC acyl ghrelin was highest after MCT, intermediate after LF, and lowest after HF (AUC mean±SD 622±422, 560±279, and 429±192 pg-half day/ml respectively, P<0.05; LF vs. HF P=0.005, MCT vs. HF P<0.05), while AUC des-acyl ghrelin was lowest after MCT, intermediate after HF, and highest after LF (mean±SD 342±269, 443±294, and 524±343 pg-half day/mL respectively, P=0.001; LF vs. MCT P=0.001, MCT vs. HF P<0.05). In addition, the AUC of the ratio of acyl / total ghrelin was highest after MCT, compared to LF and HF (P=0.01; MCT vs. LF P=0.006, MCT vs. HF P<0.05). **Conclusions:** A diet enriched in MCT oil increases the both the total level of acyl ghrelin and acyl / total ghrelin ratio, while lowering des-acyl ghrelin. Therefore, the acute and long term production of acyl ghrelin is regulated by dietary fatty acid composition. Further studies will characterize the structure of the acyl group with these dietary fatty acid intake changes.

191-P
Liraglutide and Linagliptin Improve Glycemic Control But Show Differential Anti-Obesity and Hypolipidemic Efficacy in a Novel Hamster Model of Diet-Induced Obesity and Hypercholesterolemia

Henrik B. Hansen, Gitte Hansen, Philip J. Pedersen, Frederik Hansen, Jacob Jelsing, Niels Vrang *Hørsholm, Denmark*

Background: Unlike mice and rats, Golden Syrian hamsters fed a high-fat diet with cholesterol quickly develop hyperlipidemia and hypercholesterolemia, thus showing closer similarity to human lipoprotein metabolism. We developed a novel hamster model of diet-induced obesity (DIO) and evaluated the anti-obesity, insulin sensitizing and hypolipidemic efficacy of the glucagon-like peptide-1 (GLP-1) analog liraglutide and DPP-IV inhibitor linagliptin, respectively. **Methods:** Hamsters were fed a high fat-high carbohydrate diet with cholesterol supplementation for 12 weeks. **Results:** The hamsters developed an obese phenotype with significantly increased body weight, impaired oral glucose tolerance and significantly elevated baseline levels of insulin, triglycerides, total cholesterol, LDL and HDL cholesterol. Pancreatic and atherogenetic markers are currently being evaluated. Four weeks of treatment with liraglutide (0.2 mg/kg, s.c., b.i.d) led to a normalization of body weight with a complete reversal of whole-body fat mass gain. Moreover, liraglutide significantly reduced plasma triglyceride and cholesterol levels. Both liraglutide and linagliptin (3.0 mg/kg, p.o, q.d., 4 weeks) normalized glucose tolerance. **Conclusions:** In addition to the improved glycemic control upon liraglutide and linagliptin treatment, liraglutide showed robust anti-obesity and cholesterol-lowering effects in the DIO hamster, supporting the view that chronic GLP-1 receptor agonism may also lower cholesterol-associated cardiovascular risk factors in diabetes and obesity. In conclusion, the characteristics of combined dyslipidemia, hypercholesterolemia and insulin resistance in the DIO hamster make this animal model particularly useful for evaluation of novel anti-obesity, lipid modulating and insulin sensitizing agents.

192-P
Post-Prandial Ghrelin Response Is Associated With Cortisol Response, Perceived Stress and Anxiety, and Self-Reported Coping and Hunger in Obese Women

Marjana R. Sarker, Susan Franks, James Caffrey *Fort Worth, TX*

Background: Research suggests ghrelin (GHR) regulates anxiety and stress-related behavior. The current study investigated GHR related to cortisol (CORT), perceived hunger (VHN), anxiety (VAX), stress (VSR), eating behavior, and coping. We hypothesized (1) postprandial (PP) GHR and CORT change will be positively correlated, and (2) normal GHR response women (NG) will show better coping ability, decreased PP CORT, VHN, VSR, VAX and less maladaptive eating behaviors compared to faulty GHR women (FG). **Methods:** Obese adult women (n=18) were grouped into NG or FG based on pre to PP GHR response. Surveys included: Perceived Stress Scale (PSS), State Trait Anxiety (STAI), Eating Inventory: hunger (HN), disinhibition (DI), and cognitive restraint (CR); and Eating Appraisal (EADES): emotional eating (EE) and coping (COP). Visual Analogue Scales determined subjective change in VHN, VAX and VSR. Pre- to PP slopes were calculated for GHR and CORT and the association determined with Pearson correlation. Group differences in CORT, STAI, PSS, HN, DI, CR, EE, and COP were compared via t-tests. Changes in CORT, VHN, VAX, and VSR were analyzed with repeated measure t-tests. **Results:** GHR and CORT slopes were correlated, r(18)=0.558, p=.016. As compared to FG, NG had lower HN [t (2, 16)=-2.061, p=.056] and COP [t (2, 16)=2.437, p=.027]. PP reductions in VHN were seen for NG [t(1,8)=4.141, p=.003] and FG [t(1,8)=2.718, p=.026]. NG also showed PP reductions in VAX [t(1,8)=2.977, p=.018], VSR [t(1,8)=2.321, p=.049], and CORT [t(1,8)=4.214, p=.003]. **Conclusions:** Ghrelin appears to mediate hunger, anxiety, and stress in obese women. Ghrelin change is highly associated with cortisol change and should be further explored as mediating stress related eating. Results have implications for the development of obesity interventions.

193-P
Octreotide Alleviates Obesity By Reducing Intestinal Glucose Absorption and Inhibiting Low Grade Inflammation

Rui Liu, Yan Ou, Wei Huang, Chengwei Tang *Chengdu, China*

Background: Somatostatin (SST) and its analogues have been used in trials in patients with pediatric hypothalamic obesity. Its application for diet-induced obesity has not been systematically investigated. The aim of this study was to investigate the role of octreotide, a SST analogue with anti-inflammatory action, on the digestive and absorptive functions of jejunum in rats fed a high-fat diet, as well as its therapeutic prospects for diet-induced obesity. **Methods:** Rats were divided into three groups with different diet and treatment: 1) control, 18 rats fed with standard chow; 2) high-fat control, 19 rats fed with high-fat chow; and 3) high-fat octreotide, 21 rats fed with high-fat chow and treated with octreotide for the last 8 days. The plasma tumor necrosis factor (TNF-α) and SST levels were measured by ELISA and radioimmunoassay respectively. Disaccharidase activity in the jejunal homogenate was determined. SST and Na+-dependent glucose transporter 1 (SGLT-1) in the jejunal mucosa were visualized by immunohistochemistry. SGLT-1 was quantified by RT-PCR and western blot assays. **Results:** After 176 days' experiment, the fat/body weight ratio, villus height, maltase, SGLT-1/GAPDH, and plasma TNF-α in high-fat control rats were greatly higher than those in control rats, and the parameters in high-fat octreotide rats were significantly lower than those in high-fat control rats. Inverse changes of SST dramatically took place in the intestinal mucosa of the pair of high-fat groups. **Conclusions:** The low-grade inflammation induced by high-fat diet apparently reduced the secretion of intestinal SST, which increased intestinal absorption of energy and nutrients and formation of adipose tissues. Octreotide efficiently reversed such disorders, a finding that has far-reaching significance for regulation of energy balance.

194-P
Exenatide Prevents Fat Deposition and Insulin Resistance in a Canine Type 2 Diabetic Model

Viorica Ionut, Hasmik J. Mkrtchyan, Darko Stefanovski, Ana Valeria B. Castro, Orison O. Woolcott, Malini Iyer, Josiane Broussard, Richard N. Bergman *Los Angeles, CA*

Background: The insulinotropic effects of exenatide in type 2 diabetes treatment are well established. Less understood are the effects of exenatide on body weight (BW) and composition, energy homeostasis, and insulin sensitivity. **Methods:** To investigate exenatide's effects on body habitus, food intake and insulin sensitivity, obese type 2 diabetic canines were treated for 12 weeks with exenatide (10 ug sc BID) or placebo, while maintained on a high fat diet. Food intake and BW were assessed weekly. Insulin sensitivity was assessed at 0, 3, 6, 9 and 12 weeks by IVGTT. Body composition (by MRI), energy expenditure (indirect calorimetry) and hepatic and peripheral insulin sensitivity (by hyperinsulinemic euglycemic clamp) were assessed at 0 and 12 weeks. **Results:** Exenatide treatment resulted in decreased BW (avg weight loss -0.5+/- 0.1 kg; max at wk. 9, -1.4 kg). Abdominal region MRI revealed a decrease of 13% in total fat, due to similar decreases in visceral and subcutaneous fat. The placebo group gained weight (avg weight gain 0.5 +/- 0.1 kg), mostly due to subcutaneous fat deposition. The exenatide-caused decrease in BW was associated with a transitory decrease in food intake (2896 +/- 762 to 2576 +/- 720 kcal at wk2), but not with changes in energy expenditure. Insulin sensitivity, SI-IVGTT, was maintained in the exenatide group but decreased in the placebo. Endogenous glucose production (EGP) was more suppressed in the exenatide group (delta EGP wk 0: 0.7 mg/kg/min vs. 0.9 mg/kg/min wk 12) but less suppressed in the placebo. **Conclusions:** Chronic exenatide treatment in the face of high fat feeding in a mild Type 2 diabetes model prevents fat deposition and insulin resistance. These effects might be mediated via changes in visceral fat and hepatic insulin sensitivity.

195-P
GLP-1 Response to Short-Term Overfeeding in Young Men

Danny Wadden, Farrell Cahill, Edward Randell, Yanqing Yi, Sudesh Vasdev, Guang Sun *St. John's, Canada*

Background: Glucagon-like Peptide-1 (GLP-1) is secreted from the gastrointestinal tract in response to a meal and is involved in glycemic control and energy homeostasis. Because of this, GLP-1 has been linked to the development of obesity and diabetes; however data is lacking regarding how GLP-1 responds to a positive energy challenge (PEC) and if responses differ according to obesity status. Our present study was performed to answer these research questions. **Methods:** A total of 72 young men were overfed 70% more calories than baseline requirements for 7 days. Fasting blood samples, anthropometric measures and body composition using dual-energy x-ray absorptiometry were taken before and after the PEC. Measured biochemical markers included glucose, insulin, cholesterol, HDL-C, LDL-C, and triglycerols. Serum total GLP-1 was measured using an enzyme-linked immunosorbent assay (ELISA). **Results:** Circulating GLP-1 significantly increased after the 7-day overfeeding (34.40 ± 18.5 to 40.21 ± 20.2 pmol/L, P<0.001). Partial correlation analysis (controlling for android fat) revealed baseline total GLP-1 was negatively associated with HDL-C (r=-0.334, P=0.005) and positively associated with triglycerols (r=0.409, P<0.001). When split based upon adiposity status, this relationship was only found in the obese group. Baseline GLP-1 levels were not associated with change in any measured phenotypes. However when broke-up based upon adiposity status, baseline GLP-1 was associated with change in, gynoid fat (r=-0.724, P=0.005) within the overweight group. **Conclusions:** To our knowledge, this is the first study of its kind to assess the response of GLP-1 to a short-term PEC. Increased GLP-1 levels in response to overfeeding seem to be a protective response to the PEC. The associations of GLP-1 with triglycerols and HDL-C in obese subjects warrant future study.

196-P
Circulating Ghrelin Is Associated With Alcohol Consumption in the CODING Study

Peyvand Amini, Danny Wadden, Sangeetha Vidyasankar, Farrell Cahill *St.John's, Canada*; Weizhen Zhang *Ann Arbor, MI*; Wayne Gulliver, Hongwei Zhang, Guang Sun *St.John's, Canada*

Background: Ghrelin, a 28 amino acid peptide peripherally secreted by the stomach and duodenum, has an orexigenic function. In central nervous system ghrelin is an important neuropeptide involved in food intake behavior and possibly alcohol seeking. However, little data is available regarding the potential link between circulating ghrelin level and alcohol consumption in the general population. **Methods:** A total of 2176 CODING study subjects were assessed. Subjects were at least third generation Newfoundlander, between the ages of 20 and 79 years, with no serious metabolic, cardiovascular, or endocrine diseases. Ghrelin was measured with an Enzyme Immunoassay method. The Willett Food Frequency Questionnaire was used for evaluation of alcohol consumption in the volunteers. Dual-energy X-ray absorptiometry was used for measurement of body composition. **Results:** Pearson correlation showed significant positive correlation between circulating ghrelin and daily alcohol consumption (expressed in g/person and g/kg body weight) (r=0.06, p=0.01 and r=0.06, p=0.02 respectively) in the entire study. However when analysis was performed according to gender, significant positive correlations were found in females only [r=0.09; p=0.002; r=0.08; p=0.005]. The significant positive correlations were independent of BMI, percent body fat, medication use and menopausal status in partial correlation. **Conclusions:** Our results suggest circulating ghrelin level is associated with amount of alcohol consumption in females in the general population.

197-P
Circulating Ghrelin Is Inversely Associated With Dietary Sugar Intake in the Newfoundland Population

Danny Wadden, Peyvand Amini, Farrell Cahill, Andrew Lee, Sudesh Vasdev, Edward Randell, Wayne Gulliver, Guang Sun *St. John's, Canada*

Background: Ghrelin is a 28-amino acid orexigenic hormone secreted peripherally (stomach) and centrally (CNS). Recently ghrelin has been implicated in food addiction in animal models. Additionally, rats have been found to show symptoms of addiction toward sugar. At this time, no human data is available regarding sugar intake and ghrelin. Our objective was to examine the relationship between dietary sugar intake and circulating ghrelin in the Newfoundland population. **Methods:** A total of 2143 subjects were recruited from the population-based CODING Study. Fasting acylated ghrelin was measured using an enzyme immunoassay method (SPI-bio). Nutritional patterns were assessed using the Willet Food Frequency Questionnaire and computed via Nutribase 9 Software. Body composition was measured using dual-energy x-ray absorptiometry. Partial correlations were used to examine the relationship between sugar intake per kilogram of body weight (kg bw) and ghrelin. **Results:** When stratified based on gender, partial correlation

(controlling for age, body fat, and smoking) analysis revealed that sugar intake (kg bw) was negatively associated with circulating ghrelin in both women (r=-0.06, P=0.02) and men (r=-0.11, P=0.02). When women were grouped based on menopausal status, the association remained only for premenopausal women (r=-0.07, P<0.04). However when partial correlations were employed between absolute sugar intake and ghrelin (controlling for age, caloric intake, body fat, and smoking status) the relationship remained significant only in females (r=-0.07, P=0.005). **Conclusions:** To our knowledge, this is the first large-scale study to assess the link between circulating ghrelin and dietary sugar intake. Our results suggest that dietary sugar intake is negatively associated with circulating ghrelin level and this relationship could be affected by menopausal status.

198-P
Role of Ghrelin in Inflammation in Healthy Pre-Pubertal Children

Jovanny Zabaleta, John Estrada *New Orleans, LA*; Eric Ravussin *Baton Rouge, LA*; Enette Larson-Meyer *Laramie, WY*; Cruz Velasco-Gonzalez, Nicole Pelligrino, Alexandria Augustus, Brian Bennett, Yolanda Powell-Young, Hamid Boulares, Melinda S. Sothern *New Orleans, LA*

Background: Anti-inflammatory molecules prevent cell damage and promote insulin sensitivity and metabolic health. Mechanisms explaining these observations are unknown. We explored correlates of one anti-inflammatory peptide, ghrelin, in healthy, exclusively pre-pubertal (Tanner<2) obese and non-obese children (N=40; 7-9 yrs [8.20±0.72], Caucasian [(CA) N=27] and non-CA [N=13]; M=19; F=21). **Methods:** Height and weight were measured and body mass index z-score (BMI) calculated. Insulin resistance (IR) was estimated by HOMA-IR, visceral abdominal fat (VAT) by MRI, total body fat (BF) by DXA and ectopic fat (intramyocellular soleus lipids [IMCL] and intrahepatic lipids [IHL]) by ^{1}H-magnetic resonance spectroscopy. Blood samples were obtained following a 12-hr overnight fast and plasma IL1β, IL6, IL8, TNFα, MCP-1 and ghrelin were determined in duplicate using Luminex technology allowing simultaneous detection of multiple targets per sample. Spearman correlations were calculated for ghrelin with pro-inflammatory markers and adjusted for BMI, IR, VAT, BF, IHL and IMCL. **Results:** Ghrelin was inversely associated with IL6 (r=-0.44; p≤0.005) and IL8 (r=-0.68; p≤0.0001) even after adjustment for each of BMI, IR, VAT, BF, IHL and IMCL (p≤0.01; p≤0.0001). In particular, significant inverse correlations were observed between ghrelin and IL8 after adjusting for IR (r=-0.76; p≤0.0001), VAT (r=-0.81; p≤0.0001), IHL (r=-0.81; p≤0.0001) and IMCL (r=-0.67; p≤0.0001). Adjustment for age, sex and race did not alter the strength of these associations or significance. **Conclusions:** Ghrelin is inversely related to IL6 and IL8, regardless of obesity, even after adjusting for IR, VAT and ectopic fat indicating that ghrelin's potential anti-inflammatory properties may be unrelated to metabolic function. Functional studies are needed to identify specific mechanisms that explain these findings.

199-P^{DT}
Circulating Ghrelin Is Associated With Bone Mineral Content in the CODING Study

Peyvand Amini, Farrell Cahill, Sangeetha Vidyasankar, Danny Wadden, Hongwei Zhang, Wayne Gulliver, Guang Sun *St.John's, Canada*

Background: Ghrelin is known as an orexigenic hormone acting as a natural ligand for the growth hormone secretagogue receptor. Recent studies have shown that Ghrelin significantly increase osteoblast-like cell proliferation, expression of osteoblast differentiation markers, and calcium accumulation in the bone matrix of rats. Ghrelin may have a pleiotropic effect on bone metabolism. The aim of this study is to investigate the potential association between circulating ghrelin and Bone Mineral Density (BMD), Bone Mineral Content (BMC) and Z-score. **Methods:** A total of 2346 subjects from the CODING study (Complex diseases in the Newfoundland population: Environment and Genetics Study) (age 20-79 years) were used in this study (587 men and 1759 women). Ghrelin was measured with Enzyme Immunoassay kit of SpiBio. BMD and BMC were measured by Dual-energy X-ray absorptiometry. Pearson and partial correlations were used to assess the relationship between ghrelin level and BMD, BMC and Z-score. **Results:** Partial correlation (controlling for weight, height, smoking, alcohol consumption and physical activity) revealed weak but significant positive correlation between Ghrelin level and gynoid BMC, L2-L4 BMC and femoral neck z-score in women (r =0.1, p =0.006; r =0.07, p =0.04 and r=0.07, p=0.04 respectively). No significant correlations were found in men. When female subjects were stratified based on the menopausal status ghrelin was positively associated with femoral neck z-score in premenopausal women (r =0.1, p =0.02) and gynoid BMC (r =0.1, p = 0.04) and L2-L4 BMC (r = 0.1, p = 0.04) in postmenopausal women. **Conclusions:** Our data suggest that ghrelin may have a beneficial effect on BMC and Z-score in females.

200-P
Short-Term Positive Energy Challenge Does Not Change Fasting Serum Cholecystokinin Level

Peyvand Amini, Farrell Cahill, Danny Wadden, Edward Randell, Sudesh Vasdev, Guang Sun *St.John's, Canada*

Background: Cholecystokinin (CCK) is a gastrointestinal hormone that can be involved in the regulation of food intake and satiety. However, there is no data regarding how CCK responds to a positive energy challenge. In this study we aim to investigate the nutritional regulation of CCK to a 7-day overfeeding protocol and its potential associations with body composition, glucose, insulin resistance and lipid profile at baseline and after short-term overfeeding. **Methods:** Physical and biochemical markers for 56 healthy young men were available and used in this study. These subjects underwent 70% hypercaloric diet for 7 days. Serum CCK was measured with EIA kit from Phoenix Pharmaceuticals. Insulin was measured by Immulite 2500 autoanalyzer. Homeostasis model assessment was used for measurement of Insulin resistance [HOMA-IR] and β cell function [HOMA-β]. Glucose, triglyceride, total cholesterol and HDL-cholesterol were measured by Lx20 analyzer. Dual-energy X-Ray absorptiometry (DXA) was used for measurement of body composition. **Results:** No significant difference in baseline CCK was found among normal weight, overweight and obese subjects based on body fat percentage measured by DXA or BMI. The 7-day overfeeding did not significantly change fasting CCK concentration. However, in overweight group (based on DXA), pre-overfeeding CCK concentration was negatively correlated with total cholesterol and LDL-cholesterol (r = -0.84; p=0.004 and r = -0.77; p=0.01 respectively) and positively correlated with insulin (r=0.69; p=0.04) and insulin resistance measured by homeostasis model analysis (r=0.69; p=0.04). **Conclusions:** Short-term overfeeding did not cause significant changes in fasting CCK. However, CCK may be involved in lipids and glucose metabolism.

201-P
Pancreatic Polypeptide (PP) Response to a Seven-Day Overfeeding in Young Men

Farrell Cahill, Danny Wadden, Peyvand Amini, Andrew Lee, Edward Randell, Sudesh Vasdev, Guang Sun *Logy Bay, Canada*

Background: PP, anorexigenic hormone released from the pancreas, is involved in energy regulation and the administration of PP in humans reduces food intake. The purpose of our study was to investigate the nutritional regulation of PP in response to a 7-day positive energy challenge (PEC). **Methods:** 57 men (19-29yr) participate in the study. The PEC was set to 70% above normal energy intake determined from the Willet Food Frequency Questionnaire and three 24hr food intake recalls. Fasting serum PP was measured via enzyme-linked immunosorbent assay. Partial correlations were used to explore the relationship between PP levels with obesity makers such as weight, body fat percentage(%BF), trunk fat percentage(%TF), fat weight(FatWt) body mass index(BMI), triglycerides, HDL-C, LDL-C,glucose,insulin,insulin resistance (HOMA-IR) and β-cell function (HOMA-β) at baseline and after PEC. **Results:** Although the PEC significantly affected body composition, lipids and insulin profiles, PP levels were not effected. Baseline PP was not associated with baseline obesity markers within the entire cohort or among normal-weight overweight, and obese subjects based on %BF measured by DXA. However, baseline PP was negatively associated with the changes in %BF(r= -0.318, p=0.016), %TF(r= -0.309, p=0.020), and FatWt(r= -0.333, p=0.011) in response to the PEC. These relationhsips remained after controlling for each obesity marker at baseline. **Conclusions:** To our knowledge, this is the first study to explore the association between PP and obesity related phenotypes before and after a PEC. Our findings suggest that PP is not significantly affected by our PEC and is not associated with obesity markers indepdentd of adiposity status. However, higher baseline levels of PP were foudn to be inversely correlated with a lower increase of relative fat suggesting a protective role when exposed to a PEC.

202-P
The Response of Five Functionally Connected Gut Hormones (PP, PYY, CCK, GLP-1 and Ghrelin) to a Short-Term Positive Energy Challenge

Farrell Cahill, Danny Wadden, Peyvand Amini, Andrew Lee, Yanqing Yi, Edward Randell, Guang Sun *Logy Bay, Canada*

Background: The gastrointestinal tract (Gut) secretes a number of hormones which regulate metabolism and appetite through the gut-brain axis. Theoretically gut hormones are functionally associated and thought to assist one another. However, few studies have investigated whether gut hormones are connected and how they respond to a positive energy challenge as a functionally clustered hormonal group. Therefore, in our current study we analyzed PP,PYY, CCK, GLP-1 and Ghrelin before and after 7 days of overfeeding to address these questions. **Methods:** Enzyme-linked immunosorbent assays were used to measure the 5 gut hormones. 68 men were overfeeding 70% more then normal energy requirements. Partial correlations (controlling for age and %BF) were used to assess the relationships among the 5 gut hormones at baseline and baseline variables compare to variation due to the PEC. **Results:** The partial correlations revealed that all 5 gut hormones were positively correlated with one another at baseline [PYY vs PP(r=0.45,p<0.01),GLP1(r=0.45,p<0.01),CCK (r=0.28,p<0.04) and Ghrelin(r=0.53,p<0.01). PP vs GLP1(r=0.41,p<0.01),CCK (r=0.50,p<0.01), and Ghrelin (r=0.32,p=0.01). GLP1 vs CCK (r=0.48,p<0.01) and Ghrelin (r=0.48,p<0.01). CCK vs Ghrelin (r=0.34,p=0.01)]. However, baseline PYY(r=-0.28,p=0.03) and GLP1(r=-0.29,P=0.02) are negatively correlated with the change in PP while baseline Ghrelin (r=-0.247,p=0.038) and PP (r=-0.258,p=0.046) are negatively correlated with the PYY due to the PEC. In addition, baseline GLP1(r=-0.289,p=0.015), PP (r=-0.330,p=0.029), and PYY (r=-0.332,p=0.005) are negatively correlated with the change in Ghrelin, CCK, and GLP1 respectively. **Conclusions:** Our results revealed significant positive correlations among all 5 gut hormones. In addition, the higher baseline levels of some gut hormones were associated with a lesser increase in response to the PEC.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

In vivo Studies

203-P
Regional Free Fatty Acid Uptake Assessed By Positron Emission Tomography in Postabsorptive Humans

Nicola W. Gathaiya, Qiaojun Han, Christina Koutsari, Bradley Kemp, Michael D. Jensen *Rochester, MN*

Background: Elevated free fatty acids (FFA) contribute to the metabolic complications of obesity such as insulin resistance. Therefore, defining the tissues and organ FFA uptake should help us understand the impact of FFA on metabolism. **Methods:** 11 volunteers, age 32±7 y, BMI 24.7±4.3kg/m2 received a continuous intravenous (IV) infusion of [U-13C]palmitate begun 30 minutes before the [1-11C]palmitate PET/CT study. Blood samples were obtained before and during the scan. A dynamic PET scan was acquired over the lower chest/upper abdomen. Tissue uptake rates were calculated using Patlack analysis with a PET left ventricle-blood hybrid input function. A static thigh PET/CT was done immediately after the dynamic scan to measure standardized uptake value, which was used to calculate thigh adipose palmitate uptake. This was followed by an IV [1-14C] palmitate bolus and timed abdominal subcutaneous and thigh adipose tissue biopsies. Palmitate flux ([U-13C] palmitate) x adipose 14C- palmitate content were used to calculate biopsy-derived FFA storage. **Results:** Palmitate uptake rates (μmol/kg/min) by PET in upper body (UBSQ) and lower body subcutaneous (LBSQ) fat uptake averaged 0.8±0.3 and 0.31±0.12. In comparison, UBSQ and LBSQ palmitate uptake rates (μmol/kg fat/min) by biopsy averaged 0.44±0.2 (P=0.05 vs. PET) and 0.3±0.2 (P=NS vs. PET). We found correlations between PET and biopsy derived data for UBSQ and LBSQ (r=0.66, p=0.057 and r=0.60, p=0.09, respectively). Palmitate flux (μmol/min) by [U-13C] and [1-11C] palmitate averaged 125±33 and 119±41 respectively, and were correlated (r=0.64, p=0.06). **Conclusions:** This is the 1st direct comparison of PET vs. biopsy. PET UBSQ palmitate uptake is greater than biopsy measured uptake, whereas PET and biopsy LBSQ palmitate uptake are similar.

204-P
Insulin Resistance and β-Cell Function in Patients With Obesity

Simona Ateia, Emilia Rusu, Doru Traistaru, Gabriela Radulian, Dan Cheta *Bucharest, Romania*

Background: The aim of this study was to compare the insulin resistance and β-cell function of obese adults with increased risk for diabetes (impaired fasting glucose (IFG) and/or impaired glucose tolerance (IGT)) with normal glucose tolerance (NGT) people. **Methods:** A random population-based sample (n=241) of Romanians (26–80 years) was studied; 90 persons had diabetes and were excluded. All participants underwent anthropometric measurements and blood tests (fasting plasma glucose, HbA1c, lipids, aminotransferases, insulin, proinsulin and C-peptide). Diabetes, IFG and IGT were diagnosed according to ADA 2010 criteria. Homeostasis model assessment of insulin resistance (HOMA-IR), HOMA-B, and Quicki index were also calculated. The diagnosis for metabolic syndrome (MetS) was made according to International Diabetes Federation. **Results:** 56.5% (n=61) of IFG/IGT patients and 20.8% (n=10) of NGT patients had MetS. IFG/IGT patients were older, had more MetS components and statistically significant lower values for HDL cholesterol (p<0.001). No significant differences were found for waist and triglycerides. Median HOMA-IR was higher (3 vs.2.3; p<0.001) and HOMA-B (69.6 vs. 98.6; p<0.001) and Quicki index (0.32 vs. 0.34; p<0.001) were lower in IFG/IGT persons. HOMA-IR over 2 was present in 53.1% (n=26) person in NGT group, and in 77.2% (78) in IFG/IGT group. Quicki index <0.33 was present in 27.1% (n=13) in NGT group and in 57.4% (n=62) in IFG/IGT group. **Conclusions:** The results suggest that insulin resistance is enough for early diagnosis of IFG/IGT. The management of patients with IFG/IGT must include lifestyle adjustments to promote weight reduction, antihypertensive therapy, the treatment of atherogenic dyslipidaemia, and treatment to reduce insulin resistance.

205-P[DT]
Modulation of the IL-6 System and STAT-3 Activation in Lymphocytes of Lean and Obese Women

Davina H. Rhodes, Van Nguyen, Margaret M. Sullivan, Sandra Gomez-Perez, Carol Braunschweig, Giamila Fantuzzi *Chicago, IL*

Background: Chronically elevated levels IL-6 and active STAT-3 (pSTAT-3) are linked to chronic inflammatory diseases, including cancer. Bioactivity of IL-6 is determined by levels of IL-6 itself, as well as concentrations of soluble IL-6R (sIL-6R) and sgp130, acting as agonists and antagonists, respectively, of IL-6 activity. Obesity is associated with increased levels of IL-6. However, whether obesity modulates other components of the IL-6 system and alters responsiveness to IL-6 remains to be investigated. **Methods:** Forty women were divided into groups matched by age and ethnicity based on BMI (<30, n=10; 30-40, n=12, 40-50, n=11, and >50, n=7). Plasma levels of IL-6, sIL-6R and sgp130 were measured by ELISA. Heparinized whole blood was stimulated with increasing concentrations of rhIL-6 (0-10 ng/ml) for 10 minutes. Activation of STAT-3 in lymphocytes was evaluated by flow cytometry using PE-conjugated antibodies directed against pSTAT-3. **Results:** Plasma IL-6 levels significantly increased with increasing BMI, as expected. However, plasma sIL-6R and sgp130 were not significantly different among groups. The percentage of unstimulated lymphocytes (no IL-6 added) positive for pSTAT-3 progressively increased with increasing BMI (6.1+/-1.5, 11.0+/-1.6, 19.1+/-3.0 and 20.4+/-2.1 with BMI <30, 30-40, 40-50, >50, respectively; p<0.001). However, obesity did not alter the ability of lymphocytes to dose-dependently respond to IL-6 with activation of STAT-3, with approximately 24%, 43% and 54% pSTAT-3 positive lymphocytes in each BMI group in response to IL-6 at 0.1, 1 and 10 ng/ml, respectively. **Conclusions:** Constitutively active STAT-3 in obesity with maintained responsiveness to IL-6 likely participates in determining the increased risk of chronic pathologies, including cancer, of obese individuals.

206-P
Hyperglycemia in Metabolic Syndrome Is Detrimental to Eye Health

Leah Marron *Fort Lauderdale-Davie, FL*

Background: The benefits of an improvement in glycemic control occur over the entire range of A1c values. Hyperglycemia is associated with changes to the retina through microvascular and osmotic damage. **Methods:** Diabetic retinopathy (DR) plays a significant role in vision loss. There are

 For author conflict of interest information, see page S250

two stages of DR, nonproliferative (NDR) and proliferative (PDR). NDR is characterized by microaneurysms, hemorrhages, and Kimmelstiel-Wilson nodules. Disease progression to PDR is marked by changes in vessel caliber, intraretinal microvascular abnormalities and increased microaneurysms and hemorrhages. The neovascularization in PDR is the result of retinal hypoxia. **Results:** Blood flow through the vessels supplying the retina becomes compromised in hyperglycemia resulting in retinal hypoxia. This hypoxia is associated with alterations in levels of cell signaling proteins. This is associated with elevated levels of insulin-like growth factor 1. Levels of tumor growth factor beta 2 are decreased in retinal hypoxia. Neovascular membranes have higher levels of urokinase and metalloproteinase enzymes compared to those in a normal retina. **Conclusions:** Targeting these enzymes may be an effective therapy for slowing the progression of retinopathy. Currently, the most effective therapy for slowing the progression of diabetic retinopathy is control of blood glucose levels and blood pressure.

207-P
Cyclooxygenase Inhibition Improves Endothelial Vasomotor Dysfunction of Visceral Adipose Arterioles in Obese Humans

Melissa G. Farb, Stephanie Tiwari, Brian Carmine, Donald T. Hess, Joseph A. Vita, Caroline Apovian, Noyan Gokce *Boston, MA*

Background: Obesity, particularly visceral adiposity, is associated with increased cardiovascular risk. Experimental studies suggest that cyclooxygenase (COX)-produced vasoconstrictor prostanoids may contribute to endothelial dysfunction, a key feature underlying vascular disease. Our prior published work has shown that endothelium-dependent, acetylcholine (Ach)-mediated vasodilation is impaired in arterioles from visceral fat. In the current study, we sought to determine whether COX inhibition improves vascular function in visceral adipose microvessels. **Methods:** In 10 severely obese subjects (age 37±14 yrs, BMI 47±9 kg/m2) we collected visceral fat during bariatric surgery. We isolated arterioles (75-250 μm) from fat and assessed vasomotor function by videomicroscopy. Endothelium-dependent vasodilation was examined in response to increasing organ bath Ach concentrations (10-10–10-5 M), before and after ex vivo treatment of adipose arterioles with a COX-specific inhibitor, indomethacin (10 μM). Endothelium-independent vasodilation was assessed with papaverine (2x10-4 M). **Results:** Subjects were 80% female and 50% type-2-diabetic, with mean plasma glucose 105±28 mg/dl, insulin 10±3 mU/ml, HbA1C 6.1±1.9%, HOMA 2.7±1.2, triglycerides 143±85 mg/dl, and LDL-C 119±36 mg/dl. Visceral arterioles exhibited impaired vasodilation to increasing doses of Ach (area under the curve [AUC] 33±55), while non-endothelium dependent dilation to papaverine was preserved. Treatment with indomethacin significantly improved adipose microvascular dose-response to Ach by 3-fold (AUC 96±33, p=0.02). Differential responses to indomethacin were not observed when subjects were stratified by diabetes status. **Conclusions:** Our findings suggest that upregulation of COX-mediated vasoconstrictor prostanoids contribute to endothelial dysfunction of visceral adipose arterioles in human obesity.

208-P
This abstract has been withdrawn.

209-P
Resistin Is Associated With Pro-inflammatory Adipokines in Healthy, Pre-Pubertal Youth

Yolanda Powell-Young, Melinda S. Sothern, Jovanny Zabaleta *New Orleans, LA*; Eric Ravussin *Baton Rouge, LA*; Cruz Velasco-Gonzalez *New Orleans, LA*; Enette Larson-Meyer *Laramie, WY*; Nicole Pelligrino, Alexandria Augustus, Brian Bennett, Hamid Boulares, John Estrada *New Orleans, LA*

Background: Although poorly understood, resistin, a pro-inflammatory adipokine, may function collaboratively with other obesity-induced inflammatory markers in the development of co-morbidities. This relationship has yet to be elucidated in healthy children. **Methods:** Analyses were conducted with N=40 pre-pubertal (Tanner <2) ethnically diverse children (7-9 yrs [8.20±0.72], Caucasian [(CA) N=27] and non-CA [N=13]; M=19; F=21). Adiposity indices were body mass index (BMI [z-score]) by height and weight; ectopic fat (intramyocellular [IMCL] and intrahepatic lipid [IHL]) by ^{1}H-magnetic resonance spectroscopy; visceral abdominal fat (VAT) by MRI; and total body fat (BF) by DXA. HOMA-IR estimated insulin resistance (IR). Following a 12-hour fast, venous blood samples were collected and IL1β, IL6, and IL8; TNFα; MCP-1 and resistin levels were determined by enzyme-immuno-assay. Spearman correlations were calculated and data were adjusted for adiposity indices and IR. **Results:** Resistin was significantly associated with IL6 (r=0.42; p≤.006) and IL8 (r=0.54; p≤0003). Relationships remained significant after adjustment for each of the pre-identified covariates, and for age, sex and race. Resistin was positively associated with TNFα (r=0.41; p≤0.009); but, significance was lost after adjustment for BMI, IHL and IMCL and with sex, age and race. Resistin and MCP-1 were significantly correlated after adjustment for BMI (p≤0.03), BF (p≤0.03), and IHL (p≤0.04); however, only after adjusting for age, sex and race did IR (p≤0.02), VAT (p≤0.03) and IMCL (p≤0.05) achieve significance. **Conclusions:** Resistin is significantly correlated with several pro-inflammatory markers in healthy, pre-pubertal youth even after considering total body, VAT and ectopic fat and IR. Functional studies are needed to determine mechanisms and explore the effect of sex and race on these observations.

210-P
Effect of Bariatric Surgery on Glucose Kinetics After Mixed-Meal Ingestion

David Bradley, Caterina Conte, J. Christopher Eagon, Esteban Varela *St. Louis, MO*; Amalia Gastadelli *Pisa, Italy*; Bettina Mittendorfer, Bruce W. Patterson, Samuel Klein *St. Louis, MO*

Background: Bariatric surgery often results in resolution of T2D; procedures diverting nutrients away from the upper gastrointestinal tract are more effective than those that restrict stomach volume. We tested the hypothesis that roux-en-Y gastric bypass (RYGB) surgery has important weight-loss independent effects on glucose metabolism. **Methods:** Obese, non-diabetic subjects were studied before laparoscopic adjustable gastric banding (LAGB) (n=10; BMI: 47±3 kg/m2) and RYGB (n=10; BMI: 46±2 kg/m2) and after they lost 20% of body weight.The effect of meal ingestion on endogenous glucose production (EGP) and the rate of appearance (Ra) of ingested glucose into systemic circulation was evaluated by having subjects consume a mixed meal (~400 kcal) containing U-13C-glucose over 30 minutes, in conjunction with an infusion of 6,6-D2-glucose. **Results:** In contrast with LAGB, RYGB surgery resulted in a higher peak in the early rise of plasma glucose concentration due to a marked increase in the early Ra of ingested glucose into the systemic circulation. The % of total meal-derived glucose in the circulation within 120 min after initiating meal ingestion was 75±14% before and 73±13% after surgery in the LAGB group, but increased from 70±19% before to 92±2% after surgery in the RYGB group (P=0.01). Before surgery, meal ingestion caused a prompt and nearly complete suppression of EGP. The suppression of EGP in response to meal ingestion was not different before and after surgery in the LAGB group. In contrast, RYGB surgery resulted in a more rapid and almost complete suppression of EGP, which rapidly returned to baseline levels. **Conclusions:** These data demonstrate that RYGB surgery significantly alters postprandial glucose kinetics by increasing the Ra of ingested glucose into the circulation and changing the dynamics of EGP in response to a mixed meal in obese adults.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Models of Metabolism and Obesity

211-P
Interactive Effects of Amylin and Bupropion/Naltrexone on Food Intake and Body Weight in Rodent Models

Jonathan D. Roth, Carrie Wittmer, Pete Griffin, David G. Parkes *San Diego, CA*

Background: Antagonism of opioid systems (e.g., with naltrexone; NAL) has been explored as an anti-obesity strategy, and is particularly effective when co-administered with dopamine (DA)/norepinephrine (NA) reuptake inhibitors (e.g., bupropion; BUP). Previously, we demonstrated that amylin interacts with neurohormonal (e.g., leptin, cholecystokinin, melanocortins) and small molecule (e.g., phentermine, sibutramine) agents to additively or synergistically decrease food intake (FI) and body weight (BW) in preclinical models. The present studies characterized the interaction of amylin and opioid and DA/NA agents. **Methods:** Acute FI-lowering effects of NAL and/or

BUP in wild-type (WT) and amylin knockout mice (AmyKO). FI, BW and adiposity in diet-induced obese rats (DIO) treated (for 12 d) with either vehicle, rat amylin (SC infused; 50 μg/kg/d) alone and in combination with a daily SC injection of a mixture of NAL (1 mg/kg)/BUP (20 mg/kg). **Results:** WT and AmyKO mice were shown to be similarly responsive to either NAL (1 mg/kg) or BUP (50 mg/kg) monotherapy, or to a combination of NAL (1 mg/kg) + BUP (20 mg/kg). These findings suggest NAL and/or BUP act independently of amylinergic systems and could have additive effects when given in combination. In DIO rats, amylin monotherapy decreased FI by 28%, BW by 5% and adiposity by 3.6%. NAL/BUP decreased FI by 31%, BW by 4% and adiposity by 5%. In combination, amylin and NAL/BUP decreased FI by 50%, BW by 9% and adiposity by 7%. **Conclusions:** These findings support the potential strategy of combined amylin agonism with opioid/DA/NA signaling systems for the treatment of obesity.

212-P
5-HT1a Antagonists Reduce Food Intake and Body Weight by Reducing Total Meals With No Conditioned Taste Aversion

Joelle Dill, Dana K. Sindelar *Indianapolis, IN*

Background: Experiments were conducted to determine the effects of 5HT1a antagonists on food intake and taste aversion. **Methods:** Using an automated food intake monitoring system, BioDAQ (Research Diets Inc., New Brunswick, NJ) to determine the microstructure of feeding, male diet-induced obese (DIO) mice were administered NAD-299 (3 and 10mg/kg, sc) or SRA-333 (10 or 30mg/kg, po) for 3 days. Subsequently, we sought to determine whether the feeding decrease might be an indicator of visceral illness by using a conditioned taste aversion assay. **Results:** . Meal pattern analyses revealed that 24hr food intake was reduced through a specific decrease in the total number of meals. Day 1 meal number was decreased ~14-27% compared to vehicle groups in the high dose groups with each compound and was reduced similarly each day . However, average meal size (0.2g + 0.0) was not impacted by any of the compounds on any day. In addition, body weight was reduced 1-4% compared by Day 3 to vehicle controls. Using the two bottle preference test, we found none of the compounds produced a conditioned taste aversion. Therefore, the decrease in food intake does not appear to be a response to aversion induced by the compounds. **Conclusions:** These results indicate that dosing of a 5-HT1a receptor antagonist suppresses feeding, specifically by decreasing number of meals, and induces weight loss without the liability of nausea as an adverse side effect.

213-P
Brown Norway Chromosome 1 Alleles Improve Kidney Function, Insulin Sensitivity and Glucose Tolerance in Zucker Fatty Rats

Craig H. Warden, Fawaz Haj *Davis, CA*; Rodrigo Gularte-Merida *sart-Tilman, Belgium*; Esther Min, Anh B. Le, Susan B. Hansen, Juan F. Medrano, Judith S. Stern *Davis, CA*

Background: We have previously reported that Zucker (ZUC) chromosome 1 contains a gene or genes that promote increased urinary albumin excretion (UAE) in Zucker fatty rats compared with Brown Norway (BN/Crl) rats. Glucose tolerance and insulin sensitivity were examined since end stage renal disease and type 2 diabetes are correlated in fatty Zucker rats. **Methods:** A congenic strain (ZUC.BN-Chr1) was produced containing 130 Mb of donor alleles from BN chromosome 1 on the ZUC background. Phenotypes were collected in 245 F2 male rats in a population made by crossing parents heterozygous for both the congenic donor region and ZUC leptin receptor fatty mutation (LeprfaSte). Twenty-four-week-old BN.ZUC-Chr 1 fatty (LeprfaSte/faSte) and ZUC LeprfaSte/faSte male rats were injected with glucose or insulin after fasting four hours for the insulin tolerance test and 12-16 hours for the glucose tolerance test. **Results:** Significant interactions were observed between the Lepr genotype and quantitative trait loci for several traits, including urine volume, urinary albumin excretion (UAE), albumin to creatinine ratio (ACR), liver weight and triglyceride (TG), and fasting glucose. Preliminary results indicate that BN.ZUC-Chr1 rats exhibit markedly improved insulin sensitivity and glucose tolerance, even though all other chromosomes are Zucker-derived. **Conclusions:** We conclude that the improved UAE and glucose tolerance are both due to Brown Norway alleles on rat chromosome 1. Mapping of crosses between the BN.ZUC-Chr 1 congenic and Zucker rats will help determine if all these traits are controlled by a single gene or by different genes on rat chromosome 1.

214-P
Activation of Liver X Receptor Prevents High Fat Diet-induced Obesity in Mice

Mingming Gao, Dexi Liu *Athens, GA*

Background: The objective of this study was to investigate the effects of activation of the liver X receptor (LXR), a nuclear receptor known to regulate the expression of genes involved in regulation of lipid and glucose metabolism, on the development of high fat diet (HFD)-induced obesity and insulin resistance. **Methods:** T0901317, an activator for LXR, was injected (50 mg/kg, i.p.) twice weekly in C57BL/6 mice fed with HFD. Glucose homeostasis was evaluated by IPGTT and ITT. Expression levels of genes involved in energy metabolism and fatty acid beta-oxidation were measured by qPCR. Protein levels of GLUT4 and UCP-1 were determined by western-blot and immunohistochemistry. Fat accumulation in the liver was confirmed by oil red-O staining. **Results:** When on HFD continuously for 10 weeks, C57BL/6 mice became obese, with an average body weight of 42 g, insulin resistant, and glucose intolerant. Twice weekly injections of T0901317, given to animals on the same diet, completely blocked obesity development, obesity-associated insulin resistance and glucose intolerance. Results of qPCR showed that the T0901317-treated mice had an elevated expression of cpt1a (2.3-fold), acadm (2.1-fold), acadl (1.7-fold), aox (2.9-fold) and ehhadh (67.5-fold) in the liver and an increased expression of ucp1 (71.3-fold) and cpt1b (8.5-fold) in the white adipose tissue. Western-blot and immunohistochemistry showed that the T0901317-treated mice had higher protein levels of GLUT4 and UCP-1 when compared to control animals. However, T0901317 treated animals also showed reversible aggregation of lipids in the liver. **Conclusions:** These results suggest that LXR could be a potential target for prevention of obesity and obesity-induced insulin resistance.

215-P
Activation of Pregnane X Receptor By Pregnenolone 16 α-Carbonitrile Blocks High Fat Diet-Induced Obesity in AKR/J Mice

Yongjie Ma, Dexi Liu *Athens, GA*

Background: Pregnane X receptor (PXR) is known as a xenobiotic sensor to regulate xenobiotic metabolism through selected transcription of genes responsible for maintaining physiological homeostasis. In recent years, its function has been explored in inflammation, energy homeostasis and lipids and glucose metabolism. However the role in the development of obesity and insulin resistance remains unknown. The objective of this study is to assess the effect of activation of PXR on the development of high fat diet (HFD)-induced obesity in AKR/J mice. **Methods:** Experimental procedures involved twice weekly injections (i.p.) of pregnenolone 16α-carbonitrile (PCN, 50 mg/kg), an activator for PXR, to animals fed with HFD for 7 weeks. The control animals received only the carrier solution or were fed regular food. **Results:** The average body weight of PCN-treated animals at the end of the feeding period was 28.6+1.3 g, compared to 45.3+2.5 g for control animals injected with carrier solution, and 31.1+0.9 g for mice on regular food. Body composition analysis revealed that PCN inhibited the gain of fat mass by 60% without a change in their lean mass. In contrast to control animals fed with HFD that had high insulin levels, hyperglycemia and insulin resistance, mice treated with either PCN or fed a regular diet did not show any symptoms of type-2 diabetes. qPCR analysis of liver samples revealed that PCN inhibited an HFD-induced increase in SREBP-1c gene by 85% and its target gene FAS by 50%. PCN also reduced the HFD-induced CD36 expression by 55%. **Conclusions:** The results confirm that PXR plays a critical role in lipid metabolism and could serve as a novel therapeutic target for prevention and treatment of obesity and insulin resistance

216-P
Liver-Specific Effect of Leptin and Its Usefulness For the Treatment of NAFLD

Sachiko Y. Kataoka, Ken Ebihara, Megumi Aizawa-Abe, Toru Kusakabe, Yuji Yamamoto, Daisuke Aotani, Licht Miyamoto, Takeru Sakai, Chihiro Ebihara, Junji Fujikura, Kiminori Hosoda, Kazuwa Nakao *Kyoto, Japan*

Background: Patients with lipodystrophy generally develop severe insulin-resistant diabetes, hypertriglyceridemia and non-alcoholic fatty liver disease (NAFLD). We and others have demonstrated that leptin effectively reduces triglyceride content in the liver accompanied by dramatic improvement of insulin resistance and hypertriglyceridemia in lipodystrophic patients. Since in-

 For author conflict of interest information, see page S250

sulin resistance and hypertriglyceridemia are major risk factors for NAFLD, it is unclear whether leptin has a liver-specific effect on the treatment of NAFLD.To elucidate the liver-specific effect of leptin and its usefulness for the treatment of NAFLD, we examined the therapeutic effect of leptin in Fatty Liver Shionogi (FLS) mouse, a model of NAFLD without obvious obesity, hyperphagia, and insulin resistance. **Methods:** FLS mice were treated with leptin (20ng/g/h) for 2 weeks using osmotic minipumps implanted subcutaneously, and changes of liver weight, triglyceride content, histology and other associated metabolic parameters were examined. We also conducted the pair-feeding experiment to avoid the suppressive effect of food intake by leptin. **Results:** Leptin treatment reduced food intake, body weight, plasma glucose and insulin levels, and liver triglyceride content. Pair-feeding also reduced body weight but did not significantly reduce glucose and insulin levels, and liver triglyceride content. Leptin treatment, but not pair-feeding, increased α2 AMPK activity and CPT1a gene expression in the liver. **Conclusions:** These results demonstrate that leptin has a liver-specific therapeutic effect and has a potential as a new drug for the treatment of NAFLD.

217-P
Compound 206 Reduced Body Fat: Identification of the Mechanism of Action in C. Elegans Model

Jolene Zheng *Baton Rouge, LA*; Wenqian Wei *Shanghai, China*; Jason F. King, Michael King, Zachary Fitzpatrick, Michael J. Keenan, John W. Finley, Frederick M. Enright, Roy J. Martin *Baton Rouge, LA*; Frank L. Greenway *Davis, CA*

Background: Fatty acids are essential for energy production to sustain life. Long-chain fatty acids are transported intracellularly by CD36, bind to acyl CoA using ACS, move across the mitochondrial membranes which must be through CPT-1 and CPT-2 to enter beta-oxidation and the tricarboxylic acid cycle or electron transport chain for energy production. The synthesis of malonyl CoA by ACC down-regulates CPT-1 depending upon the need for lipid synthesis. Protease inhibitors atazanavir and ritonavir dose-dependently reduce the activity of CPT-1 and CD36 in muscle cells in vitro. CPT-1 cannot stimulate fat oxidation in the absence of ACS or ACC, nor function without CD36. A test compound (C206) increases fat oxidation, elevates metabolic rate, reduces serum free fatty acids, and extends life expectancy of 3T3L1 cells. **Methods:** E. coli (OP50, CGC, U of M, MN) culture medium containing streptomycin 10 µl/ml was prepared for culturing C. elegans (N2, & acs-4(ok2872) III/hT2[bli-4(e937) let-?(q782) qIs48](I;III) (CGC, U of M, MN). Treatments: Control; C206 (0.3, 1, & 3%); atazanavir/ritonavir (3.3/0.83, 6.7/2.5, 20/5, & 33/8.3 µmoles/L); or C206 + atazanavir/ritonavir. **Results:** C206 (1%, $P<0.05$) reduced intestinal fat deposition in wild type C. elegans (N2). Mutant acs-4 lacking ACS did not respond to C206 treatment. Atazanavir with ritonavir increased the intestinal fat deposition, which was reversed in presence of C206 (0.3%-3%, $P<0.05$). **Conclusions:** These results indicated that C206-induced fat reduction was via stimulation of CPT-1 by either direct stimulation of the enzyme or removal of inhibition of malonyl CoA through inhibition of ACC.

218-P
Rosiglitazone Improves Survival and Hastens Recovery From Acute Pancreatitis in Obese Mice

Karla J. Castellanos, Maria Pini, Robert J. Cabay, Giamila Fantuzzi *Chicago, IL*

Background: Obesity increases severity of acute pancreatitis (AP) by unclear mechanisms. We investigated the effect of the PPAR-gamma agonist rosiglitazone (RGZ) on AP severity in mice fed a low fat (LFD) or high fat diet (HFD), under the hypothesis that RGZ would reduce disease severity in obese animals. **Methods:** AP was induced by administration of IL-12+IL-18 in male C57BL6 mice fed a LFD or HFD supplemented or not with 0.01% RGZ (n=8-12 per group). Mice were evaluated at Days 1 and 7 post-AP. Pancreatic acinar and fat necrosis, edema and inflammation were scored on H&E-stained sections. Adipokines and inflammatory mediators were quantified by ELISA. Hematological parameters were measured by Hemavet, body composition by DXA. **Results:** Administration of RGZ significantly increased body weight and % fat mass, with marked upregulation of adiponectin and suppression of eyrthropoiesis (all $p<0.01$), in both LFD and HFD mice without AP. RGZ significantly increased survival ($p<0.05$) and hastened recovery from AP in HFD mice, as evaluated by significantly improved pancreatic histology, maintainance of body weight and reduced necrosis of visceral adipose tissue at Day 7 (all $p<0.05$). This was associated with significantly lower circulating and pancreas-associated levels of the inflammatory mediators IL-6, galectin 3, osteopontin and TIMP-1 in RGZ-treated HFD mice, particularly at Day 7. However, RGZ did not significantly improve AP severity in LFD mice and actually increased the degree of intrapancreatic fat necrosis in this group ($p<0.05$). **Conclusions:** RGZ prevents development of severe AP in obese mice even though it significantly increases adiposity, indicating that improvement of the metabolic and inflammatory milieu can ameliorate AP severity in obesity.

219-P
Relationships Among Body Fat, Hepatic Lipid, and Intramuscular TAG During Weight Gain and Weight Loss

Kenneth Axen, Kathleen V. Axen *Brooklyn, NY*

Background: To study patterns of fat deposition during weight gain and weight loss with different diets, we compared visceral fat, soleus intramuscular TAG, and hepatic lipid content in 4 cohorts of male Sprague-Dawley rats. **Methods:** During wk 1- 8, 42 C rats ate a control diet (60% carb, 12% fat) and 135 HF rats ate a high-fat diet (15% carb, 60% fat) ad lib. At wk 8, HF rats had greater total body fat (visceral + subcutaneous) than C rats ($p<0.001$), indicating induction of obesity. Obese HF rats were then divided into 3 weight-matched groups: 1) 40 rats consumed an energy-restricted (~65% of ad lib intakes) very-low-carbohydrate (VLC, 5% carb, 60% fat) diet, 2) 31 rats consumed an isocaloric energy-restricted high-carbohydrate (HC, 60% carb, 15% fat) diet, and 3) 16 rats continued to consume the HF diet ad lib from wk 9-16. **Results:** Linear regression analysis of grouped data from individual cohorts at wks 8, 12, and 16 revealed correlations between visceral vs total fat ($r=0.990$) and between hepatic lipid vs total fat ($r=0.846$), indicating that visceral fat and hepatic lipid both paralleled total body fat and energy intake. Because muscle TAG decreased with the loss of body fat in response to the HC but not VLC diet, a weaker correlation emerged between muscle TAG and total fat ($r = 0.557$). Since the VLC and HF diets had the same %fat, dietary fat concentration may be a determinant of muscle TAG levels. In support of this view: 1) muscle TAG levels with high-fat diets (VLC and HF) exceeded those with low-fat diets (C and HC, $p<0.01$), and 2) the correlation between muscle TAG and hepatic lipid was not statistically significant ($p>0.05$). **Conclusions:** These findings promote the view that energy intake is an important determinant of visceral fat and hepatic lipid content, whereas diet composition is an important determinant of intramuscular TAG levels.

220-P
IGF1 Dependence of Dietary Energy Balance Regimens on Murine Luminal B Mammary Tumor Progression, Epithelial-to-Mesenchymal Transition and Chemokine Expression

Nikki A. Ford, Nomeli P. Nunez, Stephen D. Hursting *Austin, TX*

Background: Luminal B breast cancers confer poor prognosis in association with activation of growth factor signaling pathways. Using a murine model of luminal B breast cancer, we characterized the insulin-like growth factor 1 (IGF1)-dependency of diet-induced obesity (DIO) and calorie restriction (CR) effects on tumor growth, growth factor signaling, epithelial-to-mesenchymal transition (EMT) and chemokine expression. **Methods:** Liver-specific IGF1-deficient (LID) and wild-type (WT) mice were randomized (n=10/group) to receive control, DIO or 30% CR diets for 3 months before orthotopic injection of Met1 mammary tumor cells. Tumors grew for 1 month, then were excised, measured and assessed for Akt pathway activation and mRNA expression of chemokine and EMT pathway constituents. **Results:** LID (relative to WT) mice, regardless of diet, displayed reduced tumor growth and downregulated Akt, EMT and chemokine pathways. CR, relative to control, reduced serum IGF1 levels and tumor growth in WT (but not LID) mice. DIO, relative to control, increased tumor growth and chemokine expression in LID (but not WT) mice, and had no effect on serum IGF1 levels or expression of pAkt or cyclin D1 in either genotype. **Conclusions:** Thus, in a murine model of luminal B breast cancer, circulating IGF1 (in association with tumoral Akt, EMT and chemokine signaling) regulated tumor growth. Also while the anticancer effects of CR were IGF1-dependent, the procancer effects of DIO (associated with enhanced chemokine expression) manifested only when circulating IGF1 levels were low. We conclude that components of the IGF1/Akt, EMT and chemokine pathways represent possible mechanistic targets for inhibiting luminal B breast cancer.

221-P
Hypoglycemic Effect of Electroacupunture on High Fat Diet-Induced Insulin Resistance in Mice

Jieyun YIn, Jian Kuang, Nicola Abate, Manisha Chandalia, Jiande Chen *Galveston, TX*

Background: Background: Ecto-nucleotide pyrophosphate phosphodiesterase (ENPP1) over-expression in adipocytes is an important mechanism of adipose tissue dysfunction leading to adipocyte insulin resistance (IR). Aims: To investigate effects of electroacupuncture (EA) on blood glucose and insulin sensitivity in mice fed with high fat diet. **Methods:** Six wild type (WT) and six adipose ENPP1 transgenic (TG) mice fed with high-fed diet for 12 wks were subjected to intra-peritoneal glucose tolerance (IPGTT) and insulin tolerance test (ITT) without or with EA. **Results:** 1). In the WT mice, EA at 3Hz and 15Hz but not at 1Hz or 100Hz via CV4+CV12 significantly reduced postprandial glucose levels; EA at 3Hz was most potent. The glucose level was reduced by 65.1% at 60 min and 75.8% at 120 min with EA at 3 Hz (all $P<0.03$ vs. control). 2) Similar hypoglycemic effect was noted in the TG mice; 3) On contrary, EA at auricular points increased postprandial glucose level ($P<0.05$). 4). In the ITT in the TG mice, EA at CV4+CV12 and 3Hz significantly enhanced the decrease of blood glucose after insulin injection, suggesting improvement of insulin sensitivity. The percentage of glucose decrease with EA was 57.2±3.3% at 60 min ($P=0.02$), and 87.7±3.5% at 120min ($P=0.02$) more than the control session. **Conclusions:** EA improves glucose tolerance in both WT and TG mice fed with high fat diet, and the effect is associated with stimulation parameters and acupoints, and is probably attributed to improvement in IR.

222-P
Variation in Liquid Food Intake Patterns Associated With Obesity Development in Marmoset Monkeys: Lick Size

Suzette Tardif, Corinna N. Ross, Michael L. Power *San Antonio, TX*

Background: Lickometer systems have been used for decades to examine meal structure and satiety and in rodents used as models for human obesity but seldom used with nonhuman primates. **Methods:** Because marmoset monkeys are adapted to consume a large percentage of their diet via licking exudates, we adapted a rodent lickometer system to measure meal structure and patterning in this nonhuman primate and applied this methodology to two separate studies of obesity development: development of obesity during infancy and adolescence; and development of diet-induced obesity in adults. **Results:** While most of the standard meal and inter-meal variables used in rodent studies did not differ between obesity-prone and obesity-resistant marmosets, one set of unusual phenotypes was found to differentiate the two groups in both studies. The number of licks per day and number of licks per meal were lower in obesity-prone youngsters (68-72% of obesity-resistant average) and adults (57% of obesity-resistant average). Because the groups did not differ in the total amount of liquid diet consumed per trial, the grams per lick were consistently higher in obesity-prone youngsters (127-136% of obesity-resistant average) and adults (170% of obesity-resistant average). **Conclusions:** The consistency of these findings suggest that amount of intake per lick will differentiate obesity-prone and obesity-resistant marmoset monkeys. Anecdotal evidence leads us to suggest that this variable may be related to other behavioral phenotypes – such as anxiety and overall activity – and future studies will explore these relationships as well as whether lick size in marmosets is equivalent to bite size in either marmosets or humans.

223-P
Role of Hepatic Monounsaturated Fatty Acid Synthesis in Metabolic Regulation

Maggie Strable, James M. Ntambi *Madison, WI*

Background: Stearoyl-CoA desaturase (SCD) catalyzes the de novo synthesis of monounsaturated fatty acids (MUFA) from saturated fatty acids. Past work demonstrated SCD1 deficiency impairs hepatic lipogenesis and protects against diet-induced obesity. Our objective was to determine if hepatic MUFA synthesis is sufficient to restore the impaired lipogenic program in SCD1 global knockout mice (GKO). **Methods:** To address our objective, we produced liver-specific transgenic mice expressing either human SCD5, which preferentially synthesizes oleate (18:1n-9), or mouse SCD3, which preferentially synthesizes palmitoleate (16:1n-7), and introduced these transgenes into GKO mice. The mice were fed a lipogenic high-sucrose very-low-fat diet for 10 days. **Results:** Hepatic oleate synthesis largely prevented very-low-fat diet-induced weight loss and increased white adipose tissue (WAT) weight to a greater extent than hepatic palmitoleate. Hepatic MUFA synthesis also influenced the fatty acid composition of extrahepatic tissues, where oleate was increased in SCD5Tg and palmitoleate was increased in SCD3Tg epididymal WAT. Liver triglycerides accumulated in SCD5Tg but not in SCD3Tg mice. Hepatic MUFA synthesis also increased expression of several fatty acid synthesis genes. Additionally, hepatic oleate increased plasma glucose levels greater than hepatic palmitoleate. **Conclusions:** This work suggests that hepatic MUFA are involved in regulation of lipogenesis and gluconeogenesis with oleate being more potent than palmitoleate. Supported by NIH.

224-P
The Drosophila Titin Is a Potential Regulator of Mitochondrial Proton Leak and Fat Storage

Su Bu, Juanita C. Slaughter, Maria De Luca *Birmingham, AL*

Background: Recent biochemical and genetic evidence provides support that obesity and related metabolic disorders develop from defects in mitochondrial function. These defects produce excess cellular oxidative stress mediated by reactive oxygen species (ROS). One mechanism that appears to improve outcomes in metabolic disorders is mitochondrial proton leak, i.e., the uncoupling of energy production from respiration in the mitochondria. We have recently completed a systems genetics study to identify the gene co-expression networks regulating mitochondrial respiration and coupling efficiency in a natural population of *Drosophila melanogaster* . One of the key transcription regulators identified by our study is *sallimus* (the Drosophila homologue of Titin) that encodes a protein playing a role in both chromosome structure and muscle elasticity. In this study, we examined the effect of a viable *sallimus* mutant on Drosophila mitochondrial respiration and energy storage (e.g. whole body fat storage and glycogen levels). **Methods:** We quantified mitochondrial respiration rates in mitochondria isolated from young flies using NAD+-linked respiratory substrates (pyruvate plus proline). Fat storage and glycogen levels were measured using standard colorimetric assays. **Results:** While no difference in glycogen levels was observed between mutant and control flies, we found that flies homozygous for the *sallimus* mutation had a significantly reduced (26%) "state 2" respiration rate ($p = 0.04$). They also exhibited a 56% increase in fat storage compared with controls ($p = 0.027$). **Conclusions:** Our findings provide evidence of a potential role of *sallimus* in Drosophila mitochondrial proton leak and fat storage. Studies are currently underway to determine whether the effect of sallimus on these traits is mediated by the production of ROS.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Nutrient Effects

225-P
Megadoses of Vitamin C Reduce Fat Mass in Mice

Craig H. Warden, John Meissen, Oliver Fiehn, Janis S. Fisler *Davis, CA*

Background: Megadoses of ascorbic acid have been tested as treatments for the common cold, cancer and other diseases. We have tested the effects of megadoses of ascorbic acid on body composition and energy balance in male mice. **Methods:** Mice were fed chow diets with or without 330 mg/l of ascorbic acid in water provided ad lib. This dose is equivalent to about 4-5 g/day for a human. In two separate experiments animals were sacrificed after nine or fifteen weeks of treatment. We observed highly significant effects of supplemental ascorbic acid to reduce body weight and fat mass after nine weeks of treatment. Measurement of food intake in a second set of animals revealed no significant effect on food intake. Fat mass of mice treated with ascorbic acid for fifteen weeks was only 58% as heavy as the control untreated animals. In a third experiment mice were fed 10 Kcal per day. This is about a 30% restriction since ad lib red mice eat about 13 kcal/day. This produces an isocaloric experiment in which all animals have the same calorie intake and changes in body weight or composition must be due to alterations of metabolic rate. **Results:** Animals provided with ascorbic acid had small but statistically significant decreases of body weight that began to differ from controls after ten weeks of treatment. Thus, ascorbic acid supplementation of water

significantly decreased fat mass by as yet uncertain mechanisms. The effect is relatively long term since it lasted at least fifteen weeks. **Conclusions:** Pharmacokinetic studies in humans suggest that doses 10-fold lower might be equally effective, but these have not been tested in mice.

226-P
Cyclopia Maculata Attenuates Diet-Induced Obesity in Wistar Rats

Carmen Pheiffer *Parow, South Africa*; Oelfah Patel *Bellville, South Africa*; Christo J. Muller *Parow, South Africa*; Elizabeth Joubert *Stellenbosch, South Africa*; James Syce *Bellville, South Africa*; Johan Louw *Parow, South Africa*

Background: We have previously demonstrated that Cyclopia maculata, an endemic South African plant normally consumed as a herbal tea, has anti-obesity properties in 3T3-L1 adipocytes. The aim of the present study was to substantiate these findings in a Wistar rat model of diet-induced obesity. **Methods:** The effect of a hot water extract of "fermented" C. maculata on adiposity was investigated by randomly dividing 50 weanlings into five groups (n=10); control, standard rodent diet; standard rodent diet and C. maculata; high fat, high sugar diet (HFHS); HFHS and C. maculata; HFHS and Orlistat. Rats were treated with placebo, 300 mg/kg of extract or 60 mg/kg of Orlistat daily for 12 weeks. To determine the effect of C. maculata on obesity, 50 weanlings were fed a HFHS diet for 16 weeks before being assigned to the above treatment groups. **Results:** Treatment with C. maculata decreased body weight gain by 12% and 3.4% in non-obese and obese rats, respectively. Decreased weight gain was associated with decreased messenger RNA expression of Fasn in retroperitoneal fat of non-obese rats, and increased expression of Pparα in obese rats. Increased food consumption was observed in rats where C. maculata treatment did not decrease body weight gain. Treatment with C. maculata did not affect the secretion of adiponectin, leptin nor TNFα. Blood glucose levels was decreased by 0.6 mmol/L in obese rats after treatment. **Conclusions:** Cyclopia maculata has potential as a nutraceutical with anti-obesity properties. In obese rats the weight-inhibiting effects of C. maculata was evident in combination with the standard rodent diet only, thus highlighting the importance of diet in weight management.

227-P
Ability of an Acylated Isoquinoline Compound to Inhibit Food Intake, Reduce Body Weight, and Enhance Leptin Responsiveness in Rats

Joseph R. Vasselli, Justine Mumma *New York, NY*

Background: AOE945 (Pharma Science Nutrients) is a plant-derived isoquinoline shown to inhibit adipocyte differentiation and protein tyrosine phosphatase-1B (PTP1B), and as such may possess significant anti-obesity potential. We tested the ability of an acylated form of this compound (a-AOE945) to inhibit food intake (FI), reduce body weight (BW) and enhance leptin responsiveness in adult male and female rats. **Methods:** Groups of male Sprague-Dawley rats (n=7) fed laboratory chow were given 95 or 190 mg/kg of a-AOE945, or vehicle (saline) once daily by gavage for 16 days. **Results:** Both FI and BW of the a-AOE945 groups were dose-dependently reduced (p's < 0.001 and 0.05, respectively), with BW reductions of -13.5 and -31.5 g in the a-AOE945 groups vs. -6.5 g in the vehicle group. Similar significant effects were observed at the same doses in female rats on both chow and a 60% by calories high fat diet (HFD). Since inhibition of PTP1B by a-AOE945 would be expected to enhance leptin action, we tested leptin responsiveness in the HFD female groups at the end of treatment. Leptin (2.0 mg/kg) was injected ip into all groups and FI and BW was measured 8 and 24 hrs post-injection. Mean 24-hour FI of the a-AOE945 groups was significantly reduced vs. vehicle (p's < 0.05). Mean changes in BW over the 24 hr postinjection period in the vehicle, 95 mg and 190 mg groups were -0.1, -2.2, and -4.1 grams, respectively (p < 0.05). **Conclusions:** These results support the notion that daily oral administration of a-AOE945 reduces FI and BW, and maintains treated rats in a leptin-sensitive state although maintained on a HFD.

228-P
The Hypolipidemic Effects of Lactobacillus Curvatus HY7601 and Lactobacillus Plantarum KY1032 on High Fructose-Fed Rats

Do-Young Park, Hongsup Yoon, Hoyong Lee, Se-Hoon Park, Kil-Sun Myoung, Myoung-Hee Lee, Young-Tae Ahn, Chul-Sung Huh *Yongin-si, Republic of Korea*

Background: Metabolic syndrome including obesity, hypertriglyceridemia and hyperinsulinemia increases the risk of developing cardiovascular disease and diabetes. In particular, metabolic syndrome is associated with high-level fructose consumption, resulting in impaired fatty acid oxidation and increased de novo hepatic lipogenesis. Strategies to improve hepatocyte fatty acid metabolism, including dietary interventions, are therefore important for the prevention of metabolic syndrome. **Methods:** In the present study we administered probiotics (*Lactobacillus curvatus* HY7601 and *Lactobacillus plantarum* KY1032) orally to rats for three weeks and analyzed the levels of plasma triglyceride, glucose and insulin. Moreover, the mRNA levels of genes involved in fatty acid metabolism were determined. **Results:** Probiotic treatment significantly reduced plasma triglyceride, glucose and insulin levels compared to controls. Potential mechanisms underlying these effects of probiotics were upregulated expression of peroxisome proliferator-activated receptor alpha (PPARα), PPARα-regulated genes such as carnitine palmitoyl transferase 1 (CPT1) and 2 (CPT2), suggesting that increased hepatic fatty acid oxidation may contribute to plasma triglyceride lowering in rats. In addition, down-regulation of hepatic sterol regulatory element binding protein 1 (SREBP1), fatty acid synthase (FAS) and stearoyl-CoA desaturase 1 (SCD1) was also the leading cause of the reduced triglyceride in probiotic treated mice. **Conclusions:** Probiotics (*L. curvatus* HY7601 and *L. plantarum* KY1032) suppressed plasma triglyceride, glucose and insulin levels via altering hepatic fatty acid metabolism genes. Taken together, the present findings provide in-vivo evidence that probiotic treatment can confer beneficial effects and may be a natural alternative in the prevention of hypertriglyceridemia and hyperinsulinemia.

229-P
Eicosapentaenoic Acid Stimulates Genes Associated with Mitochondrial Biogenesis in Subcutaneous Adipocytes from Overweight Subjects

Maria J. Moreno-Aliaga, Pedro L. Prieto-Hontoria, Marta Fernández-Galilea, Sonia M. Ribeiro, J. Alfredo Martinez *Pamplona, Spain*

Background: Mitochondria play a key role in energy metabolism. Altered mitochondrial biogenesis and function in adipose tissue have been observed in obesity and type 2 diabetes in both rodents and humans. It has been suggested that mitochondria could play an important role in the mechanisms underlying the protective effects of n-3 polyunsaturated fatty acids (n-3 PUFAs) in obesity-associated metabolic disturbances.The aim of this study was to determine the effect of the n-3 PUFA eicosapentaenoic acid (EPA) on the expression of genes related to mitochondrial biogenesis and function in human adipocytes. **Methods:** Human subcutaneous preadipocytes from overweight females (BMI: 28.1-29.8 kg/m^2) were differentiated according to the manufacturer's procedures. Fully differentiated adipocytes were treated with EPA (100 μM) during 24 h. Changes in mRNA expression were investigated using RT-PCR. **Results:** EPA-treated adipocytes showed a significant upregulation of nuclear respiratory factor-1 (NRF-1), mitochondrial transcription factor A (TFAM) and cytochrome c oxidase IV (COXIV) mRNA levels. EPA treatment also promoted the expression of sirtuin 1 (SIRT1). Moreover, adipocytes treated with EPA exhibited a high mRNA expression level of the brown fat determination factor PRDM16. **Conclusions:** Our data suggest that EPA might be able to promote mitochondrial biogenesis in human obese subcutaneous adipocytes, which could contribute to the beneficial effects of n-3 PUFAs in obesity-related metabolic disorders.

230-P
Some Natural Products, Especially Mulberry, Attenuate Inflammation and Inflammation-Induced Obesity

Na Ha-Na *Baton Rouge, LA*; Park Soo Ho, Nam Jae-Hwan *Bucheon, Republic of Korea*

Background: Human adenovirus 36 (Ad36) is causatively and correlatively linked with obesity in animals and humans, respectively. Recently, we reported that Ad36 requires the inflammatory cytokine monocyte chemoattrac-

tant protein (MCP-1) to increase adiposity in mice (Na et al. J Infect Dis. 2012; 205(6): 914–22). Considering their anti-inflammatory effects, we determined if purified alcohol extracts of plant products (acorn jelly, black soybean, mulberry), red ginseng or goat's milk will attenuate Ad36 viral replication and consequential gain in adiposity. **Methods:** 4-wk-old female C57BL/6 mice were divided into seven groups (10/group). One group was inoculated with Ad36 (VIR) and one group was mock infected (CON). Remaining 5 groups were infected with Ad36 and received one of the 5 natural products by intragastric route (60 μg/d) for 12 wks. Half of the animals from each of the 5 groups started on these products 4 wks before viral infection; and the rest started along with the inoculation. **Results:** Food intake did not differ significantly between groups. As expected, VIR group had significantly greater body weight and body fat. Although the effect varied between products, some products reduced viral replication in reproductive fat pads by 60%-80%, and attenuated gain in body weight and body fat up to 30%. Some products reduced pro-inflammatory cytokines, such as mRNA and protein levels of MCP-1 and TNF-α in reproductive fat fad and serum, which probably reduced the number of infiltrating adipose tissue macrophages, especially the M1 type by 70%-90%. Mulberry extract had the greatest protection against Ad36-induced obesity and adipose tissue inflammation. **Conclusions:** Mulberry may allow the development of a therapeutic approach to attenuate inflammation and obesity mediated by pro-inflammatory cytokines.

231-P
Effects of Mungbean and Testa Extract on Anti-Obesity Related Inflammation in Vitro 3T3L1 Cells and in Vivo KK-Ay Mice

Inhae Kang *Gainesville, FL*; Munji Choi *Seoul, Republic of Korea*; Soojin Yang *Gwangju, Republic of Korea*; Jungim Kim, Haeri Wi, Selim Choi, Myoungsook Lee *Seoul, Republic of Korea*

Background: Obesity is hot issue in the developed and developing countries because it may associated with increased metabolic diseases including atherosclerosis and diabetes mellitus(DM). The Mungbean is known as famous lower Glycemic Index food thereby decrease lipid profiles. **Methods:** The extracted components from Mungbean called as X1 was treated in 3T3-L1 for 7 days from differentiation induction. To investigate anti-obesity and anti-diabetic effects of Mungbean and Mungbean testa in vivo, we used KK-Ay mice as T2DM model. Mungbean extract(MBE) and Mungbean testa extract(MBT) were orally administrated for 4 weeks with high fat diet(60%E). **Results:** Compared to vehicle, lipid accumulation was significantly ($p<0.05$) decreased in dose dependent manner of extracts in 3T3L1 cell. Liver damage was not found and MBT (700mg/kg) lowered white adipose tissue weights. IL-6 level as inflammation marker was significantly lowered in plasma but TNF-α was lowered in muscle, and MCP-1 was not differ in tissues at all. Since PPARγ, ACC, C/EBPα and AMPK gene expression were decreased by two extracts compared to the control and Metformin positive one, MBE and MBT inhibited metabolism of adipogenesis in liver. **Conclusions:** In conclusion, Mungbean exerts anti-obesity and anti-diabetic effects with evidence that MBE and MBT reduced epididymal fat weight and reduced the adipogenesis gene expression. [This work is supported by Cooperative Research Program for Korea Institute of Planning and Evaluation for Technology in Food, Agriculture, Forestry and Fisheries and Agriculture Science & Technology Development (Project No.PJ907089)]

232-P
Anti-Obesity Effects of Captopril are Dependent on the Level of Dietary Intake of Salt

Jessica E. Radcliffe, Denovan P. Begg, Richard S. Weisinger, Markandeya Jois *Bundoora, Australia*

Background: We have previously demonstrated that the Angiotensin Converting Enzyme (ACE) inhibitor captopril prevents diet-induced obesity and improves glucose tolerance in C57BL/6 mice fed a high fat diet (Weisinger et al 2009). However, the anti-obesity effects of captopril are not reported in human subjects although it is a commonly used ACE inhibitor for the treatment of hypertension. In this report we show that the anti-obesity effects of captopril require a low intake of dietary salt and that a high salt diet abolishes any anti-obesity effects of captopril in C57Bl/6 mice. We therefore suggest that the high salt intake which is typical of a Western Diet prevents anti-obesity effects of ACE inhibitors. **Methods:** Seventy two 3-week old C57BL/6J mice were fed one of three commercially prepared 21% butter fat isocaloric diets modified to contain three levels of salt: low [LS; 0.06% (g NaCl/100g diet)]; normal [NS; 0.26% (g NaCl/100g diet)]; or high salt [HS; 3.2% (g NaCl/100g diet)]. Treatment groups were given captopril added to the drinking water at a dose of 0.05mg/ml. Body weights were monitored weekly and body composition was measured by DEXA during weeks 9-12. Insulin sensitivity was assessed at 8 weeks by performing glucose tolerance test (GTT), insulin challenge test (ICT) and pyruvate challenge test (PCT). **Results:** The anti-obesity effects of captopril were observed only in LS and NS groups. None of the anti-obesity effects of captopril were evident in the HS group. **Conclusions:** ACE inhibitors are effective anti-obesity agents when combined with low dietary salt intake.

233-P
Effects of Supplementation With n-3 Polyunsaturated Fatty Acids on Subcutaneous, Visceral and Pericardial Adiposity in Minipigs Fed a High-fat Diet

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Background: N-3 polyunsaturated fatty acids (n-3 PUFA) exhibit anti-inflammatory effects on a variety of metabolic disorders including atherosclerosis. In a previous study, a high-fat diet (46% fat) was given to castrated male Sinclair minipigs (7 months of age, approx. 25 kg) for 16 wk. Subcutaneous (SQF), visceral (VF), and pericardial (PCF) fat depots increased linearly over time, and marked atherosclerosis was noted at the end of the trial. **Methods:** In the present study, minipigs were fed the same high fat diet supplemented daily with (YP) or without (NP) approximately 5.5 g/d n-3 PUFA (n = 3 per treatment group). Two minipigs served as a negative control group (C) and were fed a maintenance diet for the last 8 wks of the study. Weight was recorded and blood collected every 4 wk. At the end of the experiment, CT scans were performed to quantify adiposity in the three depots, pigs were euthanized, and tissues were collected for subsequent gene expression analysis and assessment of atherosclerosis. **Results:** A treatment by time interaction was noted ($P = 0.003$) such that both NP and YP pigs weighed more than C pigs at wks 8 through 16. At wk 16, there was a trend for less weight gain in YP compared to NP pigs ($0.10 \geq P \geq 0.05$). There was no effect of treatment in SQF or PCF adiposity, but there was an overall treatment effect ($P \leq 0.05$) such that NP had greater VF than the C group, with YP exhibiting an intermediate level of adiposity. Across all treatments, weight was associated with increased VF ($r^2 = 0.868$; $P \leq 0.05$) but not SQF or PCF. Subcutaneous adiposity correlated with levels of PCF ($r^2 = 0.812$; $P \leq 0.05$) but not VF. **Conclusions:** Segmentation of CT scans present new informative data and a more accurate estimation of specific differences between fat depots in animal models of obesity and metabolic complications.

234-P
Systematic Analysis of the Effects of Anti-Diabetic Herbal Extracts on Adipogenesis and Adipokine Secretion in 3T3-L1 Cells

Manti Ortiz, Diana Elizondo, Catherine Duazo, Andrea E. Schwarzbach, Saraswathy Nair *Brownsville, TX*

Background: Adipose tissue in addition to serving as a lipid storage organ, is an endocrine tissue that plays a major role in glucose homeostasis and energy balance through insulin sensitive glucose uptake and secretion of insulin sensitizing adipokines such as leptin and adiponectin. Therefore in the treatment of Type 2 diabetes, several anti-diabetic medications improve glucose uptake and insulin action by increasing adipogenesis and adipocyte function. **Methods:** The main focus of our work is to elucidate systematically, the cellular and molecular effects of anti-diabetic herbal alternative medicines on adipocytes. 3T3-L1 preadipocytes were treated with adipocyte differentiation media in the presence of differently concentrated (0, 0.05, 0.2, 0.5, 0.75, and 1.0 mg/mL) aqueous extracts of Astragalus membranaceus (Huang qi) and Withania somnifera (Ashwagandha). The cells were monitored for 10 days to calculate percentage of adipocyte differentiation by oil red staining of lipid accumulation. We also measured secreted leptin and adiponectin concentrations in cell culture media of the treated and untreated cells. **Results:** A. membranaceus increased percentage of adipocyte differentiation significantly (p value < 0.001) whereas W. somnifera reduced it (p value < 0.01). Leptin secretion was slightly increased (p value=0.04) and adiponectin secretion slightly decreased (p value = 0.04) by A. membranaceus. **Conclusions:** We conclude that various herbal anti-diabetic supplements may improve insulin

sensitivity by different mechanisms, either by increasing the number of adipocytes that can uptake glucose, increasing insulin sensitizing adipokine secretion or by decreasing inflammation and insulin resistance by reducing adipogenesis.

235-P
Dietary Leucine is Associated With Reduced Insulin Resistance in Women in the Newfoundland Population

Danny Wadden, Farrell Cahill, Peyvand Amini, Sudesh Vasdev, Edward Randell, Wayne Gulliver, Guang Sun *St. John's, NL, Canada*

Background: Leucine is a branched-chain essential amino acid (BCAA/EAA). Increased dietary intake of leucine has been associated with reduced insulin resistance in mice. However to date, data is unclear regarding dietary leucine intake and insulin resistance in humans at the population level. Thus our research objective was to examine the association between dietary leucine intake with markers of glucose metabolism and insulin resistance. **Methods:** A total of 2693 participants were recruited from the ongoing population-based CODING Study. Nutritional intakes were assessed using the Willet Food Frequency Questionnaire (FFQ). Nutribase 9 was used to calculate daily dietary leucine intake. Body composition, including percent body fat (%BF) was measured using Dual-energy X-ray absorptiometry. Fasting glucose and insulin levels were measured and the Homeostatic model assessment was used to evaluate insulin resistance (HOMA-IR) and beta-cell function (HOMA-β). Partial correlations controlling for age, dietary fat intake and %BF were used to assess the relationship between dietary leucine intake (per kg of body weight) and aforementioned phenotypes. **Results:** When grouped based on gender, insulin (r=-0.12), HOMA-IR (r=-0.11) and HOMA- β (r=-0.09) were all negatively associated with dietary leucine intake in women (P<0.001). When women were divided into pre- and post-menopausal groups, all relationship but one remained significant (P <0.05; in post-menopausal women: HOMA- β did not reach significance, P=0.54). Regardless of gender or menopausal status, no relationships were found between leucine intake and fasting glucose. **Conclusions:** Our results show that in the general population, dietary leucine has a beneficial effect on reducing insulin resistance in women.

236-P
Botanical Extracts Modulate Adipocyte Function and Insulin Sensitivity in Vitro and in Vivo

Allison J. Richard *Baton Rouge, LA*; David Ribnicky *New Brunswick, NJ*; Jacqueline M. Stephens *Baton Rouge, LA*

Background: Historically, many drugs have been developed from plant extracts. The study of botanical extracts is an emerging area in obesity and T2DM research. Botanical extracts are a rich source of molecules capable of modulating adipocyte development and function. Thus, botanicals which alter the properties of fat cells could be protective or causative of obesity, metabolic syndrome and/or T2DM. **Methods:** We used 3T3-L1 cells and C57BL/6 mice to study the effects of botanicals on adipocytes and adipose tissue. We examined adipogenesis in vitro and insulin action and adipokine secretion in mice. **Results:** In a screen of botanical extracts for potential novel therapeutic modulators of adipocytes, we identified several positive regulators of fat cell development from the genus Artemisia. Our studies revealed that extracts of several Artemisia species promote differentiation of 3T3-L1 fat cells and increase adiponectin secretion in mature adipocytes. Additionally, in C57BL/6 mice maintained on a 60% high fat diet, administration of the Artemisia extracts improved insulin-sensitive Akt serine phosphorylation within white adipose tissue and increased circulating adiponectin levels. **Conclusions:** In summary, we have in vitro and in vivo data to demonstrate that Artemisia extracts have a beneficial impact on metabolic syndrome by improving adipocyte development and function.

237-P
Metabolic and Cardiovascular Effects of Genistein in Obese Female Rats With Hypoestrogenism

Luis A. Lima, Karla González, Juventino Colado, Marbella Chavez, Guadalupe Bravo *Mexico City, Mexico*

Background: Obesity is a chronic degenerative disease that promotes deleterious effects on health. In postmenopausal women, the risk factors associated with increased body mass and adiposity to cardiovascular and metabolic levels are increased due to age and the cessation of ovarian function. Our aim here was to elucidate the biochemical, morphological and hemodynamic changes in an animal model of hypoestrogenism plus obesity after chronic administration of genistein and 17β-Estradiol (E2). **Methods:** Female Wistar rats were bilaterally removed the ovaries to produce a state of hypoestrogenism, subsequently received 30% sugar in drinking water plus standard diet during 10 weeks to generate the state of obesity. The animals were allocated randomly into groups that received vehicle (HE-OB), genistein (HE-OB + G) and 17β-Estradiol (HE-OB+E2). We determined the arterial blood pressure (ABP) and heart rate (HR), serum glucose, cholesterol, triglycerides, LDLc and HDLc and vascular microarchitecture aorta by histological techniques. **Results:** The results show a decrease in ABP and HR statistically significant for the groups treated with OV-OB+G, OV-OB+E2 compared with OV-OB group. Serum glucose, cholesterol, triglycerides and LDL cholesterol decreased significantly in groups OV-OB-G, OV-OB-E2 compared with OV-OB. Morphological study in aortic vessels not showed damage in endothelial and smooth muscle tissue in groups OV-OB+G and OV-OB+E2 compared with OV-OB. **Conclusions:** Together, these results suggest a significant share of E2 in the modulation of parameters biochemical, hemodynamic and an endothelial maintenance; as well as beneficial effects of genistein on some cardiovascular risk parameters and an endothelial preservation are altered very important in obese animals with hypoestrogenism.

238-P
Effect of Lycopene Supplementation on Nox2 Gene Expression in Adipose, Cardiac and Hepatic Tissues from High-Fat Diet-Fed Rats

Renata A. Luvizotto, Andre F. Nascimento, Paula T. Presti, Natália C. Miranda, ÉriKa Imaizumi, Damiana T. Pierine, Camila Correa, Ana Lúcia A. Ferreira *Botucatu, Brazil*

Background: Studies have shown increased oxidative stress in obesity, been the enzymatic system NADPH oxidase (Nox) known as a main source of reative species. However, the effect of lycopene on Nox2 gene expression in obesity is poorly discussed. Thus, this study evaluated the effect of lycopene supplementation on Nox2 gene expression in adipose, cardiac and hepatic tissues from high-fat diet-fed rats. **Methods:** Male Wistar rats, weighing approximately 350g, were randomly separated for receiving control diet (C, 5% fat) or high-fat diet (H, 29% fat) for six weeks. After this period, all animals were again randomized into C (n=6), C supplemented with lycopene (CL, n=6), H (n=6), and H supplemented with lycopene (HL, n=6), for six weeks. Obesity was characterized by adiposity index. Gene expression of Nox2 in adipose, cardiac and hepatic tissues was determined by Real Time PCR. For data analysis was used ANOVA and completed using the post hoc Tukey's test. The significance level adopted was 5%. **Results:** The high-fat diet-fed rats showed increase in adiposity index, 62% for H animals and 67% for HL animals, when compared to their control groups (C=5.8±1.8 vs H=9.4±1.5; and CL=5.8±0.8 vs HL=9.7±1.7). There was no difference for Nox2 gene expression in cardiac and hepatic tissues among groups. Nox2 gene expression decreased in adipose tissue in the HL group when compared to the H group (HL=0.65±0.22 vs H=1.26±0.52), and there was no difference among the C, CL and H groups. **Conclusions:** The high-fat diet was effective to promote obesity, however did not modulate Nox2 gene expression in cardiac, hepatic and adipose tissues. Lycopene supplementation did not affect animal's adiposity, but influence adipose tissue Nox2 gene expression in obesity. Financial Support: FAPESP (2010/06100-9; 2010/19746-4; 2011/22786-0)

239-P
Dietary Glutamate Promotes Fat Oxidation and Inhibits Fatty Acid Synthesis in Rats

Hidehiro Nakamura, Keigi Chin, Yasuko Kawamata, Tomomi Kuwahara, Kunio Torii, Hisayuki Uneyama, Ryosei Sakai *KAWASAKI-shi, Japan*

Background: Our previous study has shown that elimination of glutamate (Glu) from diets increased body fat mass and hepatic triglyceride (TG). This study investigated the underlying mechanism of fat increase caused by Glu-free diets. **Methods:** Male SD rats of 3wks old were fed fixed amount of diets containing either balanced amino acid (AA) mixture (4% Glu), its Glu-free mixture or low AA mixture (isonitrogenous to Glu-free). Oxygen consumption (VO_2) and respiratory quotient (RQ) were monitored by indirect calorimetry. Fat oxidation was measured by monitoring $^{13}CO_2$ in the exhaled gas after ingestion of experimental diets containing [1,1,1-$^{13}C_3$]tripalmitin.

Fatty acid contents in hepatic TG were measured and de novo lipogenesis was estimated from deuterium incorporation into hepatic fatty acids from drinking D_2O water. The mRNA expression in liver was measured by real-time PCR. **Results:** VO_2 did not change among the diets tested. However, removal of Glu from diets significantly increased RQ in fasting period. Tripalmitin oxidation on the third day of ingestion of experimental diet was suppressed by 20% in rats fed Glu-free diet, whereas feeding of low AA diet did not show the phenomenon. Contents of fatty acids such as palmitate, stearate, oleate in hepatic TG and de novo lipogenesis were remarkably increased when fed Glu-free diet. The mRNA expression involved in fatty acid synthesis (FAS and Elovl6) was also up-regulated by more than three folds. **Conclusions:** These results indicate that removal of Glu from diets inhibits fat oxidation and promotes fatty acid synthesis, suggesting that dietary Glu is an important nutrient for proper lipid metabolisms. Although some people believe that Glu ingestion induces obesity, missing of Glu in the diet actually promotes fat accumulation which may lead to subsequent obesity.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Feeding Studies

240-P
Effects of Dietary Fatty Acid Composition From a High Fat Meal on Postprandial Satiety

Amanda L. Kozimor, Hui Chang, Jamie A. Cooper *Lubbock, TX*

Background: The influence of dietary fatty acid composition from a meal may differentially affect markers of hunger and satiety. This study compared high-fat (HF) meals rich in either monounsaturated fatty acids (MUFAs), polyunsaturated fatty acids (PUFAs), or saturated fatty acids (SFAs) on the release of the satiety hormone peptide YY (PYY) and subjective feelings of hunger and fullness. **Methods:** Fifteen lean women were randomized in a single-blind crossover study. The three treatments were HF meals (70% of energy from fat) rich in MUFAs (42% of total energy), PUFAs (42% of total energy), or SFAs (45% of total energy). Following baseline measurements, subjects consumed a HF meal and eight postprandial blood draws were collected over a 5h period for PYY. A visual analog scale (VAS) was completed at the same time as each blood draw for subjective feelings of hunger and fullness. **Results:** The MUFA-rich meal elicited significantly lower postprandial PYY averages compared to the SFA- or PUFA-rich meal (MUFA: 100.3±2.3pg/mL, SFA: 111.1±1.4pg/mL, PUFA: 117.1±2.3pg/mL, $p<0.05$). No differences in PYY were found between the SFA- and PUFA-rich meals. The SFA-rich meal elicited greater subjective feelings of fullness compared to MUFA- and PUFA-rich meals (SFA: 58.8±6.1mm, MUFA: 53.2±6.7mm, PUFA: 47.2±6.4mm, $p<0.05$, respectively). Further, the SFA-rich meal yielded lower scores for how much the subject thought they could eat (SFA: 30.7±5.5mm, MUFA: 39.0±6.5mm, PUFA: 36.6±6.1mm, $p<0.05$). The SFA-rich meal also had the only significant correlations between PYY levels and VAS measures (Fullness: r=0.25; Hunger: r=-0.19; How much the subject thought they could eat: r=-0.21, $p<0.01$). **Conclusions:** Our data shows that meals rich in MUFAs may elicit a weaker satiating response than meals rich in PUFAs or SFAs.

241-P
This abstract has been withdrawn.

242-P
Higher Plasma Concentrations of Unsaturated Fatty Acids Are Associated With Lower Food Intake in Pima Indians During an "Ad Libitum" Food Intake Study

Maximilian Hohenadel *Phoenix, AZ*; Ana Guijarro *Irvine, CA*; Reiner Jumpertz, Susanne B. Votruba, Paolo Piaggi *Phoenix, AZ*; Danielle Piomelli *Irvine, CA*; Jonathan Krakoff *Phoenix, AZ*

Background: Increased food intake is one of the main reasons for weight gain. Based on previous animal data, circulating fatty acids may play a role in the regulation of food intake **Methods:** In 53 non-diabetic adult Pima Indians (degree of Pima Indian heritage ≥ 50 %; 21F/32M, age 32±10y; percent body fat [PFAT] 33.5 ± 10%), fasting blood samples were drawn prior to measurement of "ad libitum" food-intake over three consecutive days using a vending machine paradigm. Blood samples were analyzed for 46 different fatty acid derivatives including saturated, mono- and poly-unsaturated fatty acids, ceramides, phosopholipids and endocannabinoids. Factor analysis on these fatty acid derivatives was performed to identify correlated parameters **Results:** The first factor (F1) was primarily composed of mono- and polyunsaturated fatty acids and was negatively associated with average daily caloric intake ($p= 0.02$, adjusted for age, sex, PFAT). An increase of one standard deviation for this factor corresponded to a decrease in food intake of 350 kcal/d. Similarly, F1 was negatively associated with percent of calculated weight maintaining energy needs consumed ($p<0.03$, adjusted for age, sex, PFAT). No associations with measures of adiposity were found. Estimated daily intake of fatty acid species from food habit questionnaires did not correlate with plasma fatty acid concentrations. In the 46 individuals with follow up weights available (over a mean of 3.1 y± 2 y) F1 was not significantly associated with weight change ($p = 0.35$, adjusted for age, sex, follow-up time, initial weight) **Conclusions:** Lower food intake was directly associated with the mono- and polyunsaturated component of fasting plasma fatty acids. Whether these fatty acid concentrations represent a marker of dietary intake or individual differences in fatty acid metabolism that regulate energy intake is unclear

243-P
Effect of a 40% 8-Week Overfeeding on Cellular Dynamics of Subcutaneous Abdominal Adipocyte Progenitors in Healthy Men

Yourka Tchoukalova, Charmaine Tam, Darcy L. Johannsen, David H. Burk, Dexter Graves, Eric Ravussin *Baton Rouge, LA*

Background: The role of preadipocytes' kinetics in subcutaneous adipose tissue (SAT) growth in humans is not known. **Methods:** We overfed 12 healthy men (age 26.8±6.0y; BMI 24.7±0.6 kg/m2) a high fat diet (40% over baseline energy requirement) for 8 weeks and collected abdominal SAT biopsies at baseline and after overfeeding. Proliferation of pre-adipocytes was determined by DNA quantitation at days 1 and 4 and the number of cell doublings were calculated using a standard curve with a known number of cells. Cultures were differentiated with a serum-free cocktail for 10 days followed by staining for lipids (BODIPY) and nuclei (DAPI) and the percentages of the lipid-laden (BODIPY+) cells were determined. Differentiated cultures were treated or not (control) with apoptotic cocktail (serum-free αMEM plus 10 nM TNFα and 10 μg/ml cycloheximide) for 4 h followed by quantitation of mono/oligonucleosomes (Cell Death ELISAPLUS kit, Roche) and the apoptotic index was calculated. **Results:** Overfeeding (6.9±2.3kg) increased the number of preadipocyte doublings (1.5±0.2 to 1.9±0.2; 61±29% change, $p=0.03$), the percent lipid-laden cells (11.7±4.2 to 18.4±5, 202±84% change, $p=0.01$), and the resistance to apoptosis (apoptotic index: 29±6.7 to 19.0±5.5, -25±12% change, $p=0.04$). Importantly, the increased adipocyte differentiation was positively associated with the expansion of the abdominal SAT (30±4%; MRI; $r=0.68$, $p=0.03$). **Conclusions:** These data show that the adipocyte progenitor cells adapt to excess energy load by enhancing their sensitivity to adipogenic stimuli and their resilience during differentiation and that adipocyte differentiation plays a key role in abdominal SAT growth.

244-P
Effects of Dietary Protein to Carbohydrate Balance on Hepatic Metabolism in Mice: A Systems Biology Approach

Xin Huang *Sydney, Australia*; Natalie A. Eriksson *Brisbane, Australia*; Kari Ruohonen *Dirdal, Norway*; George E. Muscat *Brisbane, Australia*; Dale P. Hancock, Arthur D. Conigrave *Sydney, Australia*; David Raubenheimer *Auckland, New Zealand*; Stephen J. Simpson *Sydney, Australia*

Background: Earlier work has investigated the extent to which the protein to carbohydrate ratio (P:C) in diets of an inbred mouse strain (C57BL/6J) influenced total energy intake, fat storage and thermogenesis. Here we report the results of microarray analyses of the impact of changing P:C (at constant % fat) in the diet on metabolic pathways in the liver. **Methods:** Mice were provided ad libitum access for 16 weeks (from 9 weeks of age) to one of five diets that were isocaloric in energy density but differed in P:C. After 16 weeks, all mice were sacrificed. Liver samples were collected immediately after euthanasia and samples of total RNA were extracted (N=5 per diet treatment). The synthesized cDNA samples were then loaded into a custom 384-well card PCR array (Applied Biosysems). Statistical analyses were carried out using analysis of variance, followed by Benjamini-Hochberg correction.

Results: Gene expression analysis suggested that dietary P:C profoundly influenced metabolic pathways. The low P:C diets promoted genes for de novo lipogenesis; while the high P:C diets increased expression of genes for cholesterol efflux and clearance of very low density lipoprotein (VLDL). The expression levels of key members of several important regulatory pathways were altered in response to variations in P:C ratio, including the pathways of insulin, mTOR and AMPK. A tumorigenesis-related gene, MDM2, showed a U-shaped pattern in expression with increasing dietary P:C. Genes implicated in ageing and oxidative stress were upregulated in mice fed the high P:C diets. **Conclusions:** Our results show that chronic exposure to diets differing in P:C affects a network of metabolism-related regulators and signaling pathways that have been implicated in metabolic disease, stress responses, ageing, and cancer risk. Insulin, mTOR and AMPK signaling pathways are at the centre of this network.

245-P
Effect of Hypercaloric, Coca-Cola and Fat-Rich Diets on Organ and Body Weight of Male Wistar Rats

Juventino Colado, Marbella Chavez, Patrick Mailloux, Luis A. Lima, Guadalupe Bravo *Mexico City, Mexico*

Background: Epidemiological evidence has correlated the type of foods consumed with the development of high pressure, atherosclerosis and even cancer. In Mexico the average individual consumes a fat rich diet with high caloric content and a large amount of soft drinks. In this pilot study we investigated the effect of hypercaloric, high fat diets and the effect of regular consumption of Coca Cola on the weight gain, food consumption and weight of internal organs in male Wistar rats. **Methods:** 32 Male Wistar rats were organized in 8 groups (n=4). Control group was given standard laboratory animal diet, hypercaloric groups were given 20, 30 and 40% sucrose in water with standard laboratory animal diet; another group was given Coca-Cola with standard diet; high fat groups were given strips of bacon and water and strips of bacon with Coca-Cola. The amount of food consumed was measured in a daily basis, and the weight of the animals was monitored every week. Treatment was performed for 3 months; the animals were sacrificed by decapitation and the heart, liver, kidneys and testicles were excised, weighed and compared with the rest of the groups. **Results:** Hypercaloric diet caused a statistically significant decrease in food intake ($p<0.05$). Coca-Cola stimulated a higher consumption of fat in animals. Hypercaloric and Coca-Cola with high fat diet caused the highest weight gain, compared to high fat and control diet. Coca-Cola and hypercaloric groups showed a significant increase in heart weight. Coca-Cola groups showed a significant increase in liver and kidney weight. **Conclusions:** Diet has an important effect on the development of obesity. The organs affected depend on the type of diet consumed. Further research is required to explain how do specific diets affect adipogenesis and hypertrophy of different organs.

246-P
Eight Weeks of 40% Overfeeding induces Metabolic Adaptation in Energy Expenditure in Young, Healthy Adults

Darcy L. Johannsen, Charmaine Tam, Virgile Lecoultre, Wenting Xie, Jennifer C. Rood, Eric Ravussin *Baton Rouge, LA*

Background: Metabolic adaptation – a change in energy expenditure (EE) larger than expected based on the change in body composition – is clearly occurring with calorie restriction but its role during calorie excess is debated. **Methods:** Here, we measured baseline energy requirements by 14 d doubly labeled water (DLW) and feeding to energy balance, followed by 40% overfeeding (41% CHO, 44% fat, 15% protein) for eight weeks in 35 young (mean ± SD; 27 ± 5y), healthy (BMI 25.8 ± 2.4) adults (29 M/6 F). Participants were free-living however all meals were consumed under direct observation. Sleeping metabolic rate (SMR) and 24-hour sedentary EE (24EE) were measured in a metabolic chamber and total daily EE (TDEE) by DLW. Resting muscle ATP demand (vastus lateralis) was measured by 31P MRS. **Results:** Participants gained 7.5 ± 1.9 kg, an increase of 9.2 ± 2.6%. All components of EE increased after overfeeding ($p\leq0.002$). After adjusting for gains in fat-free mass and fat mass, 24EE increased more than expected (+89 ± 143 kcal/d, $p=0.0008$) whereas SMR did not increase. TDEE after adjusting for 24EE was unchanged (+49 ± 541 kcal/d, $p=0.6$), indicating no change in free-living physical activity. There were no significant associations between metabolic adaptation in 24EE and changes in circulating levels of T3, T4, leptin or adiponectin, and adaptation was not directly associated with the amount of weight gained. Interestingly, subjects who had a lower-than-predicted SMR after overfeeding had a reduction in resting muscle ATP demand ($r = 0.40$, $p=0.05$), suggesting involvement of mitochondria. **Conclusions:** In conclusion, adaptation in energy metabolism occurs with calorie excess but does not appear to slow the rate of weight gain during experimental overfeeding.

247-P
This abstract has been withdrawn.

248-P
Effects of High-Fat Dietary Obesity on Hepatic Lipogenic Mechanisms in Rats

Kathleen V. Axen, Marianna A. Harper, Yu-Fu Kuo, Steven Clarke, Jean Grassman, Kenneth Axen *Brooklyn, NY*

Background: Obesity-related fatty liver may be associated with enhanced hepatic lipogenesis. **Methods:** We studied lipogenic mechanisms in male Sprague Dawley rats eating high-fat (HF: 55% of kcal as fat, 30% SFA, N=8) vs. low-fat (LF: 15% fat, N=8) diets ad lib. At wk 10 HF rats had higher body fat, plasma leptin, and hepatic lipid ($p<0.01$), and impaired glucose tolerance vs. LF, demonstrating obesity-related fatty liver. We studied SREBP-1c and ChREBP, regulators of lipogenic gene expression including: Acetyl CoA Carboxylase (ACC), Fatty Acid Synthase (FAS), Liver Pyruvate Kinase (LPK) and Glucokinase (GK), and studied AMP Kinase (AMPK), an inhibitor of SREBP1c, ChREBP, and ACC activity. Liver samples obtained after a 16 h fast or 3h post oral glucose load (2g/kg) were analyzed by: 1) qPCR for gene expression and 2) immunoblotting for mature SREBP-1 content, ChREBP content and localization, and AMPK activity. **Results:** Despite 3x higher expression of SREBP-1c in fasted HF vs. LF rats, mature SREBP-1 protein levels were lower and groups did not differ in ACC, FAS, LPK or GK expression. In LF rats the glucose load increased expression of SREBP-1c (4x), FAS (6x), ACC (3x), LPK (3x) and GK (2x); total and nuclear ChREBP protein increased. In contrast, HF rats did not increase SREBP-1c or LPK expression, mature SREBP-1 protein, or total ChREBP protein. GK expression increased 4x in HF rats, while that of FAS, ACC and AMPK was modest. Glucose did not reduce either AMPK activity (p-AMPK) or ACC inactivation (p-ACC) in LF or HF rats (but did in younger control rats). **Conclusions:** These findings indicate an impairment in glucose/insulin stimulation of hepatic lipogenic mechanisms in high-fat dietary obese rats. They also support the uncoupling of SREBP-1c from glucose/insulin induction of hepatic Glucokinase, and suggest that age affects energy monitoring by AMPK.

249-P
Short-Term of Nutritional Overload Alters Metabolism-Related Gene Expression Profile in Hepatic Tissue of Wistar Rats

Andre F. Nascimento, Renata A. Luvizotto, Camila Correa, Aline O. Martins, Tamiris Oliveira, Cintia Miyake, Antonio Cicogna *Botucatu, Brazil*

Background: Food habits (manly, energy-dense foods that are high in fat and sugars) of humans living in Western countries have been associated with metabolic disorder, including non-alcoholic fatty liver disease (NAFLD). This study evaluated whether short-term of high-fat diet plus sugar would alter hepatic metabolism-related gene expression profile in Wistar rats. **Methods:** Male Wistar rats (348±34g) were randomly divided to receive either standard chow (C, 5% fat) or high-fat diet (H, 29% fat) plus sugar in the drinking water (300g/L) during six weeks. Gene expression of hepatic metabolism-related gene [DGAT1 e 2, ACC, AMPK, FAS, PGC1-α e PPAR-α] was assessed by Real Time PCR. Results were presented as mean ± standard. Comparison between groups was performed by Student t test. A 5% significance level was adopted. **Results:** The H animals presented similar weight gain than the C (C= 32±9 vs H= 33±9%, p= 0,481). In contrast, the H rats showed an increase of 67% in adiposity index when compared to the C group (C= 4,6±0,9 vs H= 7,7±1,5%, p< 0,001). The higher adiposity index was associated with lower hepatic gene expression of DGAT1 (C= 1,00±0,11 vs H= 0,83±0,10%, p= 0,021), AMPK (C= 1,00±0,11 vs H= 0,80±0,18%, p= 0,016), PGC1-α (C= 1,00±0,27 vs H= 0,68±0,26%, p= 0,03) and PPAR- α (C= 1,00±0,13 vs H= 0,81±0,14%, p= 0,014), and higher levels of FAS (C= 1,00±0,35 vs H= 2,11±0,98%, p= 0,007) and ACC (C= 1,00±0,14 vs H= 2,13±1,08%, p= 0,028). There was no difference for DGAT2 (C= 1,00±0,13 vs H= 0,98±0,21%, p= 0,841). **Conclusions:** The short-term of nutritional

overload leads to obesity and was enough to alter the metabolism-related gene expression profile in hepatic tissue, which may be a risk factor for NAFLD development. Financial Support: FAPESP (2011/07690-7; 2011/21664-9; 2011/09945-2)

250-P
Five Days of High Saturated Fat Feeding Abrogates the Transcriptional Response to a High Fat Meal Challenge in Healthy, Nonobese, College-Aged Males

Kimberly R. Haynie *Baton Rouge, LA*; Kristen Wahlberg, Elika Shabrokh, Michael Tarpey, Yaru Wu, Ryan P. McMillan, Madlyn Frisard, Kevin P. Davy, Matthew W. Hulver *Blacksburg, VA*

Background: Saturated fatty acid (SFA) consumption is linked to the development of pathologies associated with the metabolic syndrome however; little is understood about the influence of SFA consumption on skeletal muscle on substrate selection. Considering that metabolic inflexibility is a hallmark of the metabolic syndrome, our goal was to assess the influence of five days of high SFA feeding on skeletal muscle substrate selection from the fed to fasted state. **Methods:** Six, healthy, non-obese, 18-22 year old males were selected for participation in the study. The volunteers reported to the laboratory on two occasions; immediately before and after the consumption of a five day 50% fat, 25% SFA diet. To investigate the effects of SFA intake on metabolism independent of caloric surplus, all diets were designed to be isocaloric the volunteers' habitual caloric intake. At both testing periods, skeletal muscle biopsies were performed after an overnight fast and four hours after the consumption of a high fat meal challenge. Muscles samples were used to measure radiolabeled glucose and palmitate oxidation and mRNA expression of oxidative mRNA targets. **Results:** Five days of high SFA feeding suppressed fasting glucose oxidation by 50% and slightly reduced complete palmitate oxidation. The diet also disrupted the transcriptional regulation of metabolic flexibility. In samples obtained prior to the high SFA diet, we observed a 2- to 3-fold increase in mRNA expression of PGC1α, PPARΔ, PGC1β, and NADH Dehydrogenase in response to the meal. After five days of high SFA feeding the meal-challenge associated elevations in transcription of the aforementioned oxidative markers were either significantly blunted or no longer apparent. **Conclusions:** These findings suggest that five days of high SFA feeding disrupts the transcriptional response to a high fat meal.

251-P[DT]
Spillover of Dietary Fatty Acids Is Related to Delivery by Lipoproteins and Contributes to Postprandial Plasma NEFA Concentration

Jennifer Lambert, Joseph J. Lee, Yelena Hovhannisyan, Dora L. Bradford, Maressa J. Valdez, Elizabeth J. Parks *Dallas, TX*

Background: Spillover of dietary fatty acid (FA) into the plasma non-esterified FA (NEFA) pool arises from lipoprotein-triglyceride (TG) lipolysis and may indicate insulin resistance (IR). **Methods:** The present study investigated FA spillover in overweight Hispanic (n=10) and African American (n=10) subjects age 48 ± 3y (BMI 35 ± 1.4). Fasting and fed blood samples were taken after a standardized high-fat meal containing $^{2}H_{31}$-tripalmitin (^{2}H-Palm). Plasma NEFA and TG-rich lipoprotein (TRL) enrichments (%E) were analyzed by GC/MS. **Results:** The rate of meal-TG absorption was highly variable between subjects and peak NEFA spillover (^{2}H-Palm %E) ranged from 5-60%. Dietary spillover contributed to the increase in NEFA concentration as evidenced by correlations of NEFA-^{2}H-Palm (mmol/L) with NEFA peak concentration (r=0.53, P=0.02) and incremental change (iAUC) (r=0.81, P<0.01) over the 6h. NEFA-^{2}H-Palm (mmol/L) was related to TRL-^{2}H-Palm %E (r=0.74, P<0.01) and apoB48 concentration iAUC (r=0.47, P=0.056). Further, the slopes of ^{2}H-Palm change in NEFA and TRL correlated in the early (0-3h; r=0.66, P<0.01) and late (3-6h; r=0.46, P=0.04) postprandial periods. These data indicate that spillover depended on the amount of label delivered by lipoproteins no matter the timeframe of TG absorption. Early spillover was related to fasting insulin (r=0.60, P=0.02) and HOMA (r=0.60; P<0.01), and peak NEFA-^{2}H-Palm (mmol/L) tended to correlate with lean body mass (kg/m2 height) (r=-0.41, P=0.07), indicating greater spillover with increasing IR and less muscle. **Conclusions:** In summary, these data suggest that spillover of dietary FA can significantly raise plasma NEFA concentration and is higher in those with greater dietary TG absorption.

252-P
Effect of Overfeeding in Obese Humans

Elisa Fabbrini, Gemma Fraterrigo, Paloma Almeda-Valdes, Samuel Klein *St. Louis, MO*

Background: Although obesity is associated with metabolic dysfunction and ectopic fat accumulation, it is unknown whether overfeeding and a moderate increase in body weight in obese subjects results in additional adverse effects on metabolic function and fat distribution. **Methods:** Therefore we evaluated the effect of overfeeding an additional 1000 kcal/day from fast food restaurants on insulin sensitivity and ectopic fat distribution in 11 obese subjects (1 male, age=44±10y, BMI=34±3 kg/m2). A two-stage (7 and 50 mU/m2/min) hyperinsulinemic-euglycemic clamp procedure in conjunction with stable isotope tracer infusion was used to assess hepatic and skeletal muscle insulin sensitivity. Magnetic resonance (MR) spectroscopy, MR-elastography and MR-imaging were used to measure intrahepatic triglyceride (IHTG) content and stiffness, and visceral adipose tissue [VAT], respectively. **Results:** These measurements were obtained at baseline and after a 6±1% (5±1 weeks) weight gain was achieved. Overfeeding caused an increase in total body fat (12±4%), fat-free mass (2±1%), and VAT (10±13%) (all P-values<0.05). IHTG content increased by 83±51% (from 8±11% to 12±11%, P<0.01), and liver stiffness (index of hepatic fibrosis) increased by 16±22% (from 2.9±0.4 kPa to 3.2±0.6 kPa, P<0.05). Hepatic insulin sensitivity, measured as the % suppression of endogenous glucose production during low-dose insulin infusion, decreased from 71±10% to 64±13% (P=0.05). Skeletal muscle insulin sensitivity, measured as the % increase in glucose uptake during high-dose insulin infusion, decreased from 321±124% to 248 ±117%, (P<0.05). **Conclusions:** These results demonstrate that overfeeding with moderate weight gain in already obese subjects causes further adverse effects on fat distribution and insulin sensitivity.

253-P
Glucose and Insulin Response to Cephalic Stimulation of Sweetened Mouth Rinses

Keely Hawkins, Alexis Stamatikos, Jamie A. Cooper *Lubbock, TX*

Background: Cephalic phases of digestion initiate rapid responses in energy metabolism before any postingestional consequences occur. The purpose of this study was to investigate if nutritive or nonnutritive sweetened mouthrinses elicit a blood glucose or insulin response. **Methods:** Sixteen subjects rinsed for 45 seconds and expectorated four different mouthwash solutions: water for control (C), sucrose (SU), xylitol (X), which is a sugar alcohol, and sucralose (SL), which is an artificial sweetener. Plasma glucose (GLU) and insulin (I) concentrations were determined by blood collection at baseline and 1, 3 5, 7, 9, and 12 minutes after expectoration. Heart rate (HR) was collected at all time-points to determine the presence of a cephalic postprandial thermogenic effect. Subjective measurements were obtained by Visual Analog Scales (VAS). **Results:** There were treatment effects for higher VAS responses related to sweetness and intensity for the SU and SL vs. C and X treatments (p<0.001). There was also a treatment effect for GLU for the SU treatment which had a greater post-rinse average compared to all other treatments (91.9±1.8, 88.4±1.6, 87.1±1.5, and 88.9±1.8mg/dl (p<0.05) for SU, C, X, and SL, respectively). We measured Insulin levels on 8 subjects and observed a trend for a treatment effect (14.1±3.1, 12.4 ±1.6, 14.5±2.2 and 16.6±3.6 μU/mL (p=0.09) for SU, C, X, and SL, respectively) as well as a positive correlation between I and GLU (r=0.29, p<0.001) and I and HR (r=0.60, p<0.001). There was also a trend for a treatment effect in HR (higher postprandial HR in SL vs. other treatments, p=0.08). Additionally, a positive correlation between GLU and HR (r=0.37, p<0.001) was found. **Conclusions:** This data suggests that sucrose, but not xylitol or sucralose, can induce a blood glucose response when exposed to the oral cavity alone.

254-P
Stress Sensitivity and Dietary Restraint: Exploring the Psychobiological Profile of Restrained Eaters

Jaime R. Silva, Karina Jaramillo, Jenny Lagos, Luis A. Salazar *Temuco, Chile*

Background: Restrained eaters (RE), although they show a chronic limitation of eating for fear of gaining weight, under certain conditions overeat. A significant body of data reveals that the restraint-overeating pattern is associated with the development of overweight and obesity in the long term. Silva

et al. (2011) have proposed a psychobiological model that emphasizes sensitivity to stress as a condition characteristic of RE. Within this conceptual framework in the present study, a group of RE and unrestrained eaters are compared in three relevant parameters; genetic (polymorphism 5-HTTLPR), hormonal (cortisol am and pm) and behavioral. **Methods:** 74 female undergraduate students responded to a set of psychometric instruments and completed the Iowa Gambling Task (IGT). Two saliva samples were also collected (7:00 am and 11:00 pm). Finally, a blood sample was taken from each participant for the polymorphism 5-HTTLPR genotyping. **Results:** The results show that the individuals with the genotype s/s presented a greater risk than carriers of the l allele of being classified as RE. Furthermore, the decrease in morning cortisol was a risk factor for the classification of RE. Indeed, the presence of elevated negative affect levels combined with low morning cortisol predicted elevated levels of chronic dietary restraint. Finally, dietary restraint was associated with variations in the IGT, throughout the different levels of negative affect. The RE showed a response pattern similar to subjects with affective imbalances (i.e., depression) **Conclusions:** Although there are important limitations, the data collected suggest the existence of a stress-sensitive psychobiological profile in restrained eaters

255-P
Plasma Triglyceride Clearance Following an Intravenous Fat Tolerance Test in the Presence of Increased Plasma Insulin Concentrations and With/Without Nitric Oxide Inhibition in Healthy Humans

Christos S. Katsanos, Christian Meyer, Lawrence J. Mandarino, Sarah Everman *Scottsdale, AZ*

Background: Because insulin increases the plasma flow towards the capillary-anchored lipoprotein lipase, a response that is nitric oxide (NO)-mediated, we hypothesized that plasma TG clearance is enhanced by insulin and that this effect is reduced by the NO inhibitor NG-monomethyl-L-arginine (L-NMMA). **Methods:** Six healthy males (24±3 yrs, mean±SE), free of dyslipidemia, and with normal glucose tolerance, underwent a standard intravenous (IV) fat tolerance test (IVFTT) after an overnight fast on three separate days in association with infusions of either saline (CON), insulin (1 mU/kg/min; INS), or insulin+L-NMMA (3 mg/kg/10 min; INS+L-NMMA) initiated 10 minutes prior to the IVFTT. In the insulin infusion trials, 20% dextrose was infused to prevent hypoglycemia. Forearm IV blood samples were collected at the basal state and every 5 min for 20 minutes after the initiation of the IVFTT. Plasma TG values above basal were log-normalized and TG K2 values were calculated as the slope of the linear regression line to determine rate of TG clearance. **Results:** K2 was lower in the INS trial (5.15 ± 0.88 %/min) than the CON (9.93 ± 1.84 %/min) and INS+L-NMMA (10.93 ± 1.54 %/min) trials ($P < 0.05$). The area under the plasma free fatty acid versus time curve during the same period decreased more in the INS (-2.87 ± 0.56 mmol/Lxmin) than the CON (-0.73 ± 0.49 mmol/Lxmin) and INS+L-NMMA (-1.06 ± 0.53 mmol/Lxmin) trials ($P < 0.05$). **Conclusions:** We conclude that, contrary to the original hypothesis, increased plasma insulin concentrations acutely down-regulate the plasma TG clearance in healthy humans and that this effect is inhibited by a nitric oxide inhibitor in plasma. Insulin-induced redistribution of blood flow from non-nutritive to nutritive capillaries in muscle resulting in suppression of whole-body lipolytic activity may explain these findings.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Sleep

256-P
Insufficient Sleep Is Not Associated With a Greater Adaptive Reduction in Thermogenesis During Weight Loss in Adults

Jean-Philippe Chaput *Ottawa, Canada*; Caroline Y. Doyon *Quebec City, Canada*; Jessica McNeil, Éric Doucet *Ottawa, Canada*; Angelo Tremblay *Quebec City, Canada*

Background: The aim of this study was to verify whether sleeping habits affect adaptive thermogenesis (i.e. greater than predicted decrease in resting energy expenditure, REE) in overweight and obese adults subjected to caloric restriction. **Methods:** A total of 123 overweight and obese men and women (mean ± SD age, 41.1 ± 6.0 years; mean ± SD body mass index, 33.2 ± 3.6 kg/m2) were tested before and 17.2 ± 3.7 weeks after dietary treatment (-300 kcal/day on average). Body fat mass (dual-energy X-ray absorptiometry), REE (indirect calorimetry) and sleep duration and quality (Pittsburgh Sleep Quality Index, PSQI) were assessed at both baseline and at the end of the weight loss program. Two sets of formula were used to predict changes in REE and the difference between the changes in the predicted REE from the reference equations and the changes in the measured REE were compared between sleep duration groups. **Results:** The mean weight loss of all participants over the dietary intervention was 5.9 ± 4.6 kg, 73% of which came from fat losses. The small dietary restriction led to a 57 kcal/day reduction in REE at the end of the weight-loss program ($P<0.01$). Using multivariable linear regression models, none of sleep duration or quality was associated with adaptive thermogenesis. Similarly, the adaptive reduction in thermogenesis was not significantly different between short- (<6 h/night) and average-duration (7-9 h/night) sleepers and between poor (PSQI score >5) and good (PSQI score ≤5) sleepers. **Conclusions:** This study provides evidence that sleeping habits do not influence the adaptive reduction in thermogenesis during weight loss in adults exposed to small caloric restriction.

257-P
Sleep Disruption Induces Hypothalamic Endoplasmic Reticulum Stress and Leptin Resistance in Mice

Fahed Hakim, Jing Zhang, Alba Carreras, Camila Hirotsu, Eduard Peris, Yang Wang, David Gozal *Chicago, IL*

Background: Over the past century, excessive weight gain and the metabolic syndrome have emerged as leading contributors to mortality and morbidity. Disrupted sleep (SD) is highly prevalent and may be an important contributing factor. We hypothesized that SD will induce hypothalamic endoplasmic reticulum (ER) stress and activates the unfolded protein response (UPR), and down-regulate leptin receptor(ObR) signaling, thereby favoring increased adipose tissue accrual and metabolic dysfunction **Methods:** C57/b6 male mice were exposed to SD during the light period using a custom-designed apparatus for 6 hours- 21 days along with matched controls (CO). Hypothalamic samples were harvested, and subjected to western blots using ATF6, p-eIF2α, HSP 70, HSP90, GRP78, FAT10, SOCS3, PTP1b, ObR, p-STAT3, and β-Actin. XBP1 gene expression was quantified using RT-PCR. Leptin receptor sensitivity was assessed following leptin or vehicle injection to both SD and CO, and after tauroursodeoxycholic acid (TUDCA) treatment **Results:** After 3 days of SD, food intake was increased and sustained thereafter ($p<0.012$). SD induced significant ER stress in the hypothalamus across the 3 major UPR pathways ($p<0.05$). ObR expression showed slight increase, with parallel decrease in p-STAT3/STAT3 ($p<0.034$) suggesting reduced leptin receptor signaling. Although SOCS3 expression remained unaltered by SD, significant increases in PTP1b expression emerged ($p<0.04$) overtime. Furthermore, SD mice had reduced p-STAT3 responses after leptin injection, which were abrogated by TUDCA. **Conclusions:** SD in mice induces hyperphagic behaviors and reduced leptin signaling in the hypothalamus that appear to be mediated by ER stress and activation of the UPR. The increases in PTP1b expression further suggest this pathway as potentially promoting weight gain and metabolic dysfunction in the context of disrupted sleep

258-P
The Effects of Obesity on Obstructive Sleep Apnea in Pediatric Patients

Leah Marron, Jennifer Berkovich, Matthew Uhde *Fort Lauderdale-Davie, FL*

Background: In recent years, there has been an increasing amount of concern regarding childhood obesity and its long term implications. This poster examines the effects of obesity on obstructive sleep apnea (OSA). **Methods:** Obstructive sleep apnea is characterized by repeated episodic partial or complete airway obstruction during sleep. Obesity is linked to adenoid hypertrophy causing obstruction during breathing which exacerbates OSA. **Results:** Untreated OSA leads to pulmonary hypertension and eventual congestive heart failure. The hypercapnia associated with OSA contributes to hypertension. OSA aggravates an obese child's predisposition to endocrine and metabolic abnormalities. Increased sympathetic output resulting from OSA suppresses serum adiponectin leading to insulin resistance. There is an increased risk for development of nonalcoholic liver steatosis secondary to oxidative stress, abnormal lipid peroxidation events, increased cytokine activity, oxidized low-density lipoprotein levels and thiobarbituric acid-reactive sub-

stance formation. **Conclusions:** The combined interaction between the various physiological disturbances linked to OSA in obese children is associated with substantial end-organ morbidities. It is clear these implications need to be further investigated to address a growing need of an expanding population.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Energy Balance Regulation/Brown Adipose Tissue

259-P
Effects of Liraglutide on Appetite, *ad Libitum* Energy Intake, 24-hour Energy Expenditure and Substrate Oxidation in Obese Non-Diabetic Adults: A Randomized, Placebo-Controlled, Incomplete Crossover Trial

Judith van Can *Maastricht, Netherlands*; Birgitte Sloth, Christine B. Jensen, Tu D. Le Thi, Anne Flint *Soeborg, Denmark*; Ellen E. Blaak, Wim H. Saris *Maastricht, Netherlands*

Background: The mechanisms responsible for weight loss induced by liraglutide are not fully understood; therefore the effects of liraglutide on appetite sensations, energy intake (EI), energy expenditure (EE) and substrate oxidation (SO) were investigated. **Methods:** Twenty-nine males and 20 females (age 18–75 yrs, BMI 30–40 kg/m^2) were randomized to 5 weeks' treatment with once-daily liraglutide 1.8 mg, 3.0 mg or placebo in a double-blind, incomplete crossover design. Appetite sensations were assessed by visual analogue scales after an energy-fixed breakfast. EI was registered at a subsequent *ad libitum* lunch. EE, SO rates and physical activity (PA) were derived from 24-hr respiratory chamber measurements. www.clinicaltrials.gov ID NCT00978393 Funding: Novo Nordisk A/S **Results:** Both liraglutide doses reduced postprandial (15 min) appetite after the breakfast as assessed by overall appetite scores (OAS) for liraglutide 1.8 mg (11 mm [95%CI 6;17], p=0.0002) and 3.0 mg (12 mm [95%CI 6;17], p=0.0002) compared with placebo. Effects on OAS were driven by increased satiety and fullness, and reduced prospective food consumption. Mean EI during the subsequent *ad libitum* lunch was reduced approx. 16% with both liraglutide 1.8 mg (-588 kJ [95%CI -951;-224], p=0.002) and 3.0 mg (-568 kJ [95%CI -937;-199], p=0.003) compared with placebo. EE (24 hr) was reduced with liraglutide 1.8 mg and 3.0 mg compared with placebo (by 3.0 % and 4.9%, respectively, p<0.05). This effect was not statistically significant after adjusting for treatment-related changes in body weight and PA level. SO rates adjusted for energy balance indicated a relative shift toward more fat and less carbohydrate oxidation with liraglutide 1.8 mg and 3.0 mg compared with placebo. **Conclusions:** Liraglutide-induced weight loss appears to be mediated by effects on appetite leading to reduced EI, and not increased EE.

260-P
Capsinoids Induce Brite/Beige Cells in White Adipose Tissue in Mice When Acclimated in Mild Cold Environment

Kana Ohyama, Yoshihito Nogusa, Katsuya Suzuki *Kanagawa, Japan*

Background: Capsinoids (CSNs), which consist of capsiate, dihydrocapsiate and nordihydrocapsiate, are capsaicin analogs. They are found in non-pungent pepper called "CH19-Sweet". CSNs enhance the energy expenditure and suppress body fat accumulation via TRPV1 activation. In homeothermic animals, the change of temperature influences energy metabolism. In this research, we investigated the anti-obesity effect of CSNs in different temperatures. **Methods:** 9-week-old male C57BL/6J mice were fed high fat diet (HF) or HF containing 0.3% CSNs (CSNs) in each environment, normal temperature (25 degrees C) or mild cold temperature (17 degrees C). After 8 weeks of ingestion, blood and tissue samples were collected under anesthesia. Blood and Tissue samples were analyzed by biochemical and histological analysis. **Results:** In the mild cold environment, CSNs suppressed more body weight gain and adiposity compared to normal environment. In the mild cold environment, CSNs increased UCP-1 levels in subcutaneous and perirenal white adipose tissue (Sub WAT and Re WAT). CSNs intake in the mild cold environment increased brown adipocyte specific genes expression as well, while it increased or didn't change white adipocyte specific genes expression. Then morphological features of the brown fat were observed in Sub WAT and Re WAT of CSNs-fed mice in the mild cold environment. Moreover, increase of oxygen consumption upon stimulation with norepinephrine in Sub WAT and Re WAT was observed in CSNs-fed mice in the mild cold environment. **Conclusions:** The results suggest that CSNs intake in the mild cold environment induce brite/beige cells having thermogenesis function in WAT. Induction of brite/beige cells in WAT might be contributed to the enhancement of anti-obesity effects of CSNs in the mild cold environment.

261-P^{DT}
Lipid Oxidation During 24 hours of Fasting Predicts 6 Month Weight Change

Marie S. Thearle, Susan Bonfiglio, Jonathan Krakoff *Phoenix, AZ*

Background: Fasting and overfeeding may be potent conditions for eliciting physiologic responses that predict future weight change. **Methods:** Twenty five volunteers (17M/8F; 6AA / 8C / 4H / 7NA; Age 35.2±8.6y; BMI 26.9±4.7 kg/m^2; %body fat 29.9±12.1%) with normal glucose regulation by OGTT had baseline 24h energy expenditure (EE) during energy balance, fasting and 200% overfeeding measured via indirect calorimetry in a respiratory chamber. Body composition was determined by DXA. A subset of 16 subjects had assessment of leptin concentrations before and after each chamber. All subjects had a follow-up visit 6 months after the initial stay for determination of weight and body composition. **Results:** Mean weight change was 1.0±4.3 kg (range -6.1 to 11.2 kg). No measures during energy balance or overfeeding including 24h EE, respiratory quotient (RQ), or substrate oxidation predicted weight change. However, fasting RQ was negatively correlated with 6 month weight change (r=-0.41; p=0.04). Moreover, fasting lipid oxidation (mean 1318±269 kcal), even after adjustment for concurrent fat and lean mass, was a positive predictor of weight change (r=0.52; p=0.008) and change in fat mass at 6 months (r =0.54; p=0.006). Carbohydrate oxidation was not significantly correlated with weight or fat mass change. The relationships remained true even after adjustment for age and gender. Interestingly, the percent decrease in leptin from baseline after 24h of fasting (-63±21%) negatively correlated with lipid oxidation (r=-0.5; p=0.048), but was not independently associated with weight change. **Conclusions:** The prediction of 6 month weight change by lipid oxidation over 24h of fasting indicates that a more rapid shift from a glucose based metabolism to a lipid based metabolism in response to fasting may be associated with increased hunger signals.

262-P
Acute Effect of Dietary Fatty Acid Saturation on Postprandial Thermogenesis and Substrate Oxidation

Hui Chang, Amanda L. Kozimor, Jamie A. Cooper *Lubbock, TX*

Background: Composition of dietary fatty acids in a diet may differently affect metabolism, thus playing a role in the development of obesity. We aimed to study the effects of three high-fat (HF) meals with different fat saturations on diet induced thermogenesis (DIT) and substrate oxidation. **Methods:** 15 healthy normal weight women, ages 18-45 years participated in a randomized cross over study, in which they consumed isocaloric HF meals (70% of energy) rich in either saturated fat (SFA) (40% of energy from coconut oil and palm oil), monounsaturated fat (MUFA) (42% of energy from canola oil and olive oil) or polyunsaturated fat (PUFA) (42% of energy from sunflower oil and flaxseed oil). Indirect calorimetry was used to measure respiratory gases for a 5-hour postprandial period. Data collected was used to determine postprandial respiratory exchange ratio (RER), substrate oxidation, and energy expenditure for the determination of DIT. **Results:** The area under the curve for DIT following the PUFA-rich HF meal was greater than that of the SFA- or MUFA-rich HF meals (50±3, 43±4 and 45±6 Kcals/5-hours (p=0.02) for PUFA, MUFA and SFA, respectively). There was a trend for treatment differences in substrate utilization with the PUFA-rich HF meal having a higher postprandial RER average (0.86±0.01, 0.85±0.01 and 0.85±0.01 (p=0.09) for PUFA, MUFA, and SFA, respectively) and a higher cumulative postprandial carbohydrate (CHO) oxidation (60.9±4.8, 56.1±2.7 and 58.1±4.7 grams (p=0.09) for PUFA, MUFA, and SFA, respectively). **Conclusions:** A PUFA-rich HF meal induced a greater thermo genic effect in normal weight women compared to SFA- or MUFA-rich HF meals. No significant differences were found for substrate utilization; however, a PUFA-rich HF meal may lead to greater carbohydrate oxidation.

263-P
Accuracy of a Combined Heart Rate and Motion Sensor for Assessing Energy Expenditure in Free-Living Adults During a Double-Blind Crossover Caffeine Trial Using Double Labeled Water as the Reference Method

Analiza M. Silva, Diana A. Santos, Catarina N. Matias, Pedro B. Júdice, João P. Magalhães, Luís B. Sardinha *Cruz Quebrada, Portugal*

Background: Objective and accurate measurements of total (TEE) and physical activity energy expenditure (PAEE) are essential to establish dose–response relationships with health outcomes. Therefore, we examined the validity of a combined HR and motion sensor (Actiheart, Cambridge Neurotechnology Ltd, UK) in estimating TEE and PAEE in free-living adults under caffeine and placebo intake compared with double labeled water (DLW) as criterion. **Methods:** Using a double-blind crossover trial (ClinicalTrials.govID;NCT01477294) with two conditions (4-day each with 3-day washout) randomly ordered as caffeine (5mg/kg/day) and placebo (malt-dextrine) intake, TEE was measured by DLW in 17 non-obese males (20-38yrs), non-caffeine users. In each condition, resting energy expenditure (REE) was assessed by indirect calorimetry and PAEE calculated as [TEE-(REE+0.1*TEE)]. Simultaneously, PAEE and TEE were estimated by a sensor combining HR (individual calibration) and accelerometry (ACC+HRSTEP). Regression analysis and Bland-Altman were used. **Results:** Under caffeine, ACC+HRSTEP explained 72% and 56% of TEE and PAEE from DLW (standard errors: 17.5 and 20.5 kJ/kg/day), respectively, whereas under placebo explained 78% and 60% (standard errors: 14.8 and 17.9 kJ/kg/day), respectively. No mean bias was found between ACC+HRSTEP and DLW for TEE (caffeine: 3.9 kJ/kg/day; placebo: 2.2 kJ/kg/day) though PAEE was underestimated (caffeine:-14.4 kJ/kg/day; placebo:-19.7 kJ/kg/day;$p<0.05$). Similar limits of agreement were observed in both conditions ranging from -26.5 to 42.5 and 54.5 to 58.0 kJ/kg/day for TEE and PAEE, respectively, with no trend between the differences and the mean of the methods. **Conclusions:** Regardless of caffeine intake, the combined sensor is valid for estimating free-living energy expenditure in a group of healthy males.

264-P
Impact of Exergaming on Energy Expenditure and Heart Rate in Young Women

Carine Platat *Al Ain, United Arab Emirates*

Background: Whereas it is well-established that exercise has benefits on energy balance, being physically active remains difficult and obesity is still increasing. Exergaming, a new form of active video games, has recently been associated to significant increased energy expenditure. Nonetheless, conclusions remain contradictory, no studies were conducted in young adults and the role of weight status remains unclear. Aim To investigate if exergaming increases energy expenditure (EE) and heart rate (HR) above resting and walking, independently of weight status. **Methods:** Twenty sedentary female were recruited. Height and weight were recorded. 30-minutes bouts of moderate walking on a treadmill, dance, aerobic and sport exergaming were performed. Heart rate and energy expenditure were measured at rest and during exercise by using heart rate monitor and indirect calorimetry. Wilcoxon signed ranks test and general linear model were performed. **Results:** Exergaming significantly increased EE and heart rate of participants above resting value and walking ($p\leq10-4$). Sport was associated with the highest values, followed by aerobic, dance and walking. EE's increases above resting and walking were higher in overweight compared to normal weight participants for dance, aerobic and sport ($p\leq10-4$, $p\leq10-2$ and $p\leq10-4$, respectively). HR's increases above resting but not above walking were significantly higher in overweight compared to normal weight participants for dance and sport ($p\leq10-2$ and $p=0.05$, respectively). **Conclusions:** Exergaming's EE was increased more than moderate walking and in a highest manner among overweight participant. Exergaming could represent an alternative to sedentariness and a new way to promote physical activity among young adults.

265-P
A Stable Isotope Method For Energy Intake Assessment in Free Living Subjects

Joseph J. Kehayias, Gregory Dolnikowski *Boston, MA*; Pauli M. Kehayias *Berkeley, CA*; Helen M. Rasmussen, Erek Alper, Anna A. Rossinoff, Edward Saltzman *Boston, MA*

Background: Energy intake is evaluated by self-reported food questionnaires. Although useful in providing data on dietary patterns, these tools can be biased especially for overweight subjects. We developed a method for energy intake based on the carbon kinetics of fuel. **Methods:** After the oral administration of an amount of a fatty acid labeled with the stable isotope C-13, we monitor the appearance of C-13 in breath CO2 for several days. The rate of clearance of the isotope depends on the amount of total C-12 ingested as fuel. We tested this hypothesis using a mathematical model and a controlled clinical study. We model the incorporation of the labeled fatty acid in adipose tissue and in an active circulating free-fatty acid pool. We also model the effects of the three main types of food: protein, fat and carbohydrates, and derive isotope ratio time clearance curves. We will present the initial results of an ongoing clinical study that includes two experiments. In the first experiment a single dose of 350mg C-13 labeled palmitic acid is administered orally after a meal and CO2 breath samples are taken for 14 days. The second experiment is a test of the responsiveness of the model. Several smaller (50mg) doses are administered for a period of two weeks while the volunteers receive a caloric maintenance diet for the first week and a reduced (by 25%) energy diet for the second week. **Results:** For our first 9 volunteers, caloric intake ranged from 1480 to 3300 kcal/d. C13/C12 ratios were analyzed by isotope ratio mass spectrometry. Preliminary results show a negative correlation between caloric intake and C13/C12 ratio in breath, as predicted by the model, $R^2=0.78$. **Conclusions:** When fully developed, this method will be used to monitor energy intake in free living subjects and, when combined with rapid analytical methods, it can serve as a behavior modifier.

266-P
Elucidating the Mechanism of Uncoupling Protein 1 Phosphorylation

Cyril N. Adjeitey, Ryan J. Mailloux, Mary-Ellen Harper *Ottawa, Canada*

Background: Uncoupling protein 1 (UCP1) belongs to the transmembrane anion carrier protein family and is required to drive thermogenesis in brown adipose tissue (BAT). Depots of active BAT have been identified in adult humans and it has been posited that BAT activation could prevent obesity or be used in its treatment. Although the proton leak mechanism through UCP1 is fairly well established, the manner by which it is activated at the molecular level requires further investigation. A previous report provided evidence that UCP1 is phosphorylated in BAT of cold-exposed rats. However results were limited and have not been independently confirmed. The aims of the present study are to determine whether phosphorylation is required to activate UCP1, and to identify the corresponding signaling cascades and kinases responsible for UCP1 phosphorylation. **Methods:** To accomplish these aims we used bioinformatic analyses (e.g., phosphomouse) to query potential phosphorylation sites. We then used isoelectric focusing and mass spectrometery analysis. **Results:** Using isoelectric focusing, we confirmed that UCP1 is post-translationally modified, characteristic of phosphorylation. Moreover, BAT from cold exposed mice showed an isoelectric shift when compared to warm acclimated mice upon immunoblotting. Bioinformatics analysis revealed that UCP1 does contain phosphorylation sites and preliminary mass spectrometry data confirmed this observation. We are now identifying potential kinase candidates using a high throughput kinase screen. **Conclusions:** In summation, findings support the idea that UCP1 is phosphorylated and that phosphorylation could be an important means of acute control in non-shivering thermogenesis. It is hoped that findings will lead to the development of new therapies for obesity (Funding: Natural Sciences and Engineering Research Council of Canada)

267-P
Cold Exposure Suppresses High Fat Diet-induced Obesity in Mice

Le Bu, Mingming Gao *Athens, GA*; Shen Qu *Shanghai, China*; Dexi Liu *Athens, GA*

Background: The purpose of this study was to investigate the effects of cold exposure on high fat diet (HFD)-induced obesity in mice. **Methods:** C57BL/6 mice fed with HFD for 8 weeks were kept at 4°C for 2 hours daily while the control animals kept at room temperature throughout this study. Food-intake and body weight were determined twice weekly. Body composition was determined by MRI. Fasting glucose, triglyceride and cholesterol levels were measured using commercial kits. Glucose homeostasis was evaluated by IPGTT and ITT. Morphological changes in the adipose tissue and liver were detected by H&E staining. Fat accumulation in the liver was confirmed by oil red-O staining. **Results:** Both groups of animals (n=5) had a similar amount of food-intake. Fed with HFD for 8 weeks, C57BL/6 mice became obese, insulin resistant and glucose intolerant. Cold exposure significantly suppressed HFD-induced obesity (by 29%) and blocked development of insulin resistance and glucose intolerance. Body composition analysis showed cold exposure lowered the fat mass by 44%. Blood test showed that cold-exposed mice had a lower fasting glucose (by 14%) and fasting triglyceride (by 56%) while the fasting cholesterol level was unchanged. H&E staining showed that the cold-exposed mice had smaller adipocytes compared to control animals. Oil red-O staining showed the obesity associated fatty liver was prevented by cold exposure. **Conclusions:** These data suggest cold exposure could be regarded as a potential method for suppressing development of high fat diet induced obesity, insulin resistance and fatty liver.

268-P
Equations For Extimating Energy Requirements in Normal Weight and Overweight Men and Women

Leanne Redman *Baton Rouge, LA*; Sai Krupa Das *Boston, MA*; Manju Bhapkar *Durham, NC*; Susan B. Racette, Luigi Fontana *St. Louis, MO*; William E. Kraus *Durham, NC*; William W. Wong *Houston, TX*; Susan Roberts *Boston, MA*; Eric Ravussin *Baton Rouge, LA*

Background: The energy requirement of an individual is the energy intake required to maintain energy balance. **Methods:** In the CALERIE 2 study, we determined energy requirements in 219 healthy men and women (69% female, 77% White) during two consecutive 14-day DLW studies and obtained serial measures of body weight and body composition by DXA. Energy intake was estimated by 6-day food diaries. Subjects (20< age <51 y; 22<BMI<28 kg/m2; 52% overweight) were then prescribed a 25% caloric restriction (CR) diet to study the impact of CR on biomarkers of aging and longevity. **Results:** Total daily energy expenditure (TDEE) was consistent between the two DLW studies (ICC=0.90) with a mean TDEE of 2446±397 kcal/d that was 20% higher in males vs. females (p<0.0001). The prediction equations relating mean TDEE during weight maintenance to weight or body composition, age, and sex were: TDEE (kcal/d) = 1288+18.3(wt, kg)+2.23(age, y)-343(sex; 1=female, 0=male); r2=0.57, p=<0.0001 and TDEE (kcal/d) = 535+37.7(FFM, kg)-4.7(FM, kg)+4.07(age, y)+ 72(sex; 1=female, 0=male); r2=0.65, p=<0.0001. Individuals significantly underreported energy intake by approximately 15% or 350 kcal/d which was ~270 kcal/d (12%) and ~400 kcal/d (16%) in normal weight (BMI<25 kg/m2) vs. in overweight individuals (p<0.001). **Conclusions:** These new equations for normal weight and overweight individuals can be applied to estimate the free-living caloric requirement at the population level. While equations to predict energy requirements have been published previously,(1,2) they were derived from many studies in varying populations and used different dosing and laboratory methods for DLW. The present equations which yield larger r2 are more specific for use in individuals in the USA. Where possible, investigators and clinicians should estimate TDEE from measures of body composition.

269-P
Brown Adipose Tissue (BAT) and Adipocytokines in Obese Young Adults

Nicole L. Mihalopoulos, M. N. Nanjee, Jaci Skidmore, Regan Butterfield, John M. Hoffman *Salt Lake City, UT*

Background: Animal studies have demonstrated that BAT primarily produces adiponectin, and to a lesser degree, leptin. Rodents that have been genetically ablated for BAT develop obesity, diabetes and dyslipidemia, components of the metabolic syndrome. Excess white adipose tissue is associated with high concentrations of leptin and lower concentrations of adiponectin, as well as increased risk for the metabolic syndrome. BAT is present in obese humans, but its relationship with adiponectin has not been established. Subjects without the metabolic syndrome have higher concentrations of adiponectin. The purpose of this study was to evaluate the relationship between BAT and the adipocytokines, adiponectin (A) and leptin (L) in healthy, obese adults. **Methods:** We enrolled 17 males and 14 females (aged 18-30y, all caucasian) during winter months. Participants fasted for 12 hours prior to blood draw and initiation of a FDG-PET/CT protocol (set in a room cooled to 63-64°F for 2 hours; at the end of the first hour, 18F-FDG was injected; one hour later eyes-to-thighs scan). Height, weight, total adiponectin and leptin were quantified. **Results:** There were 13 participants (7 male) with cold-inducible BAT. Adiponectin, leptin, A/L ratio, BMI and age were not significantly different between those with and without BAT. **Conclusions:** In this cohort of healthy, obese subjects, there was no association between the presence of BAT and adiponectin, leptin or the A/L ratio. This implies that any protective effect of BAT on the metabolic syndrome is likely to be independent of adipocytokine secretion into blood.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Brain-Gut Communication

270-P
The Activation of Appetite Regulating Centres By Preproglucagon Derived Peptides

Jennifer Parker, John A. Tadross, Benjamin C. Field, James Minnion, Stephen R. Bloom *London, United Kingdom*

Background: The preproglucagon derived peptides GLP-1, glucagon and oxyntomodulin have all been shown to reduce food intake when administered peripherally. Both GLP-1 and oxyntomodulin are thought to effect satiety via the GLP-1 receptor, whilst glucagon is thought to act via its own receptor. However the effects of GLP-1 and oxyntomodulin, both on the intracellular signalling induced by their binding to the GLP-1 receptor, and on their effects in vivo appear to be somewhat divergent. **Methods:** The effects of equivalently anorectic doses of GLP-1, oxyntomodulin and glucagon on c-fos expression were assessed to compare their effects on neuronal activation in selected appetite regulating centres in mice. Dual immunohistochemistry for c-fos and for markers associated with specific populations of neurons in the nucleus tractus solitarius were used to further characterise the neurons activated. **Results:** Oxyntomodulin, GLP-1 and glucagon all activated neurons in the area postrema, nucleus tractus solitarius and central nucleus of the amygdala. However the pattern of activation seen in response to equally anorectic doses of GLP-1 and glucagon appeared to be different to that of oxyntomodulin in the NTS. **Conclusions:** The difference in neuronal activation induced by oxyntomodulin to that induced by either GLP-1 or glucagon at equivalently anorectic doses suggests that they may have different mechanisms of action. Understanding the impact of these differences may be relevant to the development of analogues of GLP-1, oxyntomodulin and novel co-agonists of the GLP-1 and glucagon receptors as potential treatments for obesity and type 2 diabetes.

271-P
Targeting the GCC Endocrine Signaling Axis to Reduce Appetite in Obesity

Gilbert W. Kim, Scott A. Waldman *Philadelphia, PA*

Background: In light of our discovery that the transmembrane receptor guanylyl cyclase C (GCC) regulates appetite through a novel gut-brain endocrine axis, we aimed to further define hypothalamic GCC expression and,

moreover, determine the consequence of obesity to this GCC signaling axis. **Methods:** Nuclei were microdissected from mouse hypothalamus and GCC expression was quantified by RT-PCR. Mouse brains were also cryosectioned and hypothalamic slices were immunostained for GCC. Further, hypothalamus and intestine were harvested from lean and obese mice, and GCC and GCC ligand expression was quantified by RT-PCR, immunoblot, and immunofluorescence. **Results:** Our studies revealed the suppression of intestinal ligand expression with the concomitant overexpression of hypothalamic GCC in obese mice. Further, our studies suggested that GCC was enriched in the arcuate nucleus, a key regulator of appetite. **Conclusions:** Our results suggest a corruption of the GCC axis in obesity, which in part reflects an endocrine deficiency of GCC ligands that could be therapeutically targeted to supersensitized receptors by hormone replacement. Thus, GCC represents a new target to develop anti-obesity pharmacotherapies against this accelerating pandemic.

272-P[DT]
Identification of Pleiotropic Genetic Effects on Obesity and Brain Structure

Joanne E. Curran *San Antonio, TX*; Anderson M. Winkler *Harftord, CT*; Rene L. Olvera, Melanie A. Carless, Thomas D. Dyer, Jack W. Kent *San Antonio, TX*; Peter Kochunov *Catonsville, MD*; Michael C. Mahaney, Anthony G. Comuzzie, Peter T. Fox, Laura Almasy, Ravindranath Duggirala, John Blangero *San Antonio, TX*; David C. Glahn *Harftord, CT*

Background: Obesity is a major contributor to the global burden of chronic disease and disability; though current knowledge of the biological underpinnings of obesity is comparatively poor. Through the regulation of energy homeostasis and interactions with adiposity and gut signals, the brain is thought to play a significant role in the development of obesity. While neuroanatomic variation has previously been associated with obesity, it is unclear if this relationship is due to common genetic factors. **Methods:** MRI images of brain anatomy were available for more than 800 Mexican American individuals from large extended pedigrees. Bivariate genome-wide association and bivariate quantitative analyses were implemented in SOLAR. **Results:** Our results show a highly significant overall genetic correlation ($p = 5.3\times10^{-4}$) between entorhinal cortex thickness and BMI. We localized two putative QTLs influencing these phenotypes. First, a locus in the region of 7q23 near the ataxin 7-like 1 gene ($p = 3.4\times10^{-7}$) was identified with a focal effect on entorhinal cortex. Ataxin-related genes have been previously implicated in neuronal function and obesity which suggest that we have identified an interesting empirical candidate gene. A second putative locus was mapped to 14q11 near the *MAP45* gene ($p = 7.9\times10^{-7}$). The sentinel marker of this QTL shows additional pleiotropic effects on the major depression-related phenotype, Beck depression inventory ($p = 0.0007$), which is consistent with the relationship between obesity and depression. **Conclusions:** Our study represents the first genetic analyses searching for evidence of pleiotropic genetic effects acting on both MRI derived measures of brain anatomy and BMI. Our results strongly support a role for the medial temporal lobe in obesity and show that pleiotropic genetic effects help determine the brain/obesity relationship.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Leptin Biology

273-P
Leptin Plasma Levels in Males Predict Percentage Body Fat as Measured by DXA Compared to BMI

Eric Braverman, Kristina Dushaj, Raquel Lohmann, Uma J. Damle, Kenneth Blum, Richard Smayda *New York, NY*

Background: Body mass index (BMI) is an inaccurate indicator of body fat in women compared to dual-energy x-ray absorptiometry (DXA). Increased leptin and increased body fat correlates but it is unknown if low levels in men have any impact on adiposity measurements. **Methods:** 1,393 patients from a New York outpatient private clinic had BMI, DXA derived body fat percentage (BF%), and fasting leptin levels assessed. Normal range of plasma leptin for adults is 3.9-30.0 ng/mL. 63% were women and 37% were men. **Results:** In men, extremely low leptin values of 0-2.9 were predictive of low body fat and high BMI p<.02, particularly in sample including athletes and military. For example, an individual with leptin levels < 3 may have 15% DXA BF%, but have BMI score of 24 p<.02. For leptin levels between 0.0-2.9 (n=16); 3.0-4.9 (n=18); 5-9.9 (n=31); 10-14.9 (n=24); 15-19.9 (n=16); 20-24.9 (n=16); 28-38 (n=6); >39 (n=9). Only in the last category of leptin values (>39) was hyperleptinemia associated with increased adiposity (p<.004). While BMI failed to accurately classify obesity for 32% of men in the sample, use of leptin adjustment may significantly increase its predictive value in men with leptin levels under 5. **Conclusions:** Clinicians can use leptin-adjusted BMI to better estimate BF% in men and women, thereby continuing use of easy and cost effective screen for obesity. Individuals with leptin levels < 2.9 required BMI adjustment of -8 to better estimate DXA BF%; whereas, with leptin levels between 3.0-5.0, BMI adjustment of -3 was required.

274-P
The Physiological Role of Leptin in the Regulation of the Hypothalamo-Pituitary-Adrenal (HPA) Axis Response to Stress

Saadia Basharat, Kevin G. Murphy, Julia C. Buckingham, Christopher D. John *London, United Kingdom*

Background: The hypothalamo-pituitary-adrenal (HPA) axis is altered and dysregulated in abdominal obesity. Leptin, a protein product released into the circulation from adipose tissue is known to possess complex effects on HPA activity via unknown mechanisms. The present study was designed to establish a cause and effect relationship between circulating levels of leptin and HPA responses to acute stress. **Methods:** Male Wistar rats (n = 8/group) received one of the following treatments; 1) no injection (control), 2) i.p. 100ul saline at 0 minutes, 3) i.p. 0.1mg/kg leptin at 0 minutes, 4) i.p. 100ul saline at 0 minutes and i.p. 250μg/kg lipopolysaccharide (LPS) at 105 minutes, 5) i.p. 250μg/kg LPS at 105 minutes, i.p. 0.1mg/kg leptin at 0 minutes and 6) i.p. 250μg/kg LPS at 105 minutes. Rats were killed and blood samples collected at 210 minutes. Plasma ACTH was measured by radioimmunoassay whilst plasma leptin and corticosterone were measured by commercial ELISA. **Results:** LPS elicited an increase in plasma ACTH and a significant increase in plasma corticosterone levels. Exogenous leptin treatment induced a significant increase in plasma leptin levels but failed to influence the aforementioned LPS induced increases in HPA activity. **Conclusions:** The inability of leptin to influence LPS-induced changes in HPA activity in rats may be due to two factors; i) the dose of LPS was too high and induced maximal secretion of ACTH and corticosterone. We have subsequently investigated the dose-dependent effects of LPS on the HPA axis and determined that a lower dose of LPS (25ug/kg) induced submaximal increases in plasma ACTH and corticosterone, as well c-fos expression in the hypothalamus. ii) the dose of leptin is too low. Our future experiment will test the effects of high dose leptin (2mg/kg) on submaximal HPA responses to acute LPS treatment.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Neuronal Control of Metabolism

275-P
Fat-Free Mass But Not Fat Mass Is Associated With Reduced Gray Matter Volume of Cortical Brain Regions Implicated in Autonomic and Homeostatic Regulation

Christopher Weise, Pradeep Thiyyagura, Eric M. Reiman, Kewei Chen, Jonathan Krakoff *Phoenix, AZ*

Background: Human obesity has been associated with alterations of central transmitter systems, neuronal activity and gray and white matter morphology. However, in obesity, both fat mass (FM) and fat-free mass (FFM) are increased, and it remains unknown whether these compartments exert distinct effects on human brain morphology. **Methods:** FM and FFM was assessed by dual energy x-ray absorptiomery and voxel-based morphometry was used to investigate associations with regional gray matter volume (GMV) in 76 healthy adults with a wide range of adiposity (24F/52M; age 32.1±8.8y; percentage of body fat [PFAT] 25.5±10.9%). **Results:** At p<0.05 (FWE voxel-level, *k*=100), height indexed FM and FFM (FMI, FFMI, kg*m-2) showed negative associations with bilateral temporal cortical regions. Further negative associations were observed for FMI with the left cerebellum and for

FFMI with the bilateral medial prefrontal cortex (mPFC), bilateral caudolateral orbitofrontal cortex/anterior insula, left medial frontal gyrus/anterior cingulate (ACC) and the left mid-posterior insular cortex. Independent associations of FFM and FM with regional GMV were investigated in a more liberal analysis ($p<0.05$, FWE cluster-level). Adjusted for FM and height, FFM covaried negatively with GMV of the mPFC (i.e. bilateral subgenual cingulate extending to the left dorsal ACC) and the right superior temporal gyrus. No significant associations with regional GMV were found for FM after adjustment for FFM and height. **Conclusions:** These data indicate that variance in FM and FFM have differential effects on the human brain. The majority of the regions associated with FFM are part of neural networks which are deemed to be involved in autonomic control and energy homeostasis. Thus, FFM may be more important in central control of energy balance than FM.

276-P
LPS Induces Prolonged Increased Sympathetic Activation of Brown Adipose Tissue in Obese Rats

Megan Sheppard, Barbara Woodside, Giamal Luheshi *Montreal, Canada*

Background: Diet-induced obesity exacerbates and prolongs several aspects of the coordinated response to lipopolysaccharide (LPS) including cytokine expression, fever, social withdrawal, and anorexia. We recently demonstrated that body weight recovery following the anorexia induced by a single intraperitoneal (i.p.) injection of LPS (100 ug/kg) was significantly delayed in diet-induced obese (DIO) rats compared to lean controls. This prolonged suppression of body weight persisted following normalization of caloric intake and locomotor activity. The present study investigated the hypothesis that this effect in DIO rats was due to prolonged increased sympathetic activation of brown adipose tissue. **Methods:** Caloric intake and body weight were measured daily. On day six post injection the brains and intrascapular brown fat were extracted and processed for real-time semi-quantitative PCR. **Results:** As predicted, DIO rats displayed delayed recovery from both LPS-induced anorexia and body weight loss. mRNA expression of uncoupling protein (UCP)-1, an inner mitochondrial membrane protein that uncouples oxidative phosphorylation and ATP synthesis, was higher in brown adipose tissue of LPS-treated DIO rats than lean controls. UCP2, UCP3 and PGC-1α, a transcriptional co-activator upregulated in response to sympathetic activation, were also upregulated. Hypothalamic expression of type-2 deiodinase,UCP2, leptin receptor, neuropeptide Y, agouti-related protein, and pro-opiomelanocortin, all neuropeptides involved in energy regulation in the context of the work presented, was decreased in DIO rats compared to lean controls. **Conclusions:** These data suggest that LPS leads to prolonged increased sympathetic outflow to brown adipose tissue and thermogenic capacity in DIO animals and are indicative of a fundamental change in the thermogenic set point as a consequence of obesity.

277-P
Synphilin-1 Alters Metabolic Homeostasis: A Novel Drosophila Model For Obesity

Jingnan Liu, Tianxia Li, Dejun Yang, Rui Ma *Baltimore, MD*; Timothy Moran *baltimore, MD*; Wanli W. Smith *Baltimore, MD*

Background: Study of the role of synphilin-1 in obesity may provide important insights into its causes and treatments. Synphilin-1, a cytoplasmic protein with unclear function, was initially identified as an interaction partner of alpha-synuclein, and has implications in Parkinson's disease pathogenesis related to protein aggregation. **Methods:** Using the UAS/GAL4 system to express human synphilin-1 in Drosophila induced metabolic imbalances resulting in obesity-like phenotypes. **Results:** Overexpression of synphlin-1 in neurons but not peripheral cells increased the body-weight of flies compared to that of non-transgenic controls. Synphilin-1 increased food intake but did not affect locomotor activity. Synphilin-1 increased the levels of triacylglycerol, and the size of fat body cells and lipid droplets, indicating that synphlin-1 increased lipid-fat disposition. Survival studies showed that synphilin-1 transgenic flies were more resistant to food deprivation. Syphilin-1 regulated lipin gene expression that may participate in synphilin-1-induced fat deposition and starvation resistance. **Conclusions:** These studies demonstrate that synphilin-1 expression affects energy homeostasis in ways that foster positive energy balance and provide a useful obesity model for future pathogenesis and therapeutic studies.

278-P
Zanamivir and Pyridoxine Increase Dopamine Levels on Young Rat Brain in Presence of Sucrose

David Calderon *Mexico City, Mexico*

Background: Recently, the use of zanamivir for the treatment of swan influenza caused by AH1N1 (Sw1V) virus is increasing considerably in children of Mexico. However, its action and possible effects on dopaminergic system when administered to hyperglycemic subjects is until now unknown and this is the core objective of the present study. **Methods:** Thirty young female Wistar rats (150g) were used in the study and were divided into 6 groups of 5 animals each. Zanamivir (2.5mg/kg) and Pyridoxine (10mg/kg) in the presence or absence of Sucrose 20% were intraperitoneally administered to the rats for 5 consecutive days. The administration of sucrose was through drinking water. The animals were sacrificed by decapitation at the end of the treatment. The levels of dopamine (DA) were measured in the brain using fluorescence methods. **Results:** In hemisphere regions of the group that received pyridoxine and sucrose, there was a significant decrease in the levels of dopamine ($p<0.05$) with respect to the control group. However, the said levels significantly increased ($p<0.05$) in the groups that received pyridoxine + sucrose and zanamivir + sucrose in comparison with those treated with only pyridoxine and sucrose. In the region of cerebellum/medulla oblongata, the levels of dopamine significantly increased ($p<0.05$) in the groups that received pyridoxine + sucrose and zanamivir + sucrose compared with the group that received sucrose. **Conclusions:** The results suggest that the administration of zanamivir and pyridoxine increase the dopaminergic metabolism of animals with hyperglycemia.

279-P[DT]
Neural White Matter and Adiposity Influenced By Common Genetic Factors in Mexican-Americans

Elena Spieker, Peter Kochunov, Laura M. Rowland *Baltimore, MD*; Ravindranath Duggirala, Rene L. Olvera, Laura Almasy, John Blangero, David C. Glahn, Joanne E. Curran *San Antonio, TX*

Background: Abdominal adiposity increases risk of metabolic diseases and neural deficits in Mexican-Americans (MA). The genetic influence of adiposity to white matter (WM) integrity has not been studied in a large homogeneous sample. We hypothesized that genetic factors are jointly associated with obesity and reduced WM integrity in MA. **Methods:** Genetic (ρG) and environmental (ρE) correlations between adiposity ((body mass index (BMI; kg/m^2); waist circumference (WC)) and WM integrity (fractional anisotropy (FA)) were calculated in a homogenous sample of MA (N=576, 60% females, 51% obese; ages 18-85y; 44.8±13.8). Whole-brain and regional FA values for four major WM tracts (corpus callosum (CC), cingulum (Cg), superior longitudinal fasciculus (SLF), and fronto-occipital fasciculus (FoF)) were calculated from diffusion tensor imaging data (DTI; 1.7×1.7×3 mm; 55 directions). **Results:** Additive genetic factors explain intersubject variance in BMI (heritability, h^2=0.38), WC (h^2=0.31), and FA (h^2=0.52). BMI shared a significant proportion of genetic (ρG) and environmental (ρE) variance with FA in the splenium of the CC (ρG=-.54, p=.01; ρE=.40, p=.03). Even stronger evidence was observed for shared variability in WC and FA in the splenium (ρG=-0.88, p<.001; ρE=.49, p=.005). **Conclusions:** We found strong evidence for shared genetic variability between anthropometric measurements of obesity and the integrity of cerebral WM in the splenium. This suggests that common genetic factors influence these traits. The correlation between BMI/WC and FA indicated a genotype-by-environment interaction, which may point to regional WM impairments associated with lifestyle-induced obesity.

280-P
Neuroendocrine Changes in the Hippocampus and Their Effects on Systemic or Peripheral Metabolism

Nicole M. Ruiz, Luis Pacheco, Christa G. Ramirez, Andrea D. Fragoso, Bianca Farrell, Tammy Munoz, Emilio R. Garrido-Sanabria, Saraswathy Nair *Brownsville, TX*

Background: We previously reported a correlation between pilocarpine induced epilepsy and weight gain in male epileptic rats. Significant gene expression changes were observed in glucocorticoid metabolism genes in the hippocampus of epileptic rats, post status epilepticus (SE) up to 2 months. **Methods:** Our aim in this follow up study was to track a group of control (n

 For author conflict of interest information, see page S250

= 2) and epileptic (n = 6) rats for a period of 1 year, measuring food and fluid intake, body weight gain and behavior using the sucrose preference test and open field test. At the end of 1 year, hippocampus, kidney, liver, adipose, skeletal muscle and heart tissues were extracted and are being used for mRNA and protein expression analyses. **Results:** Preliminary results reveal a significant difference in Hsd11b1 (Hydroxysteroid (11-beta) dehydrogenase type 1) mRNA expression in the hippocampus (t (6) = -2.96, p = 0.03) and a significant difference in glucocorticoid receptor mRNA expression in adipose tissue (t (6) = 2.42, p = 0.05). No statistically significant differences were found in sucrose consumption between control and epileptic rats (t (6) = 0.53, p = 0.62), although a trend was observed in that control rats consumed more sucrose, compared to epileptic rats. No significant difference in food and fluid intake was observed. Although the plasma levels of stress markers corticosterone, melatonin and adrenocorticotrophic hormone correlated with body weights at 12 months after onset of SE, we have not observed a significant increase in these stress hormones in epileptic rats. **Conclusions:** We conclude that glucocortcioid metabolism may be affected in adipose tissue and hippocampus, in epileptic rats 12 months post SE, leading to metabolic dysregulation.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Neuropeptides

281-P
Adult Mice Maintained on a High-Fat Diet Exhibit Object Location Memory Deficits and Altered Hippocampal Gene Expression

Frankie D. Heyward, Rosicka G. Walton, Matt S. Carle, Mark A. Coleman, W. Timothy Garvey, J. D. Sweatt *Birmingham, AL*

Background: Mounting evidence has established that diet-induced obesity (DIO) is associated with deficits in hippocampus-dependent memory. The bulk of research studies dealing with this topic have utilized rats fed a high-fat diet as an experimental model. To date, there has been a paucity of research studies that have established whether the memory deficits exhibited in DIO rats can be recapitulated in mice. Moreover, the majority of experiments that have evaluated memory performance in rodent models of DIO have utilized memory tests that are essentially aversive in nature (i.e., Morris water maze). **Methods:** The current study sought to fill an empirical void by determining if mice maintained on a high-fat diet exhibit deficits in two non-aversive memory paradigms: novel object recognition (NOR) and object location memory (OLM). **Results:** Here we report that mice fed a high-fat diet over 23 weeks exhibit intact NOR, albeit a marked impairment in hippocampus-dependent OLM. We also determined the existence of corresponding aberrations in gene expression within the hippocampus of DIO mice. DIO mice exhibited significant reductions in both SIRT1 and PP1 mRNA within the hippocampus. **Conclusions:** Our data suggest that mice maintained on a high-fat diet present with impaired hippocampus-dependent spatial memory and a corresponding alteration in the expression of genes that have been implicated in memory consolidation.

282-P
Adipogenic Effect of QRFP Peptides in 3T3-F442A and Its Expression in Adipose Tissue Depots in Wistar Rats

Marbella Chavez, Juventino Colado, Patrick Mailloux, Luis A. Lima, Guadalupe Bravo *Mexico city, Mexico*

Background: The RFamide peptides exert both anorexigenic and orexigenic effects injected centrally. RFamide QRFP (Pyroglutamylated arginine-phenylalanineamide peptide) peptides are orexigenic but it is not clear wether they exert peripheral effects. **Methods:** 3T3-F442A preadipose cells were maintained and allowed to differentiate with several concentrations of QRFP peptides. Lipid accumulation in 3T3-F442A cells was assessed by Oil Red O. RNA and protein extraction of 3T3-F442A, adipose tissues; subcutaneous, visceral, omental, perirenal were made and hypothalamus as positive control of expression. The expressions of QRFP and GPR103 were analized by RT-PCR and western blot. Also primary cultures of rat preadipocytes were assesed by RT-PCR. **Results:** We evaluated the effect of the QRFP peptides rat 43RFa, human 26RFa, rat 26RFa and the fragments rat 26RFa(1-16) and rat 26RFa(20-26) on 3T3-F442A adipogenesis and we found that they increased lipid accumulation in a concentration-dependent manner. We determined that mRNAs for QRFP and its receptor, GPR103, were expressed in 3T3-F442A preadipocytes but not in mature adipocytes. QRFP peptides stimulated adipogenesis in 3T3-F442A but not their proliferation. Also the QRFP mRNAs and proteins were expressed in omental, epididymal, perirenal and subcutaneous fat depots of wistar rats. Moreover QRFP mRNA was expressed in primary cultures of perirenal fat and its expression was favored in mature adipocytes. **Conclusions:** QRFP peptides play an important role in regulating metabolism and differentiation of adipose tissue by acting directly on this tissue, either endocrinally or autocrinally. The proadipogenic effect is not mediated by GPR103. The QRFP expression in primary cultures depends of differentiaton. Future studies are necesary for decode molecular mechanisms of QRFP.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Neuronal Control of Satiety

283-P
Effects of Allopregnanolone on Feeding Behavior in Male Wistar Rats

Ellinor Holmberg, Maja Johansson, Torbjörn Bäckström, Magnus Löfgren, David Haage *Umeå, Sweden*

Background: The action of many endogenous factors that contribute to excess eating is still not well understood. GABAergic transmission in the hypothalamus is needed for normal feeding regulation. The stress-induced progesterone metabolite allopregnanolone is one highly potent endogenous positive GABAA-receptor modulating steroid (GAMS) and in the light of this, we were encouraged to investigate the effect of allopregnanolone in different feeding situations. We hypothesize that the effect of allopregnanolone depends on the activity state of AgRP-neurons, which have in rats a higher activity in the active (dark) than in the inactive (light) period of the day. **Methods:** Chow intake was measured after acute subcutaneous injections of allopregnanolone in both the active and inactive period of the day. Eating sessions were recorded by a digital film camera, and analyzed to detect meal patterns. **Results:** Acute injections of allopregnanolone lead to a 400% increase in chow intake, with a larger effect in the active period ($Z = -4.29$; $p \leq 0.001$). In the inactive period only a few vehicle treated rats ate, but administration of allopregnanolone increased this fraction significantly. In contrast, in the active period, 80% of the vehicle treated rats ate and after administration of allopregnanolone the amount of ingested food was further increased. Allopregnanolone treated rats also started their meal earlier compared to vehicle (chi-sq(df=1)=8.02; $p \leq 0.05$). **Conclusions:** Allopregnanolone seems to act at several levels of feeding, i.e. both initiating food intake, increasing the amount of food ingested as well as the duration of a meal. The disparity in the effect of allopregnanolone between the active and the inactive period may be the diurnal differences in activity of GABAergic feeding regulating neurons.

284-P
Midbrain Dopaminergic Regulation of Novelty Seeking Traits Are Altered in Obese Females

Julia P. Dunn, Shane W. Savage, David H. Zald, Robert Kessler, Naji N. Abumrad *Nashville, TN*

Background: Novelty seeking traits (NS) have a negative relationship with autoregulatory midbrain dopamine type 2 receptor (DA D2R) binding potential (BPND) in the region of the substantia nigra (SN). We hypothesized that novelty seeking traits would be related to binge eating and that SN D2R BPND and NS would have different relationships in lean and obese. **Methods:** We measured SN D2R BPND in a fasting state using PET and [18F]fallypride, a D2/D3 radioligand in lean and obese females. Participants completed Tridimensional Personality Questionnaire-Novelty-Seeking Scale (TPQ-NS) and binge eating scale (BES). Data reported as mean±SD, lean and obese respectively. **Results:** We studied 8 lean (BMI 22±3, kg/m2, weight 59±7 kg) and 19 obese (BMI 39±5kg/m2, weight 106±16 kg) females of similar age (41±9 vs 39±8, p=0.5). TPQ-NS scores were similar in lean and obese (14±4 vs 15±6, p=0.9), while BES scores were lower in lean vs. obese (6±6 vs12±7, p=0.02). SN D2R BPND was similar in lean and obese (2.5±0.1 vs 2.7±0.3, p=0.16). TPQ-NS and BES scores were not significantly

related in the group as a whole (p=0.6) nor in lean (p=0.9) or obese only (p=0.7). SN D2R BPND and TPQ-NS scores were not associated in the group as a whole (p=0.6), while a significant negative relationship was seen in lean only (r=-0.741, p=0.048) but not in obese (p=0.884). **Conclusions:** We did not find a significant relationship between TPQ-NS and BES. Our data confirmed in healthy lean females that decreased auto-regulatory midbrain DA D2R BPND occurs with increased novelty seeking traits. We did not find a similar relationship in obese. This data suggest a possible loss of the normal regulation of novelty seeking behaviors in the obese. Further investigation is needed to determine the role of central regulation of novelty seeking traits in the obese.

285-P
Sex-based Differences in the Hormonal and Behavioral Responses to Energy Imbalance

Elizabeth A. Thomas, Jamie L. Bechtell, Elizabeth H. Kealey, Susan L. Johnson, Daniel H. Bessesen, Marc-Andre Cornier *Aurora, CO*

Background: We previously reported significant sex effects in adult behavioral responses to overfeeding. Here we report the findings of a study designed to examine the sex-based effects of short-term energy imbalance on appetite ratings and hormones. **Methods:** 58 individuals were recruited as Obese Prone (OP) or Obese Resistant (OR) based on self-identification, BMI, personal and family weight history. 29 OP (14 M, 15 F) and 29 OR (15 M, 14 F) subjects were studied across Eucaloric (EU), Overfed (OF), and Underfed (UF) conditions, in a randomized, crossover design. Each study period was performed during the follicular phase of the menstrual cycle for women and included a 3 day run-in diet, 1 day controlled feeding (basal energy needs for EU, 40% above/ below basal energy needs for OF and UF), and a test day. Visual analog scales (VAS) for hunger and fullness and blood sampling for ghrelin, PYY and leptin were performed every 30 minutes for 3 hours after a breakfast shake on the test day, and the area under the curve (AUC) for each was calculated. **Results:** There were no differences between M and F for VAS overall or for the difference between phases (EU-OF or EU-UF). Leptin was greater in F than M ($p<0.001$), and remained higher in F in all conditions even after accounting for fat mass ($p<0.001$ for EU and UF, $p=0.004$ for OF). Additionally, the increase in leptin with OF was greater in F than M ($p=0.034$). Although overall there were no sex differences for ghrelin or PYY, there were sex-group interactions. Within the OR group, the reduction in ghrelin with OF was greater in M than F ($p=0.03$), and the reduction in PYY with UF was greater in F than M in the OP group only ($p=0.035$). **Conclusions:** There are sex-based differences in the hormonal response to energy imbalance, but interestingly these do not translate to differences in subjective appetite ratings.

286-P
Obesity Proneness Is Associated With Altered Brain Structure

Marc-Andre Cornier, Jason Smucny, Jamie L. Bechtell, Lindsay Eichman, Jason R. Tregellas *Aurora, CO*

Background: We previously reported that individuals at risk for weight gain have altered neuronal responses to visual food cues, but it is not clear whether functional differences are related to altered brain structure. **Methods:** Here we report the findings of a study designed to examine the differences in regional grey matter volume (GMV) in adults recruited as either obese prone (OP) or resistant (OR) based on self-identification, BMI and personal/family weight history. Magnetic resonance imaging (MRI) was performed in 29 OP (14 men, 15 women) and 29 OR (15 men, 14 women) healthy adults. Voxel-based morphometry (VBM8) was used to identify grey matter volume differences between groups. **Results:** When adjusted for age, sex and total brain volume, OP had significantly decreased GMV in the insula, orbital frontal cortex (OFC) and cerebellum as compared to OR. Adjusting for fat mass did not impact these results. Insula GMV was negatively correlated with leptin concentrations and measures of hunger. In fact, group differences in insula GMV were completely driven by leptin. **Conclusions:** These findings suggest that individuals at risk for weight gain have structural differences in brain regions known to be important in energy intake regulation and that these differences, particularly in the insula, may be mediated by leptin and ultimately influence eating behaviors.

287-P
Sex But Not Obesity Proneness or Energy Imbalance Impacts the Neuronal Response to Sweet Taste

Marc-Andre Cornier, Megan E. Shott, Jamie L. Bechtell, Guido K. Frank *Aurora, CO*

Background: We have previously shown that propensity for weight gain and energy balance state, as well as, sex are important determinants of the neuronal response to visual food cues. It is not clear, though, whether these factors also impact the neuronal response to taste. **Methods:** The objective of this study was to examine the neuronal response to sweet taste in response to energy imbalance in individuals recruited to be obese prone (OP) or obese resistant (OR) based on self-identification, BMI, and personal/family weight history. 25 OP (13 M, 12 W) and 24 OR (12 M, 12 W) subjects were studied in the eucaloric (EU), overfed (OF) and underfed (UF) conditions in a randomized crossover design. Each study period was performed during the follicular phase of the menstrual cycle for women and included a 3 day run-in diet, 1 day controlled feeding (basal energy needs for EU, 40% above/ below basal energy needs for OF and UF), and a test day. On the test day fMRI was performed in the acute fed stated while subjects received in random order 60 trials each of 1M sucrose solution (SU), no solution (NO) or artificial saliva (AS) following a cue predicting the taste. **Results:** Overall, there were no significant differences in the neuronal response to SU as compared to AS between groups (OR-OP) or between feeding conditions (EU-OF-UF). There were, however, sex-based differences with men having overall greater neuronal response (SU>AS) in the medial and dorsolateral prefrontal cortices, orbitofrontal cortex, insula and caudate/putamen with these effects being most prominent in the UF condition. **Conclusions:** In summary, the neuronal response to sweet taste is not affected by propensity for weight gain or short-term energy imbalance. There are, though, important sex-based differences in the neuronal responses to sweet taste which may explain differences in eating behaviors.

288-P
Obese Women Show Increased Activation of Frontal Reward Regions to Odors of Foods Eaten to Satiety

William J. Eiler, Mario Dzemidzic, Rose Case, Robert V. Considine, David A. Kareken *Indianapolis, IN*

Background: Sensory-specific satiety (the decrease in reward value in a food that is eaten to satiety) plays an important role in meal termination and food choice. Altered sensory-specific satiety could therefore be an important factor in obesity. Using functional magnetic resonance imaging (fMRI), we studied the blood oxygenation level dependent (BOLD) response to two food odor types: the odor of a food consumed to satiety and the odor of a non-consumed food. **Methods:** BOLD activation to food (F; pasta and beef) odors in lean (n=16, BMI 22.1±0.6 kg/m2, age 23.4±1.3 yr) and obese (n=11, BMI 35.8±1.2 kg/m2, age 30.1±1.9 yr) women was evaluated under fed and fasting conditions (on separate, randomized days) in a 3T Siemens Trio-Tim scanner, and analyzed using SPM8. The main contrast of interest compared activation from the odor of (1) an eaten food (FE) shortly after a meal (FEFed) to (2) an average of the non-eaten (FNE) food after a meal (FNEFed) and eaten and non-eaten food odors while fasting (FEFast & FNEFast): [(FEFast+FNEFast +FNEFed)/3] – FEFed. **Results:** When tested for differences across lean and obese groups, there was a significant BOLD contrast within left orbitofrontal cortex (lOFC), left frontopolar cortex, the right anterior cingulate, and the medial prefrontal cortex of obese individuals— an effect driven primarily by increased FEFed activation in obese subjects. **Conclusions:** In leans, brain reward areas showed decreased BOLD responses to odors of eaten foods during satiety. By contrast, in obese women the BOLD response to eaten foods was potentiated. This suggests not only altered brain signaling of satiety in obesity, but a possible sensitization to the cues of food that has just been consumed. Supported by NIDDK DK089070.

289-P
Individual Genetic Variations Related to Satiety and Appetite Control Increase Risk of Obesity in Preschool Age Children From STRONG Kids Program

Yingying Wang, Anthony Wang, Margarita Teran-Garcia *Urbana, IL*

Background: The hypothalamus satiety and appetite control system is complex and involves many pathways. The leptin-melanocortin signaling path-

way is well-recognized for its critical function in appetite control. The aim of this study was to investigate whether the previously reported genetic associations between the single-nucleotide polymorphisms (SNPs) within this pathway and phenotype of obesity hold in Caucasian preschool children in the STRONG Kids Program cohort 1. **Methods:** Height and weight were measured in 128 Caucasian preschool children from the STRONG Kids Program (age 39.9 ± 2.0 months, BMI 16.5 ± 1.2 kg/m2). Genomic DNA was extracted from saliva samples and used for genotyping. Eight SNPs within or near the BDNF, LEPR, FTO, PCSK1, POMC, TUB, LEP, MC4R genes were genotyped by either FP-TDI assay or TaqMan SNP genotyping assay. Statistical analyses were performed with SAS 9.2 and p-link software to test the association between genotype and anthropometric data, and to calculate the genetic scores. **Results:** In this cohort, 25 children (19.5%) were overweight and 8 children (6.3%) were obese. There were significant associations between the height-for-age z-score and the rs2272382 SNP on TUB (P=0.0021) after adjusting for breastfeeding duration. The SNP rs17782313 in the MC4R gene also showed significant association with height-for-age z-score (P=0.038) before, but not after, adjusting for breastfeeding duration. As the number of risk allele increases, the risk of being obese or showing the first signs of being obese also increases. **Conclusions:** Our observation suggested that genetic variants on TUB, MC4R, BDNF and LEP are related to the risk of obesity in our cohort; as the number of risk alleles increases, the risk of early-onset obesity increases.

290-P
Obesity Induced By High-Fat Diet Modifies Rat Hypothalamic Proteome

Regina L. Watanabe, Amanda P. Pedroso, Mônica M. Telles, Maria Claudina C. Andrade, Claudia O. Nascimento, Lila M. Oyama *São Paulo, Brazil*; Jose C. Rosa *Ribeirão Preto, Brazil*; Dulce E. Casarini, Eliane B. Ribeiro *São Paulo, Brazil*

Background: Impairment of hypothalamic mechanisms controlling energy homeostasis contributes to obesity caused by hyperlipidic diet. We investigated the effect of high-fat saturated diet on hypothalamic proteome. **Methods:** Male Wistar rats ate either balanced or high-fat lard-enriched chow (15% and 52% energy from fat, respectively) for 2 months. Hypothalamic proteins were analyzed by two-dimensional gel electrophoresis and MALDI-TOF/TOF–MS. MASCOT server was used to search Swiss-Prot protein database. Only proteins with false discovery rate of 0% were considered in the results analysis. **Results:** The high-fat rats had increased body weight and fat pads weight. The high-fat diet caused significant ($p<0.05$) density increase of 8 spots and decrease of 7 spots. Two over-expressed and 5 under-expressed proteins were identified. Five proteins are enzymes important in energy metabolism pathways, 2 participate in neuronal growth and neurotransmission and 1 is involved in transcription regulation. **Conclusions:** The findings show that the chronic consumption of hyperlipidic saturated diet caused obesity and modified the hypothalamic protein profile. The functions of the identified proteins indicate that important hypothalamic processes are affected by the diet and may participate in the disturbances leading to obesity by high-fat intake.

291-P
Effects of Rimonabant, a Cannabinoid-1 Receptor Antagonist, on Satiety Signaling in Overweight People With Schizophrenia: A Randomized, Double-Blind, Pilot Study

Kimberly R. Warren, Robert W. Buchanan, Stephanie M. Feldman *Baltimore, MD*; Robert Conley *Indianapolis, IN*; Jared Linthicum, M. Patricia Ball, Fang Liu, Robert P. McMahon, David Gorelick, Marilyn A. Huestis, Deanna L. Kelly *Baltimore, MD*

Background: Weight gain is a serious side-effect of many second-generation antipsychotics (SGAs) and may be the result of a disruption in satiety signaling. Rimonabant, a cannabinoid-1 (CB1) receptor inverse agonist/antagonist, promotes weight loss in the general population and may exert its effect by reducing disruptions in satiety signaling. **Methods:** Baseline, 7-, and 16-wks of treatment with rimonabant (20 mg/day) vs placebo effects on satiety were tested in people with schizophrenia clinically stable on SGAs with BMI ≥ 30 kg/m2 or BMI ≥ 27 kg/m2 with hyperlipidemia. An exercise/dietary counseling group was offered weekly. Upon fasting, a standardized breakfast preload was administered followed by a pre-weighed test meal (Wheat Thins (WT), Nilla Wafers (NW)) using a 60-min. inter-meal interval; and VAS hunger ratings were taken pre- and post-preload, then every 30 min. Fifteen participants were randomized (7 rimonabant, 8 placebo); 5 completed in each group (target enrollment of 60 not met due to trial termination due to withdrawal of rimonabant from European market). **Results:** Though not statistically significant, there were trends for decreased test meal consumption in the rimonabant group, compared to placebo, for total (p=0.053, ES=0.73) and WT (p=0.089, ES=0.44) kcal. Treatment differences were consistent at visits 7 and 16, with fewer total and WT kcals consumed in the rimonabant condition than placebo (least square means). Nilla Wafer consumption did not differ between groups. There were no significant group differences in weight or BMI. **Conclusions:** No statistically significant changes in satiety were associated with rimonabant in this small sample of people with schizophrenia. There was a trend toward lower caloric consumption in the rimonabant group compared to placebo suggesting that the endocannabinoid system may be involved with satiety signaling.

292-P
Appeal of and Brain Response to Fattening Foods Predict Subsequent Food Intake and Choices During Post-Meal Satiety

Susan J. Melhorn, Sonya Mehta *Seattle, WA*; Anne Smeraglio *Portland, OR*; Vidhi Tyagi, Thomas J. Grabowski, Michael Schwartz, Ellen A. Schur *Seattle, WA*

Background: Satiety signals and their hindbrain targets are well established, but upstream CNS processes that underlie our subjective experience of satiety and suppress food intake are less well defined. **Methods:** After an overnight fast, 23 normal-weight subjects underwent an fMRI scan while viewing images of fattening (F) and non-fattening (NF) food, then ate a standardized breakfast and were re-imaged at a randomly assigned time (30-300 min) post-meal to vary satiety. Serial appetite and food appeal ratings as well as total intake and macronutrients consumed at an ad-lib buffet (after the 2nd fMRI) were measured and correlated with activation by F>NF food cues in *a priori* regions of interest. **Results:** In both the fasted (r=0.46, p=0.03) and post-meal (r=0.59, $p<0.01$) states, hunger was positively correlated with appeal of F but not NF food. Moreover, greater appeal of F food predicted higher buffet intake (r=0.63; p=0.001). Activation in the amygdala (AMY) was negatively associated with fullness during fasting (L: r=-0.52; R: r=-0.58, both p=<0.01) and post-meal (R: r=-0.46, p=0.03). However, a positive correlation emerged post-meal between fullness and activation in the bilateral dorsal striatum (caudate+putamen; R: r=0.44; L: r=0.45, both $p<0.05$). Activation did not predict total buffet intake, but in the frontal medial cortex (r=0.49, $p<0.05$), R AMY (r=0.49; $p<0.05$) and bilateral nucleus accumbens (R: r=0.57, $p<0.01$; L: r=0.43, $p<0.05$) less activation by F food cues was associated with eating a lower % fat at the buffet. **Conclusions:** Among normal-weight individuals, satiety reduces the subjective appeal of F but not NF food and alters brain responses to F food cues in areas mediating reward learning and motivated behavior. These processes are implicated in suppressing food intake after a meal, particularly of high fat food, and may be impaired in obesity.

293-P
The Neural Response of Lean Subjects to Visual Food cues in a Fasted vs. Satiated State: An FMRI Approach

Pooja Sarkar, Claudia Huerta, Muhammad Abdul-Ghani, Ralph A. DeFronzo, Timothy Duong *San Antonio, TX*

Background: Deciphering the pathology of obesity depends on our understanding of how the brain determines and manages satiety. The neural responses of obese patients to satiety may be impaired, a difference that indicates lean and obese subjects do not process visual food stimuli in the same way. Our aim was to identify brain areas involved in satiety in lean subjects, with the intention of expanding our study to include to the neural response of obese subjects to visual food cues. **Methods:** fMRI scans of 3 healthy lean subjects were obtained by presenting subjects with visual stimuli of food vs. non-food images (high caloric food images vs. objects vs. control blank screen) following 8 hrs of overnight fasting. A block paradigm was used to contrast food vs. non-food ("object") images with a control blank screen. Following 15 min scanning, subjects ingested a standard glucose solution. Post glucose-ingestion, a different set of visual stimuli were presented for 15 more minutes. fMRI parameters: EPI with TR = 3000ms, TE = 3 0 ms, and spatial resolution of 1.7 x 1.7 x 5-mm sagittal slices. Total scan time: 30 min A z map of the food minus object contrast for all scans was generated

using FSL analysis software. **Results:** The insula and orbitofrontal cortex are responsive to visual food cues in the fasted state. Following glucose intake we found the activation of these regions decreased. The inferior parietal lobe and L/R postcentral gyrus were only active during the satiated state, following glucose ingestion. **Conclusions:** The insula and OFC are potential regions of interest to study further in obese subjects, as the dysregulation of these areas may contribute to the etiology of obesity. Moreover, the involvement of the postcentral gyrus and inferior parietal lobe in the satiated state may point to regions that may be less responsive in obese subjects.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Neuroscience — Other

294-P
Doubly-Labeled Water Estimates of Food Intake Is Positively Related to Activity in Attentional and Gustatory Brain Regions When Anticipating Palatable Food Receipt

Kyle S. Burger, Eric Stice *Eugene, OR*

Background: Data indicate that obese versus lean individuals show greater response to food cues in attention, reward valuation, and gustatory brain regions, and reduced response to food receipt in dopamine target regions, implying that consistently being in a positive energy balance may prompt altered neural responses to food stimuli. Research has not evaluated whether objectively measured elevated caloric intake in lean individuals is associated with aberrant neural responsivity to food stimuli relative to lean individuals who are consuming fewer calories. **Methods:** We tested whether an objective measure of habitual intake, adjusting for basal energy needs, was related to neural activation in reward, attentional and gustatory regions of the brain in response to anticipated receipt and receipt of a palatable food. Lean adolescents (n=155; BMI=20.8±1.9; age=15.9±1.1y) underwent functional MRI during visually cued receipt of milkshake versus tasteless solution, a doubly-labeled water assessment of total energy intake (TEI), and completed an assessment of resting metabolic rate (RMR). **Results:** Controlling for RMR, when anticipating milkshake receipt, TEI was positively correlated with activation in attentional related regions of the brain, specifically the visual (Z=4.11, k=120) and anterior cingulate (Z=3.87, k=14) cortices and a gustatory region (frontal operculum; Z=3.99, k=12). However, no significant correlation was observed between TEI and activation during milkshake receipt. **Conclusions:** These results suggest that lean adolescents that consume greater amounts of food have a heightened attentional/gustatory response to food cues. Importantly, previous data show hyper-responsivity to food cues predicted weight gain and lack of success in weight loss efforts.

295-P
Interaction of Dieting Status With Reward Response to Palatable Food Cues: An fMRI Study

Alice V. Ely, Anna Rose Childress, Michael R. Lowe *Philadelphia, PA*

Background: Prior neuroimaging research from our lab (Coletta et al, 2009, J. Ab. Psych) has shown that individuals high or low in restrained eating demonstrate brain activation in response to food cues that parallels their food intake in lab studies. **Methods:** We extended these findings by comparing normal weight Nondieters, Historical Dieters (who typically counterregulate), and Current Dieters under the conditions that mimicked past lab studies. Participants were shown pictures of highly and moderately palatable foods while being scanned in an fMRI BOLD paradigm following an eight-hour fast and again after a liquid meal. **Results:** In the Fed state, Historical Dieters showed elevated reward circuitry activation in response to highly palatable food, as compared to Nondieters, Current Dieters and to themselves when fasted. In contrast, Current Dieters showed increased reward activation in the Fasted state in both within- and between-group comparisons, in line with extant behavioral research. **Conclusions:** The parallels between eating behavior and regional brain activation across groups suggest that a neurophysiological vulnerability to overeat exists in normal weight young women that may increase susceptibility to weight gain in the long term.

296-P
Body Mass Index in Children Is Associated With Altered Brain Gray Matter Volumer: Implications For the Neurobiological Mechanisms of Obesity

Ronald L. Cowan, Evan Dalton, Carrie Black, Christina Di Iorio, Tristan J. Watkins, Mary Dietrich, Aize Cao, Jennifer Blackford, Margaret M. Benningfield, Mac Buchowski, Ronald M. Salomon *Nashville, TN*

Background: Obesity is associated with altered brain gray matter in adults. If gray matter volume (GMV) alterations are present in obese children, this would suggest that structural brain changes are present very early in the course of obesity. Using voxel-based morphometry (VBM), we examined the relationship between body mass index (BMI) and GMV in pre-adolescent children (ages 8-12). **Methods:** We obtained structural MRI scans from 67 children - 33 lean (BMI 17.56 kg/m2 ± 2.5) and 34 obese (BMI 28.70 kg/m2 ± 6.3). Using SPM5 and standard VBM analysis with corrected $p<0.05$, we compared brain gray matter volume between groups and also examined the relationship of BMI as a continuous variable to GMV (while controlling for age, gender and intracranial volume) within each group. **Results:** There were no between group differences in GMV ($p>0.05$, corrected). However, in lean children, BMI correlated positively with GMV in right frontal lobe regions (BA 11 and 47) and cerebellum while there were no regions in which BMI was negatively correlated with GMV. This effect was lost in the obese group, as the strong positive association seen in frontal regions in lean children became negative in obese children. Within the obese child group, BMI was strongly negatively associated with GMV in cerebellum, thalamus, and precuneus. **Conclusions:** Healthy BMI in children was associated with greater GMV in multiple brain regions, including prefrontal cortex while BMI was not positively correlated with GMV in any brain region in obese children. In contrast, greater BMI predicted lower GMV in multiple brain regions in obese children. These findings suggest the possibility that structural brain changes influence or result from obesity. Future investigations are needed to examine the order of causation, potential reversibility, and treatment implications of these findings.

297-P
A Functional MRI Investigation of the Neural Correlates of Declarative and Recognition Memory in Obese Patients With and Without Major Depressive Disorder (MDD)

Maria R. Restivo, Margaret C. McKinnon, Benicio Frey, Geoff Hall *Hamilton, Canada*; Valerie Taylor *Toronto, Canada*

Background: There is now emerging evidence for an association between subtle cognitive dysfunction and widespread endocrine disturbances such as obesity. Given that patients with MDD experience higher rates of obesity than the general population, this may play a role in the cognitive dysfunction often seen in patients with MDD. This study examined the impact of obesity on declarative and recognition memory in patients with MDD, an area known to be susceptible to impairment in MDD patients. **Methods:** This study compared declarative and recognition memory functioning in 16 obese subjects (BMI > 35 kg/m2) with MDD, 16 obese subjects without MDD and 16 healthy non-obese controls prior to intervention at the St. Joseph's Healthcare bariatric surgery program. Subjects (ages 18 – 60) were administered a standardized battery of neuropsychological tests aimed at establishing performance on tests of declarative memory and intellectual functioning. Warrington's Recognition Memory Task words subtest was adapted to be performed in a 3T functional magnetic resonance imaging (fMRI) scanner; neural activation patterns during both encoding and recognition processes were compared between groups using subtraction methods. In addition, anatomical fMRI data was obtained to investigate potential volumetric abnormalities in the hippocampus and prefrontal cortex, neural structures thought to be critical in memory. **Results:** Obesity exerts a moderate negative effect on declarative and recognition memory; this effect is further exacerbated in patients with major depressive disorder (adjusted for age and gender). **Conclusions:** Obesity may have a negative impact on memory that is exacerbated in the presence of a mood disorder such as Major Depression. Given that different psychiatric drugs confer different risks of weight gain, this study will impact treatment in this vulnerable population.

For author conflict of interest information, see page S250

298-P
The Unique Knotted Structure Regulates Leptin Function

Ellinor Haglund, Joanna I. Sulkowska, Zhao He, Gen-Sheng Feng, Patricia A. Jennings *La Jolla, CA*; José N. Onuchic *Houston, TX*

Background: Investigating the role of mutations in mediating leptin related diseases requires the understanding of the structure and folding on the formation of the fully active protein. **Methods:** Structure based models (SBM) together with folding equilibrium studies and biological assays. **Results:** Leptin folds into a four-helix bundle that binds to the extracellular receptor to initiate signaling. A prominent feature that has been overlooked is the unique knotting of the structure as a result of a disulphide bond forming a 50-residue loop creating a lariat through which two of the helices must thread through. We term this here-to-for undescribed feature a 'cysteine-knotted helical bundle'. An open question that remains is the role the knot plays in leptin function. In the disulphide-bonded structure the N-terminal region 'threads' through the lariat to reach the geometrically complex native state. Reducing the disulphide breaks the lariat into an un-knotted linear protein with less constrains in its denatured state. Even though the complexity added by knot formation is important in the folding mechanism, the folding landscape appears to be very similar. In contrast to previous reports, we find that formation of the disulphide bridge is not necessary for activation of the JAK/STAT signaling pathway. However, the reduced, unknotted conformation is less active than the knotted bundle. Therefore, defects in the formation of the lariat lead directly to the function of leptin. **Conclusions:** We can, for the first time, explore the full transition from theoretical models to experimental approaches to investigate the folding mechanism of leptin.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Intervention Studies — Behavioral - Adult

299-P
Self-Control in Food Choice Decision-Making Changes After Participating in a Behavioral Weight Loss Intervention

Kathryn E. Demos, Jeanne M. McCaffery *Providence, RI*; Antonio Rangel *Pasadena, CA*; Todd A. Hare *Blümlisalpstrasse, Switzerland*; Graham Thomas, Rena R. Wing *Providence, RI*

Background: A critical factor in successful weight control may be the ability to exert self-control over food choices – to refuse tasty but unhealthy foods, or opt for healthier foods in the face of tastier options. Using a food choice decision-making task, this study addresses the questions of whether obese and normal weight individuals (NW) differ in their use of self-control in food choices, if obese individuals increase their use of self-control after a behavioral weight loss intervention, and whether potential differences/changes are due to food preferences or the value placed on health and taste. **Methods:** Female lifetime NW participants (N=13) completed a food choice task and age-matched female obese participants (N=13) completed the same task before and after a 12-week behavioral weight loss intervention. This task, previously used by Hare et. al (Science, 2009), assesses ratings of health and taste on 150 foods, and then measures the degree to which self-control is used in food decisions. **Results:** Prior to treatment, obese individuals exerted self-control on only 28% of trials, whereas NW exerted self-control on 58% of trials (p=.02). Following treatment, obese individuals increased their use of self-control to 47% of trials (p=.02). Health ratings did not change, nor did they differ between obese and NW (p's>.05), however, after treatment obese individuals rated unhealthy and neutrally healthy foods as less tasty than they had previously (p=.003, p=0.05). Moreover, pre-treatment obese individuals made their choices based on taste, yet after treatment obese participants made decisions based more on health (p<.001). **Conclusions:** These findings suggest that self-control over food choices can be increased through behavioral weight loss intervention, and that both changes in food preferences and the value placed on health and taste contribute to this change.

300-P
Enhancing Long-Term Weight Loss Maintenance: Two-Year Results From the Keep It Off Trial

Nancy E. Sherwood, A. Lauren Crain, Brian C. Martinson, Christopher Anderson, Marcia Hayes, Julie D. Anderson, Meghan M. Senso, Robert W. Jeffery *Minneapolis, MN*

Background: Innovative and scalable strategies are needed to address the perennial problem of weight regain. The goal of the Keep It Off trial was to evaluate the long-term efficacy of a phone- and mail-based weight loss maintenance intervention among adults who have recently lost weight, compared to a brief phone-based intervention. **Methods:** Four hundred nineteen adults who had lost ≥ 10% of their body weight during the prior year were recruited and randomized to the "Guided" or the "Self-Directed" intervention. Guided participants received a 10-session workbook and 10 biweekly phone coaching calls followed by eight monthly and six bimonthly calls. They also self-reported weights weekly and received bimonthly weight graphs and tailored letters. Self-Directed participants received the same workbook and two phone coaching calls. Primary study outcomes are weight change and weight loss maintenance (regain of < 2.5% of baseline body weight) at six, 12, 18, and 24 month follow-up. **Results:** Mixed model repeated-measures analysis examining weight change revealed a significant time*treatment group interaction ($F = 8.91$, $p < 0.035$). Guided participants regained significantly less weight at 12, 18, and 24 month follow-up relative to Self-Directed participants. The odds of weight maintenance at 24 months were 1.59 (95% CI: 1.04 – 2.41, p=0.03) times greater in the Guided than in the Self-Directed group. The likelihood of weight maintenance failure across all time points showed a hazard ratio of 0.68 (95% CI: 0.57 – 0.82, p <0.0001) in the Guided compared to the Self-Directed group. **Conclusions:** These data suggest that a sustained supportive phone- and mail-based intervention for participants who have recently lost weight is effective in promoting weight loss maintenance over a two-year period relative to a brief intervention.

301-P
BMI Predicts Exercise Fear-Avoidance Better Than Presence of Hypertension or Arthritis

Brooks C. Wingo, Jamy Ard, Renee Desmond *Birmingham, AL*

Background: Fear of exercise-induced harm, or exercise fear-avoidance beliefs, have been associated with increased BMI and decreased physical activity, but no research has assessed how comorbidities of obesity including cardiovascular risk factors or joint diseases may impact this fear. The purpose of this study was to evaluate if the presence of hypertension or arthritis predicted exercise fear-avoidance beliefs. **Methods:** Participants (n=155) completed the Exercise Fear-Avoidance Scale (EFAS), a 16-item scale that measures fear in 3 domains: weight-specific, cardio-respiratory, and musculoskeletal fears. The Pain Disability Index (PDI) was used to assess the impact of pain on daily functioning. We calculated differences in EFAS scores between individuals who reported a diagnosis of hypertension or arthritis and those who did not using independent-samples t-tests. We used stepwise regression to calculate the amount of variance in EFAS scores accounted for by diagnoses, BMI, age, and PDI. **Results:** Mean (SD) BMI was 35.17(8.86) kg/m^2. Mean age was 45.11(11.71) years. Participants reporting hypertension had significantly higher fear than those who did not (p=.01). Fear was also significantly higher among participants reporting arthritis compared to those who did not (p<.01). When entered alone, hypertension and arthritis both accounted for significant variance in EFAS scores (R^2 =.08 p<.01, R^2=.10 p<.01 respectively). When BMI, age and PDI were added to the regression models, hypertension and arthritis each became non-significant. **Conclusions:** Exercise fear-avoidance appears to be explained more by BMI, age and daily pain than presence of hypertension or arthritis. Behavioral interventions that aim to increase physical activity in obese adults should consider fear as a barrier to activity regardless of the presence of cardiovascular risk factors or joint disease.

302-P[DT]

Effects of Behavioral Weight Loss Intervention on Depression in Severely Obese African American Versus Caucasian Women

Amy D. Rickman, Bethany Barone Gibbs, Bret H. Goodpaster, John M. Jakicic *Pittsburgh, PA*

Background: Severely obese individuals are at a greater risk for depression than those with lower BMI's. Additionally, Caucasians (C) are more likely to have a lifetime diagnosis of depression than African Americans (AA), regardless of weight. Thus, the purpose of this investigation was to examine the effect of a behavioral intervention on depressive symptomology, whether these changes are associated with magnitude of weight loss, and whether the effect varies between C and AA. **Methods:** Subjects included 98 (C=66, AA=32) severely obese (BMI: >35.0 kg/m2) adults (age=46.9±6.0 years; BMI=43.8±5.5 kg/m2) who participated in a 12-month behavioral weight loss program. Weight, height, and depressive symptoms measured using the Beck Depression Inventory (BDI) were examined at baseline and 12 months. **Results:** At baseline there were no significant differences between C and AA in BMI and BDI. However, there was an inverse correlation between BMI and depression symptoms for AA (r=-.42, p= .02) but not C (r=-.04, p= .76) at baseline. C vs. AA lost significantly more weight (-14.2±11.0 vs. -8.3±8.4 kg) and had greater improvements in BDI (-4.9±5.8 vs.-1.0±5.9) at 12 months (p<.05). Partial correlations at 1 year revealed significant correlations between change in weight and change in BDI for C (r=.25, p=.05) but not AA (r=.05, p=.80), after controlling for baseline BDI. **Conclusions:** These results suggest that depression is more strongly associated with body weight in severely obese AA's, but that weight loss has a larger impact on depressive symptoms in C. However, the underlying causes of depressive symptoms in AA and C warrants further investigation.

303-P

A Randomized Controlled Trial Comparing Gold Standard and Acceptance-based Behavioral Treatment For Obesity: Outcomes From the Mind Your Health Program

Evan M. Forman, Meghan Butryn, Adrienne S. Juarascio, Lauren E. Bradley, Mackenzie Kelly, Ami P. Belmont, Michael R. Lowe, James D. Herbert, Vicki L. Clark *Philadelphia, PA*

Background: Gold standard behavioral treatment (SBT) has poor long-term outcomes due to lapses in adherence to weight control behaviors. Recent theoretical and empirical work suggest that adherence might be improved by incorporating in SBT strategies focusing on tolerance of difficult internal experiences, mindful decision making and commitment to valued behavior. **Methods:** In the current study, overweight participants (n = 128) were randomly assigned to 40 weeks SBT or acceptance-based behavioral treatment (ABT). **Results:** Both groups produced weight loss and increased quality of life, and session attendance was strongly predictive of weight loss at 6-month follow-up (r=.51, B=.006, p<.01). When administered by experts, weight loss was significantly higher in ABT than SBT at post-treatment (15.9% v. 11.6%) and 6-month follow-up (15.7% v. 8.9%). For participants with greater depression symptomology at baseline, weight loss at follow-up was 12.4% in ABT vs. 3.1% in SBT; other comparisons were 12.1% vs. 6.2% (emotional eating), and 11.2% vs. 4.0% (disinhibition). Similarly, the proportion demonstrating a weight loss of ≥10% at follow-up was dramatically higher in ACT than in SBT for those with higher depression (58.3% vs 16.6%; χ^2=5.62, p=.02), external disinhibition (55.0% vs 26.3%; χ^2= 3.31, p=.06), and susceptibility to the food environment (50.0% vs 20.0%; χ^2=5.75, p=.02). **Conclusions:** This randomized trial strongly supports the efficacy of infusing mindfulness, acceptance and commitment strategies into standard behavioral weight control interventions. Consistent with its focus, ABT was especially efficacious for those with susceptibility to eating in response to internal (emotional) and external cues (i.e., disinhibition), mood disturbance, and high responsivity to the food environment.

304-P

Targeted Needs Assessment For Inpatient Weight Loss Strategies Among Obese Patients

Che M. Harris, Rebeca Rios, Regina Landis, Scott Wright *Baltimore, MD*

Background: Hospitalized obese patients rarely receive counseling about weight loss during their admission. Specific patient preferences regarding inpatient weight loss interventions have not been systematically investigated. **Methods:** We surveyed 204 adult patients with a body mass index (BMI) of ≥ 30 who were admitted to a hospital medicine service in the Spring of 2011. Participants were surveyed via in-person interviews on the second day of their inpatient admission. Chi square tests were used to compare the group differences according to age and degree of obesity. **Results:** Two-hundred and four obese patients who were admitted during the study period consented to participate. The patient sample was predominantly Caucasian (67%) and female (62%). The mean age was 55 years, and their mean BMI was 38.1 kg/m2. Although 82% expressed the desire for their inpatient providers to discuss weight loss during their admission, nearly all (92%) reported that the provider did not do this. Most participants reported receptivity to specific weight management strategies such as general nutritional counseling (64%), individualized meal planning (65%), and developing an exercise plan with physical therapists (54%). Chi square tests revealed that patients with the highest BMI (> 35) reported greater interest in weight loss interventions compared with their less obese counterparts (BMI: 30-35). **Conclusions:** Most obese patients admitted to the hospital for acute medical conditions expressed interest and willingness to participate in behavioral weight management interventions. Implementation of patient-centered, in-hospital weight management interventions may fulfill an unmet need and motivate patients to change behaviors at a unique time when they may be primed to reflect about self-care.

305-P

Hedonic Hunger and Weight Loss Within a Short-Term Comprehensive Program Using a Partial Meal-Replacement Diet

Kelly R. Theim, Joshua D. Brown, Robert J. Malcolm, Patrick M. O'Neil *Charleston, SC*

Background: Hedonic hunger describes one's susceptibility to food cues in the environment (i.e., thoughts, feelings and urges regarding food that are independent of physiologic hunger). Obese adults report higher hedonic hunger than nonobese adults, but little is known about hedonic hunger within weight loss programs. The present study examined relations among hedonic hunger, weight control behaviors, and weight loss. **Methods:** Subjects: Overweight and obese adults (N=50, BMI M±SD 34.6±6.4) who completed a 15-week comprehensive weight loss program using a partial meal-replacement diet. Pre and post measures: Weight, weight control behavior usage (Eating Behavior Inventory; EBI), and hedonic hunger (Power of Food Scale; PFS). Analyses: Correlations and hierarchical linear regression. **Results:** Subjects lost 8.8±4.0 kg (9.4±4.1% of initial body weight). EBI scores increased and PFS scores decreased (ps<.001). EBI and PFS scores were inversely correlated at baseline (r=-.45, p=.001) and as change scores (r=-.43, p<.01). Surprisingly, *higher* baseline PFS scores (i.e., higher hedonic hunger) predicted greater % weight loss (r=.36, p=.01), and lower baseline EBI scores tended to predict greater loss (r=-.24, p=.10). Decreases in PFS and increases in EBI were correlated with greater weight loss (rs=-.35 and .32, respectively; ps<.05). The final regression model accounted for 19.7% of the variance in % weight loss, and included baseline PFS (β=.31, p=.02) and (at a trend level) change in EBI score (β=.26, p=.054). **Conclusions:** When examined separately, improvements in hedonic hunger and in weight control behaviors were both associated with greater weight loss. Surprisingly, *higher* baseline hedonic hunger also was related to better weight loss; future research should examine whether this relation holds in programs not using a partial meal replacement-based diet.

306-P

Self-Reported and Accelerometer Levels of Physical Activity and Associations With Weight Loss Among Rural Breast Cancer Survivors

Christie Befort *Kansas City, KS*; Kelley P. Gabriel *Austin, TX*; Heather L. Austin *Kansas City, KS*

Background: Obesity intervention studies often rely on self-report for assessing physical activity (PA) outcomes, however associations between self-report and accelerometer measures of PA have been modest. We compare self-report and accelerometer-derived change in PA and their associations with weight loss among rural breast cancer survivors. **Methods:** Participants (n = 31, 3.1 ± 1.6 years since breast cancer treatment, baseline BMI = 33.7 ± 4.4 kg/m2) lost an average of 13.9 ± 5.9% of baseline weight during a 6-month intervention targeting a 1200-1500 kcal diet and 225 min/wk of moderate- to-vigorous PA (MVPA). At baseline and 6 months participants

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completed the Minnesota Leisure-Time Physical Activity Questionnaire and wore the GT1M Actigraph accelerometer for 7 consecutive days, with time spent in MVPA classified as minutes ≥ 1952 counts. **Results:** 90% (n = 28) recorded 4 or more valid monitoring days at both time points. At pre-intervention, self-reported and accelerometer-derived MVPA was 105 ± 133 min/wk and 119 ± 113 min/wk, respectively (r = .27). At post-intervention, self-reported and accelerometer-derived MVPA was 296 ± 160 min/wk and 190 ± 138 min/wk, respectively (r = .27). Accelerometer-derived MVPA was moderately correlated with percent weight loss for both post-intervention MVPA (r = .41, p = .02) and for MVPA change from baseline (r = .30, p = .06). Self-reported post-intervention MVPA and change in MVPA were not significantly correlated with percent weight loss (rs = -.17 and -.09, respectively). **Conclusions:** Participants over-reported their MVPA at post-intervention, and only accelerometer-derived physical activity showed significant correlations with weight loss.

307-P
Weight Loss Maintenance Subsequent to a Behavioral Weight Loss Intervention among Rural Breast Cancer Survivors

Christie Befort, Danielle Atwood *Kansas City, KS*; Rebecca Clausius *Lawrence, KS*; Heather L. Austin *Kansas City, KS*

Background: Rural women have significantly higher obesity rates as well as breast cancer treatment-related disparities, and are thus in high need for weight control intervention. Conference call technology has been used to successfully deliver weight loss intervention to this hard-to-reach target group. This study reports initial maintenance outcomes beyond the active treatment phase. **Methods:** Participants (n = 31, 3.1 ± 1.6 years since breast cancer treatment, baseline BMI = 33.7 ± 4.4 kg/m2) lost an average of 13.9 ± 5.9% of baseline weight during a 6-month group phone-based intervention incorporating prepackaged entrees and shakes and 225 min/wk of moderate intensity PA. After a 6-month no contact follow-up period, self-reported weight and continued use of meal replacement shakes and entrees were assessed for 25 women (81%). Weight change since end-of-treatment was classified as stable (within +/-3%), regain, or additional weight loss. 24-hour dietary recall variables (daily kcal, % kcal from fat, FV servings) and accelerometer counts at end-of-treatment, and use of shakes and entrees at follow-up, were examined for association with weight change at follow-up. **Results:** Weight change from end-of-treatment to 6-month follow-up was -.75 ± 4.3 kgs; 20% were regainers, 48% were weight stable, and 32% were additional weight losers. 76% maintained ≥ 10% loss of baseline weight. Significant correlates of weight loss maintenance were % kcal from fat at end-of-treatment (r = .50, p = .01) and shakes/day at 6-month follow-up (r = .40, p = .02). **Conclusions:** Weight loss maintenance appears promising among rural breast cancer survivors during the first 6 months post-treatment and is associated with a lower fat diet at the end of treatment and continued use of meal replacement shakes.

308-P^{DT}
Examining Non-usage Attrition in an eHealth Weight Loss Intervention

Ilana B. Schriftman, Sandy Askew, Gary G. Bennett *Durham, NC*

Background: Non-usage attrition–cessation from intervention participation–is common in eHealth trials, but little is known about its correlates or consequences. This study aimed to examine correlates of non-usage attrition in an eHealth weight loss intervention trial, and to investigate the association between non-usage attrition and weight loss outcomes. **Methods:** Participants (n=180) were in the intervention arm of Be Fit Be Well, a 2-year weight loss effectiveness trial among obese, hypertensive patients in community health centers. Participants utilized an eHealth modality (the intervention website or interactive voice response calls) throughout the intervention. Cox proportional hazards regression was used to explore correlates of non-usage attrition, and a multiple regression analysis was used to examine the association between non-usage attrition and weight loss. **Results:** Our study sample was largely female, African American, and of low socioeconomic status. Almost half of all participants (47%) had become non-users by the end of the study. For those receiving IVR calls, age (50-59 vs. < 50: HR=0.38, 95% CI=0.15, 0.93, P=.03) and health insurance (non-federal vs. federal: HR=0.21, 95% CI=0.07, 0.60, P=.004) were associated with decreased risk of non-use. Difficulty with understanding written information (no difficulty vs. any difficulty: HR=1.84, 95% CI=0.91, 3.70, P=.09) was marginally associated with increased risk of non-use. We found no association between non-usage attrition and weight loss outcomes. **Conclusions:** Although non-usage attrition was found to be common in this intervention, we found few associations of selected variables with non-use. There were also no associations between non-usage attrition and weight loss outcomes. Further research is needed to elucidate the nature of the relationship between non-usage attrition and weight loss.

309-P
The Power of Tenacity: Behavioral Perseverance Is Associated With Successful Weight Loss and Increases in Physical Activity

Xiaomeng Xu, Tricia M. Leahey, Rena R. Wing *Providence, RI*

Background: Perseverance is important for health behavior change. However, no one has investigated how objective measures of perseverance are associated with weight loss intervention outcomes. **Methods:** Obese adults (N = 40; BMI = 35.6 ± 3.1; Age = 53.45 ± 4.26; 95% white; 85% women) completed a 24-week behavioral weight loss intervention. Participants were weighed at baseline and 24 weeks. Participants also reported physical activity (PA) minutes per week (min/wk) and kcals per week (kcals/wk) from moderate-to-vigorous intensity PA using the Paffenbarger Physical Activity Questionnaire. Per published protocols, perseverance was measured at 24-weeks and defined as the number of seconds participants were willing to squeeze a hand dynamometer at 70% of their personal maximum grip strength. **Results:** Participants averaged 9.19% weigh loss (SD = 6.27) and 52.5% met their 10% weight loss goal. Participants who met their 10% goal exhibited better perseverance (Mseconds= 44.45, SD = 25.88) than those who did not (Mseconds= 29.33, SD = 25.06), t(38) = 1.88, p = .068. Perseverance was significantly associated with 24-week levels of moderate-to-vigorous PA: r = .45, p = .004 (min/wk), r = .42, p = .007 (kcal/wk), as well as increases in moderate-to-vigorous PA from baseline to 24-weeks: r = .33, p = .041 (min/wk); r = .34, p = .033 (kcal/wk). **Conclusions:** Objectively assessed perseverance is associated with a better likelihood of achieving 10% weight loss and moderate-to-vigorous physical activity. Incorporating strategies to increase perseverance into behavioral weight loss programs may enhance outcomes.

310-P
Human CVD (IBC) Chip-Wide Analysis of Weight Loss in Response to Lifestyle Intervention in the Look Ahead Trial

Jeanne M. McCaffery, George D. Papandonatos *Providence, RI*; Gordon S. Huggins *Boston, MA*; Inga Peter *New York, NY*; Steven E. Kahn *Seattle, WA*; William C. Knowler *Pheonix, AZ*; Gina Evans-Hudnall *Houston, TX*; Edward Lipkin *Seattle, WA*; Abbas E. Kitabchi *Memphis, TN*; Lynne E. Wagenknecht *Winston-Salem, NC*; Rena R. Wing *Providence, RI*

Background: This study examined whether IBC chip polymorphisms differentially predict weight loss in response to intensive lifestyle intervention (ILI) compared with a standard intervention of diabetes support and education (DSE). **Methods:** IBC SNPs with minor allele frequency (MAF) >5% (N=31,959) were analyzed in relation to weight loss at year 1 among 4015 overweight or obese participants with type 2 diabetes (73% Caucasian, 16% African-American, 8% Hispanic, 1% Asian, 0.5% Native American, 2% Other; DSE: N=1998; ILI: N=2017) who participated in the Look AHEAD (Action for Health in Diabetes) clinical trial and had provided genetic consent at the time of genotyping. Primary analyses focused on SNP effects within ILI and interactions between genetic marker and treatment arm. Allele-dose coding for the rare allele was used, except for MAF<20%, in which case, the rare genotype was combined with heterozygous genotype. Covariates included age, sex, study site, baseline weight and principal components controlling for population stratification. **Results:** Three loci obtained chip-wide significance (p< 2x10-6) in predicting year 1 weight loss in ILI. These occurred on Chromosome 2 (MAF=31.2%; β=1.28 kg, p=5.41 x 10-8; 1.3% weight loss), 17 (MAF=28.5%; β=1.13 kg, p=1.34 x 10-6; 1.1% weight loss) and 18 (MAF=9.8%; β=2.02 kg, p=9.06 x 10-8, 2.0% weight loss). No SNPs interacted with treatment arm or predicted weight change across groups at the level of chip-wide significance. **Conclusions:** These findings indicate that novel SNPs may be associated with response to behavioral weight loss treatment. Such results may identify novel pathways relevant to behavioral weight loss and may help to explain why some individuals struggle with weight loss efforts.

311-P
A Pilot Study of Acceptance and Commitment Therapy as a Group Treatment For Overweight Individuals With Eating Pathology

Adrienne S. Juarascio, Jena Shaw, Evan M. Forman *Philadelphia, PA*

Background: Limited outcome research exists examining treatments for obese individuals with eating pathology (Vitielloa & Lederhendlera, 2000), and those that do exist suggest that there is significant room for improvement in the treatment of both Binge Eating Disorder (Agras et al., 1997) and Bulimia Nervosa (Fairburn, 2008). Prior research has suggested that ACT might be a useful treatment for both eating pathology (Juarascio, Forman, & Herbert, 2010) and obesity (Forman, Hoffman, McGrath, Herbert, Brandsmah, & Lowe, 2007) given the strong focus on experiential avoidance, poor experiential awareness, and difficulty sustaining motivation. **Methods:** The current study examined a sub-sample of obese patients with a diagnosis of BED or BN in a larger treatment outcome study examining an ACT-based group treatment for eating disorders at a residential treatment facility for eating disorders. **Results:** A total of 20 obese patients (Mean BMI: 39.44) with an eating disorder diagnosis (6 BN, 8 BED, 5 EDNOS) took part in the study (13 ACT and 7 Treatment as Usual (TAU)). Results revealed that obese patients in the ACT condition trended towards larger reductions in restrictive eating behavior, shape and weight concern, eating concern, and global eating pathology by discharge. Effect sizes ranged from small to large (partial eta squared of .03 to .38), with most in the moderate range. Patients in the ACT condition also lost more weight (ACT: 2.31 kg, TAU: 1.30 kg). **Conclusions:** Overall, results suggest that ACT may be a viable treatment option for obese individuals with eating pathology and further outcome research is warranted.

312-P
Do Weight Status and the Level of Dietary Restraint Moderate the Relationship Between Package Unit Size and Food Intake?

Chrystal L. Haire, Hollie Raynor *Knoxville, TN*

Background: Single-serving packages (SSPs), as compared to standard packages (STPs), may assist in reducing consumption. Those concerned about the amount they consume, such as overweight (OW) and dietary restrained individuals, may be more influenced by SSPs. This study examined if weight and restraint status moderate the influence of package size on consumption. It was hypothesized that SSPs would help to reduce intake in OW and/or restrained individuals. **Methods:** Using a 2x2x2 (unrestrained/restrained x normal weight [NW]/OW x SSP/STP) between-subjects factorial design, 64 participants (23.7 +/- 3.3 yrs.; 53.1% female; 81.3% white; 96.9% non-Hispanic) were randomly assigned to receive either 20 ounces of pretzels packaged in SSPs or STPs to eat ad libitum for four days. Each condition contained eight participants. Total grams of pretzels consumed was determined by subtracting post-consumption weight from pre-consumption weight of packages provided. **Results:** Using an analysis of variance, for total grams of pretzels consumed, there was a significant interaction (p=0.01) between package size & weight status. OW participants in the STP condition ate more compared to OW participants in the SSP condition (204.4 +/- 144.9g vs. 107.0 +/- 101.9g, p<0.05). For participants in the STP condition, OW participants ate more than NW participants (204.4 +/- 144.9g vs. 112.7 +/- 58.9g, p<0.05). No significant difference was found between OW and NW participants in the SSP condition for amount consumed. **Conclusions:** For OW individuals, STPs increased consumption as compared to SSPs, which did not occur for NW individuals. While SSPs may not influence OW individuals to eat less in comparison to NW individuals, replacing STPs with SSPs may assist with reducing overconsumption.

313-P
Innovative Technology to Improve Patient Adherence to Physician Weight Loss Recommendations

Graham Thomas, Tricia M. Leahey, Katelyn M. Gettens, Rena R. Wing *Providence, RI*

Background: Physicians play an important role in weight control by advising their patients to lose weight and referring them to an effective program. However, few referral options exist. **Methods:** We developed and tested an innovative web-based program to which physicians could refer their patients. Forty physicians referred 279 patients to the program; 154 (55%) joined the program (80% female; 87.5% White; mean±SD age=53.1±10.8 years; BMI=37.2±16.3 kg/m2). Participants were randomized to a 12-week Internet behavioral intervention (IBI; n = 76) or a newsletter control (n=78). Participants in IBI received 12 weekly video lessons modeled on the Diabetes Prevention Program that presented diet, exercise and behavioral skills; IBI participants submitted their daily weights, fat and calorie intake, and physical activity using the on-line system and received weekly automated feedback. Physicians received monthly updates on participants' progress. The control group received 12 weekly newsletters providing basic diet and exercise education. **Results:** Retention at 12 weeks was n=130 (84.4%). In intent-to-treat (ITT) analyses, using baseline weight for non-completers, weight loss in IBI was 5.4kg±4.3 (5.7±4.4% of initial body weight) compared to 1.5kg±2.7 (1.5±2.9% of initial body weight) in the control group (p<.001). In IBI, 31.2% lost ≥5% and 11% lost ≥10% of initial body weight. IBI participants logged onto the study website on 9.4±2.4 of the 12 weeks, and more log-ins were associated with greater weight loss (r=.37, p=.003). Three month follow-up showed excellent maintenance of weight losses (5.2kg±5.5 in IBI vs. 1.6kg±4.5 in control; p<.001) in an ITT analysis (79% retention). **Conclusions:** Internet-based programs show promise as a convenient, low-cost, low-intensity method of producing clinically significant weight losses among patients referred by physicians.

314-P
Sleep Disturbances Related to Psychosocial Functioning But Not Weight Retention in Postpartum Women

Todd Hagobian, Suzanne Phelan *San Luis Obispo, CA*; Chantelle N. Hart, Maureen G. Phipps *Providence, RI*; Barbara Abrams *Berkeley, CA*; Rena R. Wing *Providence, RI*

Background: Sleep disturbances in the early postpartum period (i.e., 6 weeks) have been linked with later postpartum weight retention, but few studies have evaluated the role of prenatal factors on postpartum sleep and weight. **Methods:** The current study included 401 normal-weight and overweight/obese pregnant women (28.8 years, 13.5 weeks gestation, 66% non-Hispanic White) in the Fit for Delivery study. **Results:** During pregnancy, total nightly sleep averaged 7.6 ± 1.5 hrs and 7.2 ± 3.8 hrs at 13 weeks and 30 weeks gestation, respectively. At 6 weeks postpartum, total sleep hours declined significantly ($P < 0.0001$) to 5.6 ± 1.5 hrs. Linear regression indicated several significant, prenatal predictors of greater 6 week postpartum sleep disturbances (measured by the General Sleep Disturbance Questionnaire $R^2 = 0.38$, $P = 0.001$) including more depressive symptoms ($\beta = 0.24$, $P = 0.002$) and higher stress ($\beta = 0.25$, $P=0.003$) early in pregnancy, greater increases in depressive symptoms ($\beta = -0.25$, $P=0.046$) and stress ($\beta = -0.28$, $P=0.001$) from early pregnancy to 6 weeks postpartum, more perceived problems with infant sleep at 6 weeks postpartum ($\beta = 0.29$, $P<0.001$) and breastfeeding at 6 weeks postpartum ($\beta = -0.13$, $P = 0.017$). Similar predictors emerged for total sleep time. Prenatal sleep, changes in sleep, and 6 week postpartum sleep functioning were not significantly ($P > 0.05$) related to 6 or 12-month postpartum weight retention or physical activity levels. **Conclusions:** Lifestyle interventions to improve sleep in postpartum women should target infant sleep and prenatal psychosocial status, including depressive symptoms and stress. More research is needed to understand whether sleep functioning has a meaningful impact on postpartum weight.

315-P
Outcomes From the WEIGH Study: A Low-Intensity Approach Promoting Daily Self-Weighing

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Background: Testing the efficacy of low-intensity programs for weight control is important. **Methods:** Results are from an RCT of a 6-month low-intensity weight loss intervention (INT) focusing on daily self-weighing compared to a wait-listed control (CON) group. The intervention included cellular-connected "smart" scales for daily weighing, weekly emails with tailored feedback, and emailed lessons on behavioral weight control. Weights were obtained at baseline, 3, and 6 months in clinic and via smart scales at 9 months (INT group only). Retention was 98%, 96% and 82% at each time point. Caloric intake and expenditure were measured via NCI's ASA 24-hour recall and the Paffenbarger Exercise Habits Questionnaire. **Results:** Participants (n=91) were on average age 44y±11, obese (BMI: 32.15±3.8kg/m2), mostly female (75%), White (74%), and college-educated (78%). Using lin-

 For author conflict of interest information, see page S250

ear mixed models, the INT group lost on average more weight at 6 months compared to the CON group [Mean (95%CI): -6.55%(-7.7, -5.4) vs. -0.35%(-1.5, .79); group x time interaction: p<.001]. The INT group consumed on average fewer kcals at 6 months compared to the CON group [Mean (95%CI): 1470(1279, 1661) vs. 1864(1674, 2053); group x time interaction: p=.002] and a greater percentage of the INT group expended ≥1800 kcals/wk from physical activity (28% vs. 9%; p=.035]. Post hoc analyses within the INT group showed that men lost on average more weight at 6 months compared to women [Mean (95%CI): -9.23%(-11.7, -6.7) vs. -5.34%(-7.0, -3.7); gender x time interaction: p=.045]. At 9-months, the INT group lost on average 7.10%±8.55%. **Conclusions:** Results indicate that a low-intensity program including daily self-weighing can produce weight losses and behavioral changes similar to more intensive interventions, and improve weight loss maintenance. This type of approach may be more effective for men.

316-P
Sleep Duration and Dietary Intake in Treatment Seeking Obese Adults

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Background: Epidemiological research has identified an association between short sleep duration and obesity, but it is unclear whether this association is seen within treatment-seeking obese individuals and whether it reflects differences in dietary intake. We examined the association between objectively-measured sleep duration and eating behaviors in a cohort of overweight and obese adults seeking behavioral weight loss treatment. **Methods:** Fifty-one participants (44.8±9.7yrs; 34.6±4.9 kg/m2 BMI; 84.3% female; 78.7% white) completed 7 days of actigraph-measured sleep and three 24 hour dietary recalls (2 weekdays; 1 weekend day) prior to randomization in a weight loss study. **Results:** On average, participants slept 7.8 hours /night; 19.6 % had short sleep duration (SS) defined as <7 hrs/night, 37.3% slept 7-8 hrs/night, and 43.1% slept >8 hrs/night. ANCOVA analyses adjusting for gender and comparing SS with all others (O) showed no differences in BMI (SS= 35.9 vs. O=34.3) or total kcal/day (SS= 1643 vs. O=1823 kcal/day). There was a non-significant trend for short sleepers to report a lower percent of calories from fat (SS= 29% vs. O=32%, p=.098). **Conclusions:** Approximately 20% of obese participants seeking behavioral weight control demonstrate short sleep by actigraphy measurement. Short sleepers did not differ in BMI or caloric intake from others, but contrary to hypotheses, they tended to report lower percent of calorie from fat. Further studies are needed to examine the prevalence of short sleep and its association with eating habits and weight status in those entering weight loss programs.

317-P
Effectiveness of the LOSE BIG Challenge, a Culturally-Based, Inner-City Weight Loss Program

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Background: Inner-city communities are disproportionately impacted by obesity, and chronic disease. The LOSE BIG Challenge is a motivational physical activity and nutrition education program offered to inner-city Grand Rapids, MI residents with diabetes or hypertension. **Methods:** Twenty-eight participants (26 women; 2 men) in a 12-week culturally-based weight loss program were studied. Before and after the intervention, weight, blood pressure, fasting glucose, eating behaviors, and quality of life scores were measured. Participants were followed 4 and 6 months post intervention. **Results:** At baseline, 86% of the participants were obese (BMI >30 kg/m2). Of the 17 participants who attended the pre- and post-screening, 47% had fasting glucose ≥ 100 mg/dl and 70.5% had blood pressure ≥ 120/80 mm Hg. At the 12-week post-screening, 29% had fasting glucose ≥ 100 mg/dl, while blood pressure remained unchanged. Female participants lost an average of 3.0 kg, 3.4 kg and 4.4 kg at 12 weeks (n=15), 4 months (n=13) and 6 months (n=14), respectively. The men lost an average of 12.1 kg (n=2), 12.2 kg (n=1) and 15.0 kg (n=1). Quality of life scores improved and cognitive restraint scores increased while emotional eating, uncontrolled eating and inhibition scores decreased. Women exhibited a significant decrease in mean BMI and increase in mean cognitive restraint and quality of life scores from baseline to 6 months (p<0.05). **Conclusions:** These results suggest this motivational program may provide health benefits, improve quality of life and change eating habits up to 6 months. Attrition was high indicating the challenges of reaching the inner-city, minority community.

318-P
Long-Term Weight Control Strategies and Their Association With Weight Maintenance in a Behavioral Weight Loss Program

Lauren E. Bradley, Evan M. Forman, Meghan Butryn *Philadelphia, PA*

Background: Despite the short-term success of behavioral weight loss treatments, long-term weight loss maintenance is highly variable. Weight loss interventions teach a variety of strategies for maintaining dietary and exercise adherence, but little is known about which strategies are critical for successful long-term weight control. Mindfulness strategies that emphasize tolerance of distressing internal experiences in the service of personal values may improve such adherence. **Methods:** As part of a larger study, overweight participants (n = 128) were randomly assigned to 40 weeks of standard behavioral treatment or acceptance-based behavioral treatment. At 6-month follow-up, participants reported how frequently they used particular skills to control their weight. **Results:** Percent weight loss between 40 weeks and 6 months tended to be moderately associated with standard cognitive-behavioral skills such as keeping tempting foods out of sight ($r = .30$, $p = 0.01$), recruiting social support ($r = .28$, $p = .02$), and challenging negative thoughts about food ($r = 0.23$, $p = 0.05$), and unassociated with others including weighing oneself ($r = 0.07$, $p = 0.54$) and wearing a pedometer ($r = 0.00$, $p = 0.99$). On the other hand, significant correlations with acceptance-based skills were observed including staying mindful of eating choices ($r = 0.49$, $p < 0.01$), thinking about values related to weight control ($r = 0.45$, $p < 0.01$), having an accepting stance towards internal experiences ($r = 0.30$, $p = 0.01$), and continually re-committing to weight control ($r = 0.32$, $p = 0.01$). **Conclusions:** Associations appeared to be generally stronger for acceptance-based skills vs. standard behavioral weight loss skills. Thus, it appears that acceptance-based skills were particularly important factors in weight maintenance in this sample of behavioral weight loss participants.

319-P
Perceived Stress, Anhedonia and Emotional Eating Are Associated With Future Weight Change

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Background: Although it is known that emotions may influence appetite, it is unclear if state or trait characteristics may differentially influence short or long term changes in weight (wt). **Methods:** We therefore examined baseline behavioral measures and follow-up (f/u) wts in a convenience sample from 4 longitudinal observational studies. Fifty-three non-diabetic, healthy volunteers (39m; wt=85±16 kg; age=37±9 y, race=20 NA/19 C/6 H/8 B) completed questionnaires to measure perceived stress, anhedonia, depression, and emotional eating in response to positive (EMAQ-P) and negative emotions/situations (EMAQ-N). Short-term f/u wts were obtained at scheduled visits (8±1 mos; n=42) and the last recorded wt at any visit was used for the longer-term analysis (16±9 mos; n=53). N **Results:** No measures were associated with wt at baseline. Stress (r=0.40) and EMAQ-P (r=0.36) were associated with short-term wt change (1.5±5kg), even after adjustment for initial wt and gender. However, EMAQ-P (p=0.1) was not associated with wt change independently from stress (p=0.02). EMAQ-P (r=0.27) and anhedonia (r=0.35) were correlated with longer-term wt change (1.3±5kg), even after adjustment for initial wt, gender, and f/u time. Anhedonia (p=0.004) and EMAQ-P (p=0.04) were independent from one another in the model. EMAQ-N and depression were not associated with wt change at either time point. In a sensitivity analysis limited to subjects with greater than 10 mos of f/u data (n=37), anhedonia and EMAQ-P remained significant predictors of wt change. **Conclusions:** Our data indicate that perceived stress results in short-term weight gain in some individuals. However, "emotional eaters" and people with anhedonia may make less controlled decisions about food choices and thus fail to compensate for overeating, leading to a gradual increase in weight over time.

320-P
Eating in a Buffet Setting Leads to Higher Fat and Energy Intake Among Lean Young Women With the PROP (6-n-Propylthiouracil) Non-Taster Phenotype

Yasmine Shafaie, Yvonne Koelliker, Daniel Hoffman, Beverly J. Tepper *New Brunswick, NJ*

Background: Exposure to a variety of energy-dense foods promotes increased energy intake and adiposity. However, some individuals may be more susceptible to overeating in a buffet setting than others, and this difference could have a genetic basis. Taste blindness to the bitter compound PROP (6-n-propylthiouracil) has been associated with increased adiposity in women, and might be linked to increased energy intake and greater selection of dietary fat. We investigated if PROP non-taster (NT) women would consume more fat and energy in a buffet setting than medium taster (MT) or super-taster (ST) women. **Methods:** Seventy-five non-diet restrained, lean women ate lunch and dinner in the laboratory for 3 consecutive days under two conditions: ad-libitum, fixed-item meal (FIXED) or high variety buffet meal (BUFF). A standard breakfast was consumed each day of the study (4-d washout between conditions). **Results:** All groups consumed more daily energy and fat, and less carbohydrate (%-en) during BUFF than FIXED. During BUFF, NT and MT consumed more energy and fat from dinners and snacks than did ST. Also during BUFF, NT and MT consumed more daily energy (~ 160 kcal) and less protein than ST. Daily fat intake was marginally higher in NT and MT relative to ST suggesting that some minor compensation for fat-derived calories might have occurred across the day. **Conclusions:** These data suggest that NT and MT consume more daily energy when eating in a buffet setting. This small increment could contribute to positive energy balance and weight gain in these women over time.

321-P
Examining Associations Between Treatment Adherence and Weight Loss Among Natural Social Contacts in a Behavioral Weight Loss Intervention

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Background: Research suggests that weight trajectories may be similar among non-treatment seeking individuals in a social network and that, for those seeking treatment, including social support partners in behavioral treatment may improve outcomes. This study examined whether individuals having a social contact who participated in the same intervention, but who received no specific social support training, had different outcomes than those without a social contact. **Methods:** Participants were consecutively enrolled subjects (n=92; 100% female; 54% black; mean age: 46 ± 10 years; mean BMI: 38 ± 6), grouped based upon whether or not they reported a social contact enrolled concurrently or previously in our behavioral weight control studies. Primary outcome was weight change at 6-months, with session attendance and self-monitoring examined as indicators of treatment adherence. **Results:** Half of participants (N=46) indicated they had a social contact and 71% of those said the contact was instrumental in their decision to enroll in the program. Those with a contact trended towards greater weight loss (6.2 vs. 4.2 kg; p=0.17), attended more group sessions (73% vs. 55%; p=0.002) and tended to submit more self monitoring (68% vs. 56%; p=0.10) than those without a contact. However, participants' weight change was not associated with social contact contacts' weight change (p=0.71), nor was there an association between participant and contact's group attendance (p=0.58) or self-monitoring j(p=0.68). **Conclusions:** Social networks may be a promising vehicle for recruiting and engaging participants in a behavioral weight loss program. The role of a natural social contact deserves further investigation, particularly since naturally occurring social support appears to be effective even though a participant and social contact may not have corresponding treatment outcomes.

322-P
WAIST: A Randomized Controlled Clinical Trial (RCT) of a Behavioral Lifestyle Intervention For Weight Reduction in Schizophrenia

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Background: Schophrenia and serious mental illness are exclusion criteria in almost all large clinical trials of lifestyle interventions (e.g. DDP and Look AHEAD), despite the high rates of obesity, metabolic syndrome, diabetes, heart disease, and premature mortality in this population. The belief, frequently stated, is that such individuals cannot participate successfully in behavioral interventions. This study was undertaken to test that assumption. **Methods:** A 14 week behavioral lifestyle intervention (LI), developed and previously piloted, in overweight and obese people with schizophrenia, was compared to usual care (UC) and social skills training (SST), in a randomized controlled clinical trial (RCT). SST was included, as a comparison, to control for the potential of non-specific effects of LI on weight. **Results:** Consenting overweight and obese subjects (n=260) were randomly assigned to LI (n=169), SST(n=43), or UC (n=45). Completion rate was 69% with no group difference. A repeated-measures ANOVA, on the intent-to-treat sample, was significant for change in weight between groups ($F=23.4$, $df=2.7, 351.6$, $p<0.001$). The LI group had a mean weight loss of 2.23±4.95 kgs, while the SST and UC groups had weight gain of 1.64±4.18 and 2.59±4.95 kgs, respectively. Analyses of the on-treatment sample (n=168) revealed similar significant differences in weight change between groups ($F = 22.1$, $df = 2.9, 237.6$, $p < 0.001$). The proportion of participants who lost weight was 56% in LI, 18.6% in SST, and 12.5% in UC ($X2(df=4)= 74.23$, $p=0.0001$). **Conclusions:** This is the largest RCT of behavioral LI for weight loss in Schizophrenia. Our results show that such interventions are efficacious in this population, and that their diagnoses of serious mental illness should not result in exclusion from weight loss, diabetes, and heart disease trails involving behavior change.

323-P
Consumption of a High Fat Soup Preload Leads to Differences in Short-Term Energy Adjustment in PROP Non-Taster Women Compared to Super-Taster Women

Yasmine Shafaie, Daniel Hoffman, Beverly J. Tepper *New Brunswick, NJ*

Background: Taste blindness to the bitter compound PROP (6-n-propylthiouracil) is considered a genetic marker for food selection and adiposity. We have shown that PROP non-taster (NT) women have higher BMIs and consume more fat and energy than either medium-taster (MT) or super-taster (ST) women. These data imply that differences in dietary selection underlie the body weight differences among PROP taster groups. However, no studies have investigated caloric compensation in women classified by PROP status. We investigated if NT would compensate less accurately for the calories in a high-fat soup preload in a subsequent test meal compared to MT and ST. **Methods:** Energy intake from a test meal was measured in 75 healthy non-diet-restrained, lean women 30 min after the ingestion of a high-fat soup preload (0.8 Kcal/g), calculated to represent 10% of resting energy expenditure for each subject, or the same volume of water. Subjects ate an ad-libitum buffet lunch in the lab on two occasions (6 washout days). **Results:** There were no differences in energy intake or macronutrient selection in taster groups in the water condition. After soup, NT consumed significantly more energy and fat, and less carbohydrate from the test meal than ST. Caloric compensation in the test meal was slightly less precise ($p<0.08$) in NT (86%) compared to MT (99%) and ST (104%). NT adjusted less well for the fat and energy of a high-fat soup preload compared to ST. **Conclusions:** Small discrepancies in short-term energy compensation may play a role in positive energy balance and increased adiposity in NT women.

324-P
Text Message Preferences of Young Adults Seeking Weight Loss: The IDEA Study

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Background: Mobile telephone short-message service, also known as text messaging (TM), may have potential for delivering components of a behav-

ioral weight loss intervention. This study presents the results of qualitative research conducted to understand TM preferences in overweight young adults prior to implementation of this technology in a large-scale randomized trial. **Methods:** Seventeen overweight/obese (BMI 25 to <40 kg/m2) men and women between 18-35 years of age were recruited to receive health-related TM on their mobile phones for a one month period. Subjects received TM from 1 to 3 per day, at various times of the day, and containing different types of content. Subjects participated in a qualitative interview at the completion of 1 month of receiving TM to provide information about TM preferences. **Results:** 37.2%, 62.5%, 31.3%, and 43.8% report it helpful to receive 1, 2, 3, or a mixed number of TM per day, respectively; whereas only 6.3% reported a preference to receive >3 TM per day. 33.3% agreed that TM was most effective when received at random times throughout the day, whereas 26.7% disagreed. 40% agreed that the TM was motivating for weight loss compared to 40% who disagreed. 37.6% agreed that the TM was motivating to change exercise behavior compared to 25% who disagreed. 50% agreed that the TM was motivating to change eating behaviors compared to 25% who disagreed. **Conclusions:** Despite wide use of TM in young adults, there appears to be preferences for use of TM to promote weight loss and behavior change. These findings should be considered prior to broadly applying TM as a communication channel in weight loss interventions for young adults. Whether these results apply to other population groups warrants further research. Supported by the National Institutes of Health (HL096770)

325-P
Facebook Participation During a Worksite Program Is Associated With Greater Weight Loss

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Background: Support systems have been shown to increase the success of weight loss programs. Little is known, however, about the effectiveness of social media- such as Facebook - to provide such a support system. This study's objective was to determine the association between Facebook (FB) participation and weight loss in adults during a worksite weight loss program. **Methods:** A total of 316 employees (101 male, 215 female) enrolled in a four-week worksite weight loss program based on portion control including meal replacement with single-serve frozen meals. Participants were invited to join a restricted, members-only FB group on which a registered dietitian posted weight management strategies at least four times per week. Participants reported for weekly weight measurements. Overall, 239 participants finished the program (73 male, 166 female). Of those, 202 did not participate on Facebook (NFB). A self-selected group of 45 participants joined the FB group, of whom 37 finished the program (9 male, 28 female). **Results:** After four weeks, FB experienced significantly greater weight loss compared with NFB (-4.49 vs. -2.86 pounds, respectively, p=0.037). The attrition rate of FB was 18%, slightly lower than that of NFB, 25%. **Conclusions:** As part of a worksite weight loss program, voluntary participation in a FB support group was associated with greater weight loss, suggesting that social media such as Facebook offers a potentially effective way to create a support system within worksite programs.

326-P
Effectiveness of an Online, Interactive Energy Balance Curriculum For College Students

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Background: The increased independence and freedom of choice associated with late adolescence and the transition to college is often associated with poor eating habits, decreased physical activity, and weight gain. Effective intervention strategies are needed to encourage healthy eating habits and physical activity behaviors as overweight and obesity in adolescence significantly increases the risk of obesity in adulthood. **Methods:** Toward this goal, we have developed an interactive online curriculum entitled The Science of Energy Balance. The curriculum is science-based to promote a deeper understanding of the physiological impact of diet and physical activity choices, aligns with national and state health education standards, and supports the Guidelines for Healthy Americans 2010. Additionally, it was designed around the constructs of the Theory of Planned Behavior. Consistent with this theory, mediators of behavioral intention, including attitude, social pressure, and perceived behavioral control beliefs are targeted for improvement. The curriculum includes peer and professional video interviews developed to reinforce the benefits and importance of the concepts presented, while interactive activities and behavioral strategies are offered to improve diet and physical activity behaviors. Student participation in their own diet analysis and goal-setting activity reinforces the personal relevance of the curriculum and the individual responsibility inherent in behavioral choices. **Results:** Preliminary results testing the effectiveness of this curriculum have demonstrated increased nutritional knowledge and improvement in mediators of dietary intake behaviors. **Conclusions:** These results support this intervention as an effective tool in reducing the risk of poor diet and physical activity behaviors and weight gain in late adolescence.

327-P[DT]
How to Successfully Administer a Behavioral Weight Management Program Among African American Women

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Background: Among overweight African American (AA) women, weight management is undertaken to improve health rather than "image." Programs that rely on constructs such as "drive for thinness" or discount family involvement in behavior change often lack cultural relevance. The key to helping AA women lose weight is focusing on the health benefits of weight loss and involving family/community in behavior change. **Methods:** The Family Intervention Study of Health (FISH) aimed to improve eating/exercise behavior among AA women by introducing gradual lifestyle changes over 13 weeks. The weight management program emphasized moderate caloric restriction (1800-2000 kcal) and exercise. Educating participants about ways that weight loss mitigates risk for chronic disease was a critical aspect of weekly treatment sessions. Family involvement in dietary changes and exercise was encouraged. Weight, blood pressure, and exercise were tracked during the program, and at 3-, 6-, and 12-month follow-ups. **Results:** A total of N=82 AA women participated in the program and 79% (n=65) completed the treatment. Women attended 10 sessions on average. Treatment-completers lost an average of 5.3lbs over 13 weeks and maintained lost weight (5.0lbs) at 12-month follow-up. Additionally, 20% of participants reduced blood pressure during the 13 week treatment. **Conclusions:** Results from our community-based weight management intervention for AA women suggest that tailoring weight management programs appropriately can result in treatment success. The significant decrease in weight and blood pressure shows that educating AA women about the severity of weight-related health conditions can significantly impact health by encouraging positive lifestyle changes. Further, findings suggest that the effects of the treatment phase can be maintained up to 12 months post-treatment.

328-P
A Cognitive- Behavioural Treatment Impact on Hyperobesity Effectiveness of a Clinical-Nutritional Approach

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Background: In the latest years surgical and pharmacological treatments have been increasingly indicated for the loss of weight in hyperobesity. However, after 5 years, the maintenance rate has not changed compared to the long-term conventional treatment. Thus, we should consider whether a proper intervention to modify food habits and to take up physical exercise is still cost effective to treat hyperobesity. To evaluate the BMI of hyperobese patients according to an interdisciplinary cognitive behavioural approach, without using drugs or surgery, for a period of three years **Methods:** The database of 2136 adult hyperobese patients from the CTMR was evaluated with a descriptive- retrospective design. These patients received the treatment in the period 2003-2006, and the IBM evolution was also registered (in the first and last record) (The treatment is based on an intensively frequent cognitive-behavioural dialectic, hypocaloric alimentary plans -LCD alternated with VLCD, physical activity and nutritional supervision) **Results:** Total morbid obese patients evaluated: 2136 (38 % men – 62 % women). Patients with a BMI higher than 40: 100% was reduced to 44.2% Patients with a BMI between 40 and 51: 86.5 % was reduced to 49.63% And patients with a BMI higher than 52: 13.09% was reduced to 6.2% **Conclusions:** The integral treatment emphasizing the change of habits and considering a cognitive-behavioural approach, restrictive diets and physical activity leads to a significant improvement on the BMI.

329-P
Evaluating Women's Beliefs on Total Weight Gain During Pregnancy

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Background: In 2009, the Institute of Medicine (IOM) revised its guidelines for appropriate weight gain during pregnancy highlighting once again the importance of setting weight gain targets based on pre-pregnancy BMI. Appropriate gestational weight gain (GWG) is associated with better birth and maternal health outcomes, yet more than 40% of women's actual weight gain exceeds the IOM recommendations, leading to delivery complications, excess maternal weight retention and increased offspring BMI. **Methods:** Mothers were enrolled in a randomized controlled trial evaluating the effects of a healthy lifestyle intervention to prevent excess GWG (N=144). Data collection occurred at baseline prior to exposure to either intervention or control curricula. At the time of data collection all study participants had been to at least 1 prenatal visit with a healthcare provider. Mothers' answers to survey questions on practitioner GWG advice and perceived target weight gain were compared to IOM guidelines. **Results:** Despite increased attention given to the subject after the release of the 2009 IOM guidelines, a large majority (76%) of the women in our study reported not receiving GWG advice from a healthcare provider. Of the women who reported receiving GWG advice, 41% either reported advice that was outside the IOM recommendations or could not remember the advice given. Those who reported not receiving advice were more likely to have a perceived weight gain target outside of the IOM recommendations (77.8% vs. 47.0%, $\chi 2=8.23$, p=0.016). **Conclusions:** The percentage of women in this study who did not receive GWG advice was higher than that seen in other studies involving women of mixed ethnicities. This lack of received advice underlies the need for improved patient education. The discussion on healthy GWG should begin early in pregnancy and be continued at every prenatal visit.

330-P
Behavioral Interventions to Modify Obesity Risk in the Postpartum Period: A Systematic Review

Alexander A. Berger, Wanda Nicholson *Carrboro, NC*

Background: The reproductive years and specifically pregnancy are a critical period for the development of obesity in women. Behavioral interventions may be an effective strategy for modifying a women's risk for developing obesity. We systematically reviewed the literature on the effects of behavioral interventions in the postpartum period at modifying risk of developing obesity. **Methods:** Pubmed, Cochrane, CINAHL, EMBASE were systematically searched for English language, randomized controlled trials, previous reference lists were reviewed, and authors and experts queried to find other relevant studies. Two reviewers independently screened the 122 abstracts and 26 full-text articles to identify behavioral interventions among postpartum women that reported weight related outcomes. Trials were independently critically appraised to include only good- or fair-quality trials. **Results:** The results of this review suggest that there is minimal evidence for exercise interventions, insufficient evidence for exclusive breastfeeding interventions, evidence against nutrition/diet interventions, and moderate evidence supporting combination nutrition/diet and exercise interventions for weight management in postpartum women. Interventions, subjects, and methods of intervention were heterogeneous. Data on potential harms of interventions were scant and often not reported, and there was little discussion of adherence or the theoretical basis for interventions or if the interventions were evidence based. **Conclusions:** Behavioral interventions that combine counseling with exercise and diet are an important strategy for reducing postpartum women's risk of developing obesity.

331-P
Self-Identity, Self-Esteem, and Body Attitude in Thin and Overweight Hispanic Females

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Background: The purpose was to examine any potential differences in self-esteem, body image, and body attitude between thin and overweight Hispanic women. **Methods:** A series of Implicit Association Tests (IAT; Greenwald, McGhee and Schwartz 1998) were used to assess the three constructs if interest: Self-Esteem, Self-Body Association, and Body Attitude. The IAT is a measure designed to indirectly measure the strength of association between concepts in memory using a simple computer-based categorization task. **Results:** The ANOVA analysis revealed a significant difference on the body image and body attitude IATs, such that thin participants exhibited a stronger self-association with imagery consistent with thin body size (Mthin = .63, Moverwt = 52, p = .037) and more positive attitudes toward thin body imagery (Mthin = .51, Moverwt = .39, p = .044), but did not reveal significant increase in self-esteem compared to overweight participants (Mthin = .49, Moverwt = .51, p = .65. Finally, correlational analysis of the thin participants revealed a negative correlation between current body size and implicit self-esteem (such that the thinner your current body size, the lower your implicit self esteem) and a positive correlation between worry about becoming overweight and increased implicit self-esteem. **Conclusions:** In light of these counterintuitive findings, overweight females revealed a balanced identity in memory, while thin participants did not.

332-P
Food Intake Detection By Automatic Ingestion Monitor

Edward Sazonov, Juan Fontana *Tuscaloosa, AL*

Background: A wearable sensor system (Automatic Ingestion Monitor, AIM) was developed for objective detection and characterization of food intake and ingestive behavior through non-invasive monitoring of characteristic jaw motion during chewing and hand-to-mouth gestures. This study presents results from testing the latest generation of AIM in a single meal experiment. **Methods:** Seven subjects (5 male, 2 female) wore AIM during 3 laboratory visits (total of 17 hours of sensor data). Jaw motion was captured by a miniature strain sensor attached below outer ear. Hand gestures were captured by a custom designed RF proximity sensor. Subjects performed the following activities: a) talking; b) walking; c) eating; d) resting; e) chewing gum. Subjects self-reported periods of food intake by pressing and holding a button. The data from the jaw motion sensor were processed by an automatic computer algorithm that performed pattern recognition and assigned a label {'intake', 'no _intake'} to every time slice (epoch) of 15s duration. **Results:** The average accuracy of per-epoch match between the self-report and computer recognized food intake was 90%±5.1% (88%±11.8% precision, 93%± 5.4% recall). Chewing gum was correctly not recognized as food intake with an average error rate of 13% (302 total gum epochs, 41 false positives). **Conclusions:** The study demonstrated improved accuracy of food intake detection by AIM (90% vs previously reported 81% accuracy), improved time resolution (15 s vs 30 s epochs) and high tolerance to food surrogates (chewing gum). Longer experiments are needed to validate use of AIM for 24 hour monitoring of food intake.

333-P
Barriers to Healthy Eating in Low-Income WIC Mothers Is Associated With Unhealthy Weight Control Strategies

Brittany L. James, Jennifer S. Savage, Leann L. Birch *University Park, PA*

Background: Perceived barriers to healthy eating predict multiple health and weight-related behaviors, but little is known about how these barriers affect low-income women during post-partum. This study aimed to examine how barriers to healthy eating related to weight control among low-income mothers participating in the Pennsylvania WIC Program. **Methods:** A cross-sectional study of 75 low-income mothers with 0-2 year old formula-fed infants and toddlers. Mothers completed the Barriers to Healthy Eating Questionnaire, the French Weight Loss Strategies Questionnaire, the Eating Inventory, and the 2-item Food Insecurity Screen (Hager et al., 2010). **Results:** Mothers in this study were predominantly white (71%), unemployed (50%), and obese (BMI M=30.3). More than 50% were food insecure, reporting that the food they purchased ran out or that they worried about having enough food. Total number of barriers to healthy eating was associated with using a greater number of unhealthy weight control strategies ($p < .01$). The predominant barriers reported were preparation and cost of healthy foods. Those reporting less knowledge of how to cook healthy foods were significantly more likely to use unhealthy weight control strategies (e.g., fast, increase cigarettes smoked) than those reporting greater knowledge. Obese women used significantly more healthy, but not unhealthy weight control strategies. **Conclusions:** Findings reveal that WIC mothers experience barriers for practicing a healthy lifestyle, which may contribute to the development and/or

persistence of unhealthy weight control strategies. These findings can inform the design of future interventions targeted at reducing WIC mothers' barriers to healthy eating and providing guidance on healthy weight control strategies, which could improve health and reduce obesity among WIC mothers and their children.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Intervention Studies — Behavioral-Pediatric

334-P
Parent Food Reinforcement Moderates the Effects of Child Food Reinforcement on Child Body Composition

John Best, Kelly R. Theim, Richard I. Stein, R. Robinson Welch *St. Louis, MO*; Brian E. Saelens *Seattle, WA*; Michael G. Perri *Gainesville, FL*; Kenneth B. Schechtman *St. Louis, MO*; Leonard H. Epstein *Buffalo, NY*; Denise E. Wilfley *St. Louis, MO*

Background: High food reinforcement is implicated in obesity among children and adults and has been linked to concurrent weight status, prospective weight gain, and energy intake. Past research has focused exclusively on relations between individuals' food reinforcement and their own weight status. The current study examined whether parents' food reinforcement is associated with their children's weight status. We hypothesized that parent food reinforcement would moderate the relation between child food reinforcement and child weight status. **Methods:** Prior to beginning a family-based weight loss treatment, overweight parent-child dyads (N=196) completed the Food Purchasing Questionnaire separately to determine their level of snack and fruit/vegetable food reinforcement. Anthropometrics were collected, and children's percent body fat was determined using dual-energy X-ray absorptiometry. **Results:** Both child (β = .14, p = .041) and parent (β = .17, p = .018) food reinforcement were positively related to child percent fat. Furthermore, child and parent snack food reinforcement interacted to predict child percent fat (β = -.13, p = .054) and zBMI (β = -.19, p = .007), such that children's snack food reinforcement positively correlated with their weight status only if their parent had low food reinforcement (ps < .02). Conversely, children of parents with high snack food reinforcement had generally higher percent fat and zBMI, regardless of their own level of snack food reinforcement (ps > .40). There were no main or interactive effects of parent and child fruit/vegetable reinforcement on children's body composition (ps > .30). **Conclusions:** Both child and parent snack food reinforcement are important factors related to child body composition, and pediatric obesity treatments might benefit from targeting both parent and child snack food reinforcement.

335-P
Decreases in Maternal Criticism Are Associated With Positive Weight Outcomes For Adolescents Participating in a Weight Management Program

Elizabeth S. Kuhl, Wendy Hadley *Providence, RI*; Elizabeth E. Lloyd-Richardson *North Dartmouth, MA*; Danielle R. Oster *Providence, RI*; Amy Sato *Kent, OH*; Elissa Jelalian *Providence, RI*

Background: Weight-based teasing by family members is common and may impact adolescent weight control efforts. The purpose of this study was to examine whether decreases in adolescent reports of parent weight-based teasing and criticism were associated with weight outcome in families participating in an obesity treatment study. **Methods:** Adolescents(M_{BMI}=31.95,M_{Age}=15.08 years,72% female) and parents(M_{BMI}=30.64,M_{Age}=46.10 years,98% mothers) were randomized to a 16-week, group-based behavioral weight loss program with active(Enhanced Parent,EP;n=19) compared to minimal parent involvement(Minimal Parent,MP;n=24). EP parents attended all sessions, which included communication skills training to improve parental support of adolescent weight-loss efforts. MP parents attended 3 sessions that reviewed adolescent progress. Adolescent report on the Family Experiences Related to Food Questionnaire and Perception of Teasing Scale was used to measure changes in parent weight-based criticism and teasing. **Results:** Baseline levels of parent weight-based teasing were low for both groups and did not change across treatment. MP adolescents reported significantly greater reductions in maternal negative commentary from baseline to post-treatment compared to EP adolescents($F_{1,40}$=6.48,p<0.05). A trend that $M_{\Delta BMI}$ was greater for MP compared to EP adolescents was also observed(difference=-0.59,p=0.08). Decreases in maternal negative commentary were significantly associated with decreases in adolescent BMI(r=0.35, p=0.01) for the overall sample. **Conclusions:** Our findings suggest decreasing parent weight-based criticism is important to adolescent weight control. To our surprise, greater reductions in maternal weight-based criticism were reported in the absence of communication training and appear to result from parents taking a less-active role in their adolescent's weight loss efforts.

336-P
A Pilot Randomized Control Trial Comparing Behavioral Intervention to Enhanced Standard of Care For Treatment of Obesity in Preschoolers

Elizabeth S. Kuhl, Lisa M. Clifford, Joseph R. Rausch, Lori J. Stark *Cincinnati, OH*

Background: Few interventions have targeted weight management in preschoolers even though 12.1% of this age-group is already obese. This study presents outcomes of the second iteration of a pilot RCT comparing a clinic- and home-based behavioral intervention(BI) to enhanced standard of care(ESC) on weight for obese preschoolers(M_{BMIz}=2.33, 72% girls; 78% Caucasian) and their overweight/obese parent(M_{BMI}=35.86; 83% mothers). **Methods:** BI(n=7) received 18-sessions(9 group sessions, 9 home visits) focusing on use of general child management and behavioral weight loss strategies to address developmentally-specific barriers to lifestyle modification(e.g., tantrums for food). ESC families received a 60-minute pediatrician counseling session. Preschooler and parent anthropometric measures were assessed at baseline, post-treatment(6 months), and 6 month follow-up. **Results:** Compared to ESC, BI preschoolers experienced significantly greater reductions in BMIz from baseline to post-treatment(difference in $M_{\Delta BMIz}$=0.30, p<0.05, d=1.02) that were maintained at 6 months(difference in $M_{\Delta BMIz}$=0.47, p<0.05, d=1.21). BMI decreased for BI parents but increased for ESC parents at post-treatment(difference in $M_{\Delta BMI}$=2.01) and 6 months(difference in $M_{\Delta BMI}$=1.65), but these differences were not statistically significant. By the 6-month follow-up, 43% of BI preschoolers met criteria for being overweight and 17% of their parents achieved a healthy weight status whereas 100% of ESC preschoolers and 73% of their parents remained obese. **Conclusions:** Results support our earlier findings that intensive, behavioral intervention is more efficacious in preschool weight management than enhanced standard of care. Findings that BI families continued to lose weight at the 6-month follow-up are especially positive as they suggest program effects endured even in the absence of structured intervention.

337-P
School-Based Obesity Intervention: Inclusion of Peers

Craig A. Johnston, Jennette Moreno, Deborah L. Woehler, Abeer A. El-Mubasher, Maria A. Papaioannou *Houston, TX*

Background: The increasing prevalence of childhood obesity (Ogden et al., 2012) and the comorbid physical and psychological health problems (Daniels, Jacobson, McCrindle, Eckel, & Sanner, 2009) highlight a pressing need to identify effective treatments that address this public health problem during the childhood years (Sánchez-Viveros, Barquera, Medina-Solis, Velázquez-Alva, & Valdez, 2008; Tanofsky-Kraff et al., 2004; Young-Hyman et al., 2006; Zeller, Saelens, Roehrig, Kirk, & Daniels, 2004). The purpose of the current study was to evaluate a school-based pediatric obesity program for middle-school children. **Methods:** A total of 163 adolescents between the ages of 11 and 12 were recruited, with 74 adolescents being at or above the 85th percentile for body mass index (BMI). Participants were randomized to a peer-mentor intervention (PM, n=38) or treatment as usual (TAU, n=36) condition. The PM condition received nutrition education that included lifestyle change techniques once a week and participated in physical activity the other 4 days of the week. The PM condition was led by peer mentors and program staff. The TAU condition received a typical health and physical education class. **Results:** Repeated Measures ANOVA was used to evaluate weight changes between the groups using standardized BMIs from baseline to 3 months. Adolescents in the PM condition significantly reduced their zBMI when compared to the adolescents in the TAU condition (F = 5.7, p < 0.05). **Conclusions:** This study suggests that an integrated health program supported by peers is a promising approach for school-based pediatric obe-

sity prevention. This project was funded by a grant from the Oliver Foundation.

338-P[DT]

Long-Term BMI Results From Motivating Adolescents With Technology to Choose Health (MATCH) and Associated Current Health Behaviors

Suzanne Lazorick, George T. Hardison, Xiangming Fang, Yancey Crawford, Veronica Burr, Valeria Moore *Greenville, NC*

Background: Since 2006, 7th graders in low-resource, high-obesity schools in rural NC participated in Motivating Adolescents with Technology to Choose Health (MATCH). Published pilot BMI results at 2 years were promising. We report results at 4-5 years with health habits. **Methods:** Using longitudinal repeated measures analyses, we studied the first 2 MATCH groups at 4 or 5 time points over up to 5 years. Outcome measures include: BMI Z-score, BMI %ile for age/gender and weight category. Linear mixed models were used to investigate the gender difference and temporal trend in BMI %ile and Z score over time. Statistical comparisons were carried out using t tests or ANOVA (continuous variables) and Chi-Square tests (categorical). Students also self reported by questionnaire nutrition and Physical Activity (PA) habits at follow up (f/u). **Results:** Cohort (n=195) at baseline: mean BMI 24.5; female 53%; African American 62%; weight category: overweight (OW) 19%; obese (OB) 34%. We re-measured 54% (n=106) for long-term f/u with no differences in those lost to f/u in gender, ethnicity or weight status. Reporting changes from baseline to f/u, statistically significant ($p \leq 0.005$) decreasing trends over time are shown for BMI Z-score and BMI %ile, with mean BMI %iles decreasing for OW and OB, respectively, from 90.7 to 81.6 and 98.1 to 94.1. Boys decreased > girls. Proportions of students in each weight category changed as follows: Healthy weight (HW) increased from 49 to 63%, and OW and OB decreased, respectively, from 20 to 12% and 31 to 25%. Intake of sweet drinks and high fat snacks trended with weight status: lowest HW, highest OW, and OB between. Detailed behavior results will be discussed. **Conclusions:** With over half of participants re-measured for long term f/u, many MATCH participants sustained improved BMI over 4-5 years and habits correlated with weight category.

339-P

Baseline Lipids and Weight Loss Among Youth Are Associated With Ad36 Antibody Status

Jillon S. Vander Wal *St. Louis, MO*; Jean Huelsing *Imperial, MO*; Olga Dubuisson, Nikhil V. Dhurandhar *Baton Rouge, LA*

Background: The human adenovirus 36 (Ad36) is linked with greater adiposity, but lower lipid levels in animal models and human adults. Among children however, one study supports the association between Ad36 AB status and normative lipid findings while another does not. Moreover, in response to weight loss interventions, Ad36 positivity is associated with greater weight loss among Italian adults, but lesser weight loss among South Korean children. Therefore, the objectives were to determine if Ad36 AB status in children from the United States is associated with 1) lower lipid values and 2) weight loss response. **Methods:** Ad36 AB status was ascertained among 73 youth (mean age 13.44; SD = 1.96) attending a 4-week residential weight loss treatment camp conducted in the Midwest. Fasting lipids were ascertained at baseline. Outcomes included reductions in indices of body size and fitness. **Results:** Seventeen youth (23.3%) tested Ad36 AB+. At baseline, Ad36 AB+ youth evidenced significantly lower levels of total cholesterol and triglycerides than Ad36 AB- youth (p's < .05). Four week outcomes showed that the mean weight loss for the participants was 6.8 kg (SD = 2.3 kg). Ad36 AB+ youth showed smaller reductions in BMI percentiles ($p < .05$) and z-BMI scores ($p < .09$) than Ad36 AB- youth—a difference of 0.48 kg. However, Ad36 AB+ youth evidenced greater reductions in diastolic blood pressures ($p < .03$) than Ad36 AB- youth. **Conclusions:** Results confirm an association between Ad36 AB+ status and normative lipid profiles, but a minimal association with short-term weight loss. The effect of Ad36 status in studies involving the associations among pediatric obesity, weight management, and lipids should be addressed.

340-P[DT]

Family Meals, Screen Time and Overweight/Obesity in Immigrant Children

Alison Tovar, Rebecca J. Boulos, Sarah Sliwa, Emily Kuross Vikre *Boston, MA*; Alex Pirie *Somerville, MA*; Christina D. Economos *Boston, MA*

Background: Household routines, including family meals and watching television have been associated with overweight/obesity (ov/ob). However, this has been under-explored in immigrant children. Given that immigrants' risk for becoming ov/ob increases with time in the US, it is crucial to identify modifiable risk factors in this population. **Methods:** Participants were mother/child dyads (n=383) enrolled in LiveWell, a community-based, participatory, randomized controlled lifestyle intervention to prevent weight gain in new immigrants (≤10 years in the U.S.). Mothers were asked about sociodemographics, the number of days/week dinner was eaten as a family; and the number of weekday hours her child spends watching TV/watching videos/playing computer games/on computer or internet. For children, height and weight measurements were transformed into BMI z-scores using age-and sex-specific CDC standards and categorized as overweight (85th–94th %) and obese (≥95th %), mothers' measures were reported as BMI and categorized as normal (overweight (≥ 25) and obese. Total screen time was calculated by summing daily hours reported. **Results:** Families are 36% Brazilian, 30% Latina, and 34% Haitian; 71% of mothers and 43% of children are ov/ob. Most mothers (72%) reported their child spends ≥4 hrs/day in front of a screen; 58% reported they ate dinner as a family <5 times/week. Adjusting for ethnic group, marital status, number of children, education, years in US, and maternal BMI; children eating family dinner <5 times/week vs. ≥5 times/week, and engaging in ≥4hrs of screen time/day vs. <4 hrs/day, were almost two times more likely to be ov/ob (OR=1.7, 95% CI 1.1-2.7 and OR=1.7, 95% CI 1.0-2.9, respectively). **Conclusions:** Family meals and screen time may be a promising target for obesity prevention among immigrant families.

341-P

Multidisciplinary Childhood Obesity Treatment is Associated With Body Mass Reduction and Improved Quality of Life

Wendy M. Miller *Royal Oak, MI*; Brian R. Goslin *Rochester, MI*; Judy Boura, Catherine Coleman *Royal Oak, MI*; Patricia A. Wren, Ronald Gellish *Rochester, MI*; Ronette Kolotkin *Durham, NC*

Background: Data on the efficacy of a comprehensive multidisciplinary intervention for childhood obesity (stage 3 approach in the Expert Committee's recommendations) are limited. We evaluated the impact of a multidisciplinary treatment program on body mass and quality of life. **Methods:** Obese children (N=33, ages 8 to 12 years) participated in a prospective pilot study that included 12 weekly individualized, educational sessions alternating between a psychologist, dietitian, and exercise physiologist, followed by 6 monthly group sessions. Baseline and follow-up body mass index (BMI) and surveys were completed. **Results:** Mean age, BMI percentile and BMI z-score were 9.9 ± 1.1 years, 98.8 ± 0.9%, and 2.4 ± 0.3, respectively. BMI z-scores were significantly lower at 3 months and 9 months compared with baseline, with z-scores of 2.3 ± 0.3 (p=0.03) and 2.2 ± 0.4 (p=0.006), respectively. Quality of life, measured by the Impact of Weight on Quality of Life-Kids (IWQOL-Kids), showed significant improvement from baseline (78.4 ± 12.2) at both 3 months (84.1 ± 13.0, p=0.002) and 9 months (85.5 ± 11.9, p=0.004). **Conclusions:** A 9-month comprehensive multidisciplinary program was associated with reduction in body mass and improvement in weight-related quality of life. Further research is warranted to assess long-term outcomes of this type of intervention.

342-P[DT]

Effects of a School-Based Intensive Intervention on Systemic Inflammation and Disease Risk in Mexican-American Children

Whitney L. Breslin, Craig A. Johnston, Jennette Moreno, John P. Foreyt, Brian K. McFarlin *Houston, TX*

Background: Childhood obesity is associated with an increased risk for cardiovascular disease and type 2 Diabetes Mellitus. Systemic inflammation is thought to mediate this relationship. We have previously demonstrated that an intervention designed specifically for Mexican-American children that incorporates both physical activity and nutrition counseling leads to a reduction in zBMI. Thus, this intervention may subsequently reduce obesity-related

systemic inflammation and disease risk. Purpose: To evaluate the effects of a 6-month school-based intensive intervention on circulating markers of systemic inflammation and disease risk. **Methods:** Mexican-American children (12-13 y) classified as either normal weight, overweight, or obese participated in a 6-month physical activity/nutrition designed to maintain or reduce zBMI. IL-6, IL-10, TNF-α, MCP-1, and CX3CL1 were measured as markers of inflammation using a multiplex assay. Total cholesterol, HDL, triglycerides, glucose, and insulin were measured using an enzymatic assay. **Results:** Results: At baseline, obese children have significantly greater circulating MCP-1 (P=0.015) and TNF-α (P=0.002), along with elevated triglycerides (P<0.001) and reduced HDL (P=0.033), compared to healthy weight children. We are in the process of analyzing data to determine how these outcome variables changed over the course of an intervention, designed to reduce zBMI. **Conclusions:** Conclusions: As demonstrated, childhood obesity results in an increase in systemic inflammation and disease risk. Reducing zBMI through an intensive intervention may concurrently reduce systemic inflammation and disease risk.

343-P[DT]

A Comparison of Fat Mass By Bioelectrical Impedance Analysis and Air Displacement Plethysmography in African American College Students

Amy Schweitzer, Eleanor R. Mackey, Maria-Eugenia Hurtado, Joanne Hathway, Catherine J. Klein *Washington, DC*; Kai Y. Lei *College Park, MD*

Background: Bioelectrical impedance analysis (BIA) offers a more portable estimation of body fat mass compared to air displacement plethysmography (ADP). However, the comparability of the two methods is unknown in African American college students, a group at risk for weight gain. **Methods:** In an ongoing study of an internet-based intervention in college students to improve health behaviors, BIA and ADP (BodPod®) were used consecutively to estimate body fat mass percent (%FM) in 50 students enrolled at a historically black college. Height, weight, suprailiac waist circumference (WC), hip circumference (HC), and %FM by BIA were measured in triplicate. **Results:** Students were 18-20 years old, 76% female, 92% Black, 8% mixed race, with a mean body mass index (BMI) of 24.7± 3.83 kg/m2. Mean %FM estimated by BIA (30.7±8.72%) was significantly higher than %FM by ADP (27.2±8.28%) p<0.001. Mean individual difference in %FM BIA versus ADP was 3.0±4.7 %FM (range -14 to 18 %FM). Fifty-seven percent and 42% of participants were categorized as overfat by BIA and ADP respectively. When participants were assigned to disease risk by %FM, 17 participants changed fat mass category when using ADP compared to BIA; 15 were categorized at lower disease risk, 2 were categorized at higher risk. When comparing %FM to BMI, WC and HC, Pearson correlations were significant (p<0.001) for both BIA and ADP. **Conclusions:** Although BIA may estimate higher %FM than ADP in Black college students, both measures are highly correlated to other measures of fat and to each other. In this sample BIA appeared to be a reliable measure of body fat.

344-P

Gift of Health Through Nutrition and Exercise: Feasibility of a Community-Based Intervention With Caregiver-Child Dyads

Cynthia A. Danford *Ann Arbor, MI*; Feleta L. Wilson, Cheryl K. Nordstrom *Detroit, MI*

Background: Families with children are prime targets for prevention of obesity due to strong links between obesity within families and caregiver influence on child activity/eating choices. The "Gift of Health Through Nutrition and Exercise" program (GOH) was developed to foster family interaction to achieve and sustain healthy eating/activity behaviors. The aim of this study was to test the feasibility and effectiveness of the GOH program with caregiver-child dyads. **Methods:** This pre- and post-intervention feasibility study was conducted with 24 caregiver-child (7-14 years) dyads from parish communities. Dyads participated in a one-month healthy eating/activity program including sessions on "Whoa, slow, go " foods, label reading, healthy portions, and burning calories alternating with chair aerobics. Pre-, post-intervention, and 2-month follow up data examined BMI, weight perception, eating/activity habits, barriers, and eating habits confidence. **Results:** Parishes were receptive to supporting GOH. Good retention of dyads (96%) was demonstrated with completion of all sessions. Overweight/obese children (46%) and caregivers (83%) had no significant change in BMI. Trends reflected slight weight loss in adults and weight maintenance in children. Confidence in changing habits was neutral. Caregivers (22%) believe they get enough exercise but report less than other adults. Caregiver perception of child weight became distorted as child BMI increased. **Conclusions:** Parish communities provide a supportive environment for healthy eating/activity programs. Including caregivers and children in a joint healthy eating/activity program promotes accountability, fostering a family approach to counteract obesity. More extensive programing with boosters for sustainability is recommended to improve positive change over time.

345-P[DT]

Opportunities to Strengthen Childhood Obesity Prevention in Two Mexican Health Care Settings

Elizabeth Cespedes *Boston, MA*; Gloria Martinez-Andrade *Mexico City, Mexico*; Guadalupe Rodríguez-Oliveros *Cuernavaca, Mexico*; Ricardo Perez-Cuevas, Marco González-Unzaga, Maria Amalia Benitez Trejo *Mexico City, Mexico*; Jess Haines *Guelph, Canada*; Matthew W. Gillman, Elsie M. Taveras *Boston, MA*

Background: The purpose of this study was to examine Mexican caregivers' perceptions of the role of primary care in childhood obesity management, understand the barriers and facilitators of behavior change, and identify opportunities to strengthen obesity prevention and treatment in clinical settings. **Methods:** We conducted 52 in-depth interviews with parents and caregivers of overweight and obese children age 2-5 years in 4 Ministry of Health (public, low SES) and 4 Social Security Institute (insured, higher SES) primary care clinics in Mexico City and did systematic thematic analysis. **Results:** In both health systems, caregivers acknowledged childhood overweight but not its adverse health consequences. Although the majority of parents had not received nutrition or physical activity recommendations from health providers, many were open to clinician guidance. Despite knowledge of healthful nutrition and physical activity, parents identified several barriers to change including child feeding occurring in the context of competing priorities (work schedules, spouses' food preferences), and cultural norms (heavy as healthy, food as nurturance) that take precedence over adherence to dietary guidelines. Physical activity, while viewed favorably, is not a structured part of most preschooler's routines as reported by parents. **Conclusions:** The likelihood of success for clinic-based obesity prevention among Mexican preschoolers will be higher by addressing contextual barriers such as cultural norms regarding children's weight and support of family members for behavior change. Similarities in caregivers' perceptions across 2 health systems highlight the possibility of developing comprehensive interventions for the population as a whole.

346-P

Pilot RCT Examining Parental Involvement in Adolescent Weight Control

Elissa Jelalian, Wendy Hadley *Providence, RI*; Elizabeth E. Lloyd-Richardson *North Dartmouth, MA*; Elizabeth S. Kuhl, Danielle R. Oster *Providence, RI*; Amy Sato *Kent, OH*

Background: The importance of parent involvement in behavioral weight control (BWC) for teens is unclear. This study sought to examine the acceptability and initial efficacy of an adolescent BWC intervention with enhanced parent involvement (EP) compared to a minimal parent condition (MP). **Methods:** Obese adolescents (N=50; M_{age}=14.78 years; M_{BMI}=31.95; 72% female) and their primary caregiver (M_{age}=46.10 years; M_{BMI}=30.59; 98% mothers) were randomized to a 16-week group BWC intervention with enhanced or minimal parent involvement. EP parents attended weekly meetings; set independent weight goals; and participated in activities to enhance parent-teen communication. MP parents attended 3 sessions focused on nutrition education. Weight and height were collected at baseline and end of treatment. Measures of treatment satisfaction were obtained (anonymously) post intervention. **Results:** 86% of teens were retained through the intervention. There was no difference in the percent of sessions attended based on treatment condition. Significant decreases in BMI were observed for teens in both conditions over time, F(1,40)=6.22, p=.02. While the interaction between time and treatment condition was non-significant, there was a trend favoring the MP condition, F(1,40) = 3.07, p=.09. There was a trend for teens assigned to MP to be more likely to demonstrate a minimum decrease of 1 BMI unit, X^2=3.05, p =.08. Adolescents assigned to both conditions reported a high level of satisfaction with the treatment they received (80% in MP and 78% in EP). 72% of adolescents in the EP condition were satisfied with the level of

parental involvement, compared to 52% of those assigned to MP (p=.07). **Conclusions:** While adolescents assigned to EP tended to demonstrate more satisfaction with the increased level of parental involvement, this did not translate to greater weight reduction.

347-P
Quantity and Quality of Sleep As Predictors of Physical Activity Among Overweight, Depressed, Adolescent Females With Polycystic Ovary Syndrome

Karen P. Jakubowski, Nermeen El Nokali, Kevin Kralik *Pittsburgh, PA*; Jessica J. Black *Cincinnati, OH*; Dana Rofey *Pittsburgh, PA*

Background: Obesity interventions for adolescents have traditionally focused on diet and physical activity (PA), typically seeing modest, positive results. Such findings imply that there may be important unidentified factors related to weight loss. Accordingly, sleep duration and quality are gaining attention across the obesity literature as research indicates that poor quality or shortened sleep may be associated with changes in PA the following day. To date, examinations of sleep and PA have been largely limited by the use of self-report measures or laboratory designs, which may impede the natural sleep/wake cycle. The current study aims to address these limitations through the use of novel, objective Ecological Momentary Assessment (EMA) methods. We hypothesize that compromised nightly sleep duration or quality (efficiency) will be associated with reduced PA the following day (steps taken or total moderate to vigorous PA; MVPA). **Methods:** Participants are overweight, depressed female adolescents with Polycystic Ovary Syndrome (PCOS) in an ongoing, 11 session behavioral weight loss intervention (n= 42, mean BMI= 36.94; 86% Caucasian). The SenseWear Pro, a wearable actigraph with a galvanic skin response sensor, provides objective measures of PA and sleep and is worn over 3 weekends (Thursday-Monday) during the program. Mixed models will be used to examine associations between sleep and PA, accounting for the nesting of assessments within subjects across time. **Results:** Preliminary results suggest significant associations of sleep duration ($p<0.01$) and quality ($p<0.05$) with total steps taken and sleep duration with total MVPA ($p<.01$). **Conclusions:** In summary, a broad-based intervention utilizing cognitive behavioral therapy and motivational interviewing facets and encompassing nutrition, PA, and sleep may be warranted.

348-P
In Their Own Words: Seventh Graders' Assessment of Changes From MATCH, a Middle School-Based Childhood Obesity Intervention

Suzanne Lazorick *Greenville, NC*; Claire I. Viadro *Chapel Hill, NC*; Veronica Burr, Hannah E. Woriax, Yancey Crawford, George T. Hardison *Greenville, NC*

Background: Since 2006, 7th graders in low-resource, high-obesity schools in rural North Carolina participated in Motivating Adolescents with Technology to Choose Health (MATCH). Published pilot results are promising for improved BMI after 2 years. Within standard curriculum, MATCH combines group education with skill-building for nutrition and physical activity (PA) change. **Methods:** Just before MATCH's end, students write an essay describing how MATCH "changed their behavior to become healthier" and any family changes. With NVivo 9 qualitative software we analyzed 196 usable essays from 2 schools (2008 and 2010). Two assistants coded essays using a descriptive and interpretive framework informed by health behavior theory. **Results:** Preliminary pattern analysis indicates that themes of "becoming healthier" and "family changes" were common. Students used the word "healthy" (or variations) >500 times and family words >300 times. Students described knowledge and behavior changes for nutrition and PA. Some discussed changes vaguely ("making better food choices," "not overeating"). However, noteworthy proportions (8-17%) specifically mentioned consuming more water, less soda, more fruits and vegetables, and less junk or fast food. A third reported "becoming more active," with some detail about types of PA. About 10% reported losing weight, others reported family weight loss, and some described benefits like increased alertness or stamina. Roughly 25% described impacts on family eating and PA patterns. Peer influences were rarely mentioned. **Conclusions:** Although words may reflect some degree of social desirability, student essays suggest that some adolescents responded to MATCH with relevant nutrition, PA, and even family changes. To the extent permitted by 7th-grade writing, we will explore these themes in more depth.

349-P[DT]
Supporting Autonomy of Obese Minority Youth Participating in a Weight Loss Study: Offering the Choice of Diet Plans

Kathryn Brogan, Sylvie Naar-King, Deborah Ellis, Kai-Lin, Catherine Jen *Detroit, MI*

Background: Weight loss success remains a challenging problem in obese populations, especially minority youth. A common component of many weight loss programs is a prescribed diet plan. Autonomy is a key element of Motivational Interviewing (MI), an evidence-based behavior change communication. **Methods:** By offering the choice of diet plans, either a total calorie goal (tracking all calories from food, beverages and exercise with goal range of 1600-2000 based on age and gender; TCG) or a 500 calorie deficit (adjusting typical habits for a deficit of 500 calories per day from foods, beverages and exercise; CD), our project offers nutritional education in combination with MI and Cognitive Behavioral Therapy to promote weight loss in obese African American (AA) youth. **Results:** The 64 AA adolescents (12 to 16 yrs, mean: 13 yrs, 8 mo ± 1 yr 4 months, 58% female) enrolled to date have a mean BMI of 38.7 ± 7.7 kg/m2. Fifty-three percent (n = 34) have chosen the TCG and 47% (n = 30) the CD. No difference was found between the choice of diet plan in the individual factors such as gender, BMI, food preference, healthy food knowledge or age of youth ($p > 0.05$). Family factors such as income and primary caregiver education level ($p > 0.05$) also did not influence choice of diet plans. **Conclusions:** Results indicate that individual and familial demographic characteristics do not play a role in diet plan selection of these obese AA adolescents and both plans are acceptable. Offering choice of diet plans to youth participating in weight loss studies suggests a novel strategy to increase intrinsic motivation for change by supporting autonomy.

350-P
Mothers Report Fewer Behavioral Concerns and Higher Confidence in Managing Behavior Issues After a 3-Phase Camp Intervention

Cristiana Milone, Karen A. Lindsley, Laura Colbert, Courtney McCracken, Andrew Muir *Atlanta, GA*

Background: The value of including parents in childhood obesity programs is debated. We report an association between improved maternal problem solving and decreased body fat in children who completed a family lifestyle camp. **Methods:** Child-mother dyads (n = 86) attended a 3-phase overnight camp. Children, 8-14 years had a BMI>95%'ile for age and sex. The nutrition curriculum applied a non-diet approach during child- or parent-specific and combined sessions. Anthropometrics were measured at the start of each phase. Body composition was measured in a portable displacement plethysmography unit at the start of phase 2 and end of phase 3. Questionnaires were administered at the start and end of the program. Outcomes were analyzed by rank sum or paired t-tests. **Results:** All 3 phases were completed by 49 dyads in 3 to 6 months. Children's percent fat decreased and lean mass increased between phases 2-3 ($p=0.006$). Using the Lifestyle Behavior Checklist (LBC), maternal reports of the child eating as coping mechanism, eating too much, hiding food, and complaints about being overweight correlated with the child's baseline fat mass ($p<0.05$). Mothers reported fewer behavioral concerns ($p = 0.03$) and higher confidence in managing behavior issues after phase 3 ($p = 0.001$). Children did not self-report altered eating or activity after camp. **Conclusions:** The camp program improved the confidence of mothers to manage lifestyle-related behaviors in their children. Children were unaware of lifestyle changes, yet most reversed fat gain. Parent-only interventions addressing parenting skills, feeding styles, and managing high-risk behaviors promoted success in this childhood obesity treatment.

351-P
Do Children Really Eat What They Like? Results From a Laboratory Feeding Study in 4-6 Year-Olds

Laura Kuilema, Kathleen Keller *University Park, PA*

Background: Though it is widely assumed children "eat what they like," studies testing this relationship in the laboratory have been sparse. Understanding the association between liking and intake is important for developing effective strategies to prevent childhood obesity. The objective of this study was to test the association between children's rated liking of 4 high- and low-fat test foods and their *ad libitum* intakes of the same foods. **Methods:** 81 children (mean ± SD age = 66.6 ± 9.7 months, mean BMI z-

score: 1.00 ± 1.02) with diverse ethnic backgrounds attended 2 laboratory test meals. The meals were high- or low-fat versions of macaroni and cheese, pudding, plain milk, and chocolate milk. Liking was assessed prior to each meal by asking children to taste and rate samples of each food on a 5-point facial hedonic scale. Partial correlations adjusting for age (months) were calculated to determine the relationship between children's liking ratings and caloric intake of the same food. **Results:** Children's liking ratings were positively associated with intakes of both the low-fat (partial r=0.310, p=.009) and high-fat (partial r=0.233, p=0.049) macaroni and cheese. Liking ratings and intake were also positively associated for pudding, both the low-fat (partial r=0.348, p=0.003) and high-fat (partial r=0.374, p=0.001) versions. Neither calories from white milk nor chocolate milk were correlated with liking ratings for these foods in either fat content condition. **Conclusions:** The relationship between children's liking and intake of solid foods (macaroni and cheese and pudding) was positively associated, regardless of fat content of these foods. However, liking and intake of beverages (milks) was not associated. These results may be useful for incorporating liking ratings into obesity intervention studies.

352-P
Addiction Model Intervention For Childhood Obesity, Implemented as a Smartphone App: A Pilot Study

Robert Pretlow *Seattle, WA*

Background: Current interventions for obese youth are only marginally successful, with generally poor long term results. Emerging evidence points to addiction to highly pleasurable foods as a significant cause of childhood obesity [1,2]. Evaluation of addiction treatment methods is warranted. **Methods:** An iPhone app obesity intervention was developed based on the addiction model and included: 1) listing and photographing problem foods by users, with sequential withdrawal from each food, 2) self esteem, motivation, and coping skills augmentation, and 3) buddy, mentor, and peer community support. Participants stored their plans and motivational photos in the app to fend off overwhelming cravings, impending binges, etc. Minimal parental involvement was required. A 10 week pilot study was carried out with 12 obese youth, ages 8-21. Data consisted of self-reported weekly weigh-ins and an exit questionnaire. **Results:** The app was understandable by all participants, except those under age 10. Mean weight loss was 6.1 lb. (SD 6). On a scale of 1-5, 5 being the most positive, participant mean ratings on the exit questionnaire included: Overall 4.0; Buddy chat 4.6; Mentor eRoom 4.0; Peer bulletin board 3.8; Problem Food Control Panel 4.2; Reasons I want to be thinner 4.2; Weigh-in chart 3.6. Thirty-one percent of parents confiscated the iPhones for disciplinary reasons during the study. **Conclusions:** Efficacy of the addiction problem-food model appears equivalent to face-to-face conventional interventions for childhood obesity. Advantages of the app intervention include high acceptance by adolescents, low cost, and the app may be used indefinitely to avoid relapse. References: 1) Pretlow, R., Eating Disorders. 2011;19(4):295-307. 2) Gearhardt, et al., Arch Gen Psychiatry. 2011;68(8):808-816.

353-P
Cooking Healthy to Eat Foods (CHEF) – A Study of Hands-On Meal Preparation For the Treatment of Adolescent Obesity

Chanelle T. Bishop-Gilyard, Thomas A. Wadden, Robert I. Berkowitz, Colleen F. Bechtel, Priscilla Costa, Megan Brault, Brooke A. Bailer, Sharon Leonard, Monica Mullen, Theodora K. Wong, David Sarwer, Renee H. Moore *Philadelphia, PA*

Background: Little is known about obese adolescents' involvement in meal preparation or its potential impact on weight. This study tested the feasibility and acceptability of an innovative weight-loss program to promote healthy eating by incorporating hands-on meal preparation. **Methods:** Eighteen females (M ± SD: BMI = 35.04 ± 6.65 kg/m2; age = 13.40 ± 1.35 years; 80% Black, 15% White) were randomized to a 12-week family-based lifestyle modification program (LMP) or to the same program combined with experiential cooking (CHEF). Parents and adolescents attended separate groups and completed measures on weight, nutrition knowledge, food availability, meal preparation skills, and program acceptability. Summary statistics, comparison, and correlation analyses were performed. **Results:** At baseline, 89% cooked, 100% wanted to learn to cook healthy, and 88% believed learning would help their weight-loss goals. Retention was high (89% CHEF, 100% LMP) at weeks 6 and 12 (78% CHEF, 100% LMP). The CHEF group lost more weight than the LMP group at week 6 (CHEF: -1.06 kg versus LMP: +0.35 kg) and week 12 (-1.29 kg versus +0.58 kg) (p=0.05). A trend was observed for less obesogenic foods in the home in the CHEF group compared to the LMP group at week 6 (p= 0.10). The CHEF group reported a high degree of program acceptability (100%). There were no group differences in program adherence, nutrition knowledge, or meal preparation skills. **Conclusions:** An innovative, hands-on cooking approach to weight-loss was both feasible and acceptable in obese females and increased weight loss. These results await replication in a larger, longer-term trial.

354-P
Randomized Control Trial of a Weight Management Program Targeting Both Parent and Child Weight Loss

Cathleen Odar *Kansas City, MO*; Marina Daldalian, Kelsey Dean *Kansas City, KS*; Ann M. Davis *Kansas City, MO*

Background: Research has demonstrated the effectiveness of lifestyle interventions incorporating a parent training program, an exercise program, and dietary or nutritional education for treatment of pediatric obesity (e.g. Gilles et al., 2008). However, fewer studies have evaluated treatment programs in which both parent and child weight loss are actively targeted. Therefore, the current study aims to evaluate a behaviorally based pediatric obesity program, Healthy Hawks Super, consisting of 12 sessions in which parents and children participate, and both parent and child weight loss are targeted. **Methods:** Ninety-six overweight children and their families were randomized to either the wait-list control or active treatment condition of Healthy Hawks Super. **Results:** Sixty-nine families completed treatment (i.e. completed baseline and post-treatment analyses and at least 50% of treatment sessions) and were included in study analyses. Mothers in the active treatment condition displayed significantly greater reductions in Body Mass Index (BMI) than mothers in the waitlist control group ($F(2, 51) = 5.880$, $p = .019$, Treatment BMI Change = -.351 compared to Wait List BMI Change = .211). No significant group differences in child BMI-z were found, although both groups did show reductions in BMI-z. Regarding changes in physical activity or dietary behaviors for children, no significant group differences were found for change in moderate to vigorous exercise, sedentary behavior, total kilocalories, or fruit and vegetables intake. An interesting pattern of change in sweetened beverage consumption was found ($F(1, 42) = 31.067$, $p < .001$), with the treatment group showing greater increase in consumption. **Conclusions:** A weight management program targeting both parent and child health was found effective for reducing maternal BMI and maintaining child BMI-z.

355-P
Efficacy of a Program of Cognitive Behavioral Treatment in Overweight Adolescents

Ricardo Lanza Saiz *Madrid. Santander, Spain*; Jesus Lino Alvarez Granda, María Jesus Cabero Perez, Trinidad Dierssen Sotos, Luis Gaite Pindado, María José Noriega Borge, Raul Pesquera Cabezas, Miguel García Fuentes *Santander, Spain*

Background: Cognitive-behavioral treatment is a therapeutic possibility for obese adolescents whose efficacy is not completely assessed. In this communication we present the results of application of a cognitive-behavioral program in overweighed adolescents no responders to previous intervention. We also analyzed the relationship of this efficacy with age, sex and the degree of overweighed. **Methods:** 60 overweighed adolescents, 9-18 years old (37 of them were obese according to the criteria of Cole et al. 2000), 24 males and 36 women, were treated. A cognitive-behavioral program was applied through 11 sessions of 30 minutes for 6 months. The efficacy of treatment was valuated measuring the reduction obtained of the Body Mass Index (BMI) with the intervention. Comparison of averages was carried out by the student t test and the relation between BMI reduction and age of patients through lineal regression analysis. **Results:** At the beginning of the intervention the BMI of the 60 adolescents was 28.23 (SD=4.25) and at the end it was 26.17 (SD=5.43) $p<0.005$. Reduction of BMI (1.8 of average) was obtained in 54 adolescents. No relation was found between reduction of BMI and age, sex or degree of overweight. **Conclusions:** As a conclusion, we could claim that the cognitive behavior program we have applied, has a high level of efficacy (90%). This one is not related with age, sex and degree of overweight.

356-P
Support From Family and Friends to Eat Healthy Among African-American College Students and the Association With Fruit Intake

Eleanor R. Mackey, Joanne Hathway, Amy Schweitzer, Maria-Eugenia Hurtado *Washington, DC*; Kai Y. Lei *College Park, MD*; Catherine J. Klein *Washington, DC*

Background: College students demonstrate poor eating habits at a time in development when setting a foundation for healthful eating is crucial. Existing research indicates that support from family and friends as well as self-efficacy are important correlates of healthful eating. The current study utilized baseline data from a larger randomized controlled trial of an internet-based intervention to prevent weight gain in college students to examine the mediating relationship of support from family and friends for eating healthfully and fruit intake, mediated by self-efficacy for healthful eating in African-American college students. **Methods:** Participants were 47 college students ages 18 to 20 years old (M=19.02, SD=.85; 76% Female; 92% African American/8% Mixed Ethnicity). The Block Food Frequency Questionnaire was used to assess fruit intake and included individual items assessing the amount of support students receive from family and friends to eat healthfully and confidence in one's ability to make lasting changes to dietary habits. **Results:** Data were analyzed using bootstrapping in hierarchical linear regressions (Preacher and Hayes, 2008). As hypothesized, there was a significant mediating relationship with more support associated with increased fruit intake indirectly via increased self-efficacy ($R2 = .14$, $F(1, 44) = 4.73$, $p = .01$). **Conclusions:** In sum, African-American college students are more likely to consume fruits if they report more support from family and friends, which is associated with increased self-efficacy for eating healthfully. Clinical implications of these findings include the importance of including family and friends as part of interventions to improve nutrition in this population as well as addressing self-efficacy as part of such interventions.

357-P
"Stomp For Life!" Improves Physical Activity and Nutrition in Underserved Youth

Susan Franks, Heather Kitzman-Ulrich, Paul Bowman *Fort Worth, TX*

Background: "Stomp for Life!" is a novel obesity prevention program that uses music and rhythms to help underserved youth improve physical activity (PA) and dietary intake (DI). It was pilot tested in four community centers in Fort Worth, Texas. Specific aims were: (1) to increase moderate to vigorous PA; (2) to improve DI; (3) to improve intrinsic motivation (IM) and self-efficacy (SE) for PA and healthy DI; and (4) to positively impact obesity-related physical measures in obese youth. **Methods:** Participants included underserved youth (n=79) ranging in age from 8 to 12 and classified as 27% obese, 21% overweight, and 16% normal weight. BMI and blood pressure (BP) were measured. Severity of acanthosis nigricans (AN) was determined based on neck-fold skin counts. Self-report surveys included a 7-day PA recall, a 24-hour DI recall, and IM and SE for PA and healthy DI. Percentages of subjects improving over baseline were calculated. Repeated measures t-tests were used to analyze BMI, BP, and AN. **Results:** At program completion, 57% of participants increased days of at least sixty minutes of PA. Consumption of unhealthy DI was reduced by 44% of youth and 30% increased healthy DI. IM and SE for PA were improved for 47% and 52% of youth, respectively. IM and SE for healthy DI were improved for 35% and 49% of youth, respectively. The number of AN in the obese group was significantly reduced; $t(24) = 3.07$, $p = .005$. **Conclusions:** "Stomp for Life!" positively engaged underserved youth to improve healthy lifestyle behaviors related to obesity prevention. It has potential for being scaled on a national level, as it can be easily taught in a variety of settings with simple training for implementation. Overall, "Stomp for Life!" holds promise as a program that can positively impact obesity in youth.

358-P
Convergent Validity of the Clinical Assessment of Depression as a Screening Procedure For Immersion Treatment of Adolescent Obesity

Dan Kirschenbaum *Chicago, IL*; Kristina M. Pecora, Kristen Gierut *Cupertino, CA*

Background: This study addressed one of the major challenges faced by managers of immersion treatments for obese adolescents: screening for potentially disruptive participants. Such assessments can help screen out those who might substantially disrupt the milieu and help develop plans for management of challenging participants. The present research tested the clinical validity of using a simple self-report measure, Clinical Assessment of Depression (CAD), as screening tool. **Methods:** Participants were 257 overweight young people who attended two Wellspring Camps (cognitive-behavior therapy immersion treatment) in 2010 (91% female; mean age=15.1; mean pre-treatment BMI=35.0; mean pre-treatment % overweight=77.6). Within 48 hours of admission, campers completed CADs, Binge Scales, 24-hour dietary recalls, and food pantry checklists. A reliable chart review also identified indicators of psychological distress (e.g., DSM-IV-TR diagnoses; academic problems; trauma). **Results:** The chart review classified campers based on current and historical indicators of distress into three groups: High (27%), Moderate (38%), and Low (35%). Multivariate comparisons of the three Distress groups on all measures supported the potential viability of the CAD as a screening tool. The High Distress group scored significantly higher than both of the other groups on CAD and Binge measures (see figure, below). Groups were similar on all other measures (% overweight; diet prior to camp; food pantry). **Conclusions:** Using the CAD to screen potential participants in immersion treatment may efficiently and effectively identify those at relatively high risk for requiring additional support in order to succeed or who may not be able to benefit from the intervention.

359-P
Using Technology to Accelerate the Adoption of Childhood Obesity Comparative Effectiveness Research - The STAR Study

Christine M. Horan, Renata L. Koziol, Sarah N. Price, Richard Marshall, Elsie M. Taveras *Boston, MA*

Background: Comparative effectiveness research (CER) evidence on childhood obesity provides the basis for effective screening and management strategies. The use of health information technology including decision support tools in the electronic health records (EHRs), as well as direct support to families, offer the potential to accelerate the adoption of childhood obesity CER evidence. **Methods:** The STAR study is a cluster-RCT in 14 pediatric offices in MA. We will examine the extent to which computerized decision alerts in the EHR to primary care providers during routine visits, linked to CER-based algorithms of care, with or without direct-to-parent support, will increase adoption of CER evidence for children 6 to 12 years old with a BMI ≥ 95th percentile. Point-of-care outcomes include obesity diagnosis, nutrition and physical activity counseling, and referral to weight management. One-year outcomes include changes in BMI and improvements in diet, physical activity, screen time, and sleep behaviors, as well as cost and cost-effectiveness. **Results:** From the EHR, we identified 5704 children ages 6-12 years with a BMI > 90th percentile at their most recent well child care visit. Of the 5704, we received clinician permission to contact 5265 (92%). The planned sample size is 1400. To support clinicians at the point-of-care, we are testing point-of-care alerts and structured templates for charting, orders, billing, and referral. Direct-to-parent intervention components include telephone coaching and bi-weekly text messages. Point-of-care outcomes will be available in fall, 2012. **Conclusions:** An intervention that leverages decision support tools in EHRs along with direct-to-parent support via text and phone may provide new strategies for the adoption of childhood obesity CER evidence among primary care clinicians and parents.

360-P[DT]
Parenting Style Influences on Appetite Regulations in African American School Age Children

Meredith I. Borine, Adam Davey, Jennifer O. Fisher *Philadelpha, PA*

Background: Indulgent feeding styles have been associated with child body mass index (BMI), but more direct influences on children's eating are not well characterized. **Methods:** An observational design was used to evaluate the association of maternal feeding styles with child appetite among 100 obese and non-obese African-American (AA) children aged 5 to 6 y. The Child Feeding Styles Questionnaire was used to categorize maternal reports of demandingness and responsiveness in child feeding: authoritative (high on both dimensions), authoritarian (high demandingness/low responsiveness), indulgent (low responsiveness/high demandingness) and uninvolved (low on both dimensions). Child satiation was measured at 4 laboratory-based dinner meals at which portion sizes were 100%, 150%, 200%, and 250% of those

offered in the reference condition. Each child's change energy intake across the 4 meals was calculated using a random slope mixed effects linear model. Parents' reports of child satiety responsiveness were also assessed using the Child Eating Behavior Questionnaire. Child BMI-for-age z-scores were calculated using measured height and weights. GEE models were used to predict child appetite using parental feeding styles; covariates included maternal education, income, and child BMI. **Results:** Results revealed that children of indulgent feeders showed lower satiation compared to other children by consuming more energy as the portion sizes of foods offered were systematically increased ($p < 0.01$). Similarly, children of indulgent feeders were rated by their mothers as has having lower satiety responsiveness compared to other children ($p<0.05$). **Conclusions:** These findings provide new evidence that indulgent feeding styles are associated with poorer appetite regulation among AA children. Support: R01 DK071095

361-P
Linking Parents, Families and Communities to Prevent Obesity Among Children: NET-Works Pilot Study

Simone A. French, Nancy E. Sherwood, Sara Veblen-Mortenson, A. Lauren Crain, Meghan M. Senso, Nathan R. Mitchell, Annie Hotop, Anne F. Gerlach *Minneapolis, MN*

Background: The home environment is the most important influence on early childhood eating and physical activity behaviors. Few obesity prevention interventions have directly targeted parents in the home. The NET-Works trial will randomize 500 parent-child dyads to a three-year, community-based parent-targeted obesity prevention intervention for preschool children that includes home visiting, parenting classes, primary care provider and community food and physical activity resources, with a primary outcome of change in child body mass index. The NET-Works pilot study evaluated feasibility of the intervention. **Methods:** 40 low-income parent-child dyads were recruited from primary care clinics. Families received six home visits by a culturally-matched family connector, a 12-week parenting class with community resource links, and a primary care provider message during the well child visit. Behavioral targets included general and food- and activity-specific parenting skills, family routines and home food environment. **Results:** 38% of children enrolled were overweight or obese. However, 85% of parents perceived their child's weight as normal. 40% of parents were born outside the US; 65% not working for pay; 65% high school or less education. 50% households reported a TV in the child's bedroom and 40% that child watched TV 3+ hrs/day. Of the 33 families assigned to the intervention group, 73% participated in any intervention activities: both home visits and parenting classes [n=17; 51.5%]; home visiting only [n=6; 18.2%]; parenting classes only [n=2; 6.1%]. **Conclusions:** Lessons learned from the pilot and changes planned for the main trial to begin in June 2012 will be described.

362-P
Change in Maternal Weight During Participation in a Weight Management Program For Children

Susan J. Woolford, Christine Robert, Heidi IglayReger, Ashley Amick, Paul M. Gordon, Bethany J. Sallinen *Ann Arbor, MI*

Background: The benefits for children participating in pediatric weight management programs have been documented. Less is known about the effects of pediatric programs on adult family members.To examine changes in maternal weight over the course of participation in a weight management program for their overweight children, and to determine if there is an association between maternal change in weight and child change in BMI z-score. **Methods:** A retrospective analysis of the participants in the Michigan Pediatric Outpatient Weight Evaluation and Reduction Junior (MPOWER Jr) program was performed. The MPOWER Jr program is a family-focused program for children 7 to 11 years old with a BMI > 95th percentile. From the 48 patients who enrolled in the program between January 1, 2010 and Oct 31, 2011, those with measurements of BMI for children and weight for mothers (or grandmother) at enrollment and after 3 months in the program, were included in the analysis. BMI z-scores were calculated and Pearson's Correlation was used to explore associations between patients' change in BMI z-score and maternal change in weight. **Results:** Of the 48 patients enrolled in the study period, 23 had measurements for mother and child at initial and 3 month evaluation. Mean patient age was 9 years old, 50 percent were Black, and 70% were female. The mean initial maternal weight was 97.8 kg. Mean initial child BMI z-score was 2.37. The average change in maternal weight was -1.87 kg (range -8.8 to 3.1) p=0.002. For the 19 who lost weight, the average change in weight was -2.5 kg. The average change in BMI z-score for children was -0.07 (range -0.28 to 0.06) p=0.001. There was no significant correlation between change in maternal weight and change in child BMI z-score. **Conclusions:** Our findings suggest that family-focused pediatric weight management programs may result in weight loss for adult participants. Further work should explore whether additional benefits exist beyond weight change.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Intervention Studies — Diet With & Without Physical Activity-Adult

363-P
Changes in Weight and Symptoms of Depression in Overweight or Obese Individuals With Type 2 Diabetes in the Look AHEAD Trial: Four-Year Results

Lucy F. Faulconbridge, Thomas A. Wadden *Philadelphia, PA*; Richard R. Rubin *Baltimore, MD*; William C. Knowler *Phoenix, AZ*; Haiying Chen *Winston-Salem, NC*; Delia S. West *Little Rock, AR*; Jack Rejeski *Winston-Salem, NC*; Mace Coday *Memphis, TN*; Lin J. Ewing *Pittsburg, PA*

Background: This study examined changes in weight and symptoms of depression after four years of intervention in the Look AHEAD (Action for Health in Diabetes) trial, to determine whether improvements in symptoms of depression, observed at 1 year, were maintained or worsen with weight regain during years 1-4 of the study. **Methods:** 5145 participants (age=58.7±6.8yr; BMI=35.9±5.9kg/m2) were randomly assigned to an intensive lifestyle intervention (ILI) or to usual care (diabetes support and education; DSE). Participants completed the Beck Depression Inventory (BDI) and were weighed at baseline and annually at years 1-4. **Results:** At baseline, 17.3% of all participants had BDI scores ≥10, consistent with mild-moderate depression. ILI participants lost more weight than DSE participants at every assessment (years 1-4; $p<0.001$). ILI participants achieved a mean maximum loss of 8.6% at year 1 but thereafter regained weight steadily; cumulative losses from baseline were 6.5, 5.2, and 4.8% at years 2-4, respectively. Losses for DSE participants were 0.7, 1.1, 1.1, and 1.3% for years 1-4, respectively. ILI participants had a mean reduction of 1.4 points on the BDI (indicating improvements in mood) at year 1, compared with 0.4 in DSE ($p<0.001$), and a reduction from baseline of 0.6 points at year 4, compared with 0.3 in DSE (ns). Change in weight between years 1 and 4 was positively correlated ($p<0.001$) with change in BDI score during the same timeframe for ILI and DSE groups. Within the ILI group, BDI score change was significantly different from baseline at year 1 only, with scores not different from baseline at years 2-4. **Conclusions:** Changes in mood are correlated with changes in weight, improving with weight loss during year 1, and returning to near baseline levels with weight regain from year 1 to 4.

364-P[DT]
Risk of Gallstones in a Commercial Weight Loss Program Using Very Low Energy Diet or Low Energy Diet: Matched Cohort Study

Kari Johansson *Stockholm, Sweden*; Johan Sundström *Uppsala, Sweden*; Claude Marcus, Erik Hemmingsson, Martin Neovius *Stockholm, Sweden*

Background: Very-low-energy diet (VLEDs; <800kcal/day) guidelines recommend a daily fat content >7g to prevent gallstone formation, but data supporting this threshold are scarce. The objective was to assess the risk of gallstones requiring hospital care in a commercial weight loss program using VLED or low energy diet (LED). **Methods:** One-year prospective cohort study of consecutively enrolled adults in a commercial weight loss program, conducted in 28 centres in Sweden between 2006 and 2009. LED participants were matched to VLED participants by age, sex, BMI, waist circumference, and previous gallstones resulting in 3,320 LED and 3,320 VLED participants. The intervention consisted of either VLED (500kcal/day; 7-9g fat/day) or LED (1,200-1,500kcal/day) for three-month, followed by a weight maintenance phase for nine-month. The main outcome measure was gallstones requiring hospital retrieved from the Swedish National Patient Register. Cholecystectomy was investigated as secondary outcome. **Results:** Weight loss was greater in the VLED than the LED group (-11.1 versus -8.1kg; ad-

justed mean difference -2.8kg, 95%CI -3.1,-2.4; p<0.001). During 3,163 and 3,198 person-years in the VLED and LED groups, 48 and 14 gallstones requiring hospital care occurred (152 versus 44 per 10,000 person-years; hazard ratio 3.4, 95%CI 1.9-6.1; p<0.001; number-needed-to-harm 92, 63-168). Of the 62 events, 39 (63%) resulted in cholecystectomy (29 versus 10; hazard ratio 3.1, 95%CI 1.5-6.5; p=0.003; number-needed-to-harm 151, 94-377). **Conclusions:** The risk of gallstones requiring hospitalisation or cholecystectomy, albeit low, was greater with VLED than LED treatment, as was weight loss. The threshold of 7g fat/day appears insufficient to prevent gallstones when comparing with LED.

365-P
Effect of Protein Intake on Weight Loss and Body Composition Among Older, Overweight Adults in a Community-Based Weight Loss Intervention

Denise K. Houston, Walter T. Ambrosius, Kristen M. Beavers, Beverly Nesbit, Jack Rejeski *Winston Salem, NC*

Background: To determine the association between dietary protein intake with long-term weight loss and body composition during a community-based weight loss intervention among older, overweight men and women. **Methods:** Participants were older (60-79 years), overweight, community-dwelling men (n=28) and women (n=49) at risk for cardiovascular disease enrolled in an 18-month weight loss trial. Dietary intake was determined by food frequency questionnaire at the end of the 6-month intensive weight loss phase. Weight and body composition by dual energy x-ray absorptiometry were measured at baseline and 18 months. **Results:** The average weight, fat mass and lean mass loss was 9.2 ± 8.7, 5.8 ± 6.0, and 3.0 ± 3.5 kg, respectively, in men; and 7.3 ± 6.0, 4.5 ± 4.1, and 2.5 ± 2.3 kg, respectively, in women. The mean dietary protein intake during the intensive weight loss phase was 0.94 ± 0.37 and 1.00 ± 0.40 g/kg adjusted body weight/day in men and women, respectively. There was a significant protein intake by gender interaction for weight (p=0.04) and fat mass (p=0.04) loss with higher protein intake during the intensive weight loss phase resulting in greater weight and fat mass loss in men at 18 months (β (SE): -0.8 (0.4) and -0.6 (0.3) kg per 0.1 g increment in protein/kg adjusted body weight, respectively; both p=0.03). However, protein intake was not associated with weight or fat mass loss in women or with lean mass loss in men or women. **Conclusions:** Men who consumed greater protein during a community-based weight loss intervention experienced greater long-term weight and fat mass loss. Adequate dietary protein intake during intensive weight loss may enhance long-term weight loss and promote a more favorable body composition.

366-P
Self-Monitoring on the Go: Mobile App Self-Monitoring is Related to Increased Energy Expenditure, Decreased Energy Intake, and Weight Loss

Gabrielle Turner-McGrievy, Michael Beets, Justin B. Moore, Andrew Kaczynski, Daheia J. Barr-Anderson *Columbia, SC*; Deborah F. Tate *Chapel Hill, NC*

Background: Self-monitoring diet and physical activity (PA) are key components of behavioral weight loss programs but can present a high degree of burden on participants. The purpose of this post-hoc analysis was to assess the relationship of diet (App, Website, or Paper journal) and PA (App vs. No app) self-monitoring method to dietary and PA behaviors. **Methods:** Data are from a 6-month weight loss trial which randomized 96 men and women (BMI 25–45 kg/m2, 18-60y) to receive either a behavioral weight loss intervention delivered by podcast (Podcast, n=49) or by podcast plus mobile support via Twitter™ (Podcast+Mobile, n=47). Both Podcast and Podcast+Mobile groups utilized a variety of methods to track diet and PA. So for the present analysis, Podcast and Podcast+Mobile groups were collapsed into one group. **Results:** Adjusting for randomized group, demographics, and baseline values of outcome variables, PA app users self-monitored exercise more frequently over the 6-month study (2.6±0.5 days/week) and reported greater levels of intentional PA at 6-months (196±46 kcal/day) than non-app users (1.2±0.5 days/week PA self-monitoring, P<0.01; 101±185 kcal/day intentional PA; P=0.02). PA app users also lost more weight (-3.7±1.5 %) than non-app users (-0.5±1.5 %) at 6 months (P=0.01). Diet self-monitoring method was not related to self-monitoring frequency (P=0.14). At 6-months, App users consumed less energy (1437±188 kcal/day) than Paper journal users (2049±175 kcal/day, P=0.01; P=0.046). There were no differences in other dietary variables or % weight loss. **Conclusions:** These findings support previous randomized electronic monitoring trials and point to potential benefits of mobile monitoring methods. Future randomized trials are needed to explore the benefits of mobile diet and PA monitoring.

367-P[DT]
Insulin and Extremity Lean Mass in Overweight or Obese Women

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Background: Obesity is associated with increases in both fat mass and lean mass. Increased lower extremity lean (skeletal) muscle mass may be compensatory to fat mass load, but the relation of upper extremity lean mass to obesity is unclear. We propose that elevated insulin levels may contribute to extremity lean mass in overweight or obese women. **Methods:** The following measurements were performed in 194 non-diabetic women [56% black, 35% white; age 46±11 years (mean±SD), BMI range 25.0 to 57.6 kg/m^2]: dual-energy X-ray absorptiometry for fat mass, lower extremity and upper extremity lean masses; exercise performance by peak oxygen consumption (VO_2 peak) during graded treadmill exercise; fasting insulin and, in 180 subjects, insulin sensitivity index (S_I) calculated from the minimal model. One hundred twenty-three subjects completed 6 months of participation in a weight loss and exercise program, with repeat of all measurements above. **Results:** Baseline S_I (range 0.5 to 14.1 units) was negatively, and fasting insulin (range 1.9 to 47.6 μU/mL) positively, associated with both lower and upper extremity lean masses (all P< 0.001), independent of age and height. Reduction in fasting insulin (8.0±6.4 to 6.5±6.4 μU/mL, P<0.001) following completion of the weight loss and exercise program was associated with reduction in both lower (P=0.015) and upper (P=0.017) extremity lean masses, independent of reduction in fat mass or improvement in VO_2 peak, and without significant improvement in S_I or interaction by race. **Conclusions:** Hyperinsulinemia in overweight or obese women is associated with increased lean mass in weight-bearing as well as non-weight-bearing extremities, which is partially reversible with reduction in insulin independent of fat mass loss or improvement in exercise performance, and consistent with stimulatory effects of insulin on skeletal muscle mass.

368-P
Detecting the Eating Activities of a Free Living Human By Tracking Wrist Motion

Yujie Dong, Jenna L. Scisco, Adam Hoover, Eric R. Muth *Clemson, SC*

Background: This work is motivated by the growing prevalence of obesity, a health problem currently affecting over 500 million people. Measurements of eating intake are used for epidemiological and genetic studies of obesity, observations of clinical patient outcomes such as during diabetes treatment, and for weight management for the individual. However, the current tools available for both the lay person and researcher require a considerable manual effort, leading to underreporting of consumption, non-compliance, and discontinued use over the long term. **Methods:** We describe a new method that uses wrist-worn sensors to automatically detect eating activities. We describe a 3-part pattern based upon pre-eating activity, during eating activity, and post-eating activity; feature extraction from wrist-worn accelerometers and gyroscopes; hypothesized eating activity detection; and subsequent activity classification. **Results:** Tested on 30 subjects wearing our device for a whole day, our method correctly identified 27 of 35 eating activities with approximately 1.3 false positives per actual eating activity. **Conclusions:** Although our method does not directly measure energy consumption (kilocalories), it provides a calendar of detected eating activities that could be combined with other methods to improve the tools available for the study of obesity.

369-P
Comparing Meal Duration and Eating Rate Between In-Lab and Real-World Meals

Jenna L. Scisco, James N. Salley, Adam Hoover, Eric R. Muth *Clemson, SC*

Background: Laboratory studies of eating are common, but in-lab measures may not generalize to real-world behaviors. Measuring eating behavior outside of the lab is difficult and frequently based on self-report, but a wrist-

worn device can provide objective measurements of real-world meals. In this study, meal duration and eating rate, two important predictors of amount of food consumed during a meal, were compared between an in-lab meal and real-world meals. **Methods:** 67 participants (31 males, mean age = 34) ate macaroni and cheese (up to 410 kilocalories) in a controlled lab environment until they felt full. For 2 weeks, the same 67 participants recorded meals with the wrist-worn Bite Counter device which provided meal durations. Participants reported meals using the NCI's ASA24 dietary recall which provided kilocalories. **Results:** In-lab meal duration (M = 399.85 sec, SD = 109.76) was significantly shorter than average real-world meal duration (M = 782.91, SD = 267.74), $t(66) = -11.93$, $p < .05$, but the two were positively correlated, $r = .25$, $p < .05$. In-lab eating rate (M = 57.16 kcal/min, SD = 17.62) was significantly faster than average real-world eating rate (M = 52.15, SD = 21.24), $t(66) = 2.06$, $p < .05$, but the two were positively correlated, $r = .49$, $p < .05$. **Conclusions:** The positive relationships between in-lab and real-world measures indicate that in-lab eating could predict real-world eating, providing some support for the external validity of lab studies. The short duration and fast eating rate features of in-lab meals were possibly the result of the artificial lab environment which included eating alone without TV or computer use. Future research should evaluate the relationships among in-lab and real-world meal features with improved laboratory realism.

370-P
Effects of Energy Restricted High Protein, Low Fat vs. Standard Protein, Low Fat Diets: A Meta-Analysis of Randomized Controlled Trials

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Background: It is currently unclear whether altering the carbohydrate to protein ratio of low fat, energy restricted diets augments weight loss and cardiometabolic risk markers. The aim of this study was to conduct a systematic review and meta-analysis of studies comparing energy restricted, isocaloric, high protein, low fat (HP) with standard protein, low fat (SP) diets on weight loss, body composition, the blood lipid profile, fasting glucose and resting energy expenditure (REE). **Methods:** Systematic searches were conducted using MEDLINE, EMBASE, PubMed and the Cochrane Central Register of Controlled Trials to identify weight loss trials comparing isocaloric diets matched for fat intake but differing in protein and carbohydrate, in participants >18 years of age. **Results:** 24 trials including 1063 individuals satisfied the inclusion criteria. The mean weight loss diet duration was 12.1±9.3 weeks. Compared to an SP diet, an HP diet was associated with more favourable changes in weighted mean differences for reductions in body weight (-0.79 kg; 95% confidence interval [CI], -1.50 to -0.08), fat mass (FM) (-0.87 kg; 95% CI, -1.26 to -0.48) and triglycerides (-0.23 mmol/L; 95% CI, -0.33 to -0.12), and mitigation in reductions in fat free mass (FFM) (0.43 kg; 95% CI, 0.09 to 0.78) and REE (595.5 kJ/day; 95% CI, 67.0 to 1124.1). Changes in fasting plasma glucose and total, low-density lipoprotein, and high-density lipoprotein cholesterol were similar between dietary treatments ($P \geq 0.20$). **Conclusions:** Compared to an energy restricted SP diet, an isocaloric HP diet provides modest benefits for reducing body weight, FM and triglycerides, and mitigating reductions in FFM and REE. This may provide long term benefits for weight status and cardiometabolic risk.

371-P[DT]
Racial Differences in Weight Loss Among Adults in Behavioral Weight Loss Intervention: The Role of Dietary Intake and Physical Activity

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Background: Studies have shown that African-American/Black (B) adults lose less weight in response to a behavioral intervention when compared with White (W) adults. It has been suggested that either a greater dietary intake (DI) or lower levels of physical activity (PA) in B adults are potential contributors to this ethnic difference. **Methods:** The purpose of this investigation is to examine weight loss, DI, and PA in W and B adults following a standard behavioral weight loss intervention (SBWI). Subjects (n=157; 42.4±9.2 yrs; BMI=32.9±3.6) participated in an 18-month SBWI that included weekly group sessions, decrease in energy intake to 1200-1500 kcal/d, and PA progression to 300 min/wk. Weight, DI, PA, and fitness were assessed at 0 and 18 months. DI (kcal/wk) was measured using a Food Frequency Questionnaire. PA was assessed by questionnaire, and objectively by the SenseWear Pro ArmbandTM(Body Media, Inc.). Fitness was measured as time to 85% APMHR on a submaximal treadmill test. **Results:** Weight loss (mean±SEM) was significantly greater in W (-8.2±-0.5kg) compared with B(-4.7±-0.8kg) ($p<0.01$), and a greater percentage of W (41.8%) met the 10% weight loss goal than B (12.2%)($p<0.01$) at 18 months. DI was not different between groups, but both fitness (13.34±0.2min vs. 11.8±0.4min) and subjective PA (1580±90.0 kcal/wk vs.1215±162.2kcal/wk) were significantly higher in W than B ($p<0.05$). Objective MVPA (min/wk) was not different in W compared to B at 18 months (177.9±16.2 vs. 133.3±22.4) ($p=0.11$). **Conclusions:** B lost less weight (~3.5 kg) than W adults during the 18 month SBWI. W adults had higher fitness levels and reported higher levels of PA than B adults, which may explain some of the discrepancy in weight loss between these groups. The role of PA and fitness in weight loss among B and W adults warrants further investigation.Supported by the NIH (HL008840).

372-P
A Plant-Based Diet Reduces Body Weight and Cardiovascular Risk: The GEICO Multicenter Trial

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Background: Obesity and diet-related health problems exact a medical toll, as well as a large financial burden, often borne by employers. We sought to determine the effects of a low-fat plant-based diet on anthropometric and biochemical measures in a multicenter corporate setting. **Methods:** Individuals who were overweight and/or had type 2 diabetes were recruited from 10 sites of a major U.S. insurance company. Sites were randomized to an intervention group, where volunteers followed a low-fat vegan diet (5 sites), or to a control group (5 sites). Dietary intake, body weight, plasma lipid concentrations, blood pressure, and glycated hemoglobin (HbA1C) were determined at weeks 0 and 18. **Results:** Mean body weight fell 2.9 kg in the intervention group but increased 0.06 kg in the control group ($P<0.001$). Total and LDL cholesterol fell 8.0 mg/dl and 8.1 mg/dl in the intervention group and 0.01 mg/dl and 0.9 mg/dl in the control group ($P<0.01$). Among participants with diabetes, hemoglobin A1c fell 0.6 percentage point in the intervention group and 0.08 percentage point in the control group ($P<0.01$). Among study completers, the mean changes in body weight were -4.3 kg and +0.08 kg in the intervention and control groups, respectively ($P<0.001$). Total and LDL cholesterol fell 13.7 mg/dl and 13.0 mg/dl in the intervention group and 1.3 mg/dl and 1.7 mg/dl in the control group ($P<0.001$). Hemoglobin A1c levels decreased 0.7 percentage point within the intervention group and 0.1 percentage point in the control group ($P<0.01$). **Conclusions:** A dietary intervention using a low-fat vegan diet in a corporate setting improves body weight, plasma lipid concentrations, and, in individuals with diabetes, glycemic control.

373-P
Fatty Acid Binding Protein-4, Leptin/Adiponectin Ratio and Insulin Resistance in Overweight Boys: A 6-Month Randomized Placebo Controlled Trial of an Antioxidant Supplement + Nutritional Counseling vs. Nutrition Counseling Alone

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Background: Adipocyte-fatty acid binding protein-4(FABP4) is markedly elevated in diet-induced obesity and it plays a central role in the obesity-related metabolic dysregulation in humans. The aim of the study was to investigate the effect of an antioxidant rich fruit and vegetable juice concentrate (FVJC) plus nutritional counseling (FVJC+NC) vs. nutritional counseling (NC) alone on serum FABP4 along with factors related to adiposity, insulin resistance and inflammation. **Methods:** 39 boys (age, 6-10, Tanner stage<2) were studied in a 6-month prospective randomized double-blind, placebo-controlled trial. 13 normal weight (NW); 26 over weight (OW) children received either NC alone or FVJC+NC for 6 mo. Anthropometry, body composition (DEXA), FABP4, glucose, insulin, triglycerides (TG), free fatty acids (FFA), C-ractive protein (CRP), leptin (L), adiponectin (A) and β-carotene (BC) were determined at 0, 3 and 6 months. **Results:** At baseline BMI-SDS-score, abdominal fat mass (AFM), TG, CRP, leptin, L/A, HOMA-IR, CRP and FABP4 were markedly elevated in the OW vs. NW ($P<0$ .05). FABP4 was directly related to HOMA-IR, CRP and AFM and inversely to

BC (P<0.05). FVJC+NC supplementation reduced FABP4, HOMA-IR, TG, AFM and BC (P <0.05), and tended to lower L/A (P=0.07) in the OW group compared with placebo group, after adjustment for percent change in weight. **Conclusions:** The favorable changes in FABP4, β-carotene, L/A, abdominal adiposity and IR in the OW after the intervention suggest the potential beneficial role of the antioxidant supplement along with nutritional therapy in amending obesity-related metabolic dysregulation in obese boys. Larger population-wide studies are warranted to validate this observation.

374-P
Do Weight Loss Goals and Expectations Become Aligned With Actual Weight Loss During a Long-Term Weight Management Program

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Background: Studies indicate significant disparities between weight loss recommendations of health professionals and participants' goals and expectations. **Methods:** We assessed whether overweight and obese individuals adopted more realistic weight loss expectations during a weight management trial, and whether their "dream," "happy," "acceptable," and "disappointed" weights changed across time (6, 12, and 18 months). We also examined the associations between weight loss goals, attendance rates, and achieved weight loss. Mixed model analyses, adjusting for age, gender, and ethnicity, were used to estimate changes over time and group effects. **Results:** The 18-month weight management trial was completed by 413 individuals (137 males; 276 females). Achieved weight loss became closer to the goals from baseline to 6 months but the margin between the achieved and stated goals widened slightly as time passed. Females had significantly higher weight loss goals and expectations but achieved significantly less weight loss than males. Extremely obese participants had significantly higher goals than obese participants, who had significantly higher goals than overweight participants. However, achieved weight losses did not differ between overweight and obese participants. Greater acceptance and higher weight loss goals were significantly associated with higher attendance rates for males at 12 months. For females, attendance was related to greater acceptance of weight loss at 6 months and higher weight loss goals across time. **Conclusions:** Participants continued to expect weight losses that were neither achievable nor possible to maintain. These results replicate previous findings that women and those with a higher BMI want and expect to lose more weight.

375-P
Development of EMA Items For Study Examining the Triggers of Relapse Following Intentional Weight Loss

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Background: Knowledge of the relapse process following weight loss is limited. Ecological momentary assessment (EMA) permits estimation of antecedents to relapse-relevant events (temptations or lapses) by repeated assessments in real time. The purpose of this study was to develop, pilot test and refine content for four different types of EMA assessments: subject initiated, random prompt, and beginning and end of day assessments. **Methods:** Assessment items were drawn from prior EMA studies or developed specifically to assess behaviors associated with relapse following weight loss. Draft assessments were pilot tested via an anonymous web-based questionnaire completed by 133 people who had previously participated in behavioral weight loss studies. Participants provided feedback on the clarity of the instructions and assessment items. In addition, 6 pilot study participants tested the assessments on a smartphone and provided feedback on this mode of administration. **Results:** Participants found the EMA assessments acceptable: 79% indicated willingness to enroll in a study requiring completion of EMA surveys 7 times/day; 78% indicated willingness to participate in a 12 month study. Responses indicated that training would be needed to orient participants to the EMA format prior to the study. The 6 participants who completed the pilot smartphone study indicated that they would be willing to participate in an EMA study. All their concerns were related to prompt volume and modes of data entry, rather than the EMA questions themselves. **Conclusions:** These data show that the EMA assessments and methods are acceptable to potential participants in weight loss studies.

376-P
Effects of a Dietary Restriction Plus Exercise Program on Central Adiposity in Obese, Older Women: A Randomized Controlled Trial

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Background: Excess visceral fat is a significant risk factor for the development of cardiometabolic dysfunction. In postmenopausal women, there is an accelerated loss of muscle mass and a modest increase in central adiposity, placing them at higher risk than other populations. The current study tested whether a dietary weight loss program combined with moderate intensity exercise could reduce central fat depots in obese, older women. **Methods:** Moderately functioning obese, older adult women (N=25; age range = 55 – 79) were randomly assigned to one of two groups for six months: (1) dietary restriction plus exercise (DR+E; n = 13; mean age = 63.9 years [4.8]) or (2) educational control (n = 12; mean age = 64.2 [7.6]). In the DR+E group, participants attended a group-based weight management session plus supervised exercise sessions each week. Participants in the educational control group attended monthly health education lectures. Visceral and subcutaneous fat levels within the abdominal region were determined by Magnetic Resonance Imaging (MRI), and analyses of covariance (ANCOVA) were conducted to examine changes in visceral and subcutaneous fat from baseline to post-treatment. **Results:** Participants in the DR+E group lost significantly more weight than participants in the educational control group (6.9 [3.7] vs. 0.0 [3.6] kg; p < .001). Participants randomized to the DR+E group had a significantly greater reduction in visceral adipose tissue compared to the control group (-1044.9 [1229.7] vs. +56.7 [1128.7] cm^3; p < .05), and a similar trend was observed for changes in subcutaneous fat levels (-3204.8 [4311.9] vs. +673.9 [5263.5] cm^3; p = .08). **Conclusions:** These findings suggest that a lifestyle-based weight loss program produces significant reductions in visceral adipose tissue among obese, older women.

377-P
Unintended Weight Loss With an Iso-Caloric Mediterranean Diet in Persons Who Are Overweight or Obese

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Background: A multi-faceted, Mediterranean diet has excellent potential for the prevention of colon cancer. This study evaluated compliance to a Mediterranean or a Healthy Eating diet in a randomized trial of 120 persons who were at increased risk for colon cancer. **Methods:** The Mediterranean diet had ten dietary goals targeting increases in mono-unsaturated fats, omega 3 fats and the amount and variety of fruits and vegetables. The Healthy Eating diet had five goals that were based on Healthy People 2010 recommendations. Both diets had goals for whole grains. The counseling was conducted largely by telephone over six month. **Results:** Compliance to goals was similar in both diet arms, with a mean of 85% of goals being met. The fruit and vegetable goals were exceeded in the Healthy Eating arm, resulting in similar intakes in the two diet arms at six months. In the Mediterranean arm, significant changes in serum fatty acids were found, and changes were larger in the subjects who were overweight or obese vs. normal weight at baseline. Changes in carotenoids also tended to be larger in the overweight/obese subgroup, perhaps since baseline values in overweight/obese subjects were lower than in normal weight subjects. Although the dietary goals were designed to maintain baseline body weight, a significant weight loss and a significant decrease in serum C-reactive protein concentrations were observed only in the overweight/obese subgroup of subjects randomized to the Mediterranean arm. **Conclusions:** Since changes in dietary fruits, vegetables and saturated fat were similar in the two diet arms, the weight loss effects of the Mediterranean diet may have been related to increases in dietary monounsaturated fats and the n3/n6 fatty acid ratio.

378-P
Effects of a High-Protein Energy Restricted Low-Carbohydrate or Low-Fat Diet on Weight Loss Pre and Post-Surgery in Bariatric Surgery Candidates With Non-Alcoholic Fatty Liver Disease (NAFLD): Results From a Pilot Study

Virginia Uhley, Adam Neidert, Charles Burant, John Birkmeyer, Jonathan Finks, Elif A. Oral *Ann Arbor, MI*

Background: The differential clinical effects of short-term high-protein weight loss diets: low-carbohydrate (L-CHO) or low-fat (L-Fat) were reported separately. We now investigate whether short-term weight loss prior to surgery is correlated with long-term weight loss post-bariatric surgery. **Methods:** Thirty females with NAFLD approved for bariatric surgery were randomly assigned to hypocaloric (1000 Kcal, 75 g protein) L-CHO (49.0% Kcal fat, 18.3% Kcal carbohydrates) or L-Fat (19.8% Kcal fat, 53.5% Kcal carbohydrates) diets. Short-term weight loss was collected at 6-8 weeks prior to surgery and long-term weight loss was collected post-surgery at 2 weeks, 2, 6 & 12 months. **Results:** Both groups lost clinically significant weight short-term (7-10 kg, p<0.0001). Change in weight prior to surgery was correlated with weight change after surgery (especially in the L-Fat diet 0.87, p= 0.001), L-CHO diet ((0.18 p=0.5). The weight change in the L-CHO diet did not reach statistical significance due to the observation of extreme values in study participants within that group. Measures of dietary compliance or visual analogue scales of hunger, satiety or cravings were not different between groups. **Conclusions:** While there were no short-term weight loss differences between L-CHO and L-Fat diets, this weight change correlated with weight loss post-bariatric surgery. Bariatric surgery candidates that do not achieve weight loss prior to surgery may have difficulty post-surgery with weight loss. Further, L-Fat diets prior to surgery may have an advantage in long-term weight loss post- surgery. These may be clinically relevant variables to consider in bariatric surgery candidates.

379-P
Differential Metabolic Effects of Dietary Macrocomposition in Bariatric Surgery Candidates With Non-Alcoholic Fatty Liver Disease (NAFLD): Results From a Pilot Study

Virginia Uhley, Adam Neidert, John Birkmeyer, Jonathan Finks, Hero Hussain, Thomas Chenevert, Barbara McKenna, Charles Burant, Elif A. Oral *Ann Arbor, MI*

Background: Enlarged fatty livers present risk for bariatric surgery. We investigated the differential effects of two short-term (6 to 8 weeks) diet approaches before bariatric surgery to reduce hepatic fat, total nonalcoholic steatohepatitis (NASH) scores, body weight, insulin sensitivity, triglyceride, and incretin levels. **Methods:** Thirty female patients with nonalcoholic fatty liver disease and approved for bariatric surgery were randomly assigned to equally hypocaloric (1000 cal, 75 gr protein) either a low carbohydrate (49.0% fat, 18.3% carbohydrates) or a low fat (19.8% fat, 53.5% carbohydrates) diet. The diets were provided weekly and were continued until the time of surgery (mean duration 6.3 weeks). Study parameters were collected at baseline and within the last week before surgery after a 10-hour fast. An MRI of the liver was obtained at the end visit to quantify liver fat. A liver biopsy was obtained at surgery and nonalcoholic steatohepatitis (NASH) score was determined by a single pathologist. **Results:** Both groups lost clinically significant weight (7 to 10 kg, p<0. 0001) and had a parallel reduction in leptin levels (p<0.0001). Suppression in glucagon and incretin levels reached statistical significance for subjects in the low fat group (p,0.05 for all). Low-fat group had a significantly larger improvement in fasting insulin (-9.7 versus –2.5 mIU/L, p=0.04) and HOMA-IR (-2.3 versus -0.4, p=0.03) compared to the low carbohydrate group. There were no differences in hepatic fat content and final NASH scores. **Conclusions:** While there were no short-term differences between a high fat and low fat diet when attempting to impact hepatic histopathology or fat, a low fat diet improved systemic insulin resistance and suppressed glucagon while causing significant compensatory changes in incretin levels.

380-P
Incretins and Hepatic Metabolites Correlate With Weight Loss, Hepatic Fat Content and Nonalcoholic Steatohepatitis (NASH) Scores in Women With Nonalcoholic Fatty Liver Disease (NAFLD) After Hypocaloric Diet Interventions

Elif A. Oral, Adam Neidert, Virginia Uhley, Jonathan Finks, John Birkmeyer, Barbara McKenna, Thomas Chenevert, Charles Burant *Ann Arbor, MI*

Background: The differential effects of two diets before bariatric surgery were investigated and clinical effects reported separately. We now investigate whether incretin and glucagon levels as well as hepatic lipid metabolites are related to weight loss, hepatic fat content and NASH scores. **Methods:** Thirty females with NAFLD approved for bariatric surgery were randomly assigned to hypocaloric (1000 cal, 75 gr protein) low carbohydrate (49.0% fat, 18.3% carbohydrates) or low fat (19.8% fat, 53.5% carbohydrates) diets. Study parameters were collected at baseline and within the last week before surgery (mean duration:6.3 weeks). Liver fat % was determined at end visit by MRI. Liver biopsy was obtained at surgery for NASH score and metabolomic lipid profiles. **Results:** Triglycerides, HOMA-IR and insulin at the end visit correlated positively (r = 0.48-0.52, p<0.01) while change in GLP-1 correlated negatively with NASH score(r=-0.51, p=0.0063). Hepatic fat content highly correlated with clinical lipids (r=0.49-0.62, p<0.01 in all instances). Weight loss correlated positively with change in glucagon (r=0.51, p=0.0034) and negatively with change in GIP (r= -0.54, p= 0.0016). Relationships were noted between hepatic lipid metabolite and hormone levels; e.g. hepatic oleate correlated with glucagon (r= -0.54, p=0.0077). Hepatic fat correlated with oleate and stearate but in reverse directions (r=0.61, p=0.0069 vs. -0.78, p<0.0001 respectively) suggesting that SCD-1 activity may be important for hepatic fat accumulation in obese humans even during active weight loss. **Conclusions:** Hepatic fat content and NASH scores are related to changes in glucagon and incretin levels. We also show that the setting of our study may be a useful tool to investigate hepatic lipid metabolism during diet interventions.

381-P
High Fructose Corn Syrup and Sucrose Sweetened Milk Result in Equivalent Body Composition Changes and Weight Loss Irrespective of Baseline Calcium Consumption During Weight Loss

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Background: Dietary calcium from milk has been associated with increased abdominal fat loss during weight reduction. However, it has been argued that fructose from any source may increase abdominal fat accumulation. Sucrose and high fructose corn syrup (HFCS) are the primary sources of fructose in the American diet. Subjects with lower baseline calcium intakes may respond more favorably to weight loss diets containing adequate dairy than those with higher calcium intakes at baseline. **Methods:** One-hundred twenty-nine overweight or obese individuals were placed on a hypocaloric diet for 24 weeks which incorporated three servings of HFCS or sucrose sweetened lowfat milk at 10% or 20% of calories (25th or 50th percentile population consumption levels for fructose). Subjects and research staff were blinded to which sugar was consumed. Subjects were classified according to baseline calcium level by initial three-day food record (low calcium < 600 mg/d; n=43; male=7; female=36) or high calcium (calcium > 600 mg/d; n=86; male=22; female=64). **Results:** All indices of body composition and fat decreased for the entire cohort including body mass, body fat percentage and fat percentage in the android region (p<0.001), but in no case was the response affected by baseline calcium intake (time by group interaction p>0.05 in all cases). There were no differences in body composition changes or weight loss between HFCS and sucrose at either level of calcium consumption. **Conclusions:** HFCS and sucrose sweetened milk have equivalent effects on body composition during weight loss. Baseline calcium consumption does not impact any of these parameters.

382-P
Monitoring of Daily Activity With a Smartphone Onboard Accelerometer

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Background: Smartphones can gather and upload continuous objective (sensor) signals with associated context. To be practical, functions must be convenient, operate an entire day and provide accurate data. **Methods:** Adults used an Android Smartphone application for one week. It recorded: physical activity (PA) from the onboard 3D-accelerometer (OBAccel) and Bluetooth sensor (Shimmer); GPS/RF location; proximity to an RF transponder; body weight; dietary intake and status. Three contextual surveys were applied according to criteria programmed remotely. Data were saved on the phone and uploaded regularly to a server. Participants carried the Smartphone, Shimmer and an Actigraph (GT1M) in a pouch at the waist. **Results:** All of the 30 participants (40±12 y.o., BMI 40±3.6; all mean±SD) completed 7-d Smartphone records. OBAccel data were used from 28 participants to compare to Actigraph and 25 for Shimmer because of recording failures. Smartphone recording with all services active was >12 h. All data files were uploaded within 24±60 min. PA was detected 84±90 min/d with the OBAccel, 378±162 min/d for Actigraph, and 540±333 min/d for Shimmer. Actigraph counts were 650±1040 when OBAccel was zero. Actigraph counts were paradoxically lower (617±999) when the Smartphone also recorded PA (OBAccel 1.3±1.7 m/s^2). **Conclusions:** Data upload methods were robust and timely. Smartphone battery life was sufficient for full day use and recording was more reliable than Actigraph and Shimmer. However, there were large discrepancies in PA by the three devices. The accelerometer on the Smartphone had a threshold below which PA were not recorded. And it was difficult to synchronize time between the PA devices.

383-P
Efficacy of Web-Based Self-Care Lifestyle Modification Program For Weight Loss in Type 2 DM Patients

Kanji Akai, Kathy Kleyn *Itasca, IL*; Hideto Takase *Tokyo, Japan*; Paul Tutt *Itasca, IL*; Neal D. Kaufman *Los Angels, CA*

Background: The objective of this study was to examine the efficacy of a web-based self-care lifestyle modification program (The Qupio(TM) Program) for weight loss in type 2 DM patients. **Methods:** Seventy-one patients with type 2 DM, (male = 28, female = 43, mean BMI(±SD) = 33.6±8.4 kg/m^2, mean age(±SD) = 53±12 years), participated in this program for 6 months. Goals for the user by the end of the program were weight loss of 7% of their starting body weight and a total of 150 minutes a week of physical activity. At entry into the study, diet and physical activity goals were set and planned meals and exercise routines were recommended for each participant to help them achieve calorie balance. Participants recorded their diet, activity, body weight and blood glucose on the web-based tracking system. Tracked records were reviewed every 4 weeks and goal setting, planned meal and activity were re-adjusted via a short phone call with the user depending on participant's performance and circumstances. **Results:** 55/71 participants kept up the six month study period and 52 participants who completed final records at this stage were included into analyses. Mean weight loss for the entire population was 3.07±0.04% and 78.8% (41/52) of participants lost some weight. Subgroup analysis showed participants frequently accessed to the program achieved greater weight loss. Mean weight loss in participants who accessed program more than 3 times per week was 8.75±0.06%. More than 80% of participants indicated that this web-based self-care lifestyle modification program helped them to have healthier attitudes and improved their diet and physical activity. **Conclusions:** In conclusion, web-based self-care programs may facilitate lifestyle modification and weight loss in patients with type 2 DM.

384-P
Physical Activity Improvements Among Morbidly Obese Individuals 6 Months After a Residentially-Based Behavioral Weight Loss Program

Jennifer Pells, Chandra A. Quigley *Durham, NC*

Background: A hypocaloric/low-fat diet plus physical activity is the recommended strategy for weight loss in obese adults, yet adherence to these recommendations is problematic. Physical activity may be challenging for morbidly obese individuals due to physical and social barriers, thus, interventions for that address these particular barriers are warranted. **Methods:** This study examined brief exposure to exercise that is sensitive to physical and social challenges during a weight management program and 6-months after the intervention. 133 individuals with BMI>40 (M = 49.5; M age = 48 yrs) who participated in a 4-week residential program completed fitness testing, Paffenbarger Physical Activity Questionnaire, and Impact of Weight on Quality of Life-Lite at the start and end of treatment, and 55 of these participants completed questionnaires at 6-months follow-up. **Results:** Mean baseline fitness and activity levels were low (Physical Function quality of life = 37.6; Overall Fitness = 27.1; VO2max = 28.5; METs = 158; blocks per day = 3.81). Six-month follow-up revealed improvement in Physical Function quality of life (M = 60.1, p<.001) and increased mean physical activity (METs = 396, p=.041; blocks per day = 7.75, p=.002). Greater improvements in physical activity and physical function were correlated with weight loss (r's = -.553 and .633, p's<.001, respectively). **Conclusions:** The study presents initial evidence brief exposure to tailored exercise can significantly impact longer-term physical activity levels, although a substantial percentage (49%) of individuals remained inactive. Findings support behavior change approaches that emphasize exposure-based techniques. Future studies could evaluate predictors of physical activity engagement, utilize objective physical activity measurements, and longer follow-up periods.

385-P
The Relationship Between Dietary Energy Density and Body Mass Index During an 18-month Lifestyle Intervention

Hollie Raynor, Elizabeth Steeves *Knoxville, TN*; Jacki Hecht, Jessica G. LaRose, Rena R. Wing *Providence, RI*

Background: Little is known about the relationship between dietary ED and body mass index (BMI) during a lifestyle intervention. This secondary data analysis examined changes in dietary ED during an 18-month lifestyle intervention and the relationship between ED and BMI over 18 months. **Methods:** One hundred fifty-eight adults (53.1 +/- 7.9 yrs; 34.8 +/- 4.4 kg/m2 BMI; 55.1% female; 92.4% white) with complete dietary data at 0, 6, and 18 months were included. Participants were prescribed a low-calorie (1200-1500 kcals/day), low-fat (≤ 30% kcals from fat) diet, with half of participants randomized to a condition limiting snack food variety. Dietary intake and anthropometrics were measured at 0, 6, and 18 months. **Results:** Analyses, controlling for baseline physical activity (PA) differences, showed significant reductions in ED (calculated from food only); energy and percent energy from fat consumed; and BMI ($p < 0.01$) at 6 and 18 months as compared to 0 months, with no condition differences. Hierarchical regressions, controlling for condition, age, sex, and baseline PA, found lower ED was significantly related to lower energy intake and BMI at 6 months ($p < 0.05$). Lower ED at 6 months was also significantly related to lower BMI at 18 months ($r = 0.28$, $p < 0.05$, $\Delta r2 = 0.02$, $p < 0.05$, $\beta = 0.12$, $p < 0.05$), but was not significant when BMI at 6 months was included in the analysis. **Conclusions:** During a lifestyle intervention, dietary ED decreased and lower dietary ED at 6 months was associated with lower BMI at 6 and 18 months.

386-P
Validation of a Weight Management Program Featuring a Protein-Sparing Food Plan and a 10,000-Step Exercise Regimen For Obese Individuals

Joseph J. Lamb, Deanna M. Minich, Jacob J. Kornberg, Robert H. Lerman, Todd Killebrew *Gig Harbor, WA*; Jacqueline Jacques *Irvine, CA*; Barbara Schiltz, Jeffrey S. Bland, Matthew L. Tripp *Gig Harbor, WA*

Background: Obesity has reached epidemic proportions worldwide and is linked to the development of a multitude of chronic diseases. Lifestyle factors and chronic inflammation contribute to the development of obesity. **Methods:** This intervention study investigates the effect of a lifestyle program, with or without an anti-inflammatory dietary supplement, on weight loss (stage 1, the first 12 weeks) and weight loss maintenance (stage 2, the subsequent 52 weeks) in obese participants. Stage 1 was the program validation phase in which 130 adult participants (body mass index 29 – 43) were placed on a protein-sparing food plan and a 10,000-step exercise regimen for 12 weeks, with the goal of weight reduction by ≥7.5% of total body weight. Participants were also randomized to receive tetrahydro iso-alpha acids (THIAA) supplement (400 mg tid) or placebo tablet for the evaluation of its safety and efficacy. In stage 2 (currently ongoing), participants achieving

≥7.5% weight loss were re-randomized to receive THIAA supplement (400 mg tid) or placebo for the assessment of its long-term effect. **Results:** Among the 100 participants completing the 12-week stage 1, 92 achieved the goal of ≥7.5% weight reduction. The average reduction was 11.2%. Compared to baseline, significant reductions (P<0.05) in body weight were observed in the THIAA arm (-24.9 ± 1.1 lbs) and in placebo arm (-23.0 ± 1.1 lbs). Significant reductions in triglycerides, hemoglobin A1c, insulin, triglycerides/HDL, and HOMA scores were also observed. **Conclusions:** The protein-sparing food plan and structured exercise regimen effectively helped obese individuals reduce weight and improve cardiovascular factors.

387-P
Sex Differences in Arterial Destiffening With Weight Loss

Elizabeth Erhlick, Elaina Marinik, Tim Werner, Nabil Boutagy, Brenda M. Davy, Kevin P. Davy *Blacksburg, VA*

Background: We tested the hypothesis that weight loss (WL) would reduce arterial stiffness (AS) more in men than women. **Methods:** 16 female and nine male overweight and obese (25<BMI<40 kg/m2) adults ages 55-75 years old underwent weight loss via caloric restriction alone. Body weight, body composition (DEXA and CT scans), BP, and A) were measured at baseline and following the 12-week intervention. AS was measured via carotid-femoral artery PWV and carotid artery ultrasonography combined with applanation tonometry. **Results:** Body weight (-6.1+/- 1.0 vs. -8.8+/- 1.3 kg; P<0.05) decreased similarly with WL in men and women. AVF was higher (P<0.05) at baseline and decreased more in men than women (-74.5 +/- 13.8 cm2 vs. -26.0 +/-7.7; P < 0.05) following weight loss. The reduction (both P<0.05) in SBP and DBP with WL was not different in men and women. Neither beta stiffness nor carotid-femoral PWV was significantly different between men and women at study onset. The reduction in beta stiffness index (-1.5 +/- 0.3 vs. -.78 +/- 0.31 Units) and PWV (-155.5 +/- 32.8 vs. -240.8 +/- 65.7 cm/s) was not different (P>0.05) in men and women. **Conclusions:** Taken together, the findings from the present study suggest that WL does not reduce AS more in men compared with women. As such, WL may be an effective therapeutic strategy for altering the course of vascular aging in both sexes.

388-P
An Employer-Based Diabetes Prevention Project in a Rural Underserved Area

Joyce G. Pastors, Jon T. Saunders *Charlottesville, VA*

Background: Currently, nationwide efforts are underway by CDC to encourage the development of community-based adaptations of the Diabetes Prevention Program (DPP). The primary goal of the current project was to pilot a sustainable diabetes prevention program based on a partnership between a large employer in rural southwestern Virginia and a local recreation center.The year-long program was offered to ~350 employees who tested positive for pre-diabetes at the company's annual wellness screening. The weight loss,nutrition,and exercise goals were the same as those for the DPP. **Methods:** Participants attended 18 education classes for the first 6 months and a monthly support group for the next 6 months. They were required to join the recreation center where they received support and supervision from a wellness coach and had gradually increasing goals for exercise. Monetary incentives provided by the employer included payment of half of first year's recreation center membership and full payment of second year, contingent upon attendance and weight loss/maintenance. **Results:** At ~3 months, 10 of the 16 participants in the first group achieved a weight loss of ≥ 2% of their initial body weight (IBW). The average weight loss in this group was 8 pounds or 3.7% of IBW. Five of the participants gained or lost ≤ 2% of IBW characterized by poor attendance at meetings, and lack of monitoring of food intake and activity at the recreation center. Final results for the group will be presented at the meeting. Three month data for a second group will also be presented. **Conclusions:** A partnership between work settings and exercise facilities offers several advantages including engaging participants in physical activity as well as health eating, enhancing convenience with worksite classes, and incentivizing both employees and employers with cost savings and improved health outcomes.

389-P
Comprehensive Assessment of Long-Term Effects of Reducing Intake of Energy (CALERIE) Screening and Recruitment: Methods and Results

Tiffany M. Stewart *Baton Rouge, LA*; Manju Bhapkar *Durham, NC*; Sai Krupa Das *Boston, MA*; Katherine M. Galan *Durham, NC*; Corby K. Martin *Baton Rouge, LA*; Luanne McAdams, Carl Pieper *Durham, NC*; Leanne Redman *Baton Rouge, LA*; Susan Roberts *Boston, MA*; James Rochon *Durham, NC*; Richard I. Stein *St. Louis, MO*; Donald Williamson *Baton Rouge, LA*

Background: The Comprehensive Assessment of the Long-term Effects of Reducing Intake of Energy (CALERIE) study is a systematic investigation of sustained 25% calorie restriction (CR) in nonobese humans. CALERIE is a multicenter, parallel group, randomized controlled trial. **Methods:** Participants were randomized with a 2:1 allocation to the CR group or a control group. Inclusion criteria included ages 21-50 for men and 21-47 for women, and a body mass index (BMI) of 22.0 ≤ BMI < 28.0 kg/m2. Exclusion criteria included significant medical conditions, abnormal laboratory markers, psychiatric/behavioral problems, and an inability to adhere to the rigors of the intervention/evaluation schedule. Recruitment was site-specific, and included media, internet and subway advertising, referrals, and volunteers from previous studies. A multi-stage screening process (telephone screen and 3 in-clinic visits) was applied to identify suitable candidates. **Results:** A total of 10,856 volunteers contacted the clinical sites, of whom 9,787 (90%) failed one or more eligibility criteria (age and BMI thresholds most common). Of the 1,069 volunteers who started the in-clinic screening, 831 (78%) were either ineligible or dropped out. Ultimately, 238 volunteers were enrolled (i.e., initiated the baseline evaluations), 220 were randomized, and 218 started the assigned intervention (a 2% retention from the first screening step). **Conclusions:** This study offered several lessons for future trials. Recruitment strategies must be tailored to specific clinical sites. A multi-disciplinary screening process should be applied to address medical, physical, psychological/ behavioral suitability of participants. Finally, a multi-step screening process with simple criteria first, followed by more elaborate procedures later, is efficient and parsimonious in terms of study resources.

390-P
Design and Baseline Characteristics of the Live For Life Employee Weight Management Study

Truls Ostbye, Marissa Stroo, Bernard F. Fuemmeler, Julie Joyner, Eric L. Eisenstein, Bercedis Peterson, John Dement *Durham, NC*

Background: The workplace can be an important setting for addressing obesity. An increasing number of employers offer weight management programs. The few existing evaluations of such programs have not utilized a randomized control design. We present the design and baseline data from a randomized control trial evaluating the efficacy and cost-effectiveness of two employee weight control programs offered at Duke University and Medical Center. **Methods:** 550 obese (BMI >30) employees are randomized (1:1) to one of two 12-month employee weight loss/ management programs. Before randomization, baseline data are collected including measured height/weight, accelerometry, self-reported physical activity and dietary intake, presenteeism/absenteeism, and a health risk assessment including blood pressure, glucose, and serum cholesterol. The impact of the two programs will be related to their net costs (program costs minus reduced health care expenditures). Participants in both intervention groups will also be compared to a non-randomized observational control group of obese employees. **Results:** 500 participants were randomized between January 2011 and March 2012. At baseline, the mean age is 45.6 years, 83% were female, 42% white, and 53% black. Mean baseline BMI was 37.2. Participants consumed a mean of 2.5 servings of F/V per day and 116.2 minutes of self-reported physical activity (including walking) a day while at work. **Conclusions:** This RCT addresses the need to measure long-term outcomes of employee weight management programs in terms of 1) effectiveness over time, 2) weight reduction, 3) lifestyle changes, and 4) net employer costs.

391-P
The Effects of Six-Week Consumption of Ruby Red Grapefruits on Markers Associated With Cardiovascular Disease Risk in Overweight and Obese Adults

Caitlin Dow, Betsy Wertheim, Cynthia Thomson *Tucson, AZ*

Background: Epidemiological evidence indicates that citrus intake, grapefruit in particular, is associated with a reduction in cardiovascular disease (CVD) risk factors and events. Risk factors for CVD include dyslipidemia, inflammation, and oxidative stress. Grapefruit may provide cardioprotection due to its high flavonone content, namely the presence of naringenin and hesperidin, bioactives that demonstrate lipolytic, anti-inflammatory, and antioxidant properties. **Methods:** Seventy-four healthy, overweight and obese adults (age 21-65, mean=41.2±11.0) were randomized to a control diet (n=32) or daily grapefruit consumption (n=42) in the amount of half a ruby red grapefruit 3x daily for six weeks. Plasma samples were analyzed for changes (difference between baseline and post-intervention) in lipid parameters, soluble vascular cellular adhesion molecule-1 (sVCAM-1), and C-reactive protein (CRP). Urine samples were analyzed for changes in lipid peroxidation via 8-epi-isoprostane-F2α. **Results:** Individuals consuming grapefruit demonstrated a mean reduction in total cholesterol and low-density lipoprotein of 11.7 mg/dL (p=0.002) and 18.7 mg/dL (p<0.001), respectively, compared to baseline. Results of the additional biomarkers are pending. **Conclusions:** It is hypothesized that grapefruit consumption will result in significant reductions in inflammation and oxidative stress as compared to baseline and control conditions, and these results will correlate with the improvements demonstrated in the lipid profile.

392-P[DT]
A 12-Month, Randomized, Controlled Trial to Examine the Efficacy of the Korean Diet in an Austrailian Overweight and Obese Population - A Follow Up Analysis

Nicholas Fuller, Namson S. Lau, Gareth Denyer, Ian D. Caterson *Sydney, Australia*

Background: The prevalence of obesity is remarkably low in South Korea in comparison to other countries of similar economic development, which may be in part due to traditional diet. Previously we demonstrated that such a traditional Korean diet (KD) resulted in similar weight loss to a Western diet (WD) in an Australian population despite a higher energy intake by the KD group. However, food acceptability scores significantly favoured the WD, suggesting that the KD was less enjoyable to this Western population. **Methods:** A follow up study was conducted at 6, 9 and 12 months to assess whether the KD group were successful in maintaining anthropometric measures, to establish the longer term food acceptability of the KD, and to assess for the significance of predictors on body weight change. **Results:** Anthropometric measures were predominately maintained during the follow up period. Food acceptability scores increased for the KD group when no longer being provided with daily meals. The regular intake of Korean food was found to be correlated to body weight change, with a more frequent intake of Korean food associated with greater weight loss (r = -0.306, p=0.037). **Conclusions:** The continual intake of Korean food was a predictor of weight loss and therefore it may serve an important role in weight maintenance and should be incorporated into future trials. If these findings are confirmed in prospective studies they may have important implications in understanding how to minimise weight promoting counter-regulatory changes that develop following weight loss.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Intervention Studies — Physical Activity Only-Adult

393-P
Pancreatic and Gut Peptide Responses to Short-Term Exercise Training in Obese Individuals

Jill Kanaley, Tim Heden, Ying Liu, Lauren Sims, Monica L. Kearney, Adam Whaley-Connell, Anand Chockalingam, Kevin C. Dellsperger *Columbia, MO*; Timothy J. Fairchild *Perth, Australia*

Background: Short-term exercise training is associated with improved glycemic control, but very few studies have examined the effect of short-term training on postprandial satiety peptide responses or perceived satiety. We tested the hypothesis that 15 days of aerobic exercise training would alter postprandial pancreatic and gut peptide [pancreatic polypeptide (PP) and peptide YY (PYY)] responses and perceived satiety in obese, middle aged individuals. **Methods:** Thirteen men and women (42±2 y) were studied before and after 15 days of training (walking 1 h at 70-75% VO2peak). On the study day, subjects consumed 1500 kcal as 6 meals (250 kcal: 9 g protein, 40 g CHO, 6 g fat) while blood samples and satiety measurements were taken at baseline and every 20 min for 12 h. Blood was analyzed for pancreatic polypeptide (PP), peptide YY (PYY), glucose, and insulin levels. Satiety was assessed with a visual analog scale throughout the day. **Results:** Incremental area under the curve (iAUC) for PP increased significantly with training (pre 2788±753; post 3845±830 pg/ml x min for 12 h, p<0.001), but there was no difference in response to each meal. The initial PP response to the first meal increased (ΔPPmin 20-0: pre 86±25; post 140±36 pg/ml, p<0.05) with training. PYY iAUC showed no significant changes with training but showed a significant main effect of time across the meals, with the largest response to the first meal as compared to the later meals (P<0.005). There were no changes in satiety, glucose, or insulin levels with training. **Conclusions:** In conclusion, short-term exercise training increases PP response over the course of a day. However, satiety, PYY levels, and glycemic control are unaffected by short-term exercise training. These findings suggest changes in concentration of PP may precede changes in satiety or PYY in response to exercise training.

394-P
Comparison of Physical Activity, Sedentary Behaviors and Health-Related Quality of Life in Severely Obese Individuals Seeking Bariatric Surgery or Lifestyle Intervention

Dale S. Bond, Jessica L. Unick, John M. Jakicic, Jennifer Trautvetter, Kevin O'Leary, Rena R. Wing *Providence, RI*

Background: Given that bariatric surgery (BS) and lifestyle intervention (LI) represent two vastly different approaches to treating severe obesity, there is growing interest in whether individuals who seek BS versus LI also differ on weight-related behaviors. However, previous studies have only compared these groups on eating behaviors. The present study compared BS- and LI-seekers on time spent in physical activity (PA) and sedentary behaviors (SB), and examined between-group differences in health-related quality of life (HRQoL), while controlling for PA. **Methods:** A sample of 34 LI participants was matched with 34 BS participants on gender, age, BMI, and PA monitor-daily wear time (age: 42.1±10.0 years; BMI: 45.6±6.5 kg/m2). PA and SB were assessed over a 7-day period via the SenseWear Armband (SWA). HRQoL was measured using the SF-36. Scores were standardized to a population normal distribution (M=50, SD=10). **Results:** Participants wore the SWA for 13.7±1.6 h/day. There were no significant differences between the groups (BS vs. LI) on min/d spent in SB (641±117.1 vs. 638.4±133.4, p=0.62), light PA (136.4±76.1 vs. 145.5±72.5, p=0.59), and moderate-to-vigorous PA (≥ 1-min bouts = 36.4±26.2 vs. 40.2±31.3, p=0.59 and ≥10-min bouts = 5.7±8.3 vs. 10.2±17.0, p=0.17). BS participants had lower SF-36 physical functioning (42.4±10.9 vs. 49.0±6.8, p=0.004) and physical component summary scores (43.9±10.1 vs. 48.9±7.0, p=0.02) compared to LI participants. BS group status was related to lower physical functioning (β=0.30, p=0.009), independent of gender, age, BMI, and daily PA. **Conclusions:** Seeking BS versus LI was not related to patterns of PA or SB. Moreover, lower physical function did not contribute to lower PA levels in BS participants. Severely obese individuals seeking either BS or LI should be encouraged to engage in PA.

395-P
Comparison of Bariatric Surgery Candidates' Self-Reported and Objectively - Measured Time Spent in Sedentary Behaviors

Dale S. Bond, Graham Thomas, Jessica L. Unick *Providence, RI*; Hollie Raynor *Knoxville, TN*; Sivamainthan Vithiananthan, Jennifer Trautvetter, Rena R. Wing *Providence, RI*

Background: Greater time spent in sedentary behaviors (SB), independent of physical activity level, is associated with increased morbidity and mortality risk. We have previously shown that bariatric surgery candidates are one group at particular risk for high levels of SB, with SB accounting for 80% of objectively-assessed waking time. The present study examined whether self-reported and objective estimates of sedentary time in bariatric surgery pa-

tients are comparable, and which SB account for the bulk of reported sedentary time. **Methods:** Forty bariatric surgery candidates (90% female; Age=45.4±9.4; BMI=43.2±5.0) wore the SenseWear Armband (SWA) as an objective measure of sedentary time and completed the Sedentary Behavior Questionnaire (SBQ) as a subjective measure. The SBQ measures h/d spent in 9 SB. Valid SWA wear requirements included 10 h/d on ≥2 weekdays and ≥1 weekend day. Time (h/d) spent in SB was compared for SWA vs. SB. **Results:** Average sedentary h/d on weekdays (SWA 9.7±1.6 vs. SBQ 10.8±5.0, p=0.20), weekend days (SWA 8.5±2.3 vs. SBQ 9.1±2.9, p=0.36), and all days (SWA 9.4±1.6 vs. SBQ 9.9±3.3, p=0.35) were similar between the SWA and SBQ. Across all days, the average difference between the SWA and SBQ was 0.58±3.9 h/d, with the majority (59%) of participants overestimating sedentary time on the SBQ, relative to SWA. The average absolute magnitude of the discrepancy was 3.1±2.3 h/d. Watching TV (2.3±1.2 h/d), office/paper work (1.8±1.5 h/d), sitting talking on telephone (1.5±1.4 h/d), and sitting driving in a car (1.3±0.9 h/d) comprised almost two-thirds (65%) of participants' reported daily sedentary time. **Conclusions:** SWA- and SBQ-derived sedentary time estimates in bariatric surgery candidates are comparable at the group level, although there is considerable variability at the individual level with a tendency to overreport time spent in SB.

396-P
Comparison of Exercise-Related Psychological Factors in Severely Obese Individuals Seeking Bariatric Surgery vs. Lifestyle Treatment

Jessica L. Unick, Dale S. Bond, Kevin O'Leary, Jennifer Trautvetter, Sivamainthan Vithiananthan, Beth Ryder, Dieter Pohl *Providence, RI*

Background: Severely obese individuals have low levels of physical activity (PA). However, it is unclear whether PA participation and related attitudes, motivation, beliefs, and affective states differ between severely obese individuals seeking bariatric surgery (BS) or lifestyle intervention (LI). The present study examined whether BS and LI-seekers differed on objectively-assessed moderate-to-vigorous intensity PA (MVPA), exercise enjoyment, motivation, self-efficacy, and affective responses to PA. **Methods:** Seventy-seven severely obese individuals (BMI:44.9±5.6 kg/m2; age:44.4±9.3 years; 90% female) presenting for BS (n=49) or LI (n=28) wore an objective PA monitor (Sensewear armband) over a 7-day period, and completed the Physical Activity Enjoyment Scale, Behavioral Regulation in Exercise Questionnaire-2 (BREQ-2), Exercise-Induced Feeling Inventory for Chronic Training (EFI-C), and PA Self-Efficacy scale. **Results:** BS and LI groups did not significantly differ on average daily time spent in MVPA (BS:32.7±23.7 vs. LI:42.5±29.7 min/day; p=0.35). On the BREQ-2, BS seekers had lower introjected regulation (i.e., exercising to avoid feeling guilty or to obtain self-worth) and higher amotivation (e.g., no intention to engage in exercise) compared to LI (p's<0.05). On the EFI-C, BS reported higher unpleasant affect (p<0.01) and lower pleasant affect following exercise (p<0.001) compared to LI. BS and LI had similar levels of PA enjoyment and self-efficacy. **Conclusions:** Although BS and LI-seekers did not differ on MVPA, these findings suggest that BS are less motivated to exercise and experience reduced positive and heightened negative emotional reactivity to exercise, compared to LI. Future studies aimed at increasing PA in severely obese BS should focus on strategies to make PA more internally rewarding, including maximizing the mood-related benefits of PA.

397-P
Muscle Cross Sectional Area Increases and Low Back Pain Severity Decreases in Obese Older Adults After Progressive Resistance Exercise

Heather K. Vincent, Amanda N. Seay, Cindy Montero, Kevin R. Vincent, Robert W. Hurley *Gainesville, FL*

Background: Lumbar muscle strength deficits may contribute to low back pain in obese persons. A characteristic that may influence pain and physical function outcomes may be muscle hypertrophy of lumbar extensor muscles. Resistance exercise may increase strength and increase cross sectional area of the lumbar extensors, but this has not yet been examined. **Methods:** This was a prospective, randomized, controlled study. Patients (N=30; 67.9±7.1 years) were randomized to four months of isolated lumbar extension resistance exercise (LMB), total body resistance exercise (TOT) or a control group (CON). Participants completed supervised training three times per week for 4 months at a moderate intensity. The CON group did not exercise during the intervention period. Ultrasonography of the multifidus muscles, walking endurance, chair rise, stair climb, and resting pain were assessed at baseline and month four. **Results:** At month four, the changes in multifidus cross sectional area were highest in the TOT compared to the LB and CON groups (12.9% average increase vs -2.0% to 7.8% changes in the CON and LB groups, respectively; both p<0.05). Ambulatory pain decreased 46% to 8.5% in the TOT and LB groups compared with no change in the CON group (-0.44%). The change in multifidus muscle area correlated with changes in ambulatory pain (r=-0.538; p=0.014) and chair rise time (r=-0.436; p=0.023) and tended to be directly related with changes in maximal lumbar extensor strength (r=0.371; p=0.06). **Conclusions:** Improvements in pain and physical function may occur after resistance exercise training, and may be due to increased lumbar extensor muscle hypertrophy.

398-P
Physical Activity Across Pregnancy in Sedentary, Overweight or Obese Women

Kai Ling Kong, Randal Foster, Christina Campbell, Lorraine M. Lanningham-Foster *Ames, IA*

Background: Many pregnant women are sedentary and do not meet recommendations for physical activity (PA). The purpose of this study was to increase PA among sedentary, overweight or obese pregnant women. **Methods:** 27 sedentary, overweight/obese pregnant women joined the study by week 14 of pregnancy and were randomly assigned to the control (overweight: n = 6, prepregnancy BMI = 27.9 ± 0.7 kg/m2, mean ± SD; obese: n= 6, BMI = 35.4 ± 4.0 kg/m2) or intervention groups (overweight: n = 8, BMI = 26.6 ± 1.3 kg/m2; obese: n = 7, BMI = 34.0 ± 3.7 kg/m2). Intervention participants were asked to walk for 30 minutes, 5 days a week and were provided with a treadmill. PA, steps and metabolic equivalent of task (MET), were monitored during pregnancy weeks 14 (T1), 18 (T2), 28 (T3), and 35 (T4) using a StepWatch™ Activity Monitor (SAM) and SenseWear® Mini Armband (SWA), respectively. **Results:** There were no significant differences in PA between women in control and intervention groups. Data were examined to compare overweight and obese participants. Overweight women walked significantly more than obese women at T3 (10,138 ± 313 steps vs. 8116 ± 278 steps, p<0.027). Overweight women significantly increased walking from T2 (9028 ± 294 steps) to T3 (10,138 ± 313 steps, p<0.005), with a majority (62%) meeting the generalized 10,000 steps/day recommendation. Daily MET values of overweight women were significantly higher than obese women at T1 (1.35 ± 0.05 vs. 1.12 ± 0.03, p<0.001), T3 (1.34 ± 0.05 vs. 1.09 ± 0.04, p<0.001) and T4 (1.24 ± 0.05 vs. 1.08 ± 0.04, p<0.011). For all participants, PA was significantly reduced at week 35 of pregnancy, p<0.01). **Conclusions:** During pregnancy, overweight women are more physically active than obese women, until the later weeks of pregnancy when all women become significantly less physically active.

399-P
Burn and Earn: Incentivizing Exercise in First-Year College Students

Lizzy Pope, Jean Harvey-Berino *Burlington, VT*

Background: The majority of first-year college students gain weight over freshman year. This study examined whether monetary incentives were a viable way to increase exercise and maintain/improve the BMIs of first-year college students. **Methods:** 117 first-year students participated in a 9-month randomized controlled trial including a control and an incentive group. For 12 weeks during fall semester students in the incentive group received direct monetary payments (payments began at $10/week and escalated to $38.75/week) for meeting exercise goals that increased from two times/week to five times/week for 30 minutes. Height and weight were assessed at baseline and the conclusion of fall semester, and exercise was monitored through electronic ID-card check-in and check-out records at the campus fitness center. **Results:** 63% of the incentive group met the weekly exercise goals on average compared to only 13% of the control group. This difference in goal achievement was significant, $\chi 2$ (1, n=117)=37.53, p<0.001. There was also a significant effect of week on goal achievement, such that goal achievement decreased over the 12-week study period $\chi 2$ (11, n=117)=28.57, p<0.01. There was not a significant interaction between group and week indicating that attendance decreased at roughly the same rate in the control and incentive groups, $\chi 2$=(11, n=117)=14.13, p>0.05. There was also not a significant difference between the average BMI increases in the control and incentive

groups over the fall semester, F(1, 113)=0.14, p>0.05. Average BMI increased from 24.20 to 24.92 in the control group, and from 23.14 to 23.50 in the incentive group. **Conclusions:** Weekly monetary incentives motivated significantly more first-year students to meet weekly exercise goals. However, the increased exercise by the incentive group did not prevent an increase in BMI during fall semester.

400-P
Impact of Exercise Training Plus Interdisciplinary Lifestyle Management on Physical Capacity, Quality of Life and Physical Exercise Beliefs in Obese Subjects Before Bariatric Surgery: A Pilot Study

Aurélie Baillot, Warner Mampuya, Emilie Comeau, Anne Meziat-Burdin, Marie-France Langlois *Sherbrooke, Canada*

Background: We aimed to evaluate the impact of a Pre-Surgical Physical Activity Training (PreSPAT) plus intermultidisciplinary lifestyle management in obese people who are waiting for bariatric surgery. **Methods:** In addition to the interdisciplinary lifestyle management, 8 women and 4 men (40.8 (37.5-47.5) years old, BMI=51.4 (46.4-54.9) kg/m2) underwent the PreSPAT, combining endurance and strength training. They were instructed to attend supervised exercise sessions at least twice a week during 12 weeks and to complete missed sessions at home. Before and after the PreSPAT, anthropometric variables, body composition, physical capacity, quality of life and physical exercise beliefs were assessed. **Results:** The subjects participated in 57.3 (32.5-77.6) % of the 32 supervised exercise sessions proposed. Our program induced a significant improvement in weight (144.3 (128.7-149.2) kg to 140.2 (127.4-143.4) kg; p=0.007) and in 6 minute walking test distance (464.0 (412.0-501.0) m to 492.0 (450.0-531.0) m; p=0.05). Total quality of life score is significantly increased after the program (67.1 (54.0-70.2) % to 78.2 (56.4-84.7) %; p=0.01), like the subscales: emotions, social interactions and sexual life (p<0.03). Fear of injury (50.0 (32.5-60.0) % to 35.0 (22.5-51.2) %; p=0.028) and embarrassment during physical activity (65.0 (61.2-78.7) % to 60.0 (43.7-68.7) %; p=0.028) were significantly decreased, whereas no significant change for confidence and beliefs in exercise benefits were noticed after our program. **Conclusions:** PreSPAT associated with lifestyle management presents optimistic results in morbid obese people awaiting bariatric surgery. A randomized controlled study will be conducted with longer follow-up and larger cohort to identify specifically the impact of supervised PreSPAT.

401-P^{DT}
Inconsistent Reporting of Physical Activity From Screener to Baseline

Heather J. Adamus-Leach, Scherezade K. Mama, Rebecca E. Lee *Houston, TX*

Background: Obesity prevention and control interventions often aim to increase physical activity (PA), and rely on enrollment of physically inactive participants. Screeners typically include a crude measure of PA or inactivity and may inaccurately reflect participants' behavior if "physically active" is not clearly defined. This study explored inconsistencies between PA reported during screening and at baseline. **Methods:** Ethnic minority women were recruited to a PA intervention and screened to be physically inactive, defined as reporting ≤90 minutes of PA/week. Eligible participants (N=276, M=44.6 years, M=34.8 kg/m^2) completed the International Physical Activity Questionnaire at the baseline assessment, which specifies type of PA done in the last week. Pearson's chi-square analyses and computed odds ratios examined how type of PA reported affected the likelihood of reporting >90 minutes of PA/week at baseline. **Results:** Most women (84.7%) who were screened as inactive, reported doing >90 minutes of PA/week at baseline. Participants were 33.95 times more likely to report >90 minutes at baseline if they reported doing work-related PA; 13.68 times more likely if they reported transportation PA; 12.09 times more likely if they reported household/gardening PA; and 6.03 times more likely if they reported leisure PA at baseline (all *ps*<.001). **Conclusions:** Overweight/obese ethnic minority women may misreport being physically inactive during screening if specific questions about type of PA are not included, particularly work-related PA. More detailed screening questionnaires may help intervention programs reach women who can benefit the most from PA interventions.

402-P
From Zero to Hero: Improved Screening Improves Physical Activity Intervention Efficacy

Scherezade K. Mama, Heather J. Adamus-Leach, Rebecca E. Lee *Houston, TX*

Background: Intervention efficacy may be greatly improved by accounting for differences in physical activity (PA) reported between inclusionary screening and baseline assessment. This study explored PA adoption between two groups of women who (1) reported being physically inactive at screening and baseline and (2) reported being physically inactive at screening and active at baseline. **Methods:** Women (*N*=274, *M*=44.6 years, *M*=34.8 kg/m^2) completed a telephone screener to determine eligibility for a physical activity intervention. Eligible, physically inactive participants (≤90 min of PA/week) were invited to a baseline assessment, where they completed the International Physical Activity Questionnaire that measured work, transportation, gardening/housework, and leisure-time PA. Women (*N*=139) returned after 6 months to complete an identical post-intervention assessment. Bivariable analyses were used to inform models, and repeated measures analyses of variance were used to test differences in changes in PA over time between groups, controlling for age and income. **Results:** Most (84.7%) participants reported doing >90 min of PA/week, after being screened as inactive. Women who reported being inactive at screening and baseline reported greater increases in gardening/housework (*M*Δ=341.9 vs. -113.9 MET-min/week, *p*=.001), leisure-time (*M*Δ=496.8 vs. 378.2 MET-min/week, *p*=.026), and total PA (*M*Δ=1643.7 vs. 216.8 MET-min/week, *p*<.001) compared with women who reported being inactive at screening and active at baseline. **Conclusions:** Intervention efficacy was greatly improved after accounting for reporting differences in PA status between screening and baseline. Post-hoc analyses controlling for screening inaccuracies may improve efficacy of PA interventions and inform best practices and recommendations for future PA research.

403-P
Initial Validation of the Physical Activity Acceptance Questionnaire

Meghan Butryn, Shawn N. Katterman, Stephanie G. Kerrigan *Philadelphia, PA*

Background: A moderate-to-high level of physical activity is a critical component of weight gain prevention and weight loss maintenance, but many adults find adherence to physical activity goals challenging. Acceptance of psychological and physical discomfort related to physical activity may be an important factor in beginning and sustaining a program of physical activity. The aim of this study was to develop and evaluate the psychometric properties of the Physical Activity Acceptance Questionnaire (PAAQ) and examine how this construct related to physical activity. **Methods:** A previously validated measure of acceptance was adapted to make items specific to physical activity and administered to participants (n = 187) in studies of obesity treatment, weight gain prevention, or physical activity promotion. **Results:** Inter-item correlations and factor analysis indicated that scale reduction to 5 items was optimal and produced good internal reliability (Chronbach's alpha = .78). Scores on the PAAQ were strongly related to criteria variables, including amount of moderate-to-vigorous physical activity as measured by accelerometer (r = .24, p = .03) and number of objectively measured visits to a target fitness facility (r = .35, p = .01). As expected, perceived barriers to physical activity, including time, energy, and willpower, were negatively related to PAAQ scores (all p-values < .05). Significant correlations also were observed with global measures of mindfulness (r = .23, p = .04) and distress tolerance (r = .36, p = .01). The PAAQ explained more variance in physical activity than several other measures, including perceived barriers to physical activity and autonomous motivation for behavior change (all p-values < .05). **Conclusions:** The PAAQ is a valid and reliable measure of a psychological skill that may be a promising target for intervention.

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404-P
The Effects of an 8-Week Walking Intervention on Physical Activity and Anthropometric Measures in Inactive Middle Aged Women

Merrill Funk, Ghadah Alshuwaiyer, Susan Zacharia, Laurette Taylor *Norman, OK*

Background: Walking is an effective, inexpensive way to improve overall health. This intervention assessed the effectiveness of a theoretically based 8-week walking program on physical activity and body composition in inactive middle aged women. **Methods:** Participants aged 45-64 were randomly assigned to either a walking (150 minutes of brisk walking each week, with minimal contact from researchers) or control group. Participants completed pre- and post-test measurements (weight, body fat percentage, waist and hip circumference, and physical activity level) and the walking group received pedometers and was instructed to walk 10,000 steps/day for 8 weeks. Researchers maintained minimal contact with walking subjects through weekly email messages. **Results:** 20 subjects completed baseline measurements and 12 (7 intervention, 5 control) completed follow-up measurements. Total MET minutes and total walking MET minutes significantly increased in the walking group compared to the control ($F(1,10) = 8.89$, $p<.05$; $F(1,10) = 5.06$, $p<.05$, respectively). Waist circumference, waist/hip ratio, and weight decreased in the walking group compared to the control, but the differences were not significant. **Conclusions:** This intervention successfully increased overall activity and walking which positively impacted anthropometric measures in inactive women. Although there was a significant group-time interaction on total activity and walking, a small sample size, inadequate intervention duration, and inadequate dose of exercise likely contributed to inability to produce significant within-group anthropometric changes over time. Additionally, more contact with subjects may be needed to ensure successful adherence to the walking program.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Intervention Studies — Diet and/or Physical Activity-Pediatric

405-P
Degree of zBMI Change and Health Benefits in Obese Children Attending a Community Weight Management Program

Maria Kolotourou, Duncan Radley, Lindsey R. Smith, Stavros Orfanos, Paul Chadwick, Tim J. Cole, Paul M. Sacher *London, United Kingdom*

Background: Associations between the degree of BMI z-score (zBMI) change and markers of metabolic health following child weight management programs (CWMPs) have been published in an attempt to establish thresholds for evaluation of effectiveness. We investigated alternative health benefits associated with different levels of zBMI change in obese 8-12 yr old children completing MEND, a community-based, family-centred CWMP. **Methods:** Secondary data analysis was conducted using previously published RCT data (Sacher 2010). Of 99 children measured at baseline (mean age 10.2yrs, 41% male, mean zBMI 2.8) 71 were followed-up at 6 months (post-MEND) and half the sample (42 children) was followed-up at 12 months. Children were split into 4 groups according to their degree of zBMI change: group A (increased zBMI), group B (decreased zBMI by 0-0.25), group C (decreased zBMI by 0.25-0.5) and group D (decreased zBMI by >0.5). Differences among groups for blood pressure, recovery heart rate, physical and sedentary activity and self-esteem were investigated using the Kruskal-Wallis rank test. Linear regression was used to assess whether zBMI change predicted outcome change. **Results:** There were no statistically significant differences or trends across the zBMI subgroups at 6 or 12 months for any of the variables. **Conclusions:** The results imply that regardless of the magnitude and direction of zBMI change, the MEND program had positive effects on wider health outcomes. It appears that setting a zBMI reduction cut-off may overlook other important health benefits associated with attending a CWMP (e.g. cardiovascular fitness and psychosocial improvements) which appear to improve in the absence of zBMI decrease. Since this study was not originally designed to detect such differences, further research is underway to verify these preliminary findings.

406-P
Assessing the Short-Term Effects of the MEND Program for 5-7 Year Old Overweight and Obese Children in UK Community Settings

Lindsey R. Smith, Duncan Radley, Paul Chadwick, Maria Kolotourou, Catherine S. Gammon, Jennifer M. Rosborough, Paul M. Sacher *London, United Kingdom*

Background: National surveillance programs in the UK have consistently revealed high prevalence rates of overweight and obesity in children aged 4 to 5 years, reaching an alarming 23% in 2010. Despite an obvious need, there are few empirically validated weight management interventions for this age group in the UK. **Methods:** MEND 5-7 is a 10-week, family-based child weight management program consisting of weekly group sessions (105 minutes duration). It includes positive parenting, active play, nutrition education and behaviour change strategies. The intervention is delivered by a wide range of health, education and exercise professionals in community venues such as schools and recreation centers. **Results:** In the period to 2011, 339 overweight or obese children (42% boys; mean age 6.1 years; BMI z-score 2.9) and their parent/carer participated in 75 programs. Of these, 244 (66%) were measured pre and post-intervention. Post-intervention, mean BMI and waist circumference decreased by 0.5 kg/m2 and 0.8 cm, while z-scores decreased by 0.22 and 0.18 respectively ($p<0.0001$). Improvements were also found in behavioural difficulties (SDQ) score (-1.7 units; $p<0.0001$), parent self-efficacy domains ($p<0.0001$), physical activity (+1.8 hours/week; $p<0.05$), sedentary activities (-3.3 hours/week; $p<0.01$) and the proportion of parents and children eating 5 or more portions of fruit and vegetables a day (+15% and +18% for children and parents respectively). Attendance was 81% with a 92% retention rate. **Conclusions:** The MEND 5-7 program had beneficial effects on physical, behavioural and psychological outcomes when implemented in diverse UK community settings. These findings suggest that the program was effective in the short-term for children with pre and post-data. Further investigation is required to establish if these findings are replicable under controlled conditions.

407-P
Effects of a Multidisciplinary Intervention on Cardiometabolic Risk Factors Among Obese Adolescents

Patricia Blackburn, Lison Houde, Véronique Julien, Mario Leone, Dominique Desrosiers, Johanne Harvey *Saguenay, Canada*

Background: Obese youth experience comorbidities such as type 2 diabetes, metabolic syndrome and cardiovascular disease. Consequently, as the prevalence of childhood obesity increases, health care professionals are confronted to the challenge of properly treating this condition. Thus, the objective of the present study was to assess the effect of a 16-week exercise training program combined with a multidisciplinary intervention on cardiometabolic risk factors in obese adolescents. **Methods:** 33 obese adolescents (19 boys and 14 girls) from 11 to 16 years of age (14.0 ± 1.6 years) were selected to participate in this study. Each subject was followed by a multidisciplinary team and trained three sessions per week for 16 weeks. The exercise program focused on endurance type activities and all training sessions were supervised and performed in groups. Participants were also encouraged to increase physical activity in their free time. Physical and metabolic variables were measured at baseline, at mid-time and at the end of the intervention. **Results:** Body mass index (-0.93 kg/m2, $p<0.0001$) and waist circumference (-1.9 cm, $p=0.001$) were significantly reduced after the intervention. We also found a significant decrease in LDL cholesterol levels (-5.5 %, $p=0.02$), in triglyceride concentrations (-20.7 %, $p=0.01$) as well as in total cholesterol/HDL cholesterol ratio (-11.1 %, $p=0.0004$) whereas HDL cholesterol levels were increased (+11.8 %, $p=0.0008$). Finally, the number of participants characterized by at least 2 of 7 risk factors (total cholesterol, LDL cholesterol, apolipoprotein B, HDL cholesterol, triglycerides, insulin and glucose) was decreased by almost 10 % after the intervention. **Conclusions:** These results indicate that a multidisciplinary intervention which include exercise training may significantly improve cardiometabolic risk profile in obese adolescents.

408-P
Influence of Fruit Variety and Course Sequence on Fruit Intake During a Snack in Preschool-Aged Children

Chelsi Cardoso, Shannon Looney, Hollie Raynor *Knoxville, TN*

Background: Variety and course sequence are factors known to impact consumption, but have not been examined regarding fruit intake. This study investigated the effect of fruit variety and course sequence on fruit intake during an afternoon snack in preschool-aged children. **Methods:** A 2x2 crossover design (within-subject conditions of fruit variety and course) was conducted on Wednesday afternoons in a preschool setting. Fifteen children (4.0 ± 0.7 yrs; 53.3% female; 80.0% white; 9.3% Hispanic; 58.9 ± 26.9 body-mass-index (BMI) percentile; 0.46 ± 1.32 BMI z-score) completed four, 20-minute snack sessions. Foods served included 50 g applesauce, 50 g peaches, 100 g cheese (fruit variety) or 100 g applesauce, 100 g cheese (fruit non-variety) over one 20-minute course (one course) or one, 10-minute fruit course and one 10-minute, cheese course (two course). **Results:** Repeated measures analyses of covariance found a significant ($p < 0.004$) interaction of fruit variety and course, indicating that in the fruit non-variety conditions, more fruit was consumed in the two course as compared to one course condition (68.0 +/- 33.6 g vs. 59.5 +/- 30.6 g, $p < 0.05$). Additionally, a significant main effect of course was found, with more fruit consumed in the two course as compared to one course condition (74.0 +/- 28.3 g vs. 63.7 +/- 32.1 g, $p < 0.01$). When amount and energy of all foods consumed were examined, no differences were found between conditions. **Conclusions:** In preschool-aged children, serving fruit as a first course in a snack may increase consumption of fruit.

409-P
A Family-Centered Obesity Prevention Program Developed By Families for Families: Outcome Evaluation Findings

Kirsten Davison *Boston, MA*; Janine M. Jurkowski *Albany, NY*; Kaigang Li *Bethesda, MD*; Sibylle Kranz *Lafayette, IL*; Hal A. Lawson *Albany, NY*

Background: Communities for Healthy Living (CHL) utilized Community-Based Participatory Research to empower Head Start parents to play an equal role in designing and implementing a family-centered childhood obesity prevention program. In this study, findings from the outcome evaluation are presented. **Methods:** Following a year-long development process including 12 meetings of a parent-led advisory board and an extensive community assessment, the CHL program was collaboratively developed and pilot-tested over a 6-month period in 5 Head Start centers. CHL included a social marketing campaign, revisions to body mass index (BMI) reporting procedures, nutrition counseling sessions at Head Start events, and a 6-week parent empowerment program. The intervention was evaluated using a pre-post quasi experimental design. Primary outcomes included children's BMI z-score, dietary intake (24-hour dietary recall), physical activity (accelerometry), and screen-based behaviors. Secondary outcomes included parents' concerns about obesity, self-efficacy to promote a healthy lifestyle, and parenting practices. **Results:** : Eighty percent of parents reported exposure to > 2 intervention components. Compared with pre-intervention, children at post intervention had significantly lower BMI z-scores, higher light physical activity, lower television viewing time, and lower energy and macronutrient intakes. At post intervention, parents reported greater concern about obesity in preschool-aged children, greater self-efficacy to offer healthy foods, and greater facilitation of children's physical activity. **Conclusions:** Despite the absence of a comparison group, the consistent pattern of findings highlight the promising nature of the CHL program and support the need to explore and test the CHL program and its underlying developmental process in greater detail.

410-P[DT]
Evaluation of a Community-Based Weight Management Program For Obese, Inner-City, Minority Adolescents Using the RE-AIM Framework

Jessica Rieder, Unab I. Khan *Bronx, NY*

Background: Effective, sustainable weight loss interventions for obese, inner-city adolescents are limited. We evaluated a community-based intervention tailored for this population using the Reach, Efficacy, and Implementation components of the RE-AIM Framework. **Methods:** Our 9-month intervention combines medical services and community center programming. We enrolled 349 adolescents (2007-09); mean age 15±2 years; mean BMI percentile 98.9 ± 1.5; 52% black; 44% Hispanic. Reach: Estimated the proportion of eligible adolescents in the community who enrolled. Efficacy: Compared longitudinal trends in anthropometric measures from one year before (T-12) [obtained from electronic medical records] to baseline (T0) to program-end (T9) using mixed-effects linear models accounting for dropouts; compared lifestyle changes for program completers from T0-T9. Implementation: Documented staff execution of program components and participant retention. **Results:** Of an estimated 5,250 obese adolescents in our community, 7% enrolled: 67% with severe obesity; 53% parental obesity; 82% had low motivation for behavior change. From T-12 to T9, the rate of gain in BMI (0.12 vs. 0.04, $p<0.05$) and BMI z-score (0.003 vs. –0.003, $p<0.001$) decreased. From T0-T9, the number of vegetable servings/day (0.6±0.9 vs. 1.0±0.9, $p<0.01$), fruit servings/day (0.8±1.1 vs. 1.2±1.1, $p<0.02$), and the proportion exercising > 6 days/2 weeks (13% vs. 25%, $p<0.05$) increased. Staff implemented 89% of program components. 26% of participants completed the program with dropout rates increasing after 4 months. **Conclusions:** A weight management program for ethnic minority adolescents with severe obesity can be successfully implemented in an inner-city community. Although program reach and completion were low, modest but significant improvements in anthropometrics and lifestyle behaviors are attainable.

411-P
Are High-Fiber Snacks Acceptable to School-Aged Children and What Snacks Do Children Prefer?

Mary Brauchla, Sibylle Kranz *West Lafayette, IN*

Background: Public health efforts focus on the prevention of childhood obesity. The Dietary Guidelines for Americans state that dietary patterns that are high in fiber are associated with improved calorie balance and weight management. Fiber is under-consumed by most children, thus, one possible approach to reach the public health goal is to increase intake of fiber-rich snacks. **Methods:** A convenience sample of elementary school children ages 7-11 years (n=81) were recruited and randomly assigned to an intervention or control group. The intervention group consumed 2 high-fiber snacks (average of 157kcal and 5 grams of fiber) per day for 8 weeks - n=112 snack occasions. At each snack occasion, children could select one of 2 choices from (n=27) different foods that were offered, including various ready-to-eat cereals, crackers and breads. **Results:** The study was completed by 98.8% of the subjects. At 95% of the snack occasions at least half of the snack and at 67% the entire snack was consumed. Out of a total of 3,603 eating occasions, children chose cereal 54%, bread 31%, and crackers 16% of the time. There was no statistical difference in the snack choices by age or gender. **Conclusions:** These results indicate that a variety of high-fiber snacks, especially ready-to-eat cereals, are highly acceptable in this population. Efforts to increase fiber intake in children should focus on offering choices and should include sweet, neutral, and savory snack types.

412-P
Changes in Eating Behaviors of Obese Children in Response to Carbohydrate-Modified and Portion-Controlled Diets

Shelley Kirk, Jessica G. Woo, Bonnie Brehm, Margaret Neidhard *Cincinnati, OH*; Brian E. Saelens *Seattle, WA*

Background: We hypothesized that carbohydrate-modified diets would differentially affect eating behaviors as compared to a standard portion-controlled diet, which may be associated with achieving a healthier weight in obese children. **Methods:** Obese children aged 7 to 12 (N=102) were randomly assigned to a 3-month intervention of low-carbohydrate (LC), reduced glycemic load (RGL) or portion-controlled (PC) diets. In primary analyses, all diets were effective in 12-month improvement in BMI z-score. Anthropometry and parent-report of children's eating behaviors (cognitive restraint, disinhibition and hunger as assessed by the Three-Factor Eating Questionnaire) were evaluated at baseline, 3, 6 and 12 months. Data were analyzed using longitudinal mixed models and Spearman rank correlations. **Results:** Eating behaviors did not differ between diet groups at any time point. At 3-months, all diet groups reported significantly higher cognitive restraint and lower hunger compared to baseline (all $p<0.0001$), which remained lower than baseline at 6- and 12-months (all $p<0.0017$). Disinhibition scores were lower at 3 months than baseline for LC and PC groups (both $p<0.0001$), but by 12-months, no diet group differed from baseline. Across all diets, greater increases in cognitive restraint at 3-months were correlated with greater re-

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ductions in BMI z-score at 12-months (p=0.03), an effect seen specifically in the LC (p=0.02) and RGL (p=0.07) groups, but not the PC group (p=0.7). **Conclusions:** Contrary to expectations, carbohydrate-modified diets did not differentially affect obese children's eating behavior. However, individuals with increased cognitive restraint scores by 3 months experienced greater reductions in BMI z-score by 12-months, particularly for carbohydrate-modified diets.

413-P
Cross-Sectional Time Series and Multivariate Adaptive Regression Splines Models For Prediction of Energy Expenditure of Preschool-Aged Children

Issa Zakeri *Philadelphia, PA*; Anne L. Adolph, Maurice Puyau, Theresa A. Wilson, Nancy F. Butte *Houston, TX*

Background: Introduction: Sophisticated models to predict energy expenditure (EE) are essential for quantifying the characteristically sporadic and variable patterns of EE of preschool-aged children. **Methods:** Methods: Advanced technology (Actigraph GT3X and Actiheart accelerometers and miniaturized heart rate (HR) monitors) and modeling techniques (cross-sectional time series, CSTS and multivariate adaptive regression splines, MARS) were applied to develop and validate prediction models for EE in 69 boys and girls, ages 3 to 5 y, who performed a range of sedentary to vigorous activities while in a room respiration calorimeter. **Results:** Results: For model development, the Actigraph vertical, horizontal and diagonal vectors, as well as steps and position, contribute independently to the prediction of activity EE (AEE) during awake periods. Prediction errors for AEE were 2.1 ± 16.9% with a RMSE=0.074 kcal/min for CSTS and 0.9 ± 10.4% with a RMSE=0.048 kcal/min for MARS. Actigraph accelerometry is not applicable during sleep, but in combination with HR can be used to predict EE throughout the 24-h. For Actiheart, heart rate and physical activity counts contribute strongly to the prediction of EE. Actiheart prediction errors for EE were -0.3 ± 8.6% with a RMSE=0.092 kcal/min for CSTS and 0.3 ± 6.0% with a RMSE=0.06 kcal/min for MARS. Actigraph+HR prediction errors for EE were 0.1 ± 6.8% with a RMSE=0.069 kcal/min for CSTS and 0.3± 4.7% with a RMSE=0.05 kcal/min for MARS. **Conclusions:** Conclusion: Accurate and precise CSTS and MARS models based on accelerometry and HR monitoring can be used for the quantitative assessment of AEE and EE preschool children. This research is partially supported by NIH Grant R01 DK085163

414-P
Similar Physiological and Perceived Variables Observed in Obese and Healthy Weight Children During Unstructured, Sustained Vigorous Physical Activity

Connie L. Tompkins, Timothy Flanagan, Julie Benay, David Brock *Burlington, VT*

Background: Unstructured physical activity (PA) may be a promising alternative for obese children as they may perceive certain exercises as difficult and challenging. Therefore, we examined whether both healthy weight (HW) and obese children would engage in vigorous PA in an unstructured, before-school PA program. **Methods:** Fourteen 3rd-5th graders [5 obese (>95th BMI percentile, 9 HW (25th->85th), 7-10 years; 6 males, 8 females] participated in before-school (7:30 - 8:15 a.m.) PA for 8 weeks, 3 days/week (Tuesday, Wednesday, Thursday). During every session, each child wore a Polar E600 heart rate (HR) monitor (chest strap and watch) and was provided a vigorous, age-targeted heart rate (THR) of 70%. Children were asked to engage in and sustain PA of their preference ≥ their THR for the duration of each session. Trained staff manually recorded each child's HR ~15 minutes during each session. Immediately following each session, HR was electronically downloaded and each child was asked to provide their overall rating of perceived exertion (RPE, Borg) for the session. **Results:** Mean HR ≥ THR for all participants in 16/23 sessions (70%). Classified by weight, mean HR in the obese ≥ their THR in 20/23 sessions (87%) compared to 16/23 (70%) in HW. Differences in mean HR during 2 sessions was observed between obese and HW, with the obese demonstrating significantly higher HR in 1/2. No significant difference in RPE between the groups during these 2 sessions was reported. Differences in RPE were observed during 3 sessions with the obese demonstrating significantly lower RPE compared to HW. **Conclusions:** Results from this pilot study provide evidence to support the participation of both HW and obese elementary school-aged children in unstructured, yet vigorous, before-school PA.

415-P
Identifying Constructs of Parenting Practices Related to Childhood Obesity

Dianne S. Ward, Amber E. Vaughn *Chapel Hill, NC*; Rachel G. Tabak *St. Louis, MO*; Maria Bryant *Leeds, United Kingdom*

Background: Parent feeding practices are thought to be important determinants of children's diet and obesity risk. However, understanding of the most relevant feeding practices is impaired due to confusion over what constructs are measured by existing instruments. **Methods:** A systematic literature review was conducted in October 2009 using PubMed/Medline, PsychInfo, Web of knowledge (ISI), and ERIC to identify existing measures of the home food environment. Search terms were identified to capture parental practices in the home that influence child diet and/or eating behaviors. Only articles describing parental practices (self- or child-report) with children 2-12 y were retained No limits were placed on date of publication; all articles had to be available in English. Titles and abstracts were reviewed to narrow results; full articles were then retrieved and read. The ANGELO framework (Swinburn et al., 1995) was used to guide the development of a content map (with 20 unique categories) to which individual survey items could be linked. Each paper was examined by independently by two reviewers to extract data on pre-defined forms for tool evaluation, including content coverage. **Results:** The initial search yielded 28,378 unique titles; review of titles and abstracts narrowed the pool to 1,352 articles. Of 64 instruments identified, the most commonly addressed content area included: child control (66.7%), pressure and/or prompting (60.0%), encouragement and/or negotiation (44.4%), and rules, limits, and/or discipline (44.4%). **Conclusions:** Linking of items into the content map highlighted how scales differed in their definitions/names. The great variation in items included in different scales makes comparison between instruments extremely difficult. Future efforts are needed to build consensus around definitions and measurement of parent feeding practices.

416-P[DT]
Postprandial Triglyceride Concentration and Resting Blood Pressure in Black vs White Adolescents: Effect of a Single Bout of Exercise

Sojung Lee *Pittsburgh, PA*; Stephen Burns *Singapore, Singapore*; David A. White, Silva Arslanian *Pittsburgh, PA*

Background: We compared postprandial triglyceride (TG) levels and resting blood pressure (BP) in black and white adolescents and examined the effect of a single bout of exercise in reducing cardiometablic risk factors. **Methods:** Twenty black and 14 white overweight, sedentary adolescents (12-18 yrs, BMI >85th percentile for age) participated in two 2-day trials (control vs. exercise), 1-4 weeks apart, in a counterbalanced randomized design. In the control trial, subjects took no exercise on day 1. On day 1 of the exercise trial, subjects performed a single bout of moderate-intensity exercise on a cycle ergometer for 60 minutes. On day 2 of both trials, participants consumed a high-fat test meal (1.25 g of fat, 1.07 g of carbohydrate, 0.20 g of protein, and 67 kJ.kg-1 body mass) at 08:00h and blood samples and BP were obtained fasted and for 6 h postprandially. **Results:** Following a fatty meal, peak TG and TG area under the curve (AUC) were significantly higher (effect of race, P <0.05) in white versus black youth, independent of trial. Fasting TG and postprandial TG and TG AUC were significantly lower (effect of condition, P<0.05 for all) in the exercise vs. control trial. Postprandial resting systolic BP did not differ between black versus white youth. However, systolic BP 6 hour after a fatty meal was lower in the exercise vs. control trial (effect of condition, P=0.04). **Conclusions:** Our finding suggests that aerobic exercise has a beneficial effect on reducing postprandial TG concentrations and systolic BP in overweight black and white youth.

417-P
Design and Methods For an Intervention Utilizing Peer Facilitators to Reduce Adolescent Obesity: Team Up for Healthy Living

Deborah L. Slawson, William T. Dalton, Liang Wang, Mary Ann Littleton, Elizabeth Lowe, Mozen Diana, Karen E. Schetzina, James Stoots, Christian L. Williams, Jodi Southerland, Taylor L. McKeehan, Tiejian Wu *Johnson City, TN*

Background: The proportion of obese adolescents in Southern Appalachia is among the highest in the nation. Through funding from the National Institute on Minority Health and Health Disparities in the National Institutes of

Health, the Team Up for Healthy Living Project targets obesity prevention in adolescents through a cross-peer intervention. The specific aims of the project are: 1) To develop a peer-based health education program focusing on establishing positive peer norms toward healthy eating and physical activity (PA) among high school students, 2) To test program efficacy, and 3) To explore the mechanisms underlying the program. **Methods:** The study is guided by the Theory of Planned Behavior which presupposes that human behavior is primarily driven by attitude, subjective norms, perceived behavior control, and social support. To deliver the intervention, undergraduate students from the disciplines of Public Health, Nutrition, and kinesiology were trained as peer facilitators. Ten area high schools were identified to be a part of the project, schools were matched based on similar demographics and were randomized to intervention or control. Body mass index percentile, dietary behavior, and PA among subjects will be assessed at baseline and at three and twelve months post-baseline. The peer facilitators are teaching Team Up curriculum, which consist of eight forty-minute sessions at intervention schools. The curriculum focuses on nutrition awareness, PA, leadership and communication. Control schools receive their regularly scheduled Lifetime Wellness curriculum. **Results:** The study is in progress. **Conclusions:** The long-term goal of the study is to establish an effective academia-community partnership program to address adolescent obesity disparity in Southern Appalachia.

418-P

This abstract has been withdrawn.

419-P[DT]

Texas Fun-Based Summer Camp Program for Obese Children, Kamp K'aana, Is Reproducible in Wisconsin's YMCA Residential Camp Manitou

Stephanie H. Abrams, Sarah Barlow, Carmen Mikhail, Vernisha Shepard, Paula Mrowczynski-Hernandez, William J. Klish *Houston, TX*; Garret Larsen *Livingston, TX*; Joanne M. Gilles, John Plewa, Carol Fahrenkrog *Eau Claire, WI*; William W. Wong *Houston, TX*

Background: Dissemination of successful community interventions for obese youth has been difficult. This study investigated whether a YMCA residential summer camp in Wisconsin could implement the Kamp K'aana program, a Texas-based 2-wk residential summer camp for obese children, and could reproduce the sustained improvements in body weight and BMI. **Methods:** Kamp K'aana team members in Houston, Texas provided training and materials to the YMCA Camp Manitou-Wabi and The Mayo Foundation clinical teams in Wisconsin. Instruction in camp activity programming, behavior modification lesson plans, journals for the children and sensitivity training of counselors took place in person for 2 days in Wisconsin and for 3 days in Houston with supplemental phone calls and emails. **Results:** K'aana had 55 subjects enrolled including 29 girls and 26 boys with a mean age of 12.7yrs (47% White, 31% Hispanic, 20% Black & 2% Asian), while Wabi in Wisconsin enrolled 40 subjects including 23 girls and 17 boys with a mean age of 12.5yrs (93% White, 7% Black). At the initiation of the summer camp program, K'aana campers had a mean BMI of 33, mean BMI% of 98.4% and a mean BMIz score of 2.24; similarly, the Wabi campers had a mean BMI of 34.6, mean BMI% of 98.7% and a mean BMIz score of 2.36. Mean weight loss per child during the summer camp was similar in K'aana (-3.7kg) when compared with Wabi (-5.4kg). Return rates at K'aana vs. Wabi were similar at the 3-mo reunion (78.3% vs. 72.5%) and the 6-mo reunion (41.7% vs 35%). K'aana had a mean BMI of 31.2 at the 3mo reunion and 31.1 at the 6mo reunion, and Wabi had mean BMIs of 32.8 and 31.6, respectively. **Conclusions:** The YMCA residential camp achieved similar weight improvements. We conclude that the Kamp K'aana program could be disseminated to other YMCA residential camps around the United States.

420-P

Obese, Mexican-American Children Have Elevated Non-Traditional Metabolic Risk Factors

Brian K. McFarlin, Craig A. Johnston, Jennette Moreno, Whitney L. Breslin, John P. Foreyt *Houston, TX*

Background: There is a health disparity for obesity amongst Mexican-Americans compared to other race/ethnic groups. In particular Mexican-American children who are obese are likely to become obese adults. **Methods:** The purpose of this study was to examine traditional and non-traditional risk factors in a subset of Mexican-American children prior to their participation in a larger clinical weight loss study. Venous blood samples were collected from self-identified Mexican-American children (12-14y) who were assigned to one of three weight groups based on their zBMI; normal weight (N=66), overweight (N=23), or obese (N=39). Serum was analyzed for interleukin 6 (IL-6), tumor necrosis factor alpha (TNF-α), C-peptide, Ghrelin, GIP, GLP-1, Glucagon, Insulin, Leptin, Macrophage Chemoattractant Protein 1 (MCP-1), and Pancreatic Polypeptide (PP) using a Luminex MagPix based assay (EMD Millipore). Total cholesterol, HDL cholesterol, triglycerides, and glucose were analyzed using enzymatic assays. Data were analyzed for significance using separate ANOVA tests, with significance set at $P<0.05$. **Results:** Relative to normal weight and overweight and obese children had significantly elevated C-peptide ($P<0.0001$), insulin ($P<0.0001$), leptin ($P<0.0001$), MCP-1 ($P=0.005$), and TNF-α ($P=0.006$). There were no other differences for any of the other measured variables. **Conclusions:** The changes we observed are consistent with what our lab and others have previously reported. Collectively these findings indicate differences in plasma proteins that may relate to disease risk in Mexican-American children of differing body weight. More research is needed to determine how these variables may change in children who are actively attempting to reduce their zBMI.

421-P[DT]

Kinecting With Friends: Social and Individual Active Video Game Play in Hong Kong Girls

Robin Mellecker, Alison McManus *Pokfulam, Hong Kong*

Background: Social interaction may be a contributing factor for attaining physical activity goals during an intervention program. Active video games offer children the opportunity to engage in an activity they enjoy whilst playing alone or with their peers. **Methods:** This study investigated the effect of social interaction on physical activity goal attainment during active video game play and whether this differed by weight status. Nine lean and 13 overweight Chinese girls participated in a 6-week in-school experiment. Kinect® River Rush was played in 20-minute sessions alone or with a friend. Attainment of PA goals was assessed from the time spent in moderate to vigorous activity (MVPA) and the time spent in the optimal fat oxidation zone. We also report non-attainment time. Individualized heart rate cut-offs were determined from indirect calorimetry. MANOVA was used to compare the three dependent variables by social play condition and weight status. **Results:** Playing with a friend did not significantly affect the amount of time lean or overweight girls spent within the optimal fat oxidation zone. Time spent in MVPA was significantly greater in the lean ($P = 0.003$), but did not differ by social condition. Non-attainment of the goals was lower in the overweight when playing with a friend, but higher in the lean when playing with a friend. **Conclusions:** These preliminary findings suggest that social interaction is not a necessary component for achieving physical activity goals during active video gaming, but playing with a friend was helpful in preventing low activity play in the overweight.

422-P[DT]

It's All About F.U.N: A Church-Based Intervention To Promote Physical Activity in African American Adolescent Girls

Wanda M. Thompson *Chapel Hill, NC*

Background: Physical activity declines drastically during adolescence, especially in African American adolescent girls with trending patterns revealing less physical activity and more sedentary activity each year. This trend places African American girls at increased risk of developing obesity, prediabetes and type 2 diabetes. **Methods:** A one-group pre-test and post-test design was used to test a 12-week church-based physical activity intervention for African American adolescent girls aimed at changing attitudes toward physical activity and increasing physical activity levels. Data collection was obtained across 3-time points: 0 weeks (baseline), 6-weeks (midpoint) and 12-weeks (completion). **Results:** The adolescents (n=39) mean age was 14.2 years. Positive trends in the appropriate direction were noted on attitudes, self-efficacy, and intention to exercise, and an increase from moderate intensity exercise to vigorous intensity exercise. A significant positive correlation (.37) was noted between family support at baseline and 6-weeks metabolic equivalent scores (METs). **Conclusions:** Conducting a culturally tailored physical activity intervention for African American adolescents and partnering with the church was found to be feasible. The inclusion of parents in the development and implementation of physical activity programs should be a key considera-

tion of future interventions. Improving physical activity levels among African American adolescents may be a cost-effective health promoting primary prevention strategy.

423-P[DT]

Healthy Families Study: Design of a Childhood Obesity Prevention Trial For Hispanic Families

Roger Zoorob, Mac Buchowski *Nashville, TN*; Bettina M. Beech *Winston-Salem, NC*; Juan Canedo, Sylvie Akohoue, Pamela Hull *Nashville, TN*

Background: Hispanics are disproportionately affected by the childhood obesity epidemic. This paper reports on the design and baseline characteristics of the ongoing Healthy Families Study, a randomized controlled trial (RCT) testing the efficacy of a family-based behavioral intervention to prevent excessive weight gain in Hispanic children using a community-based participatory research approach. **Methods:** The study will enroll 270 Hispanic families with children ages 5-7 residing in Nashville/Davidson County, Tennessee. Families are randomized to the active weight gain prevention intervention or an alternative intervention focused on oral health. The active intervention is implemented by lay community health promoters in a community center. This intervention was adapted the We Can! parent program to be culturally-targeted for Hispanic families and for a younger age group. It promotes healthy eating behaviors, increased physical activity, and decreased sedentary behavior, with a strong emphasis on parental modeling as well as experiential learning for children. The primary outcomes is change in body mass index of the children. Secondary outcomes are changes in children's behaviors related to healthy eating, preferences for fruits and vegetables, physical activity, and screen time. **Results:** As of September 2011, 120 Hispanic families have enrolled, completed baseline assessment, and been randomized to study groups. The sample is comprised of immigrant parents with relatively low education and income and mostly U.S.-born children. Approximately 85% of parents and 75% of children were overweight or obese at baseline. **Conclusions:** This study will contribute valuable evidence on the efficacy of a childhood obesity prevention intervention targeting Hispanic families.

424-P[DT]

Increasing Activity and Health in Overweight Kids: Do Psychological Interventions Make a Difference?

Elizabeth Milligan, Becca Resich *Hillsboro, OR*; Daniel Munoz *Portland, OR*; Erin E. Jobst *Hillsboro, OR*

Background: Treating childhood obesity is complex and multifaceted. Although many strategies implement psychological interventions, conclusions about the effectiveness of these interventions is unknown. The present study evaluated the effectiveness of psychological interventions within a program aimed at identifying barriers affecting successful weight loss and healthy lifestyle choices among a sample of overweight children. **Methods:** Participants (N=24) aged 6-16 with a BMI ≥ 85th percentile completed a 6-month activity-based mentoring program. Participants completed psychological, morphometric, and exercise tests at baseline, 6-months, and 1 year. The program was conducted in two versions; in both, each subject met with a physical therapy graduate student to engage in physical activity once per week for 6 months. In the second version (Version 2; n=12), each subject also met with a psychology graduate student once per month. **Results:** This study compared mean differences between the two versions of the program at the end of the 6-month program: no significant differences were found in BMI, waist circumference, or waist-to-hip ratio (MANOVA analysis). However, both versions were successful in maintaining BMIs at the 6-month timepoint, Version 1 (M=31.64, SD = 16.66) Version 2 (M= 35.40, SD = 8.34). **Conclusions:** In this study, the inclusion of specific psychological interventions did not result in significant mean differences in BMI, waist circumference, or waist-to-hip ratio when compared to participants who did not receive these psychological interventions.

425-P

A Parental Education Intervention to Reduce Body Weight In Overweight Preschoolers

Jennifer C. Schrecengost, Wendy L. Biddle, Carolyn Rutledge *Norfolk, VA*

Background: Childhood obesity has reached epidemic levels. Studies estimate that a third of American children age 2-19 are at risk for overweight and 17% are overweight. More than 20% of children aged 2-5 are overweight, 10.4% obese and almost 7% morbidly obese with BMI greater than 97th percentile for age. Despite an increase in the last ten years in the number of treatment studies on childhood obesity, few have examined interventions for obese preschoolers. **Methods:** Eating habits, activity level and weight gain were reported by parents in a written health log. Parents' feeding practices were measured with a questionnaire (Modified Family Eating and Activity Habits Questionnaire) administered at the beginning and end of the 8-week study period. A follow-up survey was done to determine the factors that affect parent participation in nutrition programs for their children. **Results:** Four parents participated in the intervention, 2 completed all aspects of the study. Intervention participation resulted in improvements in parental feeding practices, consumption of fruits and vegetables, sugary beverages, and activity level but they did not reach statistical significance. The intervention had no effect on body weight. Post-study surveys revealed most parents perceived their pre-schooler's weight as normal and had no concerns about their weight, despite the fact that 30% of the survey children were overweight or obese. **Conclusions:** Educating parents can produce positive changes in preschoolers' eating habits, activity level, and parental feeding practices. Further study is needed into how to increase parent participation in nutrition-related programs since most have erroneous perceptions regarding their child's weight.

426-P

Process and Outcome: Converting a Parent-Child Weight Managment Program to a Parent-Only Child Weight Management Program

Eileen Kennedy, Karen S. Vargo, Beth Sprogis, Sarah Worley, Katherine Mone, Heather Nettle, Jill Fisher *Independence, OH*

Background: Fit Youth is a 12-week child weight management program established in 2005, and up to now has had parallel parent and child weekly components. Golan et al (1998, 2006), Janicke et al (2008) and Jansen et al (2011) have reported effective child weight management outcomes when working with parents exclusively. **Methods:** This is a prospective pilot study of children 7-11 years in a parent-only Fit Youth program, compared with age- and gender-matched comparison patients who have completed the standard parent and child Fit Youth curriculum. Previous completers of the standard program will be compared 2:1 to this pilot group. **Results:** Recruitment of families required contact with many more families than in the recruitment of the standard class. Program modification included increased clarity of responsibilities that belonged to the parents and those that were shared with their child. Outcome data (change in BMI %tile and waist girth) are pending as this pilot class is currently in process. **Conclusions:** The conversion of a standard parent-child weight management program to a parent-only child weight management program has illuminated parental reluctance and sharpened delineation of parental and child roles in creating weight loss behaviors. The initial 2:1 comparison will be completed at the end of the 12 week class and at additional time points over 18 months.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Intervention Studies — Other-Adult

427-P

Energy Intake and Expenditure During Sedentary and Active Screen Time

Elizabeth Lyons *Galveston, TX*; Deborah F. Tate, Dianne S. Ward *Chapel Hill, NC*

Background: Sedentary TV watching and video game playing are positively associated with energy intake. Motion-controlled video games may be a healthier alternative due to higher energy expenditure, but little is known about their effects on energy intake. **Methods:** In this study, young adults (N = 120, 60 female) were randomized to three groups: Television (TV), traditional video games (VG), or motion-controlled video games (MC) for one hour with snack foods and beverages provided. Energy intake, energy expenditure, energy surplus (intake - expenditure), appetite, and measures of distraction (presence, engagement, and narrative transportation) were measured. **Results:** A trend toward a significant difference by group was found for in-

take (P = .065). Energy expenditure (P < .001) was higher and energy surplus (P = .038) lower in MC than in TV or VG. All conditions produced a mean energy surplus: 638 kilocalories (kcal) in TV, 655 kcal in VG, and 378 kcal in MC. The odds of consuming ≥ 500 kcal were 3.18 (95% confidence interval [CI] 1.20 - 8.42) times greater in the TV group compared to the MC group. Appetite did not differ between groups or over time. Of the distraction measures, only narrative transportation was associated with energy intake (ρ = .205, P = .025). Transportation was higher in the TV group compared to the other two groups (P = .002) and in men compared to women (P = .003). Secondary analyses collapsing the two sedentary conditions found 178 kcal (95% CI 8 – 349) lower energy intake in the MC condition than in two sedentary conditions (TV and VG). **Conclusions:** Motion-controlled games may be a healthier alternative to sedentary screen time, but play of these games in the presence of easy to obtain snacks still resulted in positive energy balance. Future studies should further investigate the effects of involving narratives on energy intake.

428-P[DT]
Preventing Excess Weight Gain During Pregnancy Among Overweight and Obese Women With a Technology-Based Approach

Kelly C. Allison, Stacia K. Studt, Lisa K. Diewald, Sindhu K. Srinivas, David Sarwer *Philadelphia, PA*

Background: Excess gestational weight gain is related to negative birth outcomes and weight retention in women. Few interventions aimed at limiting gestational weight gain for overweight and obese women have shown efficacy. **Methods:** We conducted a randomized controlled trial of 42 pregnant women with BMI > 25 kg/m2. We compared weight and birth outcomes for the intervention group (n = 21), who received weekly telephone counseling sessions weeks 16 – 36 of pregnancy and used WiFi scales to monitor their weight, and the treatment as usual (TAU) group (n = 21). **Results:** Forty-two women (mean age 28.5 yr; mean pregravid BMI 31.1 kg/m2; 55% African American, 38% Caucasian) participated. None of the outcome variables differed significantly between the intervention and TAU groups, respectively, including: gestational weight gain, 33.0 (12.5) lb vs. 29.4 (14.9) lb; proportion gaining above the 2009 IOM recommended weight ranges 79% vs 70%; and difference from pregravid weight at 6 weeks postpartum 9.7 (10.5) lb vs 6.7 (12.1) lb. Other birth and health outcomes also did not differ. Adherence by the intervention group varied with a mean of 12.5 sessions per participant completed. Access to WiFi Internet also varied during the study (55% had access across the entire study period), which may have impacted the outcomes. Both the intervention (10 lb) and TAU (7 lb) groups gained significant weight before the intervention started at 16 weeks of pregnancy. **Conclusions:** In summary, a technology-based intervention designed to decrease logistical burden on participants was not successful in reducing excessive weight gain during pregnancy. Future studies should examine more intensive forms of remote treatment beginning earlier in pregnancy.

429-P
Rapid Total Body Water Estimation By Quantitative Magnetic Resonance

Steven B. Heymsfield, Kori B. Murray *Baton Rouge, LA*; Jose E. Galgani *Santiago, Chile*; Virgile Lecoultre, Jennifer C. Rood, Eric Ravussin *Baton Rouge, LA*

Background: Whole body quantitative nuclear magnetic resonance (QMR) has the potential of safely and rapidly estimating total body water (TBW) in human subjects. We compared TBW estimates provided by a prototype QMR system (Echo Medical, Houston) to TBW by 18O dilution in adults ranging widely in baseline body mass index (BMI) and with weight gain and weight loss interventions. **Methods:** Subjects were adults (X±SD, age 30.6±9.3 yrs; 77 men and 92 women) with BMI ranging from 18-66 kg/m2 (28.2±10.5 kg/m2). TBW estimated by QMR was compared to 18O dilution by IR-MS. 27 of the subjects were placed on a weight loss intervention (-13.3±13.2 kg) and 29 gained weight with over-feeding protocols (5.8±2.2 kg). **Results:** TBW by QMR was highly correlated with TBW-18O at baseline (R2, 0.91; p<0.001). However, a Bland-Altman analysis revealed a significant TBW bias (p<0.001) at baseline showing an overestimate of TBW by QMR in participants with higher BMI. The pooled changes in TBW with weight gain and loss were well correlated (R2, 0.75, p<0.001) with good agreement between mean changes (wt gain: 1.9±1.3 l vs. 2.4±1.3 l; wt loss: -2.7±3.3 vs. -2.7±2.7 l). **Conclusions:** The evaluated QMR system provides TBW estimates at baseline and with interventions that are highly correlated with those provided by an O18 reference method, although systematic deviations in results are observed, particularly in the severely obese.

430-P
Durable Weight Loss and Metabolic Improvement at Two Years With the EndoBarrier (DJBL)

Alex Escalona, Fernando Pimentel, Allan C. Sharp, Cesar Munoz, Dannae Turiel, Cecilia Gomez, Milenko Slako, Luis Ibáñez, Sergio Guzman *Santiago, Chile*

Background: The duodenal-jejunal bypass liner (DJBL, EndoBarrier, GI Dynamics, Inc., Lexington, MA) is an endoscopic implant that mimics the intestinal bypass component of the Roux-en-Y gastric bypass. Previously, we reported weight loss and cardiometabolic improvements in subjects with morbid obesity implanted with the DJBL for one year. This report describes one-year post-explant weight and metabolic changes in a subset of subjects who were followed-up with the DJBL for one year. **Methods:** The DJBL was endoscopically implanted in 43 of 46 subjects (baseline weight, 110.8±18.7 kg; BMI, 44.1±5.7 kg/m2; age, 35.0±10 years, 76.7% women). Three subjects could not be implanted due to unfavorable anatomy. There were 16 endoscopic removals prior to 1 year due to device movement (9), liner obstruction (3), abdominal pain (2), acute cholecystitis (1) and subject t request (1). At one year 27 subjects were explanted. **Results:** Weight loss at one year in 27 subjects who completed the protocol was 22.8±16.4 kg, or 20.2±7.8% of total body weight (p<0.001). Weight loss in 8 subjects at one year post implantation and at 12 months post-explantation was 21.6±10.7 kg, or 16.1±9.2% (p=0.005) and 16.1±11.5 kg, or 14.4±9.2% of total body weight (p=0.005), respectively. Metabolic improvements included decreases in waist circumference of 16.0 cm (p=0.0006) and LDL cholesterol of 17.5 mg/dL (p=0.001). **Conclusions:** The endoscopic DJBL has a durable effect on weight loss and metabolic function 12 months after explantation. This suggests that this novel device is a candidate for the primary therapy of morbid obesity.

431-P
Clinical Efficacy and Tolerability of Chromium Dinicocysteinate Supplementation on Levels of Insulin, Insulin Resistance, TNF-α and Oxidative Stress in Type 2 Diabetic Subjects

Sushil K. Jain *Shreveport, LA*; Francis C. Lau *Benicia, CA*

Background: Chromium and cysteine supplementation have been shown to improve glucose metabolism in animal studies. This study examined the hypothesis that chromium dinicocysteinate (CDNC), a complex of chromium and L-cysteine, is beneficial in lowering oxidative stress, vascular inflammation and glycemia in type 2 diabetic subjects. **Methods:** Diabetic subjects enrolled in this study were given placebo for one month for stabilization and then randomized into three groups: placebo (P), chromium picolinate (CP; 400μg Cr3+/day) or CDNC (400μg Cr3+/day). Subjects received daily oral supplementation for 3 months. Of the 100 subjects enrolled 74 subjects completed the study (P, n=25; CP, n=25; CDNC, n=24). Blood markers of glycemia, vascular inflammation, HOMA insulin resistance and oxidative stress were determined at randomization and at 3 months of supplementation. **Results:** There was a significant decrease at 3 months in insulin resistance (p=0.02) and in the levels of protein oxidation (p=0.02) and TNF-α (p=0.01) in the CDNC supplemented cohort compared to baseline. By contrast, no significant change in these markers was observed in the P and CP supplemented groups compared to baseline. Furthermore, insulin levels were significantly decreased (p=0.01) in CDNC group but not in P or CP group. CDNC supplementation lowered insulin resistance by reducing blood levels of TNF-α, insulin, and oxidative stress in type 2 diabetic subjects. **Conclusions:** The findings suggest that CDNC supplementation has potential as an adjunct therapy for individuals with type 2 diabetes.

For author conflict of interest information, see page S250

432-P
An Obesity Educational Intervention for Medical Students Addressing Weight Bias and Communication Skills Using Standardized Patients

Robert F. Kushner, Dinah M. Zeiss, Joseph Feinglass, Marsha E. Kaye *Chicago, IL*

Background: Few educational intervention studies have been conducted with medical students addressing stigmatization and communication skills with patients who are obese. The purpose of this study is to evaluate changes in students' attitudes and beliefs about obesity, and their confidence in communication skills after a structured clinical encounter with an overweight standardized patient (SP). **Methods:** First year medical students (n = 157, 47 % female) enrolled in a communications unit conducted an 8 minute encounter with an overweight SP followed by 8 minutes debriefing. Students were instructed to discuss the SPs' weight and their perceptions. Students read 2 articles prior to the session as background information. A 16 item questionnaire was completed before and after the session indicating students' level of agreement or disagreement on a 5 point Likert scale to a series of statements that addressed attitudes and beliefs about obesity and their confidence interacting with an obese person. Scale analysis was performed based on a priori classification of item intent. Scale reliability was tested using Cronbach's α. **Results:** Three scales emerged: negative obesity stereotyping (S), empathy (E), and confidence (C). Significant improvement between baseline and follow-up responses was seen in all 3 scales. 56.7% students improved in S scale (mean change -0.94), 40.1% improved in E scale (mean change 0.43) and 87.9% improved in C scale (mean change 3.65). **Conclusions:** We have demonstrated that a structured encounter with an overweight SP can significantly decrease negative stereotyping, increase empathy and raise confidence of first year medical students toward persons who are obese.

433-P
The Effect of Sleep Deprivation on Free-Living Physical Activity: A Cross-Over Study

James D. LeCheminant, Lora L. Romney, Tyler Clark, Andrew Black, Bruce W. Bailey, Michael J. Larson *Provo, UT*

Background: Chronic sleep deprivation may increase the likelihood of obesity. The pathways that explain this association are uncertain; however, sleep deprivation may influence physical activity (PA) level, and thus, obesity. This study examined the effect of acute sleep deprivation on PA and various intensities of PA. **Methods:** Using a cross-over design, 21 women (27.9±7.7 y, 24.3±5.3 kg/m2) completed two separate acute free-living sleep conditions (Condition 1: one night of ~8 hrs of sleep; Condition 2: one night of <5 hrs of sleep) with the order counter-balanced. Sleep level was verified via accelerometery and mood was assessed using the Profile of Moods States. PA was subsequently assessed for 24 hrs via accelerometery. PA intensity categories were utilized from Troiano et al. (Med Sci Sports Exerc, 2008). **Results:** Objectively-determined sleep time was 7.7±0.4 hrs for the normal sleep condition and 4.8±0.3 hrs for the sleep-restricted condition ($F=795.6$; $P<0.0001$). On the morning following the sleep conditions, overall mood and several subscales (vigor, fatigue, and confusion) were significantly worse following sleep restriction ($P<0.05$). There was not a significant difference in total activity, moderate, vigorous, or moderate-to-vigorous intensity time between conditions. However, the sleep restricted condition resulted in ~22 minutes more sedentary time ($F=4.46$; $P=0.049$) and ~22 minutes less light-intensity activity time ($F=4.65$; $P=0.046$) over a 24-hour period compared to the normal sleep condition. **Conclusions:** Acute sleep deprivation may result in a poorer mood profile, more sedentary time, and less light-intensity activity time than a night with adequate sleep. The extent that chronic sleep deprivation influences these PA outcomes and its effect on obesity warrants additional attention.

434-P
Effects of Weight Loss on Dynamic Plantar Pressure in Obese Adults: A Pilot Study

Jinsup Song, Reagan Kane, Dana N. Tango, Stephanie S. Vander Veur, Naomi R. Reyes, Caitlin A. LaGrotte, James Furmato, Eugene Komaroff, Gary Foster *Philadelphia, PA*

Background: Excessive weight can have a profound influence on weight bearing structure and function, including pain and compromised quality of life. A prospective cohort study of 5,784 people over 50 years of age showed that obesity was a strong predictor of the onset of severe disabling knee pain. Obesity was also associated with chronic plantar heel pain syndrome. No study to-date objectively examined the effects of weight change in foot function in a randomized controlled trial. **Methods:** In this randomized controlled study, 41 participants (9 male, 32 female), between ages 50-75 and BMI >30 but < 45 kg/m2, were randomly assigned to the control or intervention group. The intervention group received weekly group education plus pre-packaged portion-controlled meals while the control group received monthly education only for 3-months. Plantar pressures were assessed with EMED-X (Novel gmbh, Munich) during barefoot walking. Changes in plantar pressure in 12 regions of the foot were tested with Repeated ANOVA (Matched Pairs by Group) analysis. **Results:** Participants were 56.2 ± 4.7 years old with a BMI of 36.0 ± 4.2 kg/m2. At 3-months, control and intervention participants lost 1.7 ± 3.14 kg (1.9%) and 5.7 ± 3.94 kg (6.1%), respectively. Subjects walked at 0.95 ± 0.17 m/s with no difference between groups or visits. Those in the intervention group experienced significantly greater reduction in peak pressure (N/cm2) beneath metatarsals 2, 4 and 5 and lateral arch than those in the control group (all $p<.05$). There were no between-group differences in changes in contact area. **Conclusions:** Weight loss produced significant reductions in peak pressure in specific regions of the foot even with no significant change in walking speed. These data need to be replicated in longer and larger studies.

435-P
Frequency of Exercise Training and Body Image in Older Women

William Neumeier, Gordon Fisher, Paula Chandler-Laney, Gary Hunter *Birmingham, AL*

Background: Increased aerobic and resistance training by older adults has demonstrated a number of health benefits, ranging from improved aerobic fitness and muscular strength to improved cognitive function and psychological well-being. The optimal frequency of combined aerobic training (AT) and resistance training (RT) to achieve physical and psychological gains is unknown. Research by this laboratory has demonstrated no significant differences in strength, cardiovascular fitness, exercise economy, or functional tasks for older adults due to frequency of combined AT/ RT. Therefore, the purpose of this study is to examine whether there are any differences in psychological improvements depending upon frequency of exercise. **Methods:** Post-menopausal women (N = 64) over the age of 60 (64.79 ± 3.74) were randomly assigned to one of three groups. Group 1 completed two exercise sessions (1 AT, 1 RT) per week, Group 2 completed four sessions (2 AT, 2 RT) per week, and Group 3 completed 6 sessions (3 AT, 3 RT) per week. Psychometric measures were collected pre- and 16-weeks post-training. **Results:** Results from repeated-measures ANOVA showed that perceptions of appearance, weight, body satisfaction, weight-related anxiety, and valuation of fitness improved with training. Self-esteem, self-motivation, and depression did not significantly change. No significant group or group*time interactions were observed. **Conclusions:** 16 weeks of combined AT/ RT conducted 2, 4, or 6 times per week significantly improved perceptions of appearance and body satisfaction in older women. Frequency of training had no effect. Results suggest as few as 2 exercise sessions per week can improve body and weight satisfaction for older women.

436-P
Clinical Efficacy and Safety of Meratrim For Weight Management

Francis C. Lau *Benicia, CA*; Artatrana T. Mishra *Vijayawada, India*; M. V. Sadasiva Rao *Eluru, India*; K. P. Rajeswari, Golakoti Trimurtulu, Alluri V. Krishnaraju, Krishanu Sengupta *Vijayawada, India*

Background: The clinical efficacy and safety of Meratrim, an extract of Sphaeranthus indicus and Garcinia mangostana, were assessed in two similarly designed randomized, double-blind, placebo-controlled 8-week clinical

trials including 100 subjects with body mass index (BMI) between 30 and 40 kg/m2. **Methods:** Participants in each trial were randomly distributed into two groups: group I received 400 mg of Meratrim twice daily; group II received placebo. Participants followed a standard diet (2,000 kcal per day) throughout the study and walked 30 min five days per week. Ninety-five subjects completed the clinical trials and the data from these studies were pooled and analyzed. **Results:** At study conclusion, significant net reductions in body weight (8.27 lb; p<0.0001), BMI (1.55 kg/m2; p<0.0001), as well as waist (2.32 inch; p<0.0001) and hip circumferences (1.25 inch; p=0.0001) were observed in the Meratrim group compared to the placebo group. A significant increase in serum adiponectin concentration was also found in the Meratrim group versus placebo (p=0.0008). At 8 weeks of Meratrim supplementation, a significant reduction was observed in fasting blood glucose (12.2%; p=0.01), cholesterol (13.8%; p=0.0024) and triglyceride (41.6%; p<0.0001) concentrations. Meratrim also improved subject physical function (p<0.05) and self-esteem (p<0.05) as measured by the Impact of Weight on Quality of Life questionnaire. Safety assessments indicate no changes in metabolic panels or multiple vital signs. No major adverse events were reported. Minor adverse events were equally distributed between the placebo and the Meratrim groups. **Conclusions:** The findings suggest that Meratrim appears to be a safe and effective ingredient for weight management.

437-P
Using Qualitative Research Methods to Inform the Development of Behavioral Weight Loss Programs For Young Adults

Jessica G. LaRose, Kathleen M. Morrow, Erica F. Robichaud, Kathy M. Palmer, Rena R. Wing *Providence, RI*

Background: Young adults (YA) are underrepresented in behavioral weight loss trials (BWL) and achieve poorer outcomes than older adults. There has been a call to develop programs for YA but limited data exist as to how standard protocols should be adapted for YA. **Methods:** Focus groups were stratified by gender and lasted ~90 minutes excluding consent. The agenda focused on 3 key areas: 1) recruitment; 2) program length and format; 3) perceived barriers to treatment. Eligible participants were overweight [i.e., BMI >25 kg/m2] and 18-25 years of age. **Results:** We conducted 7 groups (4 female, 3 male). Participants (N=31) were predominantly non-Hispanic White (68%), with a mean age of 22.3+2.2 and a mean BMI of 31.5+4.6. We developed a formal coding structure; all transcripts were independently coded by 2 trained reviewers, and codes were entered into QSR NVivo and analyzed via constant comparison and thematic summarization. Groups noted that online recruitment would be most effective, and expressed a preference for gain-framed messages focused on overall lifestyle, fitness and appearance. A prevalent theme was a preference for an individual-level, low intensity program that allows flexibility and choice. Groups consistently expressed a desire for minimal face-to-face sessions, with continued contact via email / internet. All groups noted time and motivation as key barriers to weight control and program participation. Physical activity (PA) emerged as being of central importance to YA. **Conclusions:** Findings suggest that recruiting through online venues and framing recruitment messages in terms of promoting positive outcomes may improve recruitment efforts with YA. Individual-level, low intensity programs that capitalize on recent advances in technology and that have an increased focus on PA may improve engagement.

438-P
Comparison of Energy Intakes Using Subject-Coded vs Investigator-Coded Diet Records: An Evaluation of the ASA24 Diet Tracking Tool

Carol Johnston, Brooke Schohl *Phoenix, AZ*

Background: The evaluation of energy intake by diet assessment is fundamental to obesity research yet challenging to measure properly. As the use of technology has become more prevalent, an assortment of online, web-based diet analysis methods is now available. The aim of this study was to compare energy intake from a diet intervention trial in which both subject-coded (Automated Self Administered 24 hour recall [ASA24]) and investigator-coded (Food Processor diet analysis program) diet records were available. **Methods:** Overweight adults (body mass index, 27-40 kg/m2; aged, 20-45 y) were recruited for an 8-week parallel arm, randomized controlled trial to evaluate the impact of meal preloads on energy intake. Participants were instructed to complete 3-day diet records at four times during the trial: pre-trial and weeks 1, 4, and 8. Participants were instructed to enter their dietary information on the ASA24 website the day after intake was recorded by hand. A total of 161 handwritten diet records were matched to next-day ASA24 records from 28 study participants. **Results:** Reported energy intakes were 7% lower on the subject-coded records as compared to the investigator-coded records (mean±SD: 1581±610 and 1686±693 kcals; p=0.007 Wilcoxon Signed Ranks Test), but energy intakes for the two recording methods were highly correlated (r=0.571, p<0.001). The average energy intakes for the 28 participants did not differ between subject and investigator coded records (1657±424 and 1729±446 kcals; p=0.101) and were more highly correlated (r=0.715, p<0.001). **Conclusions:** These results suggest that the ASA24 diet tracking tool is comparable to the traditional diet record tracking method.

439-P
The Effect of Alpha-Cyclodextrin on Acute Blood Lipid and Glycemic Responses to a Fat-Containing Meal

Patricia A. Jarosz, Joseph D. Artiss, Kai-Lin, Catherine Jen *Detroit, MI*

Background: Alpha-cyclodextrin (α-CD), a water-soluble fiber derived from corn, binds with dietary fat and reduces its absorption. Initial studies have found that the use of α-CD over an 8-12 week period was associated with weight loss or maintenance and a reduction in triglyceride (TG) and cholesterol (CHOL) levels in those who are hypertriglyceridemic and consume a high fat diet. It has also been reported that α-CD reduces postprandial blood glucose levels after a pure carbohydrate meal. Postprandial blood glucose and lipid responses after a high fat meal have not been examined. It was hypothesized that after consuming a high fat meal with α-CD the typical postprandial increases in blood glucose and TG levels would be attenuated relative to a meal with placebo. Low density lipoprotein cholesterol (LDL) levels might also be reduced. **Methods:** After an overnight fast, 40 healthy adults (BMI=25.04±4.08 kg/m2, range: 19.3-35.9), were studied on 2 separate days after consuming a high fat breakfast sandwich (27 g fat) with 2 identical tablets of either α-CD or placebo. Blood glucose, TG, CHOL, LDL and high density lipoprotein cholesterol levels were measured at baseline and at 1, 2, and 3 hours after completing the meal. **Results:** Results showed no significant changes in glucose or CHOL levels. Alpha-CD was associated with significantly reduced TG levels at all 3 time points when compared to baseline relative to placebo. Area under the curve for TG was also significantly lower as a percentage of baseline in the α-CD group (362±106 vs. 417±100, p < 0.0008). **Conclusions:** An acute reduction in blood lipid levels associated with α-CD use was observed over a wide range of BMI. Combining with the results from long-term studies, α-CD may be beneficial in managing hyperlipidemia in humans.

440-P
Acute Appetitive Effects of Ready-To-Eat Breakfast Cereals Containing Different Dietary Fiber Ingredients in Overweight Women

David Lafond *Battle Creek, MI*; Tia M. Rains, Kevin C. Maki, Arianne Schild, Valerie N. Kaden, Kathleen M. Kelley, Andrea L. Lawless *Glen Ellyn, IL*; Dale Romsos *East Lansing, MI*

Background: Consumption of dietary fiber has been found to enhance satiety and delay the onset and intensity of hunger. The objective of this trial was to examine the acute effects of two dietary fiber ingredients, as part of ready-to-eat (RTE) cereals, on appetite ratings and energy intake at a subsequent meal. **Methods:** Thirty overweight women (age 22.5±0.6 yr; BMI 27.0±0.3 kg/m^2) consumed one of three RTE cereals with 2% milk, diluted with water to equalize the weight consumed (500 g), on three separate days in random order. Test products provided an additional 15.0 g of dietary fiber from hydrolyzed wheat arabinoxylan or intact flax arabinoxylan (345 kcal) versus control (4 g fiber; 460 kcal). Visual analog scale (VAS) ratings for appetite (hunger, fullness, prospective consumption, desire to eat) were measured at 15 min intervals for 240 min. Energy intake was recorded at an *ad libitum* pasta/sauce lunch meal provided at 240 min. **Results:** Results showed no significant differences between conditions in appetite ratings or energy intake at the lunch meal. Total energy intake from the test product+lunch meals was 907±37, 906±36, and 1013±36 kcal for the wheat, flax, and control conditions, respectively (p=0.065 across conditions). When both fiber conditions were averaged in an exploratory analysis, the difference in energy intake reached significance vs. control (p=0.036). **Conclusions:** These results suggest that fiber-containing RTE cereals produced similar satiety relative to a lower-fiber control, despite lower energy contents, and that the difference in

energy intake at breakfast was not compensated for at lunch. *Supported by Kellogg Company.*

441-P
Resolution of Idiopathic Cardiomyopathy With Medical Weight Loss: A Case of Adipositas Cordis

Gabriel Uwaifo, Kamran Rasul, Robert L. Dubin *New Orleans, LA*; Ariane O. Conrad *new Orleans, LA*; Lisa G. Berthaut *New Orleans, LA*

Background: Obesity is associated with comorbidities that increase CV risk including hypertension (Htn), diabetes, hyperlipidemia (Hl) and obstructive sleep apnea (OSA). Cases of idiopathic CHF presumed due to "obesity " cardiomyopathy (OCM) also called adipositas Cordis (AC) have also been described. **Methods:** We present the case of a patient with recurrent CHF secondary to idiopathic cardiomyopathy (ICM) with morbid obesity (MO) which resolved following marked weight loss. **Results:** A 49 yr old Lady was referred for management of MO and bariatric surgery (BS). She has Htn, prediabetes, and OSA. Past medical history includes prior history of CHF with anemia. Early in the weight management program she had another bout of CHF with pulmonary embolism and ICM confirmed echocardiographically. Her initial weight was 423.6lbs, BMI 60.8. Following 8mths of the medical weight loss program including lifestyle and dietary counseling with topimarate, she reached a current weight of 349lbs, BMI 51.5. Follow up echocardiography shows resolution of the ICM and she is now being prepared for definitive BS. **Conclusions:** Despite comorbidities, the negative cardiac catheterization, well controlled BP, stable hematocrit and OSA suggest an idiopathic etiology for the CHF. Increased fatty attenuation of the myocardium on cardiac MRI, associated MO and marked improvement following weight loss suggest AC as the etiology of the ICM. MO may be associated with ectopic fatty infiltration of cardiac myocytes with functional and structural anomalies that cause CHF. These can be improved by significant weight loss. Our Case shows the importance of weight loss in patients with MO and ICM.

442-P
Qualitative Study of Weight Control Interventions For Patients With Mental Illnesses

Chad Morris *Aurora, CO*

Background: Persons with mental illnesses, who are overweight or obese, represent an "epidemic within an epidemic". On average, persons with mental illnesses die 25 years earlier than the general population and suffer disproportionate medical comorbidities. This excess mortality and morbidity is primarily due to modifiable risk behaviors including poor nutrition and sedentary lifestyles. **Methods:** The aim of this translational study was to investigate the weight control needs of persons with mental illnesses. The University of Colorado partnered with a behavioral health organization representing 3 large metropolitan counties. Focus groups were held separately with mental health providers and patients at 3 community agencies (6 focus groups total) to assess the need for weight control interventions for patients with serious mental illness and perspectives on barriers and facilitators for such services. Extensive literature review informed the 5 questions asked in each 90-minute focus group. Multiple coders cross-verified emerging qualitative themes through iterative analyses. **Results:** 28 mental health clients and 32 providers participated in focus groups. Five themes emerged from focus group data: Coordination of care; Needed information and resources; Prevalent weight control attitudes and beliefs; Weight control challenges; and Suggested weight control services and strategies. Results were integrated with the existing evidence base to suggest community-based treatment modalities. **Conclusions:** Qualitative finding were essential to the development of a peer-to-peer weight management program for patients with mental illnesses that includes a motivational intervention, 6-session group, and positive social networking strategies. We have subsequently initiated a 2-state outcome study of this innovative program.

443-P
Correlations Between Body Composition, Body Mass Index and Bone Mineral Density in Women With Endometirosis: Preliminary Report

Edna J. Nava-Gonzalez, Yolanda E. de la Garza-C, Raul G. Salazar-Montalvo *Monterrey, Mexico*; Raul Bastarrachea *San Antonio, TX*; Esther C. Gallegos-Cabriales *Monterrey, Mexico*

Background: Factors modulating the biology of bone mass are key players in the development of osteoporosis. Body composition and weight play an important role in women at risk. Correlations between endometriosis and decreased bone mineral density have been reported in the literature. The aim of this pilot is to analyze the relationship between body mass index (BMI), fat mass, lean mass and bone density in women with endometriosis. **Methods:** We evaluated 30 women (25-39 y.o.), from Monterrey, Mexico with laparoscopic diagnosis of endometriosis. DEXA was performed in all participants to determine total fat, lean body mass and bone mineral density. **Results:** Mean body weight was 63.5+12.6 kg, BMI was 24.9+5.1 kg/m2. The mean t-score of BMD was -.03+.89. 20% of the female subjects had overweight, 20% had obesity and 3.3% had underweight according to their BMI measurements. 13.3% had osteopenia. The t-score of BMD was positively correlated with weight, BMI, fat percentage, body fat and lean mass ($p < .001$). **Conclusions:** This is a small and preliminary sample study suggesting trends that both fat mass and lean mass may influence bone density in our cohort. Relative effects on the bone may be modulated by the absolute and relative body weight in women with endometriosis. This preliminary report from our pilot shows the relevance in correlating common phenotypes from two prevalent pathologies of the female organism. Such correlation could serve for future hypothesis generation for a probable common causal pathway between mineral bone turnover and the inflammatory processes that occur in endometriosis.

444-P
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445-P
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446-P
Lose Fat - Not Weight!

James R. Matthie *La Jolla, CA*; Robert Huizenga *Los Angeles, CA*

Background: A medical program of intense exercise and moderate caloric restriction results in massive weight loss along with dramatic cardiovascular disease risk reduction (Ahmadi, Am J Med 2011). We report the dramatic changes in water, muscle and fat during the weight loss with three different technologies. **Methods:** Seventeen sedentary morbidly obese Biggest Loser television contestants (BMI=49.3 Kg/m2) were evaluated at baseline, 2, 4 and 7-months. Fat mass (FM) and fat-free mass (FFM), i.e. weight minus FM, were determined by standards dual energy x-ray absorptiometry (DXA) and air displacement plethysmography (ADP). Bioimpedance spectroscopy (BIS) determined intra- and extracellular fluid volume (ICF and ECF), normally hydrated lean tissue (NH-LT), normally hydrated adipose tissue (NH-AT) and excess ECF (ExF). BIS FM was derived from NH-AT (Chamney AJCN 2007). **Results:** At 7-months major reductions occurred in body weight (-37.8%) and FM (-46.5 kg). The percent body fat (%BF) ($p = 0.988$ to 0.095) and its change at 7 mos ($p=0.885$) predicted by the three methods were not different ($p < 0.05$). Due to a large loss in adipose associated water (11.9 l), DXA indicated a significant decrease in FFM (-10.8 kg; $p<0.0001$) whereas BIS indicated a slight gain (1.4 kg) in NH-LT (i.e. muscle) ($p = 0.441$). **Conclusions:** Intense exercise with moderate caloric restriction induces dramatic loss of FM while maintaining or increasing skeletal muscle in morbidly obese subjects. Standards DXA and ADP, which cannot distinguish water from tissue, appear inferior to BIS for elucidating important body composition changes during weight loss.

447-P[DT]

A Comparison of Body Composition Assessment Methods in Young Non-Hispanic Black Women

Jody L. Clasey, Kelly Bradley, James W. Bradley *Lexington, KY*; Brian A. Irving *Rochester, MN*; Leslie J. Crofford *Lexington, KY*

Background: Obesity has dramatically increased and is a major health concern. Several minority populations have reported greater incidence of overweight and obesity, including non-Hispanic black (NHB) women where a reported 78.0% aged 20-39 yrs are classified as overweight (OW; BMI > 25.0 < 29.9 kg/m^2) or obese (OB; BMI > 30 kg/m^2). While baseline and post-intervention body composition measures in NHB women are important, challenges to the assumptions of fat-free mass (FFM) chemical consistencies in this population may compromise the validity of frequently used body composition measurement methods. The purpose of this study was to determine the validity of using two 2-component [Siri, 1956 (2S); Brozek, 1963 (2B)] and three 3-component [Siri, 1961 (3S); Lohman, 1986 (3L); DXA] body composition model methods to determine the body composition (%Fat) of NHB women. **Methods:** Subjects included 25 OW, 17 OB, and 37 healthy weight (HW; BMI < 25 kg/m^2) NHB women ages 18-30 yr. The criterion body composition measure was the Heymsfield, 1990 4-Component model (4H). Body density, total body water and mineral measures were determine using air displacement plethysmography, deuterium oxide dilution, and total body DXA scans, respectively. **Results:** RESULTS: The groups mean (mean±SD) %Fat differences for the 2S (32.1±9.3%), 2B (30.9±8.6%), 3S (30.0±8.7%), 3L (34.1±9.4%) and DXA (34.9±9.8%) were all significantly ($p<0.05$) different than the 4H (31.5±8.6%). The explained variance in %Fat using each of the 2 and 3 component model methods was greater than 89%. The total error about the line of identity was 2.8%, 2.7%, 1.6%, 4.0% and 4.7% for the 2S, SB, 3S, 3L and DXA, respectively. **Conclusions:** Body composition methods that rely on assumptions of consistency of the components of the FFM should be used with caution for young NHB women.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Intervention Studies — Other-Pediatric

448-P

Evaluating the Effectiveness of the MEND 7-13 Childhood Obesity Program When Delivered at Scale in Community Settings in Australia and New Zealand

Paul M. Sacher *London, United Kingdom*; Sarah Lukeis *Australia, Australia*; Paul Chadwick, Maria Kolotourou, Duncan Radley, Tim J. Cole, Atul Singhal *London, United Kingdom*

Background: The MEND Program is a community-based, multi-component, childhood weight management program which has been widely disseminated in the UK, USA and Canada. Here we present Australian and New Zealand community implementation data. **Methods:** Seven to 13 year old overweight and obese children participated in 275 MEND Programs in the period to 2011. The family-based program consisted of an intensive 10-week phase, followed by maintenance and support until 24 months. The intensive phase comprised twice-weekly group sessions which included behaviour modification, nutrition education and physical activity. The intervention was delivered by a wide range of health and exercise professionals in urban and rural venues. **Results:** Of the 2328 children who participated in the MEND program (45% boys; mean age 10.2 years; BMI SDS 2.1), 1562 (67%) were measured pre and post-intensive phase. Mean BMI and waist circumference decreased by 0.7 kg/m2 and 2.3 cm respectively and BMI z-score decreased by 0.11 (all $p<0.0001$). Eighty eight percent of children reduced or maintained their BMI z-score post-intervention. Improvements were also noted in reported physical and sedentary activity levels (+4.1 and -4.8 hours per week respectively), recovery heart rate (-8.7 beats per minute) and self-reported body-esteem (+3.8 points) (all $p<0.0001$). Mean attendance of the 20 MEND sessions was 78% with an 87% retention rate. **Conclusions:** In accordance with earlier research, attending the MEND Program had beneficial effects on physical and psychological outcomes (anthropometry, cardiovascular fitness, physical activity, body image) when implemented in Australian and New Zealand community settings. These findings suggest that the program was effective in the short-term for children with pre and post-data. Longer-term follow-up studies are in preparation.

449-P

Parental Perceptions of Pediatric Pain: The Effect of Child Obesity and Diagnostic Status

Jacquelyn A. Corvan, Kristen Jastrowski-Mano, Kristie Bergmann *San Diego, CA*; Steven Weisman, W. H. Davies, Keri Hainsworth *Milwaukee, WI*

Background: The purpose of this study was to examine parental perceptions of obese children, and whether attitudes varied based on the provision of a medical diagnosis for the pain problem. **Methods:** Participants (N = 272) consisted of parents of at least one child. Participants read one of four randomized vignettes and completed a 26-item questionnaire. All versions of the vignette described a 13-year-old child ("Tammy") who was experiencing headaches. Vignettes varied according to a 2 (weight status: obese vs non-obese) by 2 (medical diagnosis: presence vs absence) design. Participants rated how much they agreed or disagreed with each statement (e.g., "I feel pity for Tammy"). **Results:** A two-group between-subjects multivariate analysis of variance (MANOVA) was conducted on the dependent variables: Seriousness and Likelihood of Treatment Benefit. The results indicated a significant effect for weight status ($F(2, 230) = 5.840$, $p <.05$). Univariate ANOVAs indicated that the effect of obesity status was statistically significant for Likelihood of Treatment Benefit ($F(1, 231) = 10.186$, $p < .05$) but not for Seriousness. **Conclusions:** As expected, parents rated treatment recommendations as more likely to be effective for the obese child, than for the child with a healthy weight. However, inconsistent with our hypotheses, parents did not rate obese children's pain as less serious. These results indicate that while parents perceived the headache pain of the obese child as "real," they perceived the pain of the obese child to be more "modifiable" than the headache pain of the child with a healthy weight. This suggests that parents attributed the child's pain to her weight rather than to her medical diagnosis. This has implications for future work addressing the possibility of parental transmission of such biases to their children.

450-P

Graded Exercise Testing in a Stage III Pediatric Weight Management Center

Joey Eisenmann, Kyle Morrison, Emily E. Hill, William Stratbucker *Grand Rapids, MI*

Background: In the clinical setting, exercise testing is most often used in pediatric cardiology and pulmonology. We describe a protocol used to test the submaximal and maximal functional capacity of the obese pediatric patient, and describe the peak oxygen consumption (VO2) of severely obese patients seeking treatment at a pediatric weight management center. **Methods:** One-hundred eleven (78%) of the 143 patients enrolled at the pediatric weight management center performed a multistage incremental exercise test on a motorized treadmill. Expired respiratory gases were collected and analysed by the indirect calorimetry system. Peak VO2 was expressed in three ways: (1) in absolute terms (l/min); 2) as the ratio of VO2 per minute relative to total body mass (ml/kg/min), and (3) as the ratio of VO2 per minute relative to fat-free mass (ml/FFM kg/min). **Results:** The exercise test was well tolerated by all children and 81% (n=90) met end-test criteria. The mean BMI z-score was 2.4+/-0.3 and the mean % body fat determined by bioelectrical impedance was 36.5+/-9.7%. Absolute peak VO2 (L/min) was significantly different between sexes; however when expressed per unit body mass or fat-free mass values were similar between sexes. The peak VO2 was 25.7+/-4.8 ml/kg/min with a range of 13.5-36.7 ml/kg/min. **Conclusions:** Obese youth seeking treatment at a stage III pediatric weight management center show low levels of peak VO2. The protocol and testing regiment outlined here can serve as a model for similar programs interested in examining the submaximal and peak responses to exercise in obese pediatric patients.

451-P[DT]

An After Hours Rapid Access Pediatric Weight Management Clinic Increases Show Rate

Robert M. Siegel, Christopher Kist, Lawrence Ingram, Shelley Kirk *Cincinnati, OH*

Background: Pediatric weight management (PWM) programs are often plagued by low show rates. An After Hours Rapid Access Clinic (AHRAC) can potentially reduce barriers to care and improve patient show rate by seeing families sooner and eliminating the need for parents and children to miss work and school. In September 2011, our PWM center added an AHRAC to

better serve our patients and families. The AHRAC is limited to new patient medical evaluation visits and is open for scheduling one week before the clinic. Hours of operation are Tuesday evenings, 4pm to 8pm. The purpose of this study was to compare the patient show rate of an AHRAC to a clinic with traditional scheduling and morning hours of operation. **Methods:** Using data obtained from EPIC, an electronic medical record system, we compared the show rate of patients in our AHRAC to new patient medical evaluation visits in our morning PWM clinic, which met on the same day. Statistical analysis was done on visits covering a near 6-month period (9/13/11 through 3/6/12). Other data extracted were patient's age, sex, and type of health insurance. **Results:** The show rate in our AHRAC was 94% (76/81), which was significantly greater than the 76% (59/76) show rate for our morning clinic ($p<0.025$). Both the AHRAC and morning clinic patients were not significantly different in mean age (12.1 vs. 12.7 years), sex (53% vs. 61% female), and health insurance (69% vs. 71% Medicaid). **Conclusions:** Implementing an AHRAC is an effective strategy for increasing show rate for new patient medical visits in a PWM program.

452-P
The Effect of Cognitive Function on Weight Loss After Bariatric Surgery in Adolescents

Thao-Ly T. Phan, Jennifer L. Curran, Kirk Reichard, George Datto *Wilmington, DE*

Background: Bariatric surgery is an increasingly utilized treatment for morbid obesity in adolescents. While there have been descriptive studies of cognitive function in adolescents seeking bariatric surgery, no studies have examined the effect of cognition on post-operative outcomes. **Methods:** Twenty-eight adolescents (mean age 16 years, mean weight 135.5 kg, 93% female and 62% Caucasian) underwent pre-operative IQ testing with the WISC-IV or WAIS-IV. Patient characteristics were evaluated by questionnaire or clinician assessment. Weight was measured at interval visits prior to and after laparoscopic gastric band surgery. The relationships of IQ and patient characteristics to post-operative weight change were examined. **Results:** Mean IQ was 95 (SD 16). There was progressive weight loss with each visit, culminating in a mean 10.9% (14.62 kg, SD 7.20) weight loss at six months post-operatively. There was no significant correlation between IQ scores and weight change at any time interval ($r = 0.12$ at 1 week, 0.07 at 6 weeks, 0.12 at 3 months, and 0.04 at 6 months post-operatively). Patients with the diagnosis of depression lost significantly less weight than patients without the diagnosis of depression (mean difference in weight loss of 3.02 kg, $p < 0.05$). Weight loss was not significantly affected by age, gender, race, insurance type, or other comorbidities. **Conclusions:** In a cohort of adolescents undergoing bariatric surgery, IQ did not correlate with early post-operative weight loss. Patients with the diagnosis of depression experienced less weight loss compared to those without, suggesting that utilization of psychosocial services may be important to success after bariatric surgery.

453-P
The Use of Health and Behavior Codes in Pediatric Obesity Treatment

Melissa Santos *Hartford, CT*; Stephanie S. Filigno *Cincinnati, OH*; Jane Gray *Austin, TX*; Wendy Ward *Little Rock, AR*; Ann M. Davis *Kansas City, KS*

Background: The use of Health and Behavior (H&B) codes in psychological treatment began in 2002. These codes allow psychologists to rend and bill for services with a medical diagnosis without needing to provide a psychiatric diagnosis. However, the pragmatic use of these codes, and their actual reimbursement, is unknown. **Methods:** The Reimbursement Subcommittee of Division 54's Obesity Special Interest Group grew out of the need to begin to understand and address issues related to payment for obesity services. A brief email survey was developed and distributed via Division 54's general and obesity listserv. The survey focused on: psychologists' use of H&B codes versus mental health codes, decision-making regarding why a code set is used and psychologists' understanding of reimbursement with various diagnosis and procedure codes. **Results:** Eleven psychologists from ten states completed the survey. One of the most frequently cited impedances to using H&B codes is interstate differences in Medicaid's acceptance of the codes. Similarly, various commercial plans have differences in whether they will reimburse H&B codes resulting in psychologists not being able to bill for patients without a mental health diagnosis. In the absence of significant psychiatric illness, providers needing to utilize the mental health codes reported using the diagnoses of psychological factors affecting a medical condition or an adjustment disorder diagnosis. Finally, psychologists reported that they receive little information from their institutions regarding reimbursements received for their services. **Conclusions:** Billing and reimbursement in pediatric obesity remain problematic for providers which is a great hindrance to the proliferation of these much needed treatment services.

454-P
DNA Methylation Changes After a Lifestyle Intervention in Overweight and Obese Adolescents: The EVASYON Study

Adriana Moleres, Javier Campion, Fermin I. Milagro *Pamplona, Spain*; Ascensión Marcos, Cristina Campoy, Jesus Garagorri *Madrid, Spain*; Maria J. Moreno-Aliaga, J. Alfredo Martinez, Cristina Azcona-Sanjulián, Amelia Marti *Pamplona, Spain*

Background: In recent years epigenetic markers emerged as a new tool to understand the influence of lifestyle factors on obesity phenotypes. Since adolescence is considered as an important epigenetic window over human being lifetime. **Methods:** To explore baseline changes in DNA methylation that could be associated with the weight loss response after a multidisciplinary intervention program in Spanish obese/overweight (OB/OW) adolescents. **Results:** Thirty-five overweight/obese adolescents (12-16 yrs old) undergoing 10 weeks of a multidisciplinary intervention for weight loss (EVASYON study) were assigned as high and low responders to the integral treatment. A methylation microarray was performed to search for baseline epigenetic differences between the two groups (12 subjects per group), and MALDI-TOF mass spectrometry was used to validate (in 13 novel subjects) relevant CpG sites and surrounding regions. **Conclusions:** We have identified five DNA regions differentially methylated depending on the weight loss response. These epigenetic changes may help to predict the response to a weight loss program.

455-P
An Integrative Review of Five Recent Sets of Expert Recommendations For the Treatment of Childhood and Adolescent Obesity

Dan Kirschenbaum *Chicago, IL*; Kristen Gierut *Cupertino, CA*

Background: Objective: To review five sets of expert recommendations about the treatment of childhood and adolescent obesity. Method: We reviewed five sets of recent expert recommendations: 2007 Healthcare Organizations' Four Stage Model; 2007 Canadian Clinical Practice Guidelines; 2008 Endocrine Society Recommendations; 2009 Seven Step Model; and 2010 US Preventive Task Force Recommendations. **Methods:** We described a model by which expert recommendations may affect health outcomes and then examined the five recent sets of recommendations. The review focused on the degree to which each set of recommendations emphasized six commonly used and/or recommended treatments (medical management, education, self-help groups, outpatient cognitive-behavior therapy [CBT], immersion CBT, and surgery). **Results:** Most of the expert committees supported using intensive (>25 contact hours) dietary, physical activity and cognitive-behavioral counseling and two of the five groups discouraged reliance on educational interventions alone. **Conclusions:** The advantages of the Seven Step Model seem clear. More than the other sets of recommendations, the Seven Step approach may help healthcare providers advocate, and parents pursue, viable options of increasing intensity until they help their overweight and obese children make clinically significant progress toward improved health and happiness.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Intervention Studies — Pharmacotherapy

456-P
Beloranib Phase 1b Dose Response, Safety and CV Biomarkers: Novel Methionine Aminopeptidase 2 Inhibitor Shows Rapid Weight Reduction Over 4 Weeks

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Background: Beloranib is a methionine-aminopeptidase 2 inhibitor which increases fatty acid oxidation and reduces hunger. A previous study showed weight loss of ~ 4% with 0.9mg/m2 beloranib over 4wk dosing in obese women. **Methods:** This was a double-blind, placebo-controlled study to investigate the safety, tolerability, and metabolic effects of higher, fixed doses of beloranib. Obese women were randomized to 3.0mg (n=6) or 6.0mg (n=5) of IV beloranib vs. placebo (N=5) twice-weekly for 4wks. BW, body composition, and cardiometabolic biomarkers were measured. Results are based on the per-protocol population (n=6, 3, and 5 for 3.0, 6.0mg, and placebo, respectively) completing the trial. **Results:** Patients were women with mean (SEM) age 45.7(2.6) yr, BW 104.9(4.0) kg, and BMI 39.5(1.1) kg/m2. The most frequent adverse events were mild diarrhea, nausea, headache, dizziness, infusion site injury, and mild-to-moderate sleep disturbance (resulting in 2 drop-outs from the 6.0mg group). There were no clinically significant abnormal laboratory or ECG findings. After 4wks, subjects on 3.0mg beloranib lost an average of 4.7kg from baseline (P=0.0008), 6.0mg beloranib lost 6.7kg (p=0.0013) vs. a gain of 0.2kg for placebo. Body composition measurements were consistent with reduced adipose tissue mass. Hunger, LDLc and CRP decreased significantly in the two beloranib groups vs. placebo. BP and glucose did not change with treatment. **Conclusions:** Fixed dosing regimen of IV beloranib was generally well-tolerated, resulted in rapid BW loss and improved body composition and cardiometabolic risk markers. Doses <6.0mg appear to have clinical utility in balancing effectiveness and tolerability.

457-P
Combination Pharmacotherapy With Metformin and Topiramate Reduces Blood Pressure and Vascular Stiffness in Obesity With Metabolic Syndrome: A Randomized Double-Blind Clinical Trial

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Background: Treatment of metabolic syndrome is hampered by lack of medications for weight loss that improve cardiovascular risk. Monotherapy with metformin or topiramate produces weight loss. We tested the hypothesis that combining topiramate with metformin would improve weight, visceral adiposity, blood pressure and vascular stiffness more than metformin alone. **Methods:** These are interim 3-month results from 12-month double-blind, randomized, parallel-group controlled trial. To date, 25 obese subjects with metabolic syndrome (7 males; 54±1 yrs; weight=103±5 kg; BMI=37±2 kg/m2; mean±SE) have been randomized to metformin alone (MET; n=14; target dose 2500 mg) or metformin + topiramate (MET+TOP; n = 11; 2500 + 200 mg) and followed for >3 months. Half the subjects in each group were also taking orlistat. All subjects received written advice on calorie restriction and exercise. **Results:** Antihypertensive drugs were used by 21 of 25 subjects (1.8 agents/subject) with baseline sitting mean arterial pressure (MAP) of 93±5 mmHg, heart rate of 73±4 bpm, and carotid-femoral pulse wave velocity (PWV) of 8.9±0.5 m/sec. Substantial weight loss at 3 months 8.5±0.8 %* (MET) and 10.6±0.9 %* (MET+TOP), which was non-significantly greater with MET+TOP. Changes: waist circumference -4.3±1.2* cm and -8.3±1.8** cm; MAP -3.9±1.5* mmHg and -11.5 ± 3.5** mmHg; HR -1.5±2.3 bpm and -7.0±3.9* bpm; PWV -4.0±1.7 % and -8.4±2.9 %** with MET and MET+TOP, respectively.(P< 0.05, * vs. baseline; ** vs. MET alone). **Conclusions:** Adding topiramate to metformin substantially reduces BP and vascular stiffness in patients with obesity and metabolic syndrome. This occurs early in treatment (3 months), and with only modest additional weight loss compared to metformin alone. The long-term effects of combined metformin and topiramate on CV risk factors in metabolic syndrome warrant further exploration.

458-P
The Effect of Glucagon Like Peptide-1 Receptor Agonist Therapy on Body Mass Index in Adolescents With Severe Obesity

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Background: Medical treatment options for pediatric obesity remain limited. The effects of exenatide, a glucagon like peptide-1 (GLP-1) receptor agonist, on body mass index (BMI) and cardiometabolic risk factors in severely obese adolescents without diabetes were investigated in a 3-month, randomized, double-blind, placebo-controlled, multicenter clinical trial. **Methods:** Twenty-six adolescents (age 12-19 years) with severe obesity (BMI ≥1.2 times the 95th percentile or ≥35 kg/m2) were enrolled. All participants received lifestyle modification counseling throughout the study and were equally randomized to exenatide (10 mcg) or placebo injection, twice per day. The primary endpoint was the mean percent change in BMI measured at baseline and 3-months; secondary endpoints included blood pressure, hemoglobin A1c, and fasting glucose, insulin, and lipids. **Results:** Twenty-two participants (16 females; Tanner stage III: N = 2, stage IV: N = 2, stage V: N = 18) completed the trial. Exenatide elicited a greater reduction in percent (-2.70%, 95% CI (-5.02, -0.37), P = 0.025) and absolute (-1.13 kg/m2, 95% CI (-2.03, -0.24), P = 0.015) change in BMI compared to placebo. Although not reaching the level of statistical significance, reductions in systolic blood pressure and hemoglobin A1c were observed with exenatide. Medication compliance was excellent (mean = 95%). The most commonly reported adverse events (all mild-moderate and transient) were nausea (placebo 31%, exenatide 62%) and vomiting (placebo 8%, exenatide 39%). **Conclusions:** These results provide preliminary evidence supporting the feasibility, safety, and efficacy of GLP-1 receptor agonist therapy for the treatment of severe obesity in adolescents.

459-P
Weight Loss (WL) and Reduction in Unique Antidiabetic Medication Use in Obese Subjects With Type 2 Diabetes Mellitus (T2DM) Using Extended-Release Phentermine/Topiramate (PHEN/TPM ER) Over 2 Years

W. Timothy Garvey *Birmingham, AL*; Robert F. Kushner *Chicago, IL*; Wesley W. Day *Mountain View, CA*

Background: Obesity is a global epidemic linked to comorbidities such as T2DM. In the CONQUER study and SEQUEL extension, obese subjects with ≥2 weight-related comorbidities receiving PHEN/TPM ER experienced significant WL vs placebo (PBO) through 108 weeks. This post-hoc analysis in subjects with T2DM at baseline assessed WL, change in HbA1c, and net change in antidiabetic medication dose (% subjects increasing-decreasing) through 108 weeks. **Methods:** Subjects in SEQUEL maintained their original blinded randomization to PBO (n=227), PHEN 7.5 mg/TPM ER 46 mg (7.5/46; n=153), or PHEN 15 mg/TPM ER 92 mg (15/92; n=295). Subjects with T2DM at baseline (PBO: n=55; 7.5/46: n=26; 15/92: n=64) were managed to standard of care, including diet/exercise or metformin monotherapy (average baseline use: 54.5%); subsequent addition of oral hypoglycemics (metformin and others) by physicians blinded to treatment group was permitted to achieve established HbA1c targets (ADA). **Results:** At Week 108, least-squares mean percent WL (ITT-LOCF) among subjects with T2DM was significantly greater with PHEN/TPM ER vs PBO (*P*<.0001): 2.0%, 9.0%, and 9.0% for PBO, 7.5/46, and 15/92, respectively. HbA1c was also improved with PHEN/TPM ER vs PBO (*P*=NS). Furthermore, 25.5% of PBO subjects had a net increase in antidiabetic medication dose, whereas 7.5/46 subjects had no net change in dose and 3.1% of 15/92 subjects had a net decrease (*P*=.0005 vs PBO, both comparisons). Discontinuation rates due to adverse events in the T2DM population were 3.6%, 0%, and 3.1% for PBO, 7.5/46, and 15/92, respectively. **Conclusions:** Compared with PBO, subjects with T2DM receiving with PHEN/TPM ER achieved greater WL and required fewer antidiabetic medications, indicating PHEN/TPM ER may provide beneficial therapeutic effects beyond weight loss for obese patients with T2DM.

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460-P
Weight Loss (WL) By Degree of Comorbidity as Assessed By the Edmonton Obesity Staging System (EOSS) in Subjects Receiving Extended-Release Phentermine/Topiramate (PHEN/TPM ER)

Lawrence J. Cheskin *Baltimore, MD*; Arya M. Sharma, Raj S. Padwal *Edmonton, Canada*; Charles H. Bowden *Mountain View, CA*

Background: Body mass index categorizes degree of overweight/obesity but does not incorporate weight-related comorbidities into the assessment. The EOSS, validated against NHANES data, quantifies weight-related morbidity based on the presence/extent of comorbidities, such as hypertension (HTN) and dyslipidemia. **Methods:** In the Phase 3, double-blind, 56-week CONQUER study of overweight/obese subjects with ≥2 weight-related comorbidities, PHEN/TPM ER demonstrated significant WL vs placebo (PBO). Subjects were randomized to receive PBO, PHEN 7.5 mg/TPM ER 46 mg (7.5/46), or PHEN 15 mg/TPM ER 92 mg (15/92). In this post-hoc analysis, WL was assessed in subjects with HTN (n=1286) or dyslipidemia (n=885) at baseline and in the overall population according to subjects' baseline EOSS category (1=subclinical weight-related risk factors [n=97], 2=established weight-related chronic disease [n=2170], or 3=established end-organ damage [n=180]. **Results:** At week 56, PHEN/TPM ER led to significant least-squares mean percent WL vs PBO in subjects with HTN at baseline (P<.0001; ITT-LOCF): 1.9%, 8.2%, and 10.1%, for PBO, 7.5/46, and 15/92, respectively. Significant WL vs PBO was also observed in subjects with dyslipidemia at baseline receiving PHEN/TPM ER (P<.0001; ITT-LOCF): 2.2%, 9.0%, and 10.8%, for PBO, 7.5/46, and 15/92, respectively. Similar WL was seen among subjects in the overall population in all EOSS categories (P<.05). Common adverse events in the overall safety population were dry mouth, constipation, and paraesthesia. **Conclusions:** Significantly greater WL was achieved with PHEN/TPM ER vs PBO in overweight/obese subjects, regardless of baseline comorbidities or EOSS score, suggesting the efficacy of PHEN/TPM ER remains robust in the presence of comorbidities.

461-P
Weight Loss (WL) and Changes in Blood Pressure (BP) and Triglycerides (TG) By Degree of Comorbidity in Subjects Receiving Extended-Release Phentermine/Topiramate (PHEN/TPM ER)

Arya M. Sharma, Raj S. Padwal *Edmonton, Canada*; Craig A. Peterson *Mountain View, CA*

Background: The Edmonton Obesity Staging System (EOSS), validated against NHANES data, categorizes obesity-related morbidity based on degree of comorbidities. As such, the EOSS may identify patients with the greatest need for intervention. PHEN/TPM ER demonstrated significant WL vs placebo (PBO) in CONQUER, a Phase 3, double-blind, 56-week study, in overweight/obese subjects with ≥2 weight-related comorbidities. This post-hoc analysis evaluated WL in subjects based on baseline EOSS category. Changes in BP (overall and hypertensive [HTN] subjects) and TG (overall and hypertriglyceridemic [hyperTG] subjects) were also assessed. **Methods:** CONQUER randomized 2487 subjects to PBO, PHEN 7.5 mg/TPM ER 46 mg (7.5/46), or PHEN 15 mg/TPM ER 92 mg (15/92). EOSS is scored as: 1=subclinical weight-related risk factors (n=97), 2=established weight-related chronic disease (n=2170), 3=established end-organ damage (n=180). **Results:** At week 56, in the overall population, greater WL was observed with PHEN/TPM ER (6.8-10.5%) vs PBO (1.5-2.3%) at week 56 across all baseline EOSS categories (P<.05). In addition, greater reductions in SBP occurred with PHEN/TPM ER 15/92 vs PBO in subjects with baseline EOSS scores of 2 or 3 in both the overall population and subgroup with HTN (n=1286). Likewise, greater reductions were observed with TG with PHEN/TPM ER 15/92 vs PBO in subjects with EOSS scores of 2 or 3 in the overall population and subgroup with hyperTG (n=855). Common adverse events were upper respiratory tract infection, constipation, paraesthesia, and dry mouth. **Conclusions:** PHEN/TPM ER significantly reduced weight compared with PBO regardless of baseline comorbidity by EOSS category. This WL was associated with improvements in BP and TG, especially in the presence of HTN or hyperTG.

462-P
Reduction in Cardiovascular (CV) Risk Associated With Weight Loss (WL) in Three Clinical Trials of Obese Subjects Receiving Extended-Release Phentermine/Topiramate (PHEN/TPM ER)

Timothy Church, Alok K. Gupta *Baton Rouge, LA*; Charles H. Bowden *Mountain View, CA*

Background: Obesity is associated with an increased risk of CV disease. This analysis assessed WL and reductions in CV risk during three 56-week, double-blind, placebo (PBO)-controlled trials with PHEN/TPM ER (3.75mg/23mg, 7.5mg/46mg, and 15mg/92mg). **Methods:** Two Phase 3 studies in obese subjects (N=3678) and one Phase 2 study of obese subjects with diabetes (N=130) were included in this analysis. Least-squares mean percent WL and changes in waist circumference (WC), fasting glucose (FG), triglycerides (TG), and high-density lipoprotein cholesterol (HDL-C) from baseline to week 56 were assessed (Phase 3 sample). In addition, mean changes in systolic and diastolic blood pressure (SBP and DBP), heart rate (HR), and rate pressure product (RPP) were evaluated in a pooled sample of the Phase 2 and 3 trials. **Results:** At week 56, WL in the Phase 3 sample was 1.5%, 4.7%, 8.2%, and 10.4% for PBO, 3.75/23, 7.5/46, and 15/92, respectively (P<0.0001 vs PBO for all comparisons). In addition, improvements in WC, FG, TG, and HDL-C were significant at week 56 (P<.01 for comparisons with 7.5/46 and 15/92 vs PBO). In the Phase 2 and 3 studies, SBP and DBP (mmHg) decreased significantly in the 7.5/46 and 15/92 groups vs PBO (P<.005): SBP was -2.1, -3.3, -5.2, and -5.2 for PBO, 3.75/23, 7.5/46, and 15/92, respectively, and DBP was -1.9, -0.9, -3.3, and -2.9 for PBO, 3.75/23, 7.5/46, and 15/92, respectively. A significant increase in HR (1.6 bpm) was observed with 15/92 (P<.0001 vs PBO), but not with 3.75/23 or 7.5/46. RPP decreased similarly in all treatment groups (not significant vs PBO). **Conclusions:** WL induced by PHEN/TPM ER was associated with significant improvements in CV risk factors, including BP. While HR increased slightly in the 15/92 group, an overall improvement in the RPP over 56 weeks was observed.

463-P
Compared to Telmisartan 80mg Alone, a Single-Pill Combination of Telmisartan 80 mg/Hydrochlorothiazide 25 mg Provides Superior Blood Pressure Reductions Among Obese, Diabetes Mellitus and Patients at High Cardiovascular Risk

Harold Bays *Louisville, KY*; Dingliang Zhu, Pingjin Gao *Shanghai, China*; Michaela Mattheus, Birgit Voelker *Ingelheim, Germany*; Luis M. Ruilope *Madrid, Spain*

Background: To compare the efficacy and safety of telmisartan 80 mg (T80)/hydrochlorothiazide 25 mg (H25) single-pill combination (SPC) vs T80 monotherapy among pre-specified subgroups of hypertensive patients who were obese (BMI ≥30 kg/m^2), had diabetes mellitus (DM), and those at high cardiovascular (CV) risk (estimated by the Framingham risk score). **Methods:** Hypertensive patients (SBP ≥160 mmHg/DBP ≥100 mmHg) were randomized to T80/H25 SPC or T80 for 7 weeks in a double-blind study (NCT00926289). **Results:** In the full analysis set population (n = 858 of 888 treated patients), T80/H25 vs T80 reduced mean±SE SBP (mmHg) from baseline to Week 7 –37.0±0.62 vs –28.5±0.88 (p < 0.0001) and reduced DBP –18.6±0.38 vs –15.4±0.55 (p < 0.0001). Among obese patients (n = 348), T80/H25 vs T80 reduced SBP –37.0±0.91 vs –27.1±1.32 (p < 0.0001) and reduced DBP –17.8±0.57 vs –15.2±0.82 (p = 0.0065). Among patients with DM (n = 106), T80/H25 vs T80 reduced SBP –34.2±1.57 vs –26.7±2.25 (p = 0.0059) and reduced DBP –18.6±0.97 vs –17.2±1.39 (p = 0.3897). Among patients at high CV risk (n = 288), T80/H25 vs T80 reduced SBP –33.9±1.01 vs –27.2±1.27 (p < 0.0001) and reduced DBP –17.2±0.63 vs –14.9±0.79 (p = 0.0187). T80/H25 provided BP goal attainment (<140/90 mmHg) in 50.6% of obese and 47.7% of patients at high CV risk, vs 30.6% and 34.2%, respectively, with T80 alone (p=0.0004 and p=0.015, respectively). In DM patients with a BP goal of SBP/DBP <130/80 mmHg, T80/H25 achieved goal in 16.7% vs 8.8% with T80 alone (p= NS). In the treated set, adverse events were reported in 16.0% and 17.0% in T80/H25 and T80, with 16.6% vs 17.0% in obese patients, 6.9% vs 17.6% in DM patients and 16.3% vs 13.7% in high CV risk patients. **Conclusions:** Compared with T80, SPC T80/H25 provided superior BP reductions among obese, DM patients, and those at high CV risk, and was generally well tolerated.

464-P
Differential Effects of Adding Weight Loss Medications to the Gastric Band, Sleeve Gastrectomy, and Gastric Bypass

Ken Fujioka, Max A. Macmillan *La Jolla, CA*

Background: Depending on how one defines "failed" weight loss after bariatric surgery, 12% to 34% of patients who undergo the various bariatric procedures will not lose adequate amounts of weight. Use of weight loss medications in patients that are "failing" bariatric surgery may be of help. **Methods:** 52 patients who had undergone laporascopic sleeve gastrectomy (SG) were age, sex, and BMI matched with 52 laporascopic gastric bands (LGB), and 52 Lap Roux-en-Y gastric byapss (GBP) pts. These pateints were followed for an average of 3 years. If patients began to show inadequate weight loss the surgeon referred the patient to the medical side of the weight loss center and weight loss medications were started in patients that were appropriate. **Results:** The matched groups had an average age of 49 years, 63% were women, and a BMI of 44 (mean weight of 128 kilos) . At 2 years the total % weight loss was 12.4% for the LGB, 26.6% for the GS, and 28.8% for GBP. At 12, 24, and 36 months, each group was seen in the clinic. At 24 months, 29 patients of the original 52 LGB groups were seen in follow up. Of this group 16 were not on any weight loss medications and 13 were. The % weight loss in the non drug group was 10.7%(n=16) and in the LGB pts on weight loss medications the % wt. loss was 16.2%(N=13). At 24 months the non drug GS group lost 29.4%(N=19) vs. 21.0% (N=7) in the weight loss drug group. The weight loss in the GBP non-drug group was 29.4% (N=16) vs. 32.2%(N=5) in the weight loss drug group. **Conclusions:** Due to the small number of patient in the GS and GBP groups on weight loss medications little can be said regarding bennefit. In the LGB group there was 5.5% more weight loss in the group that recieved weight loss medications. This observational study would support a trial randomizing failing LGB patients to weight loss medications vs. placebo.

465-P
Substantial Weight Loss and Beneficial Effects of the Metabolic Syndrome As a Result of Testosterone Treatement For Up to 15 Years With Testosterone Undecanoate Injections in 334 Hypogonadal Men

Farid Saad *Berlin, Germany*; Michael Zitzmann, Eberhard Nieschlag *Muenster, Germany*

Background: Testosterone (T) treatment in men diagnosed with hypogonadism is considered standard therapy, particularly in younger men with congenital forms of hypogonadism. Intramuscular injection of the long-acting ester testosterone undecanoate (TU) at 3-month intervals after an initial 6-week interval have proven to be an effective method of testosterone substitution. **Methods:** We report data from 334 patients (147 with primary, 100 with secondary and 87 with late-onset hypogonadism) aged 15 to 72 years (mean 42±15 years) receiving intramuscular injections of 1000 mg of TU during a maximal treatment time of 15 years, corresponding to 1403 treatment years. Hypogonadism was defined as total testosterone below 12 nmol/L and occurrence of symptoms. **Results:** Serum T concentrations rose from 5.8 to 16.1 nmol/L within the first year of treatment and remained stable thereafter. Body weight decreased from 103.0 ± 16.3 kg at baseline to 79.1 ± 12.6 kg at the end of the observation period. Body mass index declined from 31.8 ± 5.2 to 24.4 ± 3.2 kg/m2. Waist circumference declined from 114.0 ± 10.5 to 94.1 ± 8.7 cm. Systolic blood pressure decreased from 148.0 ± 13.8 to 128.0 ± 10.6 mmHg, diastolic blood pressure from 98.0 ± 10.9 to 81.0 ± 10.2 mmHg. Triglycerides decreased from 198.0 ± 32.8 to 145.0 ± 21.2 mg/dL and HDL increased from 38.4 ± 9.7 to 53.6 ± 11.7 mg/dL. Glucose decreased from 108.1 ± 29.7 to 91.2 ± 15.2 mg/dL. **Conclusions:** Intramuscular injections of testosterone undecanoate lead to improvements in body composition and other features of the metabolic syndrome. These changes are maintained over a long-term follow-up period.

466-P
Weight Loss in Middle-Aged Hypogonadal Men on Long-Term Treatment With Testosterone Undecanoate Injections

Farid Saad *Berlin, Germany*; Gheorghe Doros *Boston, MA*; Ahmad Haider *Bremerhaven, Germany*; Abdulmaged Traish *Boston, MA*

Background: Obesity is associated with reduced testosterone, and low testosterone induces weight gain. This study analysed the effects of normalization of serum testosterone in mainly elderly, hypogonadal men. **Methods:** Open-label, single-center, cumulative, prospective registry study of 255 men (aged 38 – 83 years, mean 60.6 ± 8.0 years), with testosterone levels between 1.7 – 3.5 ng/mL (mean: 2.87 ± 0.4). Cut-off point for testosterone treatment was serum testosterone ≤ 3.5 ng/mL). 215 men were studied for at least 2 years, 182 for 3 years, 148 for 4 and 116 for at least 5 years. They received parenteral testosterone undecanoate 1000 mg/12 weeks after an initial interval of 6 weeks. **Results:** After 5 years the following changes were observed: weight (kg) decreased by 16.15 kg from 106.22 ± 16.93 (minimum: 70, maximum: 139) to 90.07 ± 9.51 (min 74.00, max 115). The statistical significance was $p<0.0001$ vs baseline and vs the previous year over 5 years indicating a continuous weight loss over the full observation period. Waist circumference (cm) declined from 107.24 ± 9.14 (min 86, max 129) to 98.46 ± 7.39 (min 84, max 117) ($p<0.0001$ vs baseline and vs the previous year over 5 years). Body mass index (BMI, m/kg2) declined from 33.93 ± 5.54 (min 21.91, max 46.51) to 29.17 ± 3.09 (min 22.7; max 36.71) ($p<0.0001$ vs baseline and vs the previous year over 5 years). The mean per cent weight loss after 1 year was 4.12 ± 3.48%, after 2 years 7.47 ± 5.01%, after 3 years 9.01 ± 6.5%, after 4 years 11.26 ± 6.76% and after 5 years 13.21 ± 7.24%. At baseline, 96% of men had a waist circumference of ≥ 94 cm. This proportion decreased to 71% after 5 years. **Conclusions:** Raising serum testosterone to normal produced loss of body weight, waist circumference and BMI. These improvements were progressive over the full 5 years of the study.

467-P
Favourable Changes in Body-Weight and Waist Circumference in Middle-Aged Hypogonadal Men Treated With Testosterone Undecanoate Injections For Up to 5 Years

Farid Saad *Berlin, Germany*; Gheorghe Doros *Boston, MA*; Aksam A. Yassin *Norderstedt, Germany*

Background: Epidemiological studies show that obese men have lower testosterone levels than men with normal weight. Part of this is explained by substances deriving from adipose tissue which suppress testosterone production via negative feedback, e.g., estrogens and cortisol. **Methods:** Observational, cumulative, prospective registry study of 261 men (mean age: 58 years), with testosterone levels between 0.4 and 3.41 ng/mL (mean: 2.23 ± 0.6). Cut-off point for testosterone treatment was serum testosterone ≤ 3.5 ng/mL). 260 men were studied for at least 2 years, 236 for 3 years, 195 for 4 and 163 for 5 years. They received parenteral testosterone undecanoate 1000 mg/12 weeks after an initial interval of 6 weeks. **Results:** After 5 years the following changes were observed: weight (kg) decreased by 7.77 kg from 100.17 ± 14.02 (minimum: 68, maximum: 141) to 92.4 ± 11.13 (min 67, max 124). The statistical significance was $p<0.0001$ vs baseline and vs the previous year over 4 years and $p=0.0001$ at the end of year 5 vs year 4 indicating a continuous weight loss over the full observation period. Waist circumference (cm) declined by 8.63 cm from 107.66 ± 10.03 (min 88, max 148) to 99.03 ± 9.05 (min 85, max 137) ($p<0.0001$ vs baseline and vs the previous year over 5 years). Body mass index (BMI, m/kg2) declined from 31.74 ± 4.42 (min 21.97, max 43.27) to 29.38 ± 3.34 (min 19.58; max 37.39) ($p<0.0001$ vs baseline and vs the previous year over 5 years). The mean per cent weight loss after 1 year was 3.06 ± 2.63%, after 2 years 5.58 ± 4.16%, after 3 years 7.39 ± 4.39%, after 4 years 9.19 ± 5.71% and after 5 years 10.79 ± 6.67%. **Conclusions:** Normalisation of serum testosterone resulted in reductions of body weight, waist circumference and BMI. These improvements were progressive over the full 5 years of the study.

468-P
Safety and Efficacy of a Long Acting alpha-MSH Analogue, MC4-NN2, in Overweight to Obese But Otherwise Healthy Subjects

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Background: The melanocortin 4 receptor (MC4R) exerts a dual effect on appetite regulation and metabolic rate, and is recognised as a promising target for the treatment of obesity. MC4-NN2 is a MC4R selective alpha-MSH analogue and with a potential for once weekly dosing regime in humans. **Methods:** This first human dose trial was a randomised, double-blind, placebo-controlled, two-part (s.c. single, SD) and multiple dose, MD) trial investigating the safety, tolerability, PK and efficacy of MC4-NN2 in overweight to obese male and female subjects, aged 18 to 64 years. Part 1

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consisted of 7 SD cohorts. Part 2 was a 10 weeks multiple dose trial consisting of 4 cohorts in which several efficacy parameter (e.g. body composition and energy expenditure) were evaluated. **Results:** In general MC4-NN2 was well tolerated and no changes in laboratory parameters, vital signs, ECG or psychological assessments were observed. MC4-NN2 exposure was dose-proportional and with a terminal half-life suitable for a once weekly administration. Adverse events (AE) were reported due to changes in penile erection and sexual arousals. Furthermore, a high incidence of unexpected non-serious AEs related to skin changes (melanocytic naevus and hyper-pigmentation) was observed in MC4-NN2 treated subjects, which lead to premature termination of the trial. Therefore efficacy parameters were not optimal explored. **Conclusions:** MC4-NN2 was well tolerated and no clinically meaningful changes in vital signs, ECG, mood disturbance or body weight were reported. No clinically relevant physical findings were observed except for high frequency of non-serious skin-pigmentation following treatment with MC4-NN2. These skin reactions were followed to remission and no long term sequelae were reported.

469-P
Telmisartan Prevents New-Onset Diabetes in Pre-Diabetic OLETF Rats on a High-Fat Diet: Evidence of an Anti-Diabetes Action

Feng-shi Tian, Zi-Qin Zhao, Rong Luo, Lan-ying Li, Xi-lan Zheng, Hai-liang Xiong, Li-ting Sun *Tianjin, China*

Background: To investigate the effects of telmisartan, pioglitazone and metformin administration for the prevention of new-onset type 2 diabetes mellitus (T2DM) in pre-diabetic OLETF rats fed with high-fat diet (HFD). **Methods:** OLETF rats aged 22-weeks were treated with pioglitazone (O-P), metformin(O-M), telmisartan (O-T), low telmisartan (O-TL) from their pre-diabetic period, OLETF control rats (O-C) and LETO control rats (LETO) were treated with vehicle. The abdominal subcutaneous (SC) and omental (OM) fat pad were dissected to measure the mRNA expressions and protein expressions (adiponectin, AdipoRs, pro-inflammatory cytokines, AT1, AT2, PPARγ1 and PPARγ2). **Results:** The incidence rates of IGT and T2DM in O-P ($\chi 2$ =11.025, P=0.001) or O-T group ($\chi 2$=5.495, P=0.019) were significantly reduced, compared to O-C group, no significant difference was noted between O-P and O-T group. Telmisartan significantly reversed the glucose tolerance and improved insulin resistance. The mRNA expressions of AT1 and pro-inflammatory cytokines were down-regulated by telmisartan administration. The mRNA and protein expressions of adiponectin, PPARγ1 and γ2 were markedly improved by telmisartan and pioglitazone, compared with O-C group in both SC and OM. The correlation analysis showed that SBP and DBP were not correlated with HOMA-IR (P > 0.05). **Conclusions:** It suggests that telmisartan acts beneficially against the diabetes-induced pro-inflammation and improves insulin resistance in pre-diabetic OLETF rats fed with HFD, and this effect might demonstrate that the dual contribution of PPARγ-agonistic and AT1 receptor-antagonistic actions in the downregulation of pro-inflammatory cytokines by telmisartan administration. Its potential action as an early prevention medicine ameliorates the inflammation of adipose tissue in T2DM.

470-P
L-Arginine For the Treatment of Centrally Obese Patients: A Pilot Study

Ryan T. Hurt, Jon O. Ebbert, Ivana T. Croghan *Rochester, MN*; Stephen A. McClave *Louisville, KY*; Darrell R. Schroeder, Brent A. Bauer, John M. Miles *Rochester, MN*

Background: Visceral adiposity has been linked to higher rates of cardiometabolic risk than other types of adiposity. Central adiposity, as measured by waist circumference (WC), is the best anthropomorphic surrogate of visceral adiposity. Animal studies have demonstrated that L-arginine reduces visceral adiposity and fat mass. The primary aims of this phase II open label pilot were to assess the safety, adherence, and efficacy of L-arginine on reducing central adiposity (WC) in non-diabetic obese adults. Secondary aims included assessing the efficacy of L-arginine in decreasing body mass index (BMI), waist-to-hip ratio (WHR), weight, and blood pressure. **Methods:** The Mayo Foundation IRB reviewed and approved the study. Subjects (n=20) were included if they: were ≥ 18 years and ≤ 40 years of age, had a BMI of ≥ 30 and ≤ 40 kg/m2, WC ≥ 89 cm for women and ≥ 102 cm for men, and motivated to lose weight. All subjects received 3 grams of L-arginine three times a day for 12 weeks. No significant lifestyle modification plan was used. **Results:** L-arginine was well tolerated with no clinically significant adverse events. Serum L-arginine levels were significantly (p<0.05) increased from baseline at 6 and 12 weeks. WC (mean±SD) decreased from 115.6±12.7 cm at baseline to 109.2±11.7 cm at 12 weeks (p=0.0004). Weight (mean±SD) decreased from 98.6±19.7kg at baseline to 95.7±18.6 kg at 12 weeks (p=0.015). Significant reductions from baseline were also observed in BMI and WHR. There was no significant reduction in blood pressure. **Conclusions:** L-arginine may be effective at reducing central adiposity in obese patients.

471-P
Effect of Lorcaserin on the Use of Concomitant Medications For Dyslipidemia, Hypertension and Type 2 Diabetes During Phase 3 Clinical Trials Assessing Weight Loss

Emelyn Vargas, Matilde Sanchez, William R. Shanahan, Christen M. Anderson *San Diego, CA*

Background: Lorcaserin is an investigational 5HT-2C receptor agonist for weight management. **Methods:** Medications for the treatment of hypertension (HTN), dyslipidemia and type 2 diabetes (T2D) were monitored in the BLOOM, BLOSSOM and BLOOM-DM studies, which included 7190 obese or overweight non-diabetic patients (ND) and 604 patients with T2D. Among ND, 22% had HTN and 30% had dyslipidemia; among T2D, 55% had HTN and 60% had dyslipidemia. Daily medication doses at baseline and 1 year were compared. Data are presented for placebo (PBO) and lorcaserin 10 mg BID (LOR). **Results:** Among ND, fewer on LOR (2.2%) increased anti-hypertensives vs. PBO (3.0%), and more patients decreased total use (LOR 2.2%, PBO 1.7%). Fewer patients on LOR (2.6%) increased use of anti-dyslipidemics vs. PBO (3.4%), and more patients decreased use (1.3% vs. 0.7%, respectively). Blood pressure and lipids improved significantly with LOR relative to PBO. Among T2D, 17% on LOR decreased use of anti-hyperglycemic medications compared to 12% of PBO; 14% (LOR) and 22% (PBO) increased total dose. Changes in mean daily doses of SFU were +6.5% (PBO) and -16% (LOR; p<0.05); changes in mean TZD doses were +3.3% (PBO) and -16% (LOR). Metformin changed +6.6% (PBO) and -0.8% (LOR; p<0.05). LOR also decreased use of drugs to treat HTN or dyslipidemia vs. PBO. The proportions of patients who decreased anti-HTN drugs were 6.0% (PBO) and 8.4% (LOR). The proportions of patients who decreased anti-dyslipidemics were 2.4% (PBO) and 5.6% (LOR). Changes in medications occurred in the context of LOR-associated favorable trends or significant improvements in glycemic control, blood pressure and lipids. **Conclusions:** In summary, LOR used for weight loss in clinical trials was associated with decreases in use of medications for the treatment of diabetes, HTN and dyslipidemia.

472-P
The MetStudy: Metformin, Eating Behaviors and Anthropometric Measures in a Prospective Cohort of Obese Children and Adolescents

Ihuoma Eneli, Jeff Bridge, Monika Chaudhari, Tricia Fine Rosenstein, MaryAnn Murphy, Susan Timan, Carrie A. Tolman, Cynthia Yensel, Rosanna Watowicz *Columbus, OH*

Background: Metformin has been used together with lifestyle modification for adolescent weight loss with modest benefits. However, the mechanism of action for weight loss remains debatable. Anecdotally, families report a change in eating behaviors when Metformin is prescribed. The purpose of this study was to investigate the relationship between Metformin use and eating behaviors in a prospective cohort of children ages 10-18 years in a tertiary care obesity center. **Methods:** In a tertiary care obesity center, subjects received lifestyle intervention and Metformin. Adherence was assessed via monthly pill count. Anthropometric measures as well as child and parent evaluation of eating behaviors (assessed using the Eating Inventory and Child Eating Behavior Questionnaire) were performed at baseline and 3 months. **Results:** Of the 86 subjects enrolled, 56 (65%) completed a 3 month lifestyle intervention program. At baseline, mean age was 14.2 years and mean body mass index (BMI) was 38 kg/m2. Of those who completed month 3, 21% decreased their BMI by 5%. From baseline, weight declined by a mean of 1.01kg and 0.44kg and BMI declined by 0.51 and 0.48 at months 1 and 3, respectively. At three months from baseline, there was an improvement in satiety responsiveness (2.09±0.61 vs. 2.45±0.72) and emotional overeating (3.07±0.98 vs. 2.54±0.89). There was a significant correlation between both weight loss and decline in BMI at month 3 with change in both emotional

overeating and satiety responsiveness. Cognitive restraint, disinhibition, and hunger Eating Inventory subscale scores all improved at month three, with a mean change of 1.89, -1.62, and -2.31, respectively. **Conclusions:** These preliminary findings warrant further study to examine the role of eating behavior in the Metformin and weight loss therapeutic pathway.

473-P
Effects of Liraglutide on Gastric Emptying and Postprandial Glucose Metabolism in Obese, Non-Diabetic Adults: A Randomized, Placebo-Controlled, Incomplete Crossover Trial

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Background: This study investigated the effects of once-daily s.c. liraglutide, a human GLP-1 analog, on gastric emptying (GE) and postprandial (PP) glucose metabolism in obese adults without type 2 diabetes (T2D). Liraglutide 3.0 mg is currently under development for weight management. **Methods:** Subjects (n=49, mean±SD 48.3±13.2 yrs, BMI 34.2±2.7 kg/m^2) were randomized to liraglutide 3.0 mg, 1.8 mg, or placebo (PBO) in a double-blind, incomplete, two-period crossover trial. GE (acetaminophen absorption method) and glycemic parameters were assessed after 5 weeks in a 5-h mixed meal test. Trial ID: NCT00978393. Funding: Novo Nordisk A/S **Results:** Equivalence in GE ($AUC_{0–300\ min}$; primary endpoint) was observed for liraglutide 3.0 mg vs. 1.8 mg (90%CI contained within [0.80;1.25]) and liraglutide vs. PBO. However, 1-hour GE ($AUC_{0–60\ min}$) decreased by 23% with liraglutide 3.0 mg (ratio 0.77 95%CI [0.6;0.9], p=0.007) and 13% with 1.8 mg (ratio 0.87; 95%CI [0.7;1.1], p=0.14) vs. PBO. Liraglutide 3.0 mg and 1.8 mg reduced FPG by 10 mg/dL vs. PBO (p<0.0001); no effects on fasting glucagon, insulin or C-peptide were seen. Incremental AUC ($iAUC_{0–300\ min}$) for glucose decreased with liraglutide 3.0 mg (p=0.02) but not 1.8 mg (p=0.99) vs. PBO. PP glucagon ($iAUC_{0–300\ min}$) decreased by about 30% with both liraglutide 3.0 mg (p=0.051) and 1.8 mg (p=0.04). Liraglutide 3.0 mg and 1.8 mg significantly lowered 1-hour PP insulin ($iAUC_{0–60\ min}$) by 22–26% and C-peptide by 18–21% vs. PBO. **Conclusions:** Liraglutide 3.0 and 1.8 mg were equivalent with respect to 5-h GE, and not different from PBO. The minor GE delay with liraglutide 3.0 mg at 1 h is unlikely to affect absorption of co-administered oral drugs. The clinical relevance of the 1-h GE delay and improved glycemic parameters with 3.0 mg will be determined in the ongoing Phase 3 program in obese adults with and without T2D.

474-P
Lipid-Lowering Effect of Berberine in Human Subjects and Rats

Yueshan Hu, Erik A. Ehli, Julie Kittelsrud, Patrick J. Ronan, Karen A. Munger, Terry Downey, Krista Bohlen, Leah Callahan, Vicki Munson, Mike Jahnke, Lindsey L. Marshall, Kelly Nelson, Patricia Huizenga, Ryan Hansen, Timothy J. Soundy, Gareth E. Davies *Sioux Falls, SD*

Background: Due to serious adverse effects and the limited effectiveness of currently available pharmacological therapies for obesity, many research efforts have focused on the development of drugs from natural products. **Methods:** Obese human subjects (Caucasian) were given 500 mg berberine orally three times a day for twelve weeks. The efficacy and safety of berberine treatment was determined by measurements of body weight, comprehensive metabolic panel, blood lipid and hormone levels, expression levels of inflammatory factors, complete blood count, and electrocardiograph. A Sprague Dawley rat experiment was also performed to identify the anti-obesity effects of berberine treatment. **Results:** The results demonstrate that berberine treatment produced a mild weight loss (average 5 lb/subject) in obese human subjects. But more interestingly, the treatment significantly reduced blood lipid levels (23% decrease of triglyceride and 12.2% decrease of cholesterol levels) in human subjects. The lipid-lowering effect of berberine treatment has also been replicated in the rat experiment (34.7% decrease of triglyceride and 9% decrease of cholesterol level). Blood hormone levels and expression of inflammatory factors were not significantly changed following 12 weeks of berberine treatment. However, there was interestingly, an increase in calcitriol levels seen in all human subjects following berberine treatment (mean 59.5% increase, p = 0.11). Tests of hematological, cardiovascular, liver, and kidney function following berberine treatment showed no detrimental side effects to this natural compound. **Conclusions:** Collectively, this study demonstrates that berberine is a potent lipid-lowering compound with a moderate weight loss effect and a potential role in osteoporosis treatment/prevention.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Surgical Treatment of Obesity

475-P[DT]
Perceptions and Attitudes of Post-Gastric Bypass Patients Regarding Weight Maintenance: A Qualitative Study

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Background: Weight regain following gastric bypass (GB) surgery continues to plague many individuals across the United States. However, understanding long-term eating and exercise behaviors to promote and sustain a lower weight following GB surgery is underreported. **Methods:** The purpose of this study was to explore the perceptions and attitudes of eating and exercise behaviors associated with weight maintenance and regain in post-GB patients (n=24) two or more years post-surgery. Demographic, anthropometric and food record data were collected. Focus groups and personal interviews were used to understand behaviors and support systems associated with weight stabilization. Two focus groups were audio-taped, transcribed, and organized into common themes. **Results:** Approximately six years post-surgery, rural Midwest, Caucasian women had a mean age of 51.8±10.5 years. The majority were married (17 of 24, 71%) and (14 of 24, 58%) had a college degree. Although the average weight regain was estimated at 16.2±12.7 kg, most of the women (18 of 24, 75%) had maintained a significant weight loss of at least 50% of their excess body weight. Themes emerging from the focus groups included fragmented healthcare, variable family support and a return to "old eating habits." **Conclusions:** Focus-group participants identified lack of long-term emotional and medical support from healthcare providers, family members and limited community support for weight loss surgery patients.

476-P
Percent Total Body Weight Change Is the Optimal Method of Reporting Weight Loss After Roux-en-Y Gastric Bypass (RYGB)

Lee M. Kaplan, Ida Hatoum *Charlestown, MA*

Background: RYGB is an effective treatment for obesity, but weight loss (WL) after surgery varies widely. Identification of WL predictors could help distinguish who would benefit most from this therapy. Higher preoperative BMI (pBMI) is a strong predictor of diminished WL after RYGB, but its utility in clinical decision-making is limited. To identify more useful WL predictors it is important to avoid confounding by known predictors, including pBMI. Surgical WL is typically described as % excess WL (%EWL), but at lower initial BMIs %EWL can overstate WL. Non-surgical WL is typically reported as percent weight change (%WC), but the relationship of %WC to pBMI is unknown. We therefore sought to determine if there are benefits to either form of WL reporting in RYGB patients. **Methods:** We analyzed WL profiles after RYGB of 846 patients with pBMI≥35kg/m2 using>20 measures of weight, including continuous and categorical measures of absolute change in BMI (ΔBMI), %WC, and %EWL. Associations between each metric and pBMI were assessed using Spearman correlations and linear and logistic regression. **Results:** Average pBMI was 50.0kg/m2. After one year, average ΔBMI was -17.1kg/m2, %WC was -34.2, and %EWL was 71.7%. pBMI was positively associated with ΔBMI (r=0.56, p=4.7 x 10-51, r2=0.39) and negatively associated with %EWL (r=-0.52, p=3.8 x 10-44, r2=0.25). In contrast, pBMI was not significantly correlated with %WC (r=0.04, p=0.33, r2=0.002). **Conclusions:** Change in BMI and %EWL are both strongly associated with pBMI, which explains a large portion of the variability in these metrics. Because %WC is least associated with pBMI, its use allows for both the most sensitive identification of novel predictors of WL after RYGB and provides a better comparison of WL across the spectrum of surgical patients. Wider adoption of %WC to report WL after RYGB would therefore be advantageous.

477-P[DT]

Binge Eating and Changes in Body Mass Index (BMI) Following Bariatric Weight Loss Surgery (WLS)

Alexis Conason, Julio Teixeira, Chia-Hao Hsu, Lauren Puma, Allan Geliebter *New York, NY*

Background: This study examined a group of binge eating and non-binge eating participants to investigate changes in BMI following WLS. **Methods:** Participants (N=343) were recruited pre-operatively from a bariatric surgery office at a major urban hospital. All participants underwent either laparoscopic gastric banding (LGB) or laparoscopic Roux-en-Y gastric bypass (LRYGB) surgery. Participants were given a packet of questionnaires that included self-report measures of height and weight (to calculate BMI) and the Questionnaire on Eating and Weight Patterns-Revised (QEWP-R). Participants were assessed prior to undergoing WLS and at follow-up points including 1 year and 2 years post-WLS. **Results:** Data were analyzed using an independent samples t-test. Participants were divided into binge eating (BE) group vs. non-binge eating (NBE) group based on QEWP-R scores. Participants categorized as "moderate" or "severe" on the QEWP-R were classified as the BE group while participants categorized as "normal" or "mild" on the QEWP-R were classified as the NBE group. There were no significant differences in changes in BMI at 1-year for the BE group (M=-14.9, SD=9.8) vs. the NBE group (M=-13.9, SD=6.8), t (74)=.45, p=.65. There were also no significant differences in changes in BMI at 2-years for the BE group (M=12.7, SD=12.7) vs. the NBE group (M=12.41, SD=12.4), t(40)=.09, p=.92. **Conclusions:** Results showed that patients who have pre-operative binge-eating behaviors reduced their BMI to a similar extent as patients who do not have pre-operative binge-eating behavior. Thus, the patients with BED did not fare differently in terms of weight loss 1 and 2 years post-surgery. There is some debate regarding if BED should be used as an exclusionary criteria for WLS. The results from this study would caution against use of BED as an exclusionary criteria for WLS.

478-P

Elevated Systemic Fasting and Post-Prandial Glucagon- Like Peptide 1 in Patients With Symptoms of Nausea and Vomiting Following Surgical Weight Loss

Noora Al-Rasheid, Pratik Sufi, Rosaire Gray, Lucy Jones, Kirsten McDougall, Elizabet Atherton, Vidya Mohamed-Ali *London, United Kingdom*

Background: Gastric bypass (GB) surgery is an effective way of managing morbid obesity and its associated type 2 diabetes. Increased Glucagon- Like Peptide-1 (GLP-1) levels are reported after GB and may be responsible for the weight loss by increasing satiety and regulating glycaemia. A subset of patients experience prolonged and debilitating symptoms of nausea and vomiting after GB. The symptoms are similar to those seen by patients on GLP-1 mimetics. We postulated that in this cohort abnormally elevated GLP-1 levels could be the underlying cause of the undesired symptoms reported. **Methods:** Patients post GB were assigned as symptomatic (n=10) or asymptomatic (n=10) for nausea and vomiting and studied following an overnight fast. Anthropometric data were recorded and blood obtained post-absorptively and following a meal (180 kcal) at 45, 120, and 180 minutes. Plasma GLP-1, insulin, glucose, total cholesterol, LDL, HDL, and triglyceride were measured. **Results:** Both groups showed significant and comparable weight loss following surgery. Changes in plasma glucose, total cholesterol, LDL, HDL and triglyceride were not significantly different between the groups. However, basal and postprandial GLP-1 levels were higher in the symptomatic group, compared to asymptomatic group, as ascertained by area under the curve. While basal insulin levels were similar the first phase response (45 minutes) was lower in the symptomatic group. **Conclusions:** Exaggerated GLP-1 responses are associated with excessive nausea and vomiting symptoms in a subset of patients post GB. Symptomatic patients may benefit from GLP-1 antagonist therapy, such as exendin (9-39),to alleviate their symptoms.

479-P

Changes in Metabolic Parameters Are Not Related to Weight Regain Six Years After Gastric Bypass Surgery

Ted D. Adams, Lance E. Davidson *Salt Lake City, UT*; Sheldon E. Litwin *Augusta, GA*; Richard E. Gress, Paul N. Hopkins, Steven C. Hunt *Salt Lake City, UT*

Background: Diabetes and related metabolic parameters improve quickly following gastric bypass surgery and prior to significant weight loss, supporting speculation that these favorable outcomes may be independent of weight change. This suggests that long-term 6-year changes in metabolic parameters may be independent of weight regain. **Methods:** From the Utah Obesity Study, prospective weight change of gastric bypass patients (N = 375) from 2 to 6 years after surgery was regressed against the 2 to 6 year changes in the following metabolic parameters: fasting glucose and insulin, HDL-C, LDL-C, triglycerides, and blood pressure. **Results:** Mean unadjusted weight loss in the surgical group was 35.0% and 27.9% from baseline to year two and year six, respectively, representing a significant 7.1% regain of initial weight from year two to year six ($p<0.001$). Glucose, insulin, LDL-C, triglycerides, and blood pressure worsened from 2 to 6 years ($P<0.001$), while HDL did not significantly change ($p=0.45$). However, despite the significant metabolic parameter changes, they were not correlated with the 2- to 6-year regain in body weight after adjustment for sex, age, weight at year 2, and year 2 levels of each metabolic parameter. **Conclusions:** Seven percent weight regain (2 to 6 years) subsequent to 35% weight loss may not be expected to clinically impact metabolic parameters. Despite this possibility, failure of post-surgical weight gain (2 to 6 years) to be associated with declines in metabolic parameters support a weight independent mechanism explaining improvement in diabetes and related metabolic factors following gastric bypass surgery.

480-P[DT]

Behavioral or Meal Replacement Weight Change in Presurgical Bariatric Adolescents: A Red Flag, Green Light, or Proceed With Caution

George Datto, Kirk Reichard *Wilmington, DE*

Background: To determine if pre-surgical weight loss from 6 months of behavioral weight management (BWM) or from two weeks of a low calorie meal replacement diet (LCMR) predicts weight loss in adolescents after laparoscopic adjustable gastric band (LAGB) surgery. **Methods:** A prospective cohort study: 46 adolescents (mean age 16 years, 85% female, 63% Caucasian, 24% African American, 13% other) were enrolled in a FDA IDE study of the safety and efficacy of LAGB in adolescents. Subjects were required to participate in a pre-surgical six month behavioral weight management program, followed by two weeks of an optifast meal replacement diet immediately prior to LAGB surgery. Absolute weight change during BWM and LCMR were calculated. Using multiple linear regression, these weight change variables, along with baseline weight and band fill volume, were the explanatory variables for the following outcome variables: absolute post operative weight loss at 1.5, 3, 6, 9, and 12 months. **Results:** Mean baseline weight was 140.5 kg (SD=20.6). Mean BWM weight change was + 0.88 kg SD=6.6), LCMR weight change was -5.6 kg (SD=2.6) Weight change at each post operative time point was (-11.1 kgs, -13.9 kgs, -17.6 kgs, -19.9 kgs, -25.0 kgs) BWM, baseline weight and band fill volume did not predict post surgical weight loss at any time point. LCMR weight loss significantly contributed to the variability of weight loss at the following post surgical time points (34% at 1.5 months, 29% at 3 months, 24% at 6 months, 28% at 9 months, and 17% at 12 months) **Conclusions:** Meal replacement weight loss during a two week optifast meal replacement significantly predicted post surgical weight loss. Weight change during a pre-surgical two week meal replacement diet maybe a useful clinical predictor of weight loss after adolescent LAGB surgery.

481-P[DT]

Bone Mineral Density Loss After Bariatric Surgery: Comparison of Duodenal Switch and Gastric Bypass

Nuria Vilarrasa, Anna Casajoana, Rocio Valera, Mireia Guerrero, Silvia Toro, Iñaki Elio, Amador Garcia-Ruiz Gordejuela, Jordi Pujol, Joan Soler, Jose Manuel Gomez *Hospitalet, Spain*

Background: Duodenal switch (DS) is a malabsortive technique that has not been widely used because of its technical difficulty and risk of nutricional

complications. Scarce data exists on the effect of DS on bone metabolism. The objective of the study was to compare changes in BMD between DS and gastric bypass (GBP). **Methods:** In 32 women undergoing DS and 101 women with GBP, plasma concentrations of calcium, 25(OH) D3, PTH, IGF-I were determined prior and 12 months after surgery. Body composition and BMD was assessed by DEXA in all patients a year after surgery. **Results:** Groups were matched for age, however initial BMI was significantly higher in DS. Twelve months after surgery, the percentage of body weight loss was 34% in DS and 33% in GBP p=0.53. Lean mass after surgery was significantly decreased in DS (44.6 ± 4.2 vs 46.7 ± 4.4kg, p=0.023). BMD at the lumbar spine twelve months after surgery was lower in DS (0.97 ± 0.14 vs 21.05 ± 0.14 g/cm2, p=0.007). PTH concentrations after the intervention were higher in DS (7.9 ± 3.1 vs 5.8 ± 2.6 pmol/l, p=0.013). No significant differences were observed in 25(OH) D3 concentrations although higher dosage of calcium and vitamin D supplementation was required in DS. 9.6% of women with DS and 1.9% with GBP had osteoporosis in lumbar spine a year after surgery, p=0.05. In the regression analysis age (β -0.292, p=0.026) and lean mass 12 months after surgery (β 0.278, p=0.034) were found to be the main determinants of BMD at the lumbar spine. No significant influence was found between low bone mass and type of surgery, plasma PTH, 25(OH) D3 or IGF-I. **Conclusions:** DS is characterized by a higher BMD loss at the lumbar spine compared to GBP, affecting mainly older women. Lean mass reduction after surgery has a greater influence of on bone status than malabsortion of calcium and vitamin D.

482-P
Protein Intake and Body Composition Following Bariatric Surgery

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Background: The relationship between protein intake (PI) and the changes in body composition following bariatric surgery (BS) are not well established. Aim: To evaluate the relationship between PI and the changes in fat free mass (FFM) following gastric bypass (GBP) or sleeve gastrectomy (SG) in morbidly obese subjects. **Methods:** Daily PI (based on 3-d food records) and body composition (DXA) were estimated prior to surgery, and at 4, and 12 months in 98 consecutive patients (GBP/SG: n=46/52; male/female: 17/83%; age: 42.8±12 years; BMI: 46.2±4.4 kg/m2). **Results:** Prior to surgery PI was 93.7±27.4 g/d (17.5±4.2% of total daily caloric intake). At 4 and 12 months, PI decreased relative to baseline (respectively 53.6±16.6 and 63.1±19.0 g/d, both p<0.001), and was below the currently recommended 60g/d in 60.4%, and 44.1% of the GBP and SG subjects respectively (p<0.05 relative to baseline). At 4 months, weight loss (WL, % of baseline) was 22.2±5.3% and FFM loss as percent of WL was 25.2±1.2%. At 12 months WL was 33.5±10.5%, and %FFM-loss/WL 30.7±12.6%. In a stepwise linear regression analysis, gender (p<0.01), but not the daily PI estimates (total or per ideal body weight) or the type of surgery, age, or the pre-surgical BMI predicted the %FFM-loss/WL at 4 months. At 12 months, the type of surgery, age, and PI significantly predicted %FFM-loss/WL (p<0.001). As a whole the model accounted for 37% of the variation of the %FFM-loss/WL at 12 months, with total daily PI contributing 11% to the variation. A daily PI>60 g/day was not significantly associated with %FFM-loss/WL after surgery. **Conclusions:** Daily PI is a significant contributor to the variation in the FFM loss occurring at 12 months after bariatric surgery. However, our data does not support a PI of 60 g/day as the minimum PI to minimize FFM loss after bariatric surgery.

483-P
One Year Evaluation of Metabolic Syndrome in the Helping Evaluate Reduction in Obesity (HERO) Study

John Dixon *Melbourne, Australia*; Ted Okerson *Irvine, CA*; Caroline Burk *Laguna Beach, CA*; Rui Shi, Daisy S. Ng-Mak, Denise Globe *Irvine, CA*; Nancy Dreyer *Cambridge, MA*

Background: Metabolic syndrome (MeS) is associated with a significantly increased risk of cardiovascular disease and type 2 diabetes[1]. Few studies have assessed the effect of weight loss following LAP-BAND® AP adjustable gastric banding (LAGB) on prevalence of MeS. No study has compared gender and regional differences in MeS after banding. **Methods:** Subjects enrolled in the HERO 5-year prospective study, who had baseline (BL) and 1yr waist circumference, were included in this analysis (834/1,123). BL and 1yr rates of MeS were assessed and compared by gender and regions using the NCEP ATP III MeS definition using Chi-square. **Results:** 599/834 patients (71.8%) had MeS at BL with more patients from United States (US) and Canada (CA)/ Australia (AU) than Europe (EU): 74.6% and 73.6% vs. 61.8% respectively (p<0.05). At 1yr, median weight change was -16.5% (p<0.001), there were fewer patients with MeS compared to BL for all regions 356 (42.7%) as well as within each region (43.0% in US, 47.2% in CA/AU and 38.2% in EU) (p<0.0001). More men had MeS at BL (Overall 82.2% vs. 69.2%, US 82.4% vs. 72.8%, CA/AU 92.6% vs. 68.4%, EU 75.0% vs. 57.7%) and at 1yr (Overall 55.6% vs. 39.4%, US 55.9% vs. 40.0%, CA/AU 59.3% vs. 43.9%, EU 52.5% vs. 33.8%) (all but CA/AU p<0.05). **Conclusions:** LAGB was associated with significant weight loss and decrease in MeS at 1yr across all regions and for both men and women. Further analyses are needed to identify factors associated with the observed differences. 1. Conroy R et al. J of Obes, 2011

484-P
Preoperative Circulating Adiposity-Adjusted Leptin (Lep_{AA}) Predicts Weight Loss After Roux-en-Y Gastric Bypass

Sriram Machineni, Ida Hatoum, Jill Carmody, Lee M. Kaplan *Boston, MA*

Background: Roux-en-Y gastric bypass (RYGB) is a powerful treatment for severe obesity, however, there is substantial variability in the degree of weight loss (WL) achieved. The ability to better predict RYGB-induced WL would help identify the most appropriate patients for this procedure, but clinical factors thus far examined have had limited predictive utility. Elevation of adiposity-adjusted leptin (Lep_{AA}) is a marker of leptin resistance and predicts diminished WL after dietary interventions. We sought to determine whether Lep_{AA} would also predict WL outcome after RYGB. **Methods:** We analyzed the charts of all 248 Caucasian patients who underwent RYGB at a single academic center between 2004 and 2007 with fasting pre-op serum leptins and confirmed nadir weights. Using excess body weight (EBW) as a marker of total adiposity, we calculated Lep_{AA} as [leptin] x 100 ÷ EBW. Post-op WL was characterized as percent excess WL (%EWL) and percent total WL (%WL) at nadir. **Results:** The mean pre-op BMI (pBMI) in this cohort was 48.2±8.7 kg/m2, Lep_{AA} was 76.7±52.6, %EWL was 81.8±21.5% and %WL was 37.6±9.1%. Both alone and after correcting for other known predictors of WL after RYGB, including age, sex, pBMI and diabetes status, Lep_{AA} was significantly and positively correlated with both %EWL (β= 0.06, p=0.015) and %WL (β= 0.03, p=0.006). **Conclusions:** Elevated pre-op Lep_{AA} predicts significantly greater WL after RYGB, independent of other known clinical predictors. The positive correlation between greater leptin resistance and RYGB-induced WL contrasts with its negative correlation to diet-induced WL, underscoring the fundamental differences in mechanism between these therapies. Inclusion of Lep_{AA} may significantly enhance the predictive models for RYGB-induced WL and improve the overall risk-benefit profile of RYGB by helping to select the most appropriate patients.

485-P
The Isolated Effects of Roux-en-Y Gastric Bypass Compared With "Pair-Fed" Controls on Appetite and GLP-1

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Background: Evidence suggests that Roux-en-Y gastric bypass (RYGB) surgery affects appetite and induces substantial alterations in GLP-1 response to a meal. However, this has never been investigated independent of the acute change in diet/energy balance seen as a result of RYGB. Objective: To assess the short-term effect of RYGB per se on plasma levels of GLP-1 and appetite sensations **Methods:** 28 obese (BMI:45.8±4.4kg/m2), non-diabetic subjects were recruited from a waiting list of patients selected for RYGB, and randomized to undergo RYGB surgery at either week 8 or 12. The study included a baseline visit (week 0) and two visits (week 7 and 11) where blood samples and appetite sensations (VAS) were obtained in relation to an isocaloric liquid meal (310kcal). The subjects were supervised by a dietician (weekly) to follow a low-calorie diet (Cambridge Weight Plan, 1000kcal/day) throughout the entire study period, thereby providing a "pair-fed" control group and constant negative energy balance **Results:** After the test meal the surgically treated patients felt more satiated (p=0.02) and full (p=0.003), while no significant difference in prospective food intake (p=0.1) or hunger (p=0.3) were found. GLP-1iAUC in response to the meal was increased post

RYGB (p<0.001); however, the effect of RYGB on appetite ratings could not be explained by changes in GLP-1. **Conclusions:** In agreement with previous findings, we found that RYGB increased satiety and fullness and increased GLP-1 response postprandially. However, by using a "pair-fed" design we are able to show that this is an effect of RYGB per se, independent of acute changes in energy balance. Conflicts of Interests: The low calorie products were provided by Cambridge Weight Plan®, Northants, United Kingdom.

486-P
The Relationship of Recalled Weight Status at Age 18 With Adult Health Status at the Time of Bariatric Surgery

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Background: Adverse health effects of obesity are thought to be related to both obesity severity and duration. Little is known about the contribution of adolescent weight (wt) status to development of specific comorbid conditions in adults seeking bariatric surgery. **Methods:** Adults enrolled in the Longitudinal Assessment of Bariatric Surgery-2 study underwent preoperative anthropometric and health assessments. Wt status at age 18 was determined from recalled wt/ht at age 18 reported on the Cincinnati Weight History Questonnaire (CWHQ) if at least 80% certain of responses. Modified Poisson regression with robust error variance was used to evaluate whether weight status at age 18 was independently associated with risk of T2DM, hypertension, sleep apnea and asthma at time of surgery controlling for years since age 18, change in BMI from age 18 to time of surgery, race, and sex. **Results:** 1,473 subjects (median age=47 years, adult BMI=46kg/m2, age 18 BMI=26 kg/m2) of 2264 who completed the CWHQ were at least 80% certain of their ht and wt at age 18. At age 18, 42% were normal wt, 29% were overweight, 16% were class 1, and 13% were ≥ class 2 obese. Compared to being normal wt at age 18, having class 1 or class 2/3 obesity increased risks of hypertension by 14% (p=.04), and 28% (p<.01), respectively, sleep apnea by 25% (p<.01) and 35% (<.001), respectively, T2DM by 39% (p<.01) and 38% (p=.02), respectively, and asthma by 45% for class 2/3 obese (p=.02). **Conclusions:** In morbidly obese subjects presenting for bariatric surgery, weight status at age 18 was independently associated with increased risk of common comorbid conditions. Further study of the impact of weight history on development of comorbidities is warranted.

487-P
This abstract has been withdrawn.

488-P
Medical and Pharmacy Costs for Bariatric Surgery: A Six-Year Follow-Up

Valerie H. Myers, Megan A. McVay, Meghan Brashear *Baton Rouge, LA*; Claire E. Adams *Houston, TX*; Brooke L. Barbera, William D. Johnson, Patricia S. Boyd, Phillip J. Brantley *Baton Rouge, LA*

Background: The Office of Group Benefits (OGB) is Louisiana's managed medical insurance program for approximately 240,000 state employees and their dependents. **Methods:** In 2003, OGB commissioned a study of weight loss surgery (WLS) in a sample of extremely obese (BMI>40kg/m2) members. OGB solicited a total of 189,398 members informing them of a study utilizing gastric bypass surgery. Adult members (BMI >40 kg/m2) who wished to be considered for the surgery were initially screened. A total of 911 members completed this process. Additional screening processes included self-report anthropometric and health information, and clinic visits in which standard diagnostic and preoperative testing was conducted. A total of 40 OGB members were selected via lottery for the surgery. The surgeries occurred between April and November 2004 with total surgical costs of $25,000 per procedure. **Results:** The majority of surgery patients reported no major complications. One post-surgical death occurred. The present study examined total and subcategory medical and pharmacy costs of WLS after six years. Medical costs were lower for WLS compared to non-WLS patients beginning four years post-surgery and were maintained. Total pharmacy costs were lower for WLS patients at two and three years post-surgery, but were not maintained. However, costs remained lower for anti-diabetic, anti-hypertensive, and dyslipidemic agents through all six post-surgery years (all ps <.05). **Conclusions:** The cost of WLS may begin to be recouped within the first four years post-surgery with continued effects six years post-surgery.

489-P
Which Weight Loss Surgery Patients Are at Risk For Development of Post-Surgical Substance Use Disorders?

Karen K. Saules, Summar H. Reslan *Ypsilanti, MI*; Leslie M. Schuh *Carmel, IN*

Background: Our research team has observed that weight loss surgery (WLS) patients are overrepresented in substance abuse treatment (Saules et al., 2010; Wiedemann et al., 2012). However, only a minority of WLS patients develop post-surgical substance use disorders (SUDs). Thus, we investigated which WLS patients are at high risk for post-surgical SUDs. **Methods:** A convenience sample of 141 gastric bypass patients was recruited (79% female; mean of 35% total weight loss, 71% excess weight loss). Participants completed an online survey assessing eating- and weight-related variables, mood, quality of life, and substance use. **Results:** A total of 25 participants (17.7%) met criteria for probable SUD after WLS, 2/3 of whom denied SUD before WLS — a group we refer to as New Onset SUD. Relative to non-SUD WLS patients, those with post-WLS SUD were significantly more likely to have a family history of SUD, and they endorsed having significantly more family members with a SUD history. Those with a family history of SUD had nearly a four-fold risk (OR=3.8) of developing post-WLS SUD, and each additional family member with a SUD history compounded risk. The post-WLS SUD group also had significantly higher scores on the PHQ-9 Depression scale, the Night Eating Questionnaire, the Power of Food Scale, and TFEQ disinhibition and hunger subscales. Family history of SUD consistently emerged as the strongest predictor in logistic regression models that included combined predictors. **Conclusions:** Results have practical implications in that family history of SUD can be easily assessed, and at-risk patients can be advised accordingly. Results also have theoretical implications in that those most likely to develop post-WLS SUD appear to be those with stronger affective, cognitive, and behavioral responses to food, providing some support for the concept of "addiction transfer."

490-P
Validating a Human Behavioral Economic Choice Paradigm For Assessing Food Demand Among Post-Weight Loss Surgery Patients

Shannon Clark, Summar Reslan, Karen K. Saules *Ypsilanti, MI*; Mark K. Greenwald *Detroit, MI*

Background: Behavioral economic theory can guide analysis of factors influencing choice/consumption relative to commodity price. Most human behavioral economic research has focused on drug choice. Recently, we validated this approach in a human laboratory model of food-appetitive behavior (Reslan, Saules, & Greenwald, under review). We now expand this method to post-weight loss surgery (WLS) patients, because food choice may impact weight regain after WLS. **Methods:** Post-WLS patients (N=12) completed 2 sessions that imposed exponentially increasing prices (5 to 2275 responses across 11 trials within session) to earn the same unit amount of each food. Because WLS patients tend to find sweet foods more intense and unpleasant, and may experience post-ingestive side effects after consuming them, the choices were: Task 1) High-Fat/High-Carb (Original Pringles potato chips) vs. No-Fat/High-Carb (Fat-Free Pringles); Task 2) High-Fat/High-Carb (Original Pringles) vs. No-Fat/Low-Carb (Baby Carrots). **Results:** Notably, 11 of 12 patients achieved >50% Excess Weight Loss criteria for successful WLS outcome, and their food choices support this. Mean breakpoints for No-Fat/High-Carb chips were 7.7-fold greater than High-Fat/High-Carb chips (Task 1) and breakpoints for No-Fat/Low-Carb Carrots were 3.7-fold greater than High-Fat/High-Carb chips (Task 2). Demand curves fitted to price vs. group-percent choice data (n = 11 successful patients) exhibit a parallel shift or a change in demand intensity, but no significant difference in demand elasticity (price-sensitivity). Thus, the healthier option was selected more, independent of price, by these successful patients. **Conclusions:** Our preliminary data provide support for using behavioral economic choice procedures with bariatric surgery patients. In future studies, we hope to use this method to predict WLS outcomes prospectively.

491-P
Sleep Disordered Breathing in Extremely Obese Adolescents Before and After Bariatric Surgery

Thomas Inge, Todd M. Jenkins, Raouf Amin, Narong Simikajornboon
Cincinnati, OH

Background: Sleep disordered breathing and obstructive sleep apnea are considered common comorbid conditions for morbidly obese adults. We sought to assess sleep-disordered breathing (SDB) in extremely obese adolescents before and after a surgical weight loss intervention. **Methods:** A cross-sectional survey of SDB symptoms was performed during the Follow-up of Adolescent Bariatric Surgery (FABS) study. This study assessed health and anthropometrics in extremely adolescents before and after roux en Y gastric bypass. A validated screening assessment for SDB (Michigan pediatric sleep questionnaire [MPSQ]) was completed by parents, while anthropometric assessments were performed at the time of regular clinical visits. The MPSQ's SDB scale contains 22 items regarding snoring, sleepiness, and inattentive/hyperactive behaviors. A score ≥ 0.33 is considered a positive screen for pediatric SBD. **Results:** Participants included n=17, n=19, n=23 subjects at preoperative, 3-6 months postoperatively, and at annual time points, respectively. Mean (SD) BMI at baseline, 3-6mo, and at the annual time point was 60 (11), 45 (9), and 40 kg/m2 (10) (p for trend < 0.01). The mean SBD score declined from 0.41 at baseline, to 0.23 at 3-6 months, and to 0.18 at annual time points (p for trend < 0.01). Scores suggestive of SBD (≥ 0.33) were found in 59% of subjects pre-operatively, 11% at 3-6 months, and 9% at annual time points (p for trend < 0.01). **Conclusions:** Extremely obese adolescents undergoing surgical weight loss frequently have symptoms suggestive of SDB. Using a validated, age appropriate instrument, we found significantly less symptoms of SDB following a surgical weight loss intervention.

492-P
A Closer Look at the Nature of Anxiety in Weight Loss Surgery Candidates

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Background: Depression among weight loss surgery (WLS) candidates is common. Anxiety in this population has received relatively less attention. The aims of this study were to describe the nature of anxiety among WLS candidates. **Methods:** In this retrospective study of pre-surgical candidates who presented for evaluation to an academic medical center, 174 pre-surgical candidates' medical charts were reviewed. 143 candidates provided complete data on the 21-item, Beck Anxiety Inventory (BAI), a commonly used self-report measure. A Principal Components Analysis (PCA) with varimax rotation was used to identify the factor structure of the BAI among WLS candidates. **Results:** The sample consisted of primarily middle-aged (46.0 ±13.24 years), married (60.8%) Caucasian (65.7%) females (79%) with Class III obesity (50.1 ±10.68) and mild anxiety (8.86 ± 8.70). Forty-four percent of the sample endorsed clinically significant anxiety. Based on an examination of the scree plot associated with the PCA, a four-factor structure was forced on all BAI items, which explained 56.28% of the variance. The four factors were: 1) cognitive distress, 2) autonomic hyperarousal, 3) neurophysiologic concerns, and 4) temperature. **Conclusions:** Clinically significant anxiety is common among WLS candidates. Untreated anxiety persists post-surgery and is associated with poor prognosis for post-surgical weight loss. Anxiety symptoms in pres-surgical candidates clustered in a unique pattern, with cognitive complaints as the hallmark of these individual's presentation. This finding is unexpected, given the overlap amongst cardiovascular and physiological symptoms of anxiety and obesity. Findings lend support for the utility of psychotherapeutic approaches (e.g., Cognitive-Behavioral Therapy) tailored to address maladaptive thoughts, which may be a more effective than pharmacological alternatives.

493-P[DT]
Racial Disparities in Lipid Profile Outcomes Following Gastric Bypass Surgery

Nawfal W. Istfan, Jen-Pin Chuang, Wendy A. Anderson, Megan Ruth, Donald T. Hess, Brian Carmine, Caroline Apovian *Boston, MA*

Background: We have previously demonstrated racial differences in weight loss outcomes after gastric bypass surgery (RYGB). It is unclear whether these differences have an impact on health outcomes. Here, we evaluate the effect of RYGB on lipid profiles in an ethnically diverse patient population at Boston Medical Center. **Methods:** Lipid profiles from blood taken before RYGB and at 3-month intervals were analyzed for the same patient population previously characterized by weight loss outcome. White patients separated into two clusters according to the percent of weight loss at plateau by two-way cluster analysis (W Clust 1, mean weight loss of 43%; W Clust 2, mean weight loss of 27%). African Americans (AA) and Hispanics (H) were identified by two homogenous clusters (33% and 32% weight loss, respectively). **Results:** All patients had significant improvements in lipid profiles after RYGB, with lower total cholesterol, LDL-cholesterol, and triglycerides and higher HDL-cholesterol levels. AA had significantly higher pre-RYGB HDL levels than other groups. In general, the improvement in lipid profiles among AA was similar to that in W Clust 1 and superior to H and W Clust 2. **Conclusions:** Among White patients, lipid profile outcomes paralleled weight loss with a differential benefit favoring W Clust 1. Despite smaller weight loss at plateau, AA had similar improvement as W Clust 1 and significantly more improvement in lipid profiles in comparison to either H with similar weight loss or White patients with smaller weight loss. Further research is needed to understand the clinical significance of racial disparities in weight loss outcomes after RYGB, specifically why AA lose less weight than Whites but achieve similar benefits in lipid levels.

494-P
Identifying Psychosocial Barriers to Bariatric Surgery

David Mahony *Brooklyn, NY*; Henry Alder, Jeffrey Eha *Cincinatti, OH*

Background: There are an estimated 30 million individuals with obesity (BMI > 35) in the US with a cost of 147 billion dollars a year for medical services. These numbers continue to rise in spite of the existence of effective treatments such as bariatric surgery. At present, less than 1% of the individuals eligible for bariatric surgery receive the procedure. Even amongst patients that enroll in bariatric programs, up to 40% drop out for financial and/or psychosocial reasons. In an effort to understand and address the low adoption rate of bariatric surgery, this study seeks to identify the psychosocial barriers to surgery. **Methods:** Beginning with a pool of 16,000 subjects that were previously enrolled in bariatric programs, 1500 were randomly chosen. Contact was made by telephone and the first 200 subjects that agreed to participate were included. Of these, 123 were re-contacted and completed a telephone interview. **Results:** Of the 123 subjects, 52 (42.3%) did not complete bariatric surgery while 71 (57.7%). completed surgery. Patients that did not complete surgery had higher levels of surgical anxiety, higher levels of confidence in their ability to lose weight on their own, were less "bothered" by their weight, and had to complete more pre-surgical requirements. **Conclusions:** Psychosocial barriers play a major role in the low adoption rate of bariatric surgery and are the primary cause of attrition in surgical programs. The development and implementation of motivational enhancement strategies may be useful to increase the number of obese individuals that receive bariatric surgery and the benefits of weight loss.

495-P
Post-Surgical Substance Abuse By Gastric Bypass Patients Predicts Poor Weight Loss Beyond That Predicted By Eating-Related Variables

Summar Reslan, Karen K. Saules *Ypsilanti, MI*; Leslie M. Schuh *Carmel, IN*

Background: Parallels have been drawn between overeating and substance use disorders (SUDs), and there is theoretical and empirical support that weight loss surgery (WLS) patients may experience difficulty in both domains. **Methods:** We assessed whether post-WLS SUD predicts percent total weight loss (%TWL). A sample of 141 adults with a history of Roux-en-Y gastric bypass surgery were recruited (79% female; mean %TWL=35%). **Results:** Participants meeting criteria for a probable post-WLS SUD (n=25) achieved a lower %TWL (M=29.06, SD=12.58) than did those who did not meet criteria for a post-WLS SUD (n=116, M=35.73; SD=9.55), t(138)=2.98, p=.003. Those meeting criteria for post-WLS SUDs most often reported using opioids, sedatives, and alcohol. A multiple regression analysis was conducted with emotional eating, dietary restraint, and dietary disinhibition entered on block 1 and SUD classification (i.e., probable SUD vs. no SUD) entered on block 2. Eating-related variables accounted for 14.2% of the variance in %TWL, F(3,139)=7.49, p=.001. When SUD classification was added to the model, 17.6% of the variability in %TWL was explained,

 For author conflict of interest information, see page S250

F(4,139)=7.22, p=.001. When the effects of all other predictors were held constant, post-WLS SUD predicted %TWL (β=-5.15, p=.019). **Conclusions:** The literature suggests that post-WLS SUDs may not adversely affect weight loss outcomes among those in a substance abuse treatment facility (Pulcini et al., 2011) or among those with a history of substance abuse treatment (Clark et al., 2003). In our general population sample of WLS patients, however, post-surgical SUD predicted poor weight loss, beyond that which was predicted by eating-related variables. Results suggest strongly advising WLS patients to avoid substance use. In particular, opioids, sedatives, and alcohol may be particularly problematic substances for WLS patients.

496-P
Evaluation of a Group Intervention to Reduce Substance Abuse Relapse For At-Risk Bariatric Surgery Candidates

Kathleen Ashton, Leslie Heinberg, Amy K. Windover, Julie Merrell, Megan Lavery *Cleveland, OH*

Background: Concerns have been raised about an increased incidence of substance abuse post-bariatric surgery. Alcohol use after surgery may be particularly problematic due to changes in the pharmacokinetics of alcohol leading to greater intoxication. The current study evaluated a relapse prevention group for at-risk bariatric surgery candidates. **Methods:** : Patients with a history of at-risk substance use applying for weight loss surgery (WLS) (N=37) were referred to a single-session intervention (64.9% Female; 67.6% Caucasian; M age=45.4 years; M BMI= 48.87 kg/m2). The session included education about the health effects of alcohol and other substances on WLS outcomes as well as developing alternative coping strategies, identifying warning signs of relapse, and providing resources for treatment. Patients completed a pre- and post-intervention questionnaire measuring knowledge of the health effects of substances, the AUDIT-C, and motivation for abstinence. **Results:** Patients showed a significant increase in knowledge regarding the negative effects of substance abuse after surgery (pre-intervention M = 8.1/10 vs. post-intervention M = 9.7/10; t = 23.42, p <.0001). Patients also reported significantly more healthy alternative coping strategies following the intervention (t = 12.44, p < .0001). A significant number of patients reported a lower intention of using alcohol post-surgery after the session (X 2= 8.23, p<.01). **Conclusions:** At-risk patients applying for weight loss surgery may benefit from a substance abuse relapse prevention intervention. More research will be needed to see if interventions positively affect postsurgical behaviors.

497-P
Baseline Insulin Use and Older Age Predict Failure to Achieve Diabetes Remission After Bariatric Surgery

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Background: Bariatric surgery is increasingly performed to treat type 2 diabetes (DM) among obese adults. DM remission after surgery is more likely in patients undergoing gastric bypass (GBP) than lap band (LB) surgery and in those with shorter duration of DM at baseline. Evidence from small studies suggests that older age and baseline insulin use—possible markers of DM duration or severity—may predict decreased likelihood of DM cure. **Methods:** Using claims from a large national commercial insurer, we studied 3409 diabetic patients age 18-64 y who underwent LB or GBP (17% LB, 38% lap GBP, 44% open GBP) from 2001-08, were dispensed DM meds in the 6 m before surgery, and had at least 9 m follow-up after surgery. We obtained linked consumer credit data on race/ethnicity, household income, net worth, and education. Our outcome was discontinuation of DM meds (no dispensing for ≥ 6 m after surgery). Within each surgical type, we used survival analysis and Cox proportional hazards models to assess differences in DM med discontinuation rates by age (50-64 v. 18-49 y) and baseline insulin use. **Results:** Mean age was 47.2 y (55% 18-49 y); 78% were white, 72% were female, 40% had ≤ HS education and 10% had income <$20K. Mean (SD) follow-up time after surgery was 2.5 (1.6) y; 28% used insulin prior to surgery. In models adjusted for sex, race, education, income, and year, we found that in both surgical types, patients age > 50 y were less likely to discontinue DM meds (GBP: HR 0.76, 95%CI 0.69-0.83, LB: HR 0.63, 95%CI 0.50-0.79), as were patients on insulin (GBP: HR 0.43, 95%CI 0.39-0.48, LB: HR 0.36, 95%CI 0.26-0.50). **Conclusions:** Older age and baseline insulin use were associated with lower likelihood of DM remission after bariatric surgery; effects appeared stronger for LB than for GBP.

498-P
Psychosocial Co-Morbidity and Excess BMI Loss Among Patients With BMI≥70

Leslie Heinberg, Julie Merrell, Kathleen Ashton, Megan Lavery *Cleveland, OH*

Background: Greater psychiatric risk and poorer weight loss amongst the super-super obese has been previously reported. This study was conducted to better understand psychosocial co-morbidity in a very severely obese surgical population and to clarify whether poorer outcomes relate to higher BMI or are explained by co-morbid psychosocial issues. **Methods:** Bariatric surgery candidates (N=1133; 73% female; 77.1% Caucasian) completed a pre-surgical psychological evaluation. Participants with a baseline BMI≥70 (n=40) were compared to BMI<70 (n=1093) on psychosocial and demographic factors and differences in % excess BMI units lost at 1-, 3-, 6- 9-, 12-, and 18-months following surgery. **Results:** BMI≥70 patients were younger (39.8 years vs 47.1 years; t=3.82; p<.001) and more likely to be male (42.5% vs 26.3%; X2=5.19; p<.03). Surgery type also differed between groups (X2=129.40; p<.001). BMI≥70 had a lower rate of past inpatient psychiatric treatment (8.5% vs 9.7%; p<.001), but a higher rate of past suicide attempts (13.9% vs 6.9%; p<.001) and a greater history of physical (27.3% vs 12.3%; p<.005) and sexual abuse (18.8% vs 13.8%; p<.005). No differences were found on current psychiatric treatment or history of substance abuse/dependence. BMI≥70 patients lost significantly less % excess BMI at all time-points (p's < .001). Hierarchical regression models controlling for age, gender, surgery type, psychosocial comorbidity, and baseline BMI were conducted. Baseline BMI remained an independent predictor of excess BMI lost at all time-points. **Conclusions:** Patients with a BMI≥70 were significantly different on a number of demographic and psychosocial variables. Interestingly, when these factors were controlled for, BMI remained a significant predictor of outcome. Future research should examine how to improve outcomes for the most severely obese.

499-P
Body Silhouette and Weight Loss Expectations and Their Relationship with BMI and Comorbid Health Risk in Laparoscopic Sleeve Gastrectomy Candidates in Newfoundland and Labrador

Hilary I. Price, Deborah M. Gregory, Laurie K. Twells *St. John's, Canada*

Background: Over 13 million Canadians are overweight or obese and at increased risk of developing obesity-related comorbidities, which place a substantial burden on the healthcare system. In NL one in three adults are considered obese. Bariatric (weight loss) surgery may modify obesity health risk by promoting sustainable weight loss. This study explores morbidly obese individuals (a) perception of body mass index (BMI) status and health risk as it relates to their postoperative expectations of weight loss and body silhouette, and (b) actual versus perceived current body image in terms of defined surgical success. **Methods:** Eighty-four laparoscopic sleeve gastrectomy candidates completed the Goals and Relative Weights Questionnaire and the gender-specific Silhouette Figure Rating Scale (SFRS) before an educational seminar on bariatric surgery. Participants determined their "goal", "dream", "happy", "acceptable", and "disappointed" postoperative expectations of weight and body silhouette as well as their current status. These self-reported expectations were linked to normative BMI data associated with the SFRS, and established obesity health risk curves. Body image dissatisfaction was scored. **Results:** Health reasons were reported as the primary motivation for seeking bariatric surgery and for selecting a weight loss goal. Candidates have unrealistic expectations of weight loss and body figure attainment from surgically induced weight loss. Furthermore, they do not associate silhouettes within the parameters of clinical success to be successful despite the significant health benefits from achieving these weight ranges. **Conclusions:** Preoperative education should include evidence-based weight loss and body image goals that encourage realistic expectations that increase the likelihood of patient satisfaction post-surgery.

500-P
Results From the Newfoundland and Labrador Bariatric Surgery Cohort Study

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Background: In the province of Newfoundland and Labrador (NL), one in three adults are obese, the highest prevalence of obesity in Canada. The provincial government agreed to annually fund 70-100 laparoscopic sleeve gastrectomies (LSG), a surgical treatment option for the extremely obese. LSG, the least common of bariatric surgeries (~5%) is becoming more popular as a stand-alone procedure. The purpose of this study is to recruit eligible patients and follow them post-surgery for 5 years to examine clinical, humanistic and economic outcomes. **Methods:** Data collection began May 2011. The following information is being collected on all consenting patients with a BMI ≥35 with at least two comorbid conditions or BMI ≥ 40: changes in weight, BMI, waist circumference, status of comorbid conditions, quality of life, medications and health services use. **Results:** Baseline data (n=35) and 6-8 week follow-up (n=27) data are currently available, with 8-12 month follow-up to be presented in October 2012. The majority of the sample was female (86%), average age was 41 yrs (SD 9.8). Baseline anthropometric measures were: weight 129.3kg (SD13.9),waist circumference 134.31cm (SD9.1) and BMI 46.0kg/m2(range 35.7-57.4). Patients presented with: hypertension (42.9%), T2DM (34.3%), sleep apnea (31.4%) dyslipidemia (22.9%), GERD (22.9%), and asthma (17.1%).Quality of life, measured by the EQ-5D Visual Analogue Scale was 64.8% (SD18.4). The majority of patients reported some problems with activity, pain and anxiety. At follow up, average absolute change in weight loss, waist circumference and BMI was 13.9kg (3.8-21.9), 11.2cm(5.0-19.5) and 5.0kg/m2 (1.4-8.2), respectively. All were significant, p< .05. %EWL was 21.8(5.9-35.1). **Conclusions:** Early follow-up results of the NL BaSco Study suggest successful reductions in weight measures in the majority of patients undergoing LSG.

501-P
Weight Loss Goals and Expectations of Laparoscopic Sleeve Gastrectomy Candidates in Newfoundland & Labrador

Hilary I. Price, Deborah M. Gregory, Laurie K. Twells *St. John's, Canada*

Background: Unrealistic weight loss expectations are prevalent in obese patients and may negatively impact their adherence to dietary and lifestyle goals.This study examines the postoperative weight loss goals and expectations of laparoscopic sleeve gastrectomy candidates in Newfoundland & Labrador. Current weight, critical points of weight gain in the lives of surgical candidates and self-reported knowledge of and information about bariatric surgery were also explored. **Methods:** Eighty-four bariatric surgery candidates completed a modified version of the Goals and Relative Weights Questionnaire before an educational seminar. Participants reported their weight loss expectations in four categories and rated on a scale of 1-10 the effect of current weight on 20 indicators of health, quality of life, social functioning, and self-image. Perceptions of body image were measured using the Silhouette Figure Rating Scale. **Results:** Preliminary analysis of the first 56 candidates indicate 82.1% female (age 43.8 ± 8.7 years, body mass index 49.0 ± 7.0 kg/m2). Candidates' "goal", "dream", "happy", "acceptable" and "disappointed" percentage of excess body weight losses were 84 ± 12%, 89± 11%, 76± 13%, 68± 16% and 41 ± 21% respectively. Current weight negatively affected health, psychological, and social factors and influenced goal weight choice. Childhood (31.7%), personal illness or injury (27.7%), and pregnancy (25.8%) were critical points of weight gain in the lives of surgical candidates. Surgical knowledge was intermediate (6.15/10) and sourced from the internet (84.5%), family doctor (77.4%), and family or friends (53.6%). **Conclusions:** Bariatric surgery candidates have unrealistic weight loss expectations. Current weight negatively impacts well-being and is often initiated by a critical event.

502-P
A Prospective, Longitudinal Comparison of the Pharmacokinetic Properties of Tablet and Solution Sertraline Formulations in Roux-en-Y Gastric Bypass Patients

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Background: Few data are available concerning the influence of Roux-en-Y Gastric Bypass (RYGB) on the pharmacokinetics (PKs) of medications. Approximately 40% of bariatric candidates take an antidepressant preoperatively and the majority of these patients remain on an antidepressant following surgery. With limited PK data available, appropriate pharmacotherapy management can be challenging post-surgery. **Methods:** A prospective, longitudinal trial is underway to assess the PKs of sertraline preoperatively at baseline (BL) and 3 and 12 months following RYGB. Participants receive single 100 mg doses of sertraline in the tablet (Tab) and solution (Sol) forms, separated by a wash-out period, at each study time-point (BL, 3, 12 months). Sixteen plasma samples are collected over 72 hours at each sertraline administration. An interim analysis has been performed. Calculations of area-under-the-plasma concentration time curve (AUC) were based upon the trapezoidal rule and preliminary analyses were based on the Wilcoxon Signed Rank Test. **Results:** Of the target enrollment of 30 patients, 13 have been entered into the protocol. Mean AUCs from 0-72 hours (AUC0-72) were examined from participants with complete BL and 3 month data (N=8 Tab, N=7 Sol). Data currently available show a significant reduction in the mean AUC0-72 between BL and 3 months post-RYGB associated with the Tab. Sertraline Sol AUC0-72 does not show a significant reduction between BL and 3 months post-surgery using data currently available. **Conclusions:** Data collected to date suggest that sertraline Tab bioavailability is reduced at 3 months post-RYGB, whereas Sol bioavailability is not. Data are being collected from the larger cohort of participants and will include more detail and 12 month data in future presentation, which will address whether these changes remain stable over time.

503-P
How Do I Look? Body Image and Bariatric Surgery

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Background: Laparoscopic Roux-en-Y-Gastric Bypass (LRYGB) improves health and results in changes in body shape. The purpose of this study was to analyze changes in body image following LRYGB using the Body-Image Ideals Questionnaire (BIQ). **Methods:** 180 consecutive LRYGB patients completed a BIQ which analyzes the perception of actual and ideal body characteristics. The score ranges from -3, which indicates congruence to +9, which indicates maximum discrepancies across physical attributes. An observed/expect (O/E) outcomes ratio was calculated for BIQ scores and weights with observed being patient outcomes and expected being societal norms. A low O/E ratio indicates better than expected outcome and a high O/E ratio indicates poorer than expected outcome. **Results:** Patient demographics: average BMI 47.5, age 47, 70% white, 76% with private insurance, and 4 preoperative comorbidities. Women had average scores of 3.6, 2.7, 2.1 and men had average scores of 3.4, 1.6, and 2.0 at preoperative, and six and twelve months postoperative (p=0.46, p=0.07, p=0.78). Men and women reached population norms as early as six months post operative. Women had a higher significantly lower O/E ratios preoperative (2.6 vs. 2.0, p=0.01) and trended towards a lower ratio at 12 months postop (1.7 vs. 1.3, p=0.11). Patients over 50 years with a higher than normal congruency in BIQ scores preoperatively were more likely to have a lower BMI 12 months postoperative (27.7 vs. 33.8 kg/m2, p<0.001).There was a strong correlation between the percent improvement in BIQ congruence with the percent excess weight loss from preop to 12 months postop (r2=0.11, p=0.002). **Conclusions:** This study demonstrates that patients after LRNYGB had large improvements in BIQ scores and patients with high preop BIQ congruency are likely to see the largest improvements in weight.

For author conflict of interest information, see page S250

504-P
Satisfaction With Life and Bariatric Surgery: A Long Term Outcome Study

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Background: Satisfaction with life (SWL) has become a widely studied construct over the past three decades. Little is known about the life satisfaction that bariatric surgery patients experience five or more years following surgery. **Methods:** Patients who underwent bariatric surgery between January 1, 1999 and June 30, 2005 completed a survey examining medical and psychological outcomes which included the Satisfaction with Life Scale (Diener et al, 1985). **Results:** Survey data were obtained from 419 patients who were on average 7.6 years post surgery, of whom 80% were female, 96% were Caucasian, and 73% were married. Most patients (88%) had roux-en-y gastric bypass surgery. Presurgery weight and BMI were 316 lbs and 60.0 units, respectively, and post surgery weight and BMI were 211 lbs and 34.1 units. The mean SWL score was 24.6 (range 5 to 35). This falls at the division between a high and an average score. Fifteen patients scored in the extremely dissatisfied range, whereas 117 patients scored in the highly satisfied with life range. Variables positively associated with SWL were overall health r =.47, life productivity r=.39, and body satisfaction r=.30. Mean overall satisfaction with bariatric surgery (range 0 to 10) was high, 7.8 points. **Conclusions:** Overall, bariatric surgery patients were pleased with their surgery results and reported average to above average life satisfaction 7 ½ years following surgery. Health and life productivity were positively associated with SWL. Bariatric surgery appears to be an important tool to enhance the long term health and life quality of the severely obese.

505-P
Differences Between Bariatric Patients With and Without Problematic Alcohol Use Seven Years Post-Surgery

Valentina Ivezaj *Ypsilanti, MI*; Leslie M. Schuh, David Creel, Joseph Stote, Katharine C. Hudson *Carmel, IN*; Karen K. Saules *Ypsilanti, MI*; Brenda M. Cacucci, David Diaz, Christopher M. Evanson, John M. Huse, Margaret M. Inman, Douglas Kaderabek *Carmel, IN*

Background: A burgeoning research area has focused on alcohol use after bariatric surgery (e.g., Saules et al., 2010). Less is known about differences between bariatric patients who do and do not use alcohol post-surgery. The present study examined problematic alcohol use rates in long-term outcome data and group differences between those who did and did not meet criteria for problematic alcohol use. **Methods:** Participants (N=419) who had bariatric surgery between January 1, 1999 and June 30, 2005 completed a survey on medical and psychological outcomes after surgery. **Results:** Participants were primarily White (96%) and female (80%), with a mean age at surgery of 48.4 years, current BMI of 34.2 units and time since surgery of 7.6 years. A subgroup (13.3%) met criteria for problematic alcohol use based on the CAGE cut-off score of ≥ 2. Relative to those who did not meet criteria for problematic alcohol use, patients who met criteria post-surgery responded similarly well on various measures of success, including weight loss, medical conditions, and reported emotional problems. Nonetheless, those who met criteria for problematic alcohol use post-surgery were more likely to seek help for mental health conditions than those who did not meet criteria; however, the problematic alcohol use group was likely to present to treatment due to depression and anxiety, not alcohol use. **Conclusions:** Findings highlight a subgroup of post-bariatric patients that may be struggling with alcohol use but presenting to treatment for other comorbid issues. Mental health providers working with post-bariatric patients should routinely query about alcohol use. Future research is needed to better understand the potential unique treatment needs of post-bariatric patients who may be at risk for abusing alcohol post-surgery.

506-P
Exercise Tolerance and Physical Activity Patterns Among Bariatric Surgery Candidates

David Creel, Leslie M. Schuh, Adrienne Gomez, Christina Reed, Brenda M. Cacucci, David Diaz, Christopher M. Evanson, John M. Huse, Margaret M. Inman, Douglas Kaderabek *Carmel, IN*

Background: The purpose of this study was to determine exercise tolerance and physical activity patterns among individuals seeking bariatric surgery. **Methods:** This investigation is part of an ongoing physical activity study in which bariatric surgery patients are randomly assigned to receive usual care, pedometer use, or individualized exercise counseling before and for 6½ months postoperatively. The current data are baseline information collected before surgery. Participants (n=68) wore a GT3X accelerometer (ActiGraphTM) for approximately two weeks. Participants completed demographic and activity-related questionnaires. On the same day as randomization, each participant (n=92) completed a submaximal graded exercise test on a treadmill. The test was terminated after the rating of perceived exertion (RPE) reached 16 (hard to very hard on the 6-20 Borg Scale) or 70% maximal heart rate (MHR; Karvonen formula) was achieved. **Results:** Most participants planned to undergo roux-en-y gastric bypass surgery (77/92). They had a mean age of 42 years and BMI of 46.6 (weight 290 lb). They were predominantly female (81%), Caucasian (83%), and married (61%). Accelerometer data revealed that on average, participants spent 81% of their time in sedentary activity, 13% in light activity, 5% in lifestyle activity and 1% in moderate intensity activity. Preoperative exercise testing revealed variability in fitness. On average, patients considered 3.5 MET activity as "somewhat hard"; however, 31% of participants considered activity of less than 3 METs as somewhat hard to very hard. Most participants reported an RPE of 16 prior to reaching 70% MHR. **Conclusions:** Patients awaiting bariatric surgery engage in mostly low intensity physical activity. Many morbidly obese individuals will consider activities < 3 METs (walking 2.5mph) as challenging.

507-P
Rates of Problematic Substance Use and Other Excessive Behaviors in Post-RYGB Patients

Melissa E. Pulcini *Ypsilanti, MI*; Leslie M. Schuh *Carmel, IN*; Karen K. Saules *Ypsilanti, MI*; David Creel, Joseph Stote, Katharine C. Hudson, Brenda M. Cacucci, David Diaz, Christopher M. Evanson, John M. Huse, Margaret M. Inman, Douglas Kaderabek *Carmel, IN*

Background: Research suggests that post-roux-en-y gastric bypass (RYGB) patients are overrepresented in the inpatient substance use disorder (SUD) treatment population. However, the rate of SUDs and other behavioral excesses among the post-RYGB population is unclear. **Methods:** Participants (N=362) who had RYGB surgery at the St. Vincent Bariatric Center of Excellence from 1/1/1999 to 6/30/2005 completed a survey on medical and psychological outcomes after surgery. The CAGE Questionnaire was used to screen for alcohol use problems in the past 30 days, using a cut-off score of ≥ 2. New onset problems were defined as those occurring in the postoperative period but not during the preoperative period. **Results:** Participants (age=55.6 yrs) were mostly female (80%) and Caucasian (96%) and had a total body weight loss of 33.5% at 7.5 years post-surgery. Although patients experienced significant mean improvements in physical and mental health compared to presurgery, a minority reported potential problems with substance use or behavioral excesses on screening questions. 16% reported postoperative excessive spending (43.4% new onset), 3.2% postoperative excessive gambling (72.7% new onset), 9.0% abuse of prescription pain, anxiety, or sleep medication during the postoperative period (i.e., using more than prescribed or for a different reason than prescribed), and 5.7% met criteria for alcohol use problems in the past 30 days. Finally, 2.0% reported seeking substance abuse or addiction treatment during the postoperative period. **Conclusions:** A minority of post-RYGB patients reported potentially problematic substance use or other behavioral excesses, and many of these difficulties had not occurred before surgery. Professionals involved with postoperative bariatric care should routinely query about substance use and other maladaptive behaviors.

508-P
Effect of Bariatric Surgery on Cardiometabolic Risk in Elderly Subjects: A Population-Based Study

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Background: Obesity is a major cardiovascular (CV) risk factor. Bariatric surgery (BarSx) is an approved therapeutic alternative for class II-III obesity but very few reports have assessed the effect of BarSx on cardiometabolic variables and long-term CV risk in the elderly. **Methods:** We performed a population-based study from 1990-2009, of 40 consecutive elderly (age≥60years) residents of Olmsted County, MN, with class II-III obesity treated with BarSx. Data were obtained from the Rochester Epidemiology Project. Metabolic syndrome (MetS) was defined using AHA/NHLBI criteria (increased triglycerides, low high-density lipoprotein, increased blood pressure, increased fasting glucose, and BMI as a modified measure of obesity instead of waist circumference). Change in CV risk factors, MetS prevalence, and impact on predicted CV risk using the Framingham risk score was ascertained at a year post-operatively and assessed statistically. **Results:** Baseline mean age and BMI were 64 ± 4 and 45 ± 6 kg/m2, resp., and 28/40 (70%) were female. One subject died during the 11month study period after BarSx from respiratory complications related to BarSx, and one subject was lost to follow-up. %Excess weight decreased by 61% (p<0.001) at a year. Prevalence one year after BarSx decreased for diabetes (80 to 43%; p<0.001), hypertension 88% to 74% (p=0.05), dyslipidemia (58 to 23%; p<0.001), and sleep apnea (63 to 37;p<0.001). MetS prevalence decreased from 80 to 45% (p<0.002). Using diagnostic criteria other than BMI for MetS did not alter our results. Baseline risk was 14±10% which changed at follow-up at 8 ±4% (mean difference -5 ±1%;p<0.001). **Conclusions:** In elders, BarSx induces considerable weight loss, improves CV risk factors, and decreases markedly the prevalence of MetS, in class II-III obesity and is an effective obesity treatment in this high-risk population.

509-P
Diagnosis of Eating Disorder Not Otherwise Specified Relates to Behavioral Adherence and Complications One Month After Weight Loss Surgery

Julie Merrell, Leslie Heinberg, Amy K. Windover, Megan Lavery, Kathleen Ashton *Cleveland, OH*

Background: A higher prevalence of eating disorder not otherwise specified (EDNOS) has been found amongst severely obese individuals. Responders to a brief intervention prior to weight loss surgery (WLS) have shown greater postoperative weight loss than non-responders. Less is known about the link between preoperative EDNOS and postoperative complications and adherence. This study examined the relationship between preoperative EDNOS and 1-month postoperative behavioral adherence, medical and psychological complications. **Methods:** Data were analyzed from patients (n=230; 72.6% Female; 69.4% Caucasian; Mean Age= 47.79, Mean preoperative BMI=50.41 kg/m2) who completed a one-month postoperative psychology appointment and behavioral questionnaire. Patients diagnosed with EDNOS were compared to patients without an eating disorder diagnosis on behavioral adherence and postoperative complications. **Results:** Patients diagnosed with EDNOS were more adherent with protein intake (t =3.99; p < .05), but less adherent with exercise (t =4.65; p < .05) at one month and indicated greater postoperative anxiety (X2=4.83, p<.05), depression (X2=4.18, p<.05), and sexual/intimacy concerns (X2=6.33, p<.05). EDNOS diagnosis was also associated with a trend for greater incidence of dehydration, rehospitalization, and body image concerns (X2=3.16, p≤.06; X2=3.34, p≤.06; X2=6.12, p≤.06 respectively). **Conclusions:** A baseline diagnosis of EDNOS was associated with behavioral adherence as well as psychological and medical complications one month after WLS. Psychiatric symptoms and behavioral adherence should be closely monitored postoperatively and one month after WLS may be an optimal time for intervention. Future research should focus on the impact of EDNOS treatment and behavioral adherence postoperative WLS.

510-P
The Impact of Sleeve Gastrectomy as Compared to Adjustable Gastric Band on Active and Total Ghrelin and Other GI Hormones and Their Influence on Satiety and Hunger

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Background: Sleeve Gastrectomy (SG) is a relatively new procedure that has been proposed as a potential definitive treatment for morbid obesity. The mechanism of action of SG remains unclear but may include increased restriction, alterations in gastric emptying or increased satiety related to alterations in satiety hormones. The data on the effect of this procedure on satiety hormones and their influence on satiety and hunger are still limited. **Methods:** Thirty female patients were involved in this cross sectional study. Patients were divided into three groups, ten each, including post Sleeve Gastrectomy (SG), post Adjustable Gastric Band (AGB) and obese control. All surgical patients were ≥12 months post-surgery (period of weight stabilization). Groups were matched by age and BMI. Blood was collected after overnight fast, before and after standardized meal. Satiety was assessed by Visual Analogue Scale (VAS) that was performed after each blood sampling. **Results:** Weight loss defined as excess weight loss percentage (EWL%) was 39.9±18.7 for SG versus 20.8±21.45 for AGB group (p= 0.0683). Average follow up time for the SG group was 16.7 month versus 25.2 month for the AGB group. Ghrelin area under the curve0–120 (AUC) for both active and total were suppressed significantly in the sleeve group as compared to AGB group (P<0.0001). Furthermore, AUC 0–120 of GLP-1 and of PYY were significantly elevated for the SG group as compare to AGB (p< 0.0001). These hormonal changes translated to a significant decrease in hunger and increase in fullness as determined by VAS AUC 0–120 (P< 0.05). **Conclusions:** The changes in active ghrelin, GLP-1 and PYY 3-36 after LSG appear to be related to the better satiety effect. Difference in active ghrelin levels between these operations may be the key to understanding the superiority of LSG over LAGB in sustaining weight loss.

511-P[DT]
Quality of Life Following Panniculectomy For Gynecologic Cancer Surgery

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Background: Little is known about the effect of panniculectomy in gynecologic oncology surgery. The aim of the study was to determine the quality of life effect of panniculectomy when added to gynecologic cancer procedures. **Methods:** Patients undergoing gynecologic oncology surgery in conjunction with panniculectomy between 2003 and 2011 were identified. Patients completed two validated measures of quality of life, Functional Assessment of Cancer Therapy - Gynecology (FACT-g) and Impact of Weight on Quality of Life (IWQOL-lite). Quality of life measures were compared pre- and post-procedure, or to the female normative population where appropriate. **Results:** Thirty-one (31) patients met inclusion criteria and 26 (84%) were interviewed. The median age of the patient cohort was 57.7 years and the majority (75%) were caucasian. Median pre-operative weight was 155.5kg and the median BMI was 56.8. Fifty-seven percent of patients underwent surgery for endometrial cancer, and 93% had a hysterectomy with bilateral salpingo-oophorectomy. Nearly all patients maintained their post operative weight or continued to lose weight during the follow up period. FACT-g assessment showed that panniculectomy was associated with superior social well being (23.3 vs.19.8) and functional well being (22.2 vs.18.3) when compared to that of the general US female population (p<0.05). In addition, overall quality of life was also superior in the panniculectomy group (87 vs. 79.6, p<0.05). All obesity specific quality of life measures (IWQOL) were significantly improved following panniculectomy, including physical function (33.1 vs 21.3), self esteem (21.4 vs.14.2), sexual life (14.4 vs 9.2), public distress (14.9 vs 9.3), and work (10.9 vs 7.2) (p<0.05). **Conclusions:** Panniculectomy in conjunction with gynecologic oncology surgery results in measurable improvements in quality of life.

512-P
Folic Acid Levels in an Adolescent Bariatric Laparoscopic Adjustable Gastric Band (LAGB) Population

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Background: Folic acid is an essential vitamin in an adolescent's mental functioning. Also, maternal folic acid deficiency has been linked to neural tube defects in developing embryos. Therefore, we sought to describe changes in folic acid levels of adolescents post LAGB surgery. **Methods:** A prospective cohort study: 35 adolescents (mean age 16, 80% female) were enrolled in an FDA IDE study of the safety and efficacy of the LAGB in adolescents. At study entry, a baseline serum folic acid level was obtained and was obtained again at 9 to 12 months postoperatively. Additionally, subjects were given dietary guidance from a Registered Dietitian and were counseled to take a multivitamin supplement with 400 micrograms of folic acid both pre- and post-operatively. Mean, standard deviation, rates of deficiency (folic acid level <6), and percentage of patients with decreasing folic acid levels were calculated. Paired t-tests were used to analyze the change in folic acid levels following surgery. **Results:** Mean baseline folic acid was 15.2 ng/mL (SD=5.7). Mean folic acid at 9-12 months post LAGB surgery was 11.9 ng/mL (SD=4.9). There was a significant decrease in folic acid levels following surgery: $t(34) = 3.29$, $P<.01$. At baseline, 5.7% (n=2) of subjects were folic acid deficient. At 9-12 months post-surgery, 5.7% (n=2) of subjects were deficient, although these were not the same subjects who were folic acid deficient at study entry. 74% of subjects had a decrease in folic acid levels from study entry to 9-12 months after LAGB surgery. **Conclusions:** Folic acid levels significantly decreased post LAGB surgery. It is uncertain whether increased folic acid supplementation or more intensive counseling around vitamin adherence would be beneficial. Further research is indicated to determine trends in folic acid levels after 9-12 months post LAGB surgery.

513-P
Effectiveness of Adjustable Gastric Banding Based on Baseline BMI

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Background: Adjustable gastric banding (AGB) has been established as an effective treatment to reduce weight in obese patients (> 40 kg/m2 OR > 30 kg/m2 with > 1 co-morbidity).. Here we summarize the efficacy of AGB based on baseline BMI at 2.5-year as well as safety endpoints. **Methods:** This ongoing 5-year, prospective, observational study will assess weight reduction, comorbidities and health related-quality of life after the LAP-BAND AP® System insertion. This is an interim analysis of subjects (n=359) who have completed or exited at 2.5 years. The primary endpoints are percent weight loss (%WL) and percent excess weight loss (%EWL) from baseline; the primary safety endpoints are adverse events. **Results:** At baseline, subject BMI (in kg/m2) distribution was as follows: <40: 27%; 40 to 45: 34%; 45 to 50: 22%; >50: 17%. Mean respective %WL values were -17.3, -20.2, 18.5 and -19.6 at 2.5 yrs. The overall population achieved a %WL of -18.9. The %EWL for these respective groups at 2.5 years was -52.4, -49.3, -39.3 and -36.9. The interim safety assessment indicated 34% and 16% of subjects experienced an AE or SAE, respectively, with 80% of AEs and 49% of SAEs being device-related. Explantation and revision rates were 4.2% and 3.3%. There were no statistically significant differences in AE/SAE rates between the baseline BMI categories ($\chi 2$; p=NS). **Conclusions:** This 2.5-year interim analysis suggests that baseline BMI does not appear to correlate with %WL, with each group experiencing similar overall weight loss. The variation observed between %EWL and baseline BMI likely reflects the fact that those with a higher starting BMI have more excess weight at study commencement. The data indicate that the LAP-BAND® is safe and effective over a broad range of baseline BMIs. Hence, choice of which bariatric procedure to perform should be based on other clinical factors.

514-P
HDL Increases Correlate With Weight Change After Laparoscopic Sleeve Gastrectomy (LSG)

Gladys W. Strain, Taha Saif, Faith Ebel, Gregory Dakin *New York, NY*; Michel Gagner *Montreal, Canada*; Alfons Pomp *New York, NY*

Background: Since there is an increasing acceptance of the LSG and limited information on cardiac risk factors we assessed lipid profiles. **Methods:** Retrospective review of patient records pre and post LSG was performed. **Results:** Eighty one patients (67% female) had presurgery lipid profiles and follow-up observations (31 at 1 year, 20 at 3 years and 19 at 5 years. The three follow-up groups were not significantly different in gender. The mean age was older in the 5-year group [52.3 years vs. 45.3 and 43.7 in the 3-year and 1-year groups, respectively (P=0.07)]. The pre surgery mean BMI for all patients was 55.7 and the % EBMIL was 60.8%, yr 1, 63.6% yr 3 and 45.7%, yr 5. Lipid measurements were within the normal ranges for all parameters, however, at baseline approximately 35.8 % had abnormalities. At 1 yr cholesterol, LDL, and HDL increased while triglycerides decreased. At year 3, cholesterol, LDL, and triglycerides decreased and HDL reached its highest level. Yr 5 showed a reversion toward baseline. With statistical adjustments for baseline differences none of the lipid changes reached statistical significance. Year 3 compared to baseline for HDL had a significant correlation with weight loss ($P = 0.03$, correlation coefficient 0.50), however the P value for the change was 0.07. The percentage of patients receiving medication for dyslipidemia did not change during these observations. **Conclusions:** LSG did not have a significant effect on lipid parameters. HDL increases correlated with weight change although they did not meet significance criteria.

515-P
Visceral Adiposity After Bariatric Surgery: Improvement in Depressive Symptoms and Fatigue

Nana Gletsu-Miller *West Lafayette, IN*; Dominique Musselman *Miami, FL*; Edward Lin *Atlanta, GA*

Background: Evidence suggests that visceral obesity promotes dysregulation of mood. We sought to determine the specific relationships of visceral adiposity with depression and fatigue in severely obese women (N = 19) prospectively during weight loss for 6 months following gastric bypass surgery. **Methods:** Total adipose tissue (TAT) mass, and abdominal visceral (VAT) and subcutaneous adipose tissue (SAT) volumes were measured by air displacement plethysmography, and computed tomography, respectively. Validated questionnaires included the Zung Depression and Neurotoxicity Rating scales (measuring the severity of various psychiatric, cognitive, neurovegetative, and somatic symptoms), and the Multidimensional Fatigue Inventory (measuring general, physical, and mental fatigue, reduced motivation and activity). Pearson correlations and repeated measures analysis of variance were used to assess relationships and changes over time. **Results:** Body mass index decreased from baseline to 6 months (46.5±0.8, 33.5±1.2kg/m2), due to decreases in TAT, VAT and SAT (all $P<0.05$). Subjects experienced decreases in severity of depression and fatigue (all scales $P < 0.000$). At baseline, VAT was correlated to depression (vs. Zung, $r = 0.53$) and fatigue measures (vs. general, $r = 0.50$; physical, $r = 0.51$; mental, $r = 0.51$; reduced motivation, $r = 0.74$; all $P<0.05$). TAT was correlated to physical fatigue only ($r = 0.48$). At 6 months, longitudinal correlations were found between decreased VAT and mental fatigue ($r = 0.50$) and reduced motivation ($r = 0.55$); but no relationships were found for TAT and SAT. **Conclusions:** In conclusion, weight loss via gastric bypass improved depressive symptoms and fatigue, mediated in part by decreases in visceral adiposity.

516-P
Post-RYGB Outcomes Among Those With and Without Current Substance Use Disorders: A Matched Controlled Study

Melissa E. Pulcini, Karen K. Saules *Ypsilanti, MI*; Leslie M. Schuh *Carmel, IN*

Background: Post-Roux-en-Y gastric bypass (RYGB) patients may be at elevated risk for developing or relapsing to substance use disorders (SUDs). However, little is known about how the surgical outcomes of these individuals differ from those who do not experience SUDs in the postoperative period. **Methods:** Questionnaire data from 26 SUD inpatients with a history of RYGB surgery were compared with data from 26 controls with a history of RYGB surgery and absence of postoperative SUDs. Controls matched on sex, age, and time lapse since surgery were identified using a database from St. Vincent Bariatric Center of Excellence. Surgical failure was defined as < 50% excess weight loss (EWL). Depression and quality of life were measured using the Patient Health Questionnaire-9 (PHQ-9) and the World Health Organization Quality of Life-BREF (WHOQOL-BREF), respectively. **Results:** Participants had a mean age of 48.9±8.2 years, were a mean of 6.9±3.0 years post-surgery, and were mostly female (81%). Preoperative BMI was not significantly different between the SUD and control group (54.3±12.4 kg/m2 vs. 53.5±8.7 kg/m2). A significantly greater proportion of

the control group met criteria for surgical failure than did the SUD group (34.6% vs. 11.5%, p<.05). There were no significant differences between the SUD and control groups in mean %EWL (74.4±22.1 vs. 66.5±27.6) or mean percent total body weight change (-38.2±11.8 vs. -34.7±15.0). The SUD group had significantly higher PHQ-9 (14.5±5.7 vs. 7.0±7.0, p<.01) and lower WHOQOL-BREF scores relative to the control group, indicating greater symptoms of depression and lower quality of life, respectively. **Conclusions:** Despite having relatively worse psychosocial outcomes, RYGB patients in treatment for postoperative SUDs achieve weight loss outcomes comparable to those who do not evidence SUDs in the postoperative period.

517-P
Robotic-Assisted Sleeve Gastrectomy For Obesity and Diabetes: A New Approach

Eduardo H. Pirolla *Sao Paulo, Brazil*

Background: The bariatric surgery and / or metabolic increasingly has established itself as the only truly effective and permanent treatment in most cases for the treatment of different forms of obesity and their comorbidities. The approach has shown some advantages robotics techniques in selected cases, either by severe obesity or metabolic diseases. **Methods:** It was evaluated as one of the early experiences of robotic assisted resection in South America, three patients with severe obesity, and sleeve gastrectomy performed to treat this disease. The patients had other severe comorbidities, characterizing the metabolic syndrome. **Results:** Patients were followed up for 1 year, average loss of 50% to 60% of their initial weight, normalization of blood sugar level, blood pressure, cholesterol and HbcA1. Two of the patients had sleep disturbances, which were solved. Criteria such as postoperative pain and increased intra operative viability were evaluated and considered best. **Conclusions:** The surgery bariatric / metabolic by robotic technique, was technically feasible, with some advantages, but as a small charge (currently) more than the pure laparoscopic technique. Your information must be restricted to certain cases and with clarification and agreement of the patients. This is a new surgical tool and still requires further action, but that certainly has its place in tramento surgical patients.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Clinical Practice-Based Trials

518-P
Correlations Between Biomarkers of the Metabolic Syndrome and Men and Women With Grade 2 and Grade 3 Obesity

Richard Weil, Xavier Pi-Sunyer, Simon Klebanov, Betty Kovacs *New York, NY*

Background: A large body of data shows positive correlations between metabolic syndrome biomarkers and BMI. However, large data sets such as NHANES typically report only on BMI's from approximately 20 to 35. Missing from the literature is data for correlations between BMI >35 and metabolic syndrome biomarkers. **Methods:** Medical chart review of 196 male and female patients (BMI 35 to 72), age 22-73, in an out-patient weight loss program at the New York Obesity Nutrition Research Center. Patients taking cholesterol lowering agents (n=44, 33.1%), glucose lowering agents (n=16, 14.2%), or anti-hypertensive medication (n=74, 37.8%), were excluded from analyses, depending on the biomarker. For non-medication patients, correlations were determined for the associations between BMI and total cholesterol, LDL, HDL, triglycerides, resting blood pressure, and fasting glucose. Correlations between BMI and the biomarkers were performed for all BMI's together and then for BMI's divided into categories of >35 to 35.9, 40.0 to 49.9, and 50 to 59.9. **Results:** No statistically significant correlations between BMI in any category and total cholesterol, HDL, LDL, triglycerides, fasting glucose, or blood pressure were found. **Conclusions:** NHANES data show that rates of the metabolic syndrome increase in overweight subjects and reach a prevalence of approximately 60% in moderately obese participants with a BMI of approximately 35. We did not find that that trend continued above a BMI of 35 and conclude that the observation of "obese, metabolically lean" extends to men and women with BMI's from 35 to 60 in a majority subset of our population.

519-P
Self Measured vs. Professionally Measured Waist Circumference in a Primary Care Setting

Teresa B. Jensen, Christina Koutsari *Rochester, MN*; Sylvia Santosa *Montreal, Canada*; Jennifer J. Hartman *Rochester, MN*; Lorraine M. Lanningham-Foster *Ames, IA*; Michael D. Jensen *Rochester, MN*

Background: Although waist circumference (WC) is considered an important vital sign for primary care provider office visits, it is difficult to implement WC measures as standard practice. We hypothesized that patients could self-perform WC accurately. . **Methods:** Nurses were trained to perform WC measures in a primary care practice setting. Patients (n = 714, age 34 ± 14 y, BMI 27.5 ± 5.8) were provided with standardized, written/pictorial instructions from the CORE (Center for Obesity Research and Education). Patient and professional (prof) WC measures were performed at the same visit. **Results:** The mean and SD WC were the same for self and prof – 90.9 ± 14.6 cm and the average self-prof WC difference was 0.0 ± 4.9 cm. The absolute self-prof WC difference was 3.9 ± 3.3 cm (mean ± SD), median 2.6 cm, with a range of -18 to +19 cm. Multivariate regression analysis revealed no association between the self-prof WC error and age, BMI or sex. **Conclusions:** The error in patient-performed WC using currently available instructional materials is large enough to degrade the clinical utility. Age, sex and BMI do not explain the sources of error. Unless more robust instructions can be developed, professional measures are the best option for adding WC to primary care vital signs.

520-P
Young Hearts, Strong Starts: A RCT to Enhance Utilization of Pediatric Cardiovascular Risk Reduction Guidelines

Lauren M. Whetstone, Suzanne Lazorick *Greenville, NC*; Helen J. Binns, Adolfo J. Ariza *Chicago, IL*; Connie L. Hobbs, Robert D. Furberg *Research Triangle Park, NC*; Kenneth A. LaBresh *Waltham, MA*

Background: Risk factors accelerating atherosclerosis begin in childhood. Risk reduction, including earlier detection and intervention of obesity, blood pressure (BP) and tobacco exposure, can delay disease. Guidelines for cardiovascular (CV) risk reduction in children were released by the National Heart, Lung and Blood Institute. The purpose of this randomized, controlled study is to accelerate guideline uptake and evaluate pre- and post-intervention risk identification. **Methods:** 32 primary care practices in two states were randomized to intervention or control. Control practices received guidelines only; intervention practices received guidelines, academic detailing, monthly quality improvement webinars, and clinical decision support tools including a mobile device body mass index (BMI) and BP percentile calculator to facilitate point-of-decision risk assessment. Baseline and follow-up chart abstraction will assess measurement, interpretation, and counseling for BMI, BP, and tobacco exposure. **Results:** Baseline data from 963 well child checks of children age 3 – 11 years were abstracted. BMI was recorded in 88% of charts, interpreted in 83% of those with BMI, and management recommended in 30% of those with elevated BMI %tile. BP was recorded in 98% but 0 had interpretation. Recommended smoking assessment and counseling were documented in < 14%. **Conclusions:** Baseline data show BMI interpretation greater than what has been previously reported, although still below 90%. Identification of critical co-morbid risk factors for CV disease of high BP and tobacco exposure are extremely low, revealing opportunities for improvement. This well designed clinical trial will address these revealed deficiencies and test the effectiveness of primary care tools and training, especially a point of decision calculator, to accelerate guideline implementation.

521-P
Effectiveness of a Weight Loss Program in Community-Cased Primary Care Offices: High-Intensity Intervention Versus Low-Intensity Intervention

William C. Haas *Greenville, NC*; Michael Kaplan *Smithtown, NY*; Craig A. Johnston, John P. Foreyt *Houston, TX*; Eric Ravussin *Baton Rouge, LA*; Justin B. Moore *columbia, SC*

Background: Despite the call for primary care providers (PCPs) to offer obese patients intense behavioral therapy for weight loss, few studies have examined the effectiveness of such interventions in real-world, community-based medical practices. This study evaluated the effectiveness of a physician guided weight-loss program implemented in private medical offices over a

12-month period. In addition, the fidelity of program delivery was examined with respect to intervention intensity. **Methods:** Analyses were performed on chart review data from 550 obese patients who took part in a high-intensity (n = 236) or low-intensity weight-loss intervention (n = 314) at either a primary care or a weight loss clinic. High-intensity participants underwent physician-guided behavioral therapy sessions at least twice per month for the first three months, while low-intensity participants attended fewer than two sessions per month during the first three months. All patients were prescribed an energy reduced diet supplemented by meal replacements. **Results:** Among the 150 patients continuing care for 12 months, high-intensity participants (n = 102) achieved significantly greater reductions in body weight than low-intensity participants (n = 48) (15.1 kg vs. 11.0 kg). Moreover, the percentage of high- and low-intensity participants losing at least 5% of their body weight was 87.3% and 70.8%, respectively. Regardless of intervention intensity, participants lost an average of 12.8% of their initial body weight after 12 months. Primary care clinics and weight loss clinics were equally effective at delivery of treatment interventions. **Conclusions:** Primary care physicians can successfully treat obese patients using high- or low-intensity behavioral counseling coupled with meal replacement therapy.

522-P
Patients With Diabetes Who Lose Greater Amounts of Weight Have Greater Reductions in Fasting Lipids, Hyperlipidemia Medications and Associated Costs Compared to Those Who Lose Modest Amounts of Weight

Jeanene Fogli, Linda Gotthelf, Linda Grant *Boston, MA*

Background: Type 2 diabetes is increasing rapidly along with the epidemic rise in obesity. Studies have found that modest lifestyle changes can positively impact the course of diabetes. The purpose of this study was to compare fasting lipids, hyperlipidemia drug use, and related costs and lifestyle behaviors for patients with type 2 diabetes who lost modest amounts of weight (5-10% of initial body weight) with those who lost larger amounts of weight (≥ 20%). **Methods:** Data were analyzed from health risk appraisals of 139 type 2 diabetes patients on diabetes medications when they entered the HMR Program for Weight Management™, a structured program with a range of weight-loss treatment options. All options for weight loss and maintenance focus on the same three lifestyle changes: increased physical activity (≥ 2000 kcal/wk); use of meal replacements (≥ 35/wk in weight loss and ≥14/wk in maintenance); and an increased vegetable and fruit intake (≥ 35/wk). **Results:** At an average of 111 weeks follow-up, 23.3% of those (n=59) who lost 5-10% of initial weight (an average of 20 lbs) had discontinued hyperlipidemia drugs. At an average of 90 weeks follow-up, 41.0% of those (n=80) who lost ≥ 20% of initial weight (an average of 81 lbs) had discontinued hyperlipidemia drugs. Previous estimates of cost savings have been established between $314-$1,428 per year for patients. These data do not reflect the reduction in medication dosages, thereby underestimating the full impact of weight loss. **Conclusions:** In summary, modest weight loss has a positive impact on those with hyperlipidemia and type 2 diabetes in terms of medication and medical costs. Those losing larger amounts of weight experience even greater reductions in medication and costs.

523-P
Patients With Diabetes Who Lose Greater Amounts of Weight Have Greater Reductions in Fasting Blood Glucose, Diabetes Medications and Associated Costs Compared to Those Who Lose Modest Amounts of Weight

Jeanene Fogli, Linda Gotthelf, Linda Grant *Boston, MA*

Background: Type 2 diabetes is increasing rapidly along with the epidemic rise in obesity. Studies have found that modest lifestyle changes can positively impact the course of diabetes. The purpose of this study was to compare fasting blood glucose, oral diabetes medications, insulin use, and related costs for patients with type 2 diabetes who lost modest amounts of weight (5-10% of initial body weight) with those who lost larger amounts of weight (≥ 20%). **Methods:** Data were analyzed from health risk appraisals of 139 type 2 diabetes patients on diabetes medications when they entered the HMR Program for Weight Management™, a structured program with a range of weight-loss treatment options. All options for weight loss and maintenance focus on increased physical activity, use of meal replacements, and increased vegetable and fruit intake. **Results:** At an average of 111 weeks follow-up, 19.0% of those (n=59) who lost 5-10% of initial weight (average 20 lbs) had discontinued insulin and 29.8% had discontinued oral medications. At an average of 90 weeks follow-up, 53.3% of those (n=80) who lost ≥ 20% of initial weight (average 81 lbs) had discontinued insulin and 57.7% had discontinued oral medications. This correlates with an estimated cost savings in excess of $750 per year for patients discontinuing insulin and $700 per patient discontinuing oral medications. These data do not reflect the reduction in medication dosages or other costs associated with diabetes care, thereby underestimating the full impact of weight loss. Previous estimates indicate medication accounts for less than 13% of total diabetes treatment costs. **Conclusions:** In summary, modest weight loss has a positive impact on those with type 2 diabetes in terms of medication and medical costs. Those losing larger amounts of weight experience even greater reductions in medication and costs.

524-P
High-Risk Patients With Multiple Co-Morbidities Reduce Medical Risk Factors and Medications After Participating in Weight Management Program

Linda Gotthelf, Jeanene Fogli, Linda Grant *Boston, MA*

Background: Medically complex obese patients with multiple co-morbidities can be difficult to treat and represent a large portion of medical spending. Therefore, it is important for these patients to reduce the number of co-morbid conditions given the additive and interactive effects of risk factors. The purpose of this study was to examine co-morbidities in patients who entered a weight management program. **Methods:** Data were analyzed from health risk appraisals of 112 patients with ≥ 10 elevated medical risk factors when they entered the HMR Program for Weight Management™, a structured program with a range of weight-loss treatment options. **Results:** The average weight loss for medically supervised patients was 55 lbs, after average follow-up 166 weeks (3.2 years). Patients substantially lowered the number of elevated risk factors (11 to 3) and made substantial lifestyle changes, including; increasing physical activity (425 to 2249 kcal/wk), decreasing dietary fat (>40% to 28%) and increasing vegetables and fruit. Average reductions in all measured risk factors, included; 14.5% in total cholesterol/HDL; 29.2% in trigylcerides; 12% in fasting blood glucose; 13 systolic and 9 mm/Hg diastolic blood pressure. 28.7% of cholesterol, blood pressure or diabetes medications (oral or insulin) had been eliminated. Since this does not include reductions in medication dosages, this is an underestimate of the full impact of lifestyle changes. **Conclusions:** In summary, patients participating in a weight management program made substantial lifestyle changes thereby reducing elevated risk factors, multiple co-morbid conditions and medication use.

525-P
Plasma Lipids and HDL Metabolism in Obese and in Non-Obese Type 2 Diabetes (T2DM) Patients With Equal Glycemic Levels

Marilia C. Sprandel, Priscila O. Carvalho, Oscar G. Laverdy, Alexandre Segre, Antonio Casella-Filho, Antonio C. Lerario, Whady A. Hueb, Raul C. Maranhão *Sao Paulo, Brazil*

Background: T2DM is consequent to genetic alterations aggravated by environmental factors, such as excess caloric intake and sedentarism that progressively increase insulin resistance. T2DM dyslipidemia is the major risk factor for T2DM-related cardiovascular disease (CVD). The aim was to investigate whether obesity can worsen dyslipidemia and alter HDL metabolism in T2DM patients independently from the glycemic levels. **Methods:** 83 obese (BMI ≥ 30 kg/m2, aged 61±9) and 75 non-obese (BMI < 30 kg/m2, aged 64±8 yrs) T2DM patients, with similar glycemic (127±40 vs 132±39 mg/dL, respectively) and glycated hemoglobin levels were compared for lipid and apolipoprotein plasma profile and an in vitro assay of radioactive lipid transfers from a lipid donor nanoemulsion to HDL, a step of HDL metabolism. Participants were not taking statins. **Results:** Total cholesterol (205±46 vs 210±41 mg/dL), LDL-cholesterol (134±43 vs 138±38), non-HDL cholesterol (168±47 vs 171±41) and triglycerides (188±111 vs 173±92 mg/dL) were not different in obese and non-obese T2DM, but HDL-cholesterol was lower in obese (37±8 vs 40±10 mg/dL, p=0.04). Apolipoproteins A1 (132±22 vs 139±29 mg/dL) and B (99±19 vs 103±22), and the transfers of lipids to HDL were equal in both groups. **Conclusions:** In T2DM patients with similar glycemic levels, although in all the other lipid parameters there was no difference between obese and non-obese patients, the obese had lower HDL-cho-

lesterol concentration, which is an important risk factor for atherogenesis. Therefore, it can be assumed that despite the glycemic control was equal, obese patients should be considered at greater CVD risk and this finding highlights the importance of weight loss in T2DM management.

526-P
Complex Treatment of NAFLD Patients Without Histological Answer on Previous Therapy

Evgeny Sas, Vladimir Grinevich, Oleg Efimov *St.-Petersburg, Russian Federation*

Background: Objective: The objective of this study was to assess the effectiveness of complex treatment of NAFLD patients without histological answer on previous therapy. **Methods:** Prospective Study of 36 NAFLD patients (38-46 years old, BMI>30). All patients underwent careful medical examination, histological evaluating baseline and 2 years later, metagenomic assessment of gut microbiota. All patients followed the basic treatment scheme included dietary, physical regimen, polyunsaturated phosphatidicholine – PUPC (Essentiale® forte N), Nifuroxazide, and prebiotic Protobiol. **Results:** We find positive correlation between appetite and gut microbiota concentration, the most powerful correlation was with: Lactobacillus (p<0,01), Clostridiales (p<0,01), Clostridium (p<0,01), Faecalibacterium (p<0,01), Acidaminococcus (p<0,01), Anaerotruncus (p<0,02), Desulfovibrio (p<0,01), Holdemania (p<0,05). People with high concentration of Clostridiales, Faecalibacterium, Dorea, Paraprevotella in gut microbiota were more inclined to abdominal form of obesity. Histological evaluation find positive correlation between inflammation level and gut microbiota concentration: Alistipes (p<0,048), Faecalibacterium (p<0,02), Catenibacterium (p<0,01), Streptococcus (p<0,03), Peptostreptococcaceae (p<0,03). Moreover the results of liver biopsy (histological examination) and Fibromax test showed, that in patients with NAFLD additionally treated by complex treatment, the progress of hepatic fibrosis was significantly slowly. In addition after 12 months of treatment its reduction in IG of steatosis (p<0,02) and disease activity (p<0,03) by Metavir scale. **Conclusions:** Patients with resistant form of NAFLD requires complex treatment with PUPC, Nifuroxazide and prebiotics Protobiol. Metagenomic assessment of gut microbiota in future could explain new pathogenetic links of NAFLD.

527-P
Medican Nutrition Therapy in the Treatment of Type 2 Diabetes Mellitus

Stanford Owen *Gulfport, MS*

Background: Medical Nutrition Therapy (MNT) is Step One therapy for Type 2 Diabetes Mellitus. It is rarely offered in clinics for a variety of reasons and dietary counseling, if offered, is usually brief and unsustained. A self-teach, simple, yet effective MNT approach is needed for the primary care or specialty clinic treating diabetes mellitus. **Methods:** Retrospective chart reviews spanning eight years was performed on patients using PrescriptFit MNT. Sixty five patients met criteria for analysis (all data points were available) including 33 adult women and 32 men. Weight, A1C, medication, lipids, proteinuria, and neuropathy were measured. All patients were given self-teach instruction on use of PrescriptFit MNT, a physician-developed program utilizing meal-replacement products, 12 major food groups without portion control, and a simple workbook recording Splurging, minutes of physical activity, and which food groups were utilized. **Results:** PrescriptFit MNT significantly reduced HbgA1C from an average of 8.6% to an average of 6.0%. Weight loss averaged 12%. 28% achieved an A1C <5.5 (remission). Ninety percent were able to discontinue insulin therapy and 64% were able to discontinue sulfonylurea medication. These data suggest that PrescriptFit™ MNT is an effective long term Nutrition Therapy strategy for Diabetes Mellitus Type 2. Remarkably, no hospitalizations were recorded in this group spanning 8 years. **Conclusions:** Long term effective treatment of Type 2 Diabetes Mellitus is possible via a self-teach office based clinical MNT approach by teaching food group strategy combined with engineered meal-replacment food products. The fact that this was achieved in Mississippi, the most obese and diabetic state is also noteworthy.

528-P
Weight and Body Composition Changes After a 10-Day Cycle of Ketogenic Enteral Nutrition

Gianfranco Cappello, Annalisa Cappello, Antonella Franceschelli *Rome, Italy*

Background: Ketogenic Enteral Nutrition (KEN) consists in a 10-day cycle of Home Enteral Nutrition through a small nasogastric tube with a continuous infusion of a protein solution (0.80-0,90 gr/kg/day) to obtain ketosis and a fast weight loss of overweight or obese patients. During KEN all patients completely stop oral feeding. **Methods:** 3128 patients (BMI=38.4±7.1) underwent a cycle of KEN. With a BIA Handy 3000 apparatus Body Composition was cheched in all patients (1) before, (2) after KEN and (3) 10 days after a period of low-carbohydrate, normocaloric diet which followed the KEN treatment. **Results:** Mean weight (kg) was (1) 106.8*,(2) 99.9*,(3)100.7.Mean Total Body Water (kg) was (1) 44.9*, (2) 41.2*, (3) 43.5. Mean Fat (kg) was (1) 44.4*,(2) 42.0*(3) 40.3. (*) means p<0.0001 with subsequent value. **Conclusions:** During a 10-day KEN cycle mean weight loss is 6.9kg while fat loss is only 2.4 (34.7%). After KEN weight goes up of .8kg but fat reduction goes on. From these data we can suppose that fat cells loosing triglicerides absorb water from interstitial fluids. Afterwards fat cells collapse and impedentiometry reads the real value of fat loss: 4.1 kg (67,2%)

529-P[DT]
Challenges in the Use of Hemoglobin A1c For the Diagnosis of Diabetes and Prediabetes in Youth: Variation Between Methodologies

Christine L. Chan, Kim McFann, Kristen J. Nadeau, Lindsey Newnes, Philip Zeitler, Megan Kelsey *Aurora, CO*

Background: The American Diabetes Association (ADA) incorporated hemoglobin A1c (A1c) into the diagnostic criteria for diabetes in 2010 (<5.7% normal, 5.7-6.4% prediabetes, ≥6.5% diabetes). We measured A1c by multiple methods in a sample of obese adolescents. **Methods:** A1c was collected on 60 adolescents, 10-18 yrs, BMI≥85th%ile, not on pharmacologic diabetes treatment. A1c was run on all subjects via immunoassay (IA; DCA Vantage Analyzer). 29/60 subjects had A1c measured on the same sample by high performance liquid chromatography (HPLC; Bio-Rad Variant II). A1c obtained from community hospitals (C) prior to enrollment were available for 43/60 subjects. Concordance in diabetes classification status among assays was determined. Linear regression was performed. Differences in means were analyzed with paired t-tests. Bland-Altman plots explored the bias between measurements. **Results:** Mean A1c differed by method: IA=5.579%+/-0.296, HPLC=5.7%+/-0.327, and C=5.972%+/-0.350 (p=0.0065 IA vs HPLC; p<0.0001 IA vs C). Concordance in diabetes classification between IA and HPLC and IA and C was 83% and 51%, respectively. Linear regression of IA on HPLC found Y=1.70331+0.6800x and correlation of IA and HPLC was significant (r2=0.5668, p<0.0001). IA was systematically lower than HPLC by an average of -0.12%+/-0.22. The difference between actual values ranged from 0.2% to -0.7%. **Conclusions:** Assay standardization, convenience, and incorporation of A1c into the diagnostic criteria have led to increased A1c screening rates in obese adolescents, as well as increases in diagnoses of prediabetes. However, important biases are introduced by differing methodologies, with some devices consistently overestimating or underestimating results. A1c values obtained during screening of obese adolescents should be interpreted with caution.

530-P
Personalized Reminder Phone Calls: Do They Improve Attendance Rates at Multidisciplinary Obesity Clinics?

Ihuoma Eneli, Amanda Wodzisz, Rhyan Williams, Teresa Brode *Columbus, OH*

Background: High attrition rates in pediatric multidisciplinary obesity programs have been linked to limited program efficiency and sustainability. While a number of studies have examined possible predictors for attrition, there has yet to be studies on the efficacy of interventions. Our goal was to determine whether personalized reminder phone calls by clinic staff improve attendance in a tertiary care obesity clinic. **Methods:** Clinic staff made personalized reminder calls one weekday prior to the appointment for patients scheduled between Jan 2011 and Dec 2011. Each patient also received the standard hospital ten day reminder letter and an automated phone call 72

hours prior to their appointment. **Results:** Over 12 consecutive months, reminder calls were conducted for a mean number of 17 out of 22 clinic days per month (77 %) with a range of 11 to 21 days. There were 4379 calls made during the study period; 44.5% were answered, 37.4% received a voicemail message, and 16.9% could not be reached. Of the calls answered; 65.9% arrived to their appointment, 12.1% cancelled or rescheduled and 21.8% were no shows. Of the 2377 unanswered calls (received a voicemail message or could not be reached); only 56.3% arrived for their appointment while 43.6% did not show. The average personnel cost to make the calls for the year was $3120. Additional cost benefit analysis is on-going and will be presented. **Conclusions:** Personalized reminder phone calls improve attendance rates at multidisciplinary obesity clinics. At a minimal cost to the center, increasing the rate of attendance also bears a positive impact on revenue and thus sustainability.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Clinical Studies on Mechanisms, Including Imaging

531-P
Obesity and Bone Marrow Fat: Relationship With Regional Adiposity and Leptin

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Background: Obesity was thought to be protective against osteoporosis. Howeveer, not all fat depots have a positive relationship with bone mineral density(BMD). Studies found that lumbar BMD has an inverse relationship with bone marrow fat content (BMF). A positive association between visceral adipose tissue (VAT) and BMF has been shown in obese or diabetic women. To our knowledge, no studies look at the relationship between BMF and regional fat depositions in men. A mechanistic explanation of the impact of VAT on BMF may be the fact that bone and fat cells in bone marrow share a common precursor stem cell under the influence of hormones such as Leptin. Our objectives were to observe the relationships of BMF with 1) VAT and abdominal subcutaneous adipose tissue(aSAT), 2) calf subcutaneous(cSAT) and intermuscular(IMAT) adipose tissue and 3) Leptin in older men. **Methods:** Non-diabetic men were recruited for this study. BMF was measured by H-MRS in the lumbar vertebrae (L1-L3); percent body fat(BF) by DXA. VAT, aSAT, cSAT and IMAT were assessed by quantitative CT. Serum Leptin was measured by RIA. **Results:** 149 men (age 80.4±4.7) participated, mean BMI was 28.0±3.7kg/m2 (range 18.8-38.4). Mean BMF was 55.5±11.1% (23.5-76.4). Mean BF was 27.8±4.8% (17.5-40.9). Average BMF(L1-L3) was correlated with BF(r=0.35,P=0.01) and VAT(r=0.34,P=0.01), but was not correlated with BMI, aSAT, cSAT or IMAT.The relationship between BMF and VAT remained after controlling for BMI. BMF was positively correlated with Leptin(r=0.17,P=0.03). **Conclusions:** The positive relationship between BMF and VAT observed in women is also true in older men. BMF was positively correlated with plasma Leptin, but not with other regional fat depositions such as IMAT and SAT. Further studies are needed to explore the relationship between VAT and BMF, particularly the hormonal influence of adipokines on BMF.

532-P[DT]
Ethnic Differences in Ectopic Fat Deposition in Pre-Diabetic Overweight African-American (AA) and Latino (LA) Adolescents

Claudia Toledo-Corral, Tanya L. Alderete, Sherryl Esplana, Houchun H. Hu, Krishna S. Nayak, Michael Goran, Marc J. Weigensberg *Los Angeles, CA*

Background: The objective of this study was to examine differences in visceral adipose tissue (VAT), and hepatic (HFF) and pancreatic fat fraction (PFF) in obese minority youth with pre-diabetes (PD) relative to normal glucose tolerance (NGT) and to further examine whether the altered ectopic fat pattern was different in Latino (LA) vs African American (AA) youth. **Methods:** From 146 healthy, overweight/obese adolescents (56AA/90LA, 70M/76F; age 15.5±1.2 yrs; BMI z-score: 2.1±0.5), we defined 2 groups: NGT (n=106); and PD (n=40: FG ≥100mg/dL and/or 2hr glucose 140-199mg/dL and/or A1C 6.0-6.4%). Measures included A1C; OGTT glucose and insulin; VAT, subcutaneous abdominal adiposity (SAT), HFF and PFF by MRI; body fat by DEXA. **Results:** Using a 2-way ANOVA, there was no main effect of ethnicity or PD on age, sex, Tanner stage, BMI z-score, total % body fat or SAT. Compared to NGT, PD had greater HFF (8.3±1.4 vs. 3.9±0.3%, p<0.001) and PFF (4.5±0.5 vs. 3.3±0.2%, p=0.004) with no difference in VAT. There was a marginally significant ethnicity*PD interaction for PFF (p interaction=0.06) but not HFF (p interaction=0.35). AA with PD had 63% higher PFF than NGT (4.2±1.5 vs. 2.6±0.6%, p=0.006), while LA with PD showed no significant differences in PFF by group (3.2±1.5 vs. 3.2±0.6%, p=0.79) after controlling for age, sex, Tanner, total % body fat and VAT. Logistic regression (using age, sex, total fat, VAT, SAT, HFF and PFF) showed that for every 1% increase in PFF, the odds of PD increased by 66% in AA; in LA for every 1% increase in HFF the odds of PD increased by 22%. **Conclusions:** In conclusion, these data illustrate ethnic differences in ectopic fat phenotypes associated with PD in adolescents, suggesting that pancreatic fat in AAs, vs hepatic fat in LA adolescents, may be driving diabetes risk.

533-P
Evaluation of Vascular Function in Pre-Menopausal Overweight and Obese Women

Sebely Pal, Simone Radavelli-Bagatini *Perth, Australia*

Background: Endothelial dysfunction and hypertension are associated with increased cardiovascular disease (CVD) and have been implicated in the development of atherosclerosis. We hypothesised that overweight/obese women would present greater arterial stiffness caused by an increased blood pressure. **Methods:** Twenty-six Caucasian premenopausal women were designated into one of the two groups: overweight/obese (BMI 25-34.9kg/m2) group (n=12), and lean (BMI 18.5-24.9 kg/m2) women (n=14). Participants were assessed for clinical, anthropometric, metabolic and augmentation index (AIx) measurements. **Results:** Age was similar between both groups (p=0.482). BMI was significantly higher in overweight/obese compare to lean participants (30.26±1.09 kg/m2 vs 21.62±0.52 kg/m2, p=0.001) as well as the percentage of body fat (40.60±2.43 vs 21.57±1.13, p=0.001), waist circumference (91.47±2.77 vs 70.67±1.60, p=0.001) and waist/hip ratio (0.81±0.04 vs 0.71±0.03, p=0.036). Overweight/obese women showed higher total cholesterol, triglyceride, LDL and fasting glucose levels compared to the lean group p<0.05). Both systolic (122.92±3.18 vs 108.14±2.42 mmHg, p=0.001) and diastolic (83.58±2.43 vs 72.43±1.29 mmHg, p=0.0001) blood pressures were significantly higher in the overweight/obese group compared to lean group. Overweight/obese women had a significantly higher AIx (50.08±4.71) than lean subjects (20.79±2.17, p=0.001). AIx was positively associated with measurements of body composition (p<0.05), triglycerides (r=0.361; p=0.035) and glucose levels (r=0.371; p=0.031), and systolic and diastolic blood pressure (r=0.793 and r=0.718, p=0.0001 respectively). **Conclusions:** These results suggest that greater cardiovascular risk in overweight women may be related to increased arterial stiffness, as well as increased blood pressure and cholesterol.

534-P
The Influence of Children's Sleep on Leptin, Ghrelin, and C-Reactive Protein

Chantelle N. Hart *Providence, RI*; Robert V. Considine *Indianapolis, IN*; Joseph L. Fava, Mary A. Carskadon, Elissa Jelalian *Providence, RI*; Hollie Raynor *Knoxville, TN*; Judith Owens *Washington, DC*; Rena R. Wing *Providence, RI*

Background: Shorter sleep duration is associated with obesity risk. Studies in adults suggest that short sleep may lead to hormonal changes associated with greater appetite and increased inflammation; however, there are no studies in children. We examined whether children would show hormonal changes associated with greater appetite and inflammation during a decreased (DEC) sleep than an increased (INC) sleep condition. **Methods:** Using a within-subject, crossover design, 33 children (9.6+ 1.0 y; 19 boys; 79% Caucasian; BMI percentile =55.0+27.8) who reported sleeping 9.5 hrs/night completed a 3 wk study. Children first slept their typical amount for 1 wk, were then randomized to INC or DEC time in bed (TIB) by 1.5 hrs/night for 1 wk, followed by the alternate condition the 3rd wk. Children wore actigraphs & completed sleep diaries throughout; fasting morning blood was drawn at the end of each wk. Analyses control for baseline (BL) values, zBMI, and gender. **Results:** Children achieved a mean 141 minute difference

in actigraph-measured sleep time during the INC and DEC wks($p< 0.001$). Ghrelin was marginally higher during INC (921.0+321.8) than DEC (876.6+348.9 pg/ml), ($p = 0.07$), with a significant condition x baseline ghrelin interaction (higher levels of ghrelin at BL had greater differences between INC and DEC), $p = .03$. There was a marginal gender x condition interaction for leptin, $F (1,28)=3.60$, $p =.07$, with boys showing lower log-transformed leptin during INC (1.5+.5) than DEC (1.9+.7). No differences were found for log-transformed CRP, which was low in this healthy population. **Conclusions:** In contrast to findings in adults, shorter sleep in children may be associated with an increase in ghrelin and decrease in leptin suggesting that regulation of these hormones may be different in children.

535-P
A Diurnal Cortisol Pattern Reflecting Chronic Stress Is Associated With Stress-Eating Behaviors and Overweight in Preschool-Aged Children in Poverty

Julie C. Lumeng, Alison L. Miller, Karen E. Peterson, Niko Kaciroti, Julie Sturza, Katherine Rosenblum, Delia M. Vazquez *Ann Arbor, MI*

Background: Children living in poverty are more likely to be overweight and to have differences in hypothalamic-pituitary-adrenal axis functioning reflecting chronic stress exposure. This study examined the association of children's diurnal cortisol patterns with stress-eating and weight status. **Methods:** Participants included 348 children attending Head Start programs. Mean salivary cortisol-intercept (representing morning peak) and cortisol-slope (representing diurnal decline) were calculated using mixed models from samples obtained across 3 days. Stress-eating was identified by factor analysis, and was comprised of Children's Eating Behavior Questionnaire subscales Food Responsiveness, Emotional Overeating, Desire to Drink, Emotional Undereating; food-related tantrums, and observed kilocalories consumed during a free snack procedure. Body mass index was categorized as non-overweight, overweight, and obese. Energy-adjusted intake of foods high in fat and added sugars was measured by food frequency questionnaire. **Results:** A 1-standard deviation unit (SDU) decrease in cortisol-intercept was associated with a 1.45 relative risk (RR) of being overweight (95% confidence interval (CI) 1.08 - 1.95), but not obese. Lower cortisol-intercept was associated with higher stress-eating (standardized $\beta = -0.12$ SDU, 95% CI -0.22 - -0.01). A 1-SDU increase in stress-eating was associated with 1.61 RR of being overweight (95% CI 1.20 - 2.16), but not obese. Daily servings of foods high in fat and added sugars were each associated with stress-eating (standardized $\beta = 0.11$ (95% CI 0.0045 - 0.2214; standardized $\beta = 0.12$ (95% CI 0.01 - 0.22)). **Conclusions:** A diurnal cortisol pattern reflecting chronic stress exposure promotes stress-eating and overweight. Interventions that address stress in low-income children are potential obesity prevention strategies.

536-P
Cerebral Vasoregulation in Patients With Obesity

Marcela Rodriguez-Flores, Carlos Cantu-Brito, Eduardo Garcia-Garcia, Claudia V. Cano-Nigenda *Mexico city, Mexico*

Background: Increased risk for cerebrovascular disease has been observed in individuals with obesity. Transcranial doppler (TCD) has been used for the study of the cerebrovascular dynamics in patients with stroke and to evaluate more incipient vascular disease. The breath-holding index (BHI) is a measure of vasomotor reactivity of the brain measured with the TCD. **Methods:** BHI was induced by a 30-second apneic stimulus to produce vasodilation in non-diabetic, non-hypertensive individuals with and without obesity. Differences in metabolic variables, scores to detect risk for obstructive sleep apnea (OSA), and BHI were calculated between the comparison groups. A multivariable linear regression was calculated to correct the association of BHI with obesity and metabolic variables. **Results:** Median triglycerides were 95 mg/dL, IQR 73-131 vs. 138 mg/dL, 102-188.5, $p<0.001$; HDL 53 mg/dL, IQR 44-62 vs. 42 mg/dL, IQR 35-50, $p<0.001$; frequency of insulin resistance by the HOMA index, 13, 15% vs. 56, 65%, $p<0.001$, in the obese vs. non-obese individuals, respectively. BHI was measured in 164 right middle cerebral arteries (RMCA) of 85 obese patients (80% women, median age 36 years, IQR 26-44, median BMI 41.2 kg/m2, IQR 38.5-45) and 85 non obese individuals (80% women, mean age 37 years, IQR 27-44, mean BMI 22.9 kg/m2, IQR 21.3-24.7).The BHI was significantly lower in the obese individuals: median of 0.42, IQR 0.3-0.6, vs. median of 0.78, IQR 0.58-1.01 ($p<0.001$) in the non-obese individuals. A multivariable lineal regression showed a significant linear correlation of the BHI with the obese subjects, independent of neck circumference, triglycerides, insulin resistance and HDL. **Conclusions:** We found a diminished vasomotor reactivity in individuals with obesity independent of the presence of incipient metabolic disorders.

537-P
Xanthine Oxidase and Cardiovascular Risk in Obese Children

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Background: The pathological mechanisms of how childhood obesity leads to increased risk of cardiovascular disease are not fully characterized. Enzymes that increase oxidative stress, such as xanthine oxidase (XO), have been linked to obesity, endothelial dysfunction, and cardiovascular disease in adults but little is known about this pathway in children. Therefore, the aims of this study were to 1) determine if plasma XO activity is different in obese children compared to normal weight children and 2) determine if plasma XO activity is associated with endothelial dysfunction and cardiovascular disease risk factors. **Methods:** Fasting plasma samples were obtained from obese (BMI≥95th percentile, n=9) and normal weight (BMI>5th and BMI<85th percentile, n=7) children and adolescents (ages 8-14) to determine the activity of XO in plasma. Cardiovascular risk factors that were assessed included: fasting cholesterol, blood pressure, insulin and glucose levels, and endothelial function (brachial artery flow-mediated dilation). **Results:** We observed a 6-fold difference in plasma XO activity in obese (1.18 ± 0.1 μUnits/mg protein) compared to normal weight (0.18 ± 0.02 μUnits/mg protein) children ($p<0.001$). Plasma XO activity was correlated with BMI ($r = 0.83$), systolic blood pressure ($r = 0.70$), and high density lipoprotein cholesterol ($r = -0.66$). Despite the finding of increased XO activity in the obese group, there were no differences between groups for flow mediated dilation of the brachial artery. **Conclusions:** XO activity is highly elevated in obese children and correlates with cardiovascular disease risk factors, suggesting that XO may play a role modulating pediatric cardiovascular risk.

538-P
An Automated Algorithm to Detect and Quantify Brown Adipose Tissue in ^{18}F-FDG-PET/CT Scans

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Background: The identification of brown adipose tissue (BAT) in adults has spurred great interest in understanding the role for this metabolically active tissue in treating obesity. However, the rare prevalence of BAT compels the need for an efficient tool to quantify these cases in large cohorts. Our aim was to develop an automated algorithm to identify and quantify BAT in ^{18}Fluoro-deoxyglucose-positron emission tomography/X-ray computed tomography (^{18}F-FDG-PET/CT) scans. **Methods:** Cases (n=18, BAT reported in medical record) and controls (n=18, no BAT) were randomly selected from 1100 ^{18}F-FDG-PET/CT scans at Boston Medical Center (2006-09). Cases and controls had similar ages, outdoor temperature at scan date, sex and BMI. BAT was identified as pixel area ≥ 10 mm2, CT density [-200 – (-10)] Hounsfield units, and SUV ≥2.0 g/ml. All ^{18}F-FDG-PET/CT scans and algorithm-generated images were read by the same blinded radiologist. Scans were scored 0 for no BAT; 1 for faint/unknown; and 2 for BAT positive. **Results:** Comparison of the scores between the ^{18}F-FDG-PET/CT scans and algorithm images showed an overall agreement of 85.3% for all regions (mediastinum, supraclavicular, axilla and paraspinal). The false negative rate (1.6%) was lower than the false positive rate (12.7%). False negatives were due to PET/CT misregistration and underestimation in paraspinal region by the algorithm. False positives were due to heart activity spillover, BAT activity overestimation by algorithm and underestimation by radiologist and one case of neck tumor pathology. **Conclusions:** The low false negative rate and further refinement of the algorithm will yield a valuable tool to identify and quantify BAT. The utility of this tool is evident from the rapidly growing research focused on increasing BAT activity to improve energy expenditure in obesity.

For author conflict of interest information, see page S250

539-P
Low Serum Obestatin Concentration Is a Predictor of All-Cause and Cardio-Vascular Mortality in Maintenance Hemodialysis Patients

Ilia Beberashvili, Inna Sinuani, Ada Azar, Hadas Kadoshi, Gregory Shapiro, Leonid Feldman, Zhan Averbukh, Joshua Weissgarten *Zerifin, Israel*

Background: Obestatin, an anorexogenic gut hormone, has been shown to have effects on nutrition in experimental animal studies. Here, we studied the implications of obestatin levels in hemodialysis patients. We hypothesized that obestatin level increase may link to protein-energy wasting, predisposing to increased mortality risk. **Methods:** We performed a prospective cohort study of 94 prevalent hemodialysis patients (38% women) with a mean age of 64.8±11.2 years. Obestatin together with other anorexogens (leptin, TNFα) and marker of inflammation (IL-6), dietary energy and protein intake, biochemical parameters of nutrition and body composition (anthropometry and bioimpedance analysis) were measured. In total, the study period extended 45.8±26.7 months. **Results:** Among various nutritional markers only fat mass index (FMI) exhibited statistically significant linear association (r=0.210, p=0.042) with obestatin. Each 5.0ng/ml increase in serum obestatin level, controlled for age, gender, diabetes status, dialysis vintage and history of cardio-vascular disease, was associated with lower daily energy intake (OR 2.12, 95% CI 1.01-4.47) by logistic regression analysis. Surprisingly, patients with serum obestatin concentrations below the median (<7.12ng/ml) had lower cumulative incidences of survival (p=0.009 by log-rank test). The crude all-cause (HR 2.43, 95% CI 1.22-4.86) and cardio-vascular mortality hazard ratio (HR 2.97, 95% CI 1.24-8.77) in these patients persisted to be significant after adjustment for various confounders (HR 2.21, 95% CI 1.04-4.68 and HR 2.91, 95% CI 1.08-9.19, respectively). **Conclusions:** Low serum obestatin concentration is an independent predictor of mortality in prevalent hemodialysis patients. This behavior of obestatin in hemodialysis patients should be further elucidated.

540-P
Obesity Is Associated With Dobutamine Stress-Induced Changes in Aortic Stiffness in Older Adults at High Cardiac Risk

Tina E. Brinkley, Dalane W. Kitzman, Jingzhong Ding, Barbara J. Nicklas, Stephen B. Kritchevsky, W. Gregory Hundley *Winston-Salem, NC*

Background: Obesity may be associated with abnormal vascular responses to stress. However, it is unclear if this association is driven by overall adiposity or local thoracic fat depots. Thus, we determined whether epicardial (EAT), paracardial (PAT) and periaortic fat volumes are associated with dobutamine stress-induced increases in aortic stiffness in older adults at high cardiac risk. **Methods:** One hundred (100) adults (age: 69±9 yrs, 57% female, 20% non-white) with hypertension (94%), diabetes (34%), or coronary artery disease (28%) underwent cardiovascular magnetic resonance imaging to assess adiposity and aortic stiffness. Aortic arch pulse wave velocity (PWV) and ascending and descending aortic (AA, DA) distensibility were measured at rest and during intravenous dobutamine. **Results:** After adjusting for age and gender, obese persons (BMI ≥30 kg/m2, n=54) had greater EAT (7820±328 vs. 6711±355 cm3), PAT (9626±480 vs. 6146±519 cm3), and DA fat (356±16 vs. 291±18 cm3) compared to non-obese persons (p<0.05). During stress, obese persons had smaller increases in aortic stiffness (PWV: 0.94±1.81 vs. 2.97±1.95 m/s; AA distensibility: -0.03±0.12 vs. -0.08±0.13 x10-3 mmHg-1; DA distensibility: +0.15±0.15 vs. -0.15±0.16 x10-3 mmHg-1), although these differences did not reach statistical significance. In univariate analyses, BMI was positively associated with changes in AA (p=0.06) and DA (p=0.005) distensibility, while PAT (p=0.09) and DA fat (p=0.11) were inversely associated with changes in PWV. When both BMI and PAT (or DA fat) were included in the same model with age and gender, only BMI remained associated with changes in aortic stiffness. **Conclusions:** In older adults at high cardiac risk, higher BMI predicts an attenuated aortic stiffness response during dobutamine stress, which is likely driven by systemic, and not local, effects of adiposity.

541-P
The Relationship Between Distress Tolerance and Disordered Eating Related Constructs

Stephanie P. Goldstein, Lindsay M. Martin, Lisa Hayley Glassman, Lauren E. Bradley, Evan M. Forman, James D. Herbert *Philadelphia, PA*

Background: Distress tolerance (DT) is often referred to as the ability to embrace aversive thoughts, feelings, or bodily sensations. Recent research suggests that DT may be implicated in disordered eating behaviors. Additionally, weight loss studies are investigating DT and its relation to eating behaviors and weight gain. We examined the relationship between DT and restrained eating, disinhibited eating, emotional eating, and sensitivity to the food environment in a normal undergraduate sample. Given previous research, we hypothesized that DT will be related to disordered eating variables that involve stressful food-related situations. **Methods:** Students (current n=26; projected n=100) completed self-report measures of eating behavior (Three-Factor Eating Questionnaire, Dutch Eating Behavior Questionnaire, Revised Restraint Scale, Power of Food Scale) and DT (Distress Tolerance Scale, DTS; Discomfort Intolerance Scale, DIS,) and two behavioral DT measures (Breath Holding, BH; Mirror Tracing Persistence Task, MTPT). **Results:** Disinhibited eating, (r= 0.41, p=.04), and susceptibility to the food environment, (r=0.43, p=.027), were associated with the DIS but not with DT behavioral measures. Restraint was associated with MTPT persistence (r=-0.42, p=.04), but not with self-reported DT. Emotional eating was associated with DTS (r=-0.54, p<.01), but not with behavioral DT measures. Weight fluctuation was associated with DIS (r=0.44, p=.024) and moderately related to BH (r=-0.37, p=.06). **Conclusions:** Lack of consistency between relationships suggests that DT is a varied construct, with different facets associated with different eating behaviors . However, preliminary results suggest that there may be a relationship between DT and disordered eating associated with weight gain, although future research should attempt to clarify this relationship.

542-P
Implicit-Explicit Attitude Discrepancy as a Predictor of Disinhibited Eating

Stephanie P. Goldstein, Evan M. Forman, James D. Herbert, Adrienne S. Juarascio, Breann M. Erford, Amanda Barbieri *Philadelphia, PA*

Background: Research focusing on cognitive and individual difference factors associated with maladaptive eating behaviors may point toward novel weight loss intervention strategies. One such area of work focuses on implicit (automatic) and explicit (deliberative) attitudes related to disinhibited eating, which typically occurs in restrained eaters and has been linked to weight gain. Given previous research, the behavior could involve both types of attitudes, namely the discrepancy between implicit and explicit attitudes, which may be more predictive of disinhibited eating than either alone. **Methods:** The current study examined both implicit and explicit attitudes towards food as well as their discrepancy in predicting disinhibited eating of chocolate, a commonly craved food. We recruited 95 normal-overweight, moderate-high restraint female undergraduate students. Measures of implicit attitudes (Implicit Association Test; IAT), explicit attitudes (Visual Analogue Scale; VAS), self-reported disinhibited eating (Disinhibitive Eating Scale; DIS), and behavioral disinhibited eating (bogus taste test) were administered. **Results:** Results revealed that neither implicit attitudes alone nor explicit attitudes alone predicted disinhibited eating. However, attitude discrepancy, calculated as the absolute difference in z scores of the IAT and the VAS, was a statistically significant, positive predictor of behavioral disinhibited eating, b= 6.16, t(87) = 2.69, p <.01. Discrepency did not predict self-reported disinhibited eating, b= 0.19, t(88) = 0.19, p =.85. **Conclusions:** Results suggest that attitude discrepancy may be a contributor to disinhibited eating, and raise intriguing possibilities for the development of more effective interventions for weight loss.

543-P
Elevated Growth Hormone 120 Minutes Following a Single Low-Dose of Amino Acids in Healthy Subjects

Charmaine Tam, William D. Johnson, Jennifer C. Rood, Alok K. Gupta, Frank L. Greenway *Baton Rouge, LA*

Background: The use of amino acid supplements to provoke growth hormone (GH) secretion in athletes and entertainers now extends to the general

public. Not only do they have a goal of building lean tissue and reducing fat, but also in improving skin quality and other rejuvenating qualities that they believe GH can provide. Despite increasing mainstream use, evidence for whether oral amino acids stimulate GH is not clear. **Methods:** This was a cross-over, placebo-controlled randomized study. 16 (12 males; 32±14 years; 26.4±5.0 kg/m2) healthy subjects had serum GH measured at baseline and 15, 30, 60, 90 and 120 minutes after taking a single low dose proprietary amino acid supplement blend (SeroVitalTM) including amino acid salts of l-lysine 1.2g and l-arginine-1.2g or placebo. **Results:** After 120 minutes, GH levels had increased 8-fold from baseline (0.17 to 1.33ng/ml) and were significantly higher than placebo (P=0.01). In addition, a significantly higher mean AUC was observed after taking the supplement [20.4 (95% CI: 19.9-21.0ng/ml) vs. 19.7 (95% CI: 18.7-20.6ng/ml); P=0.04]. **Conclusions:** Our findings replicate and extend the original findings of Isidori et al, and find that a single oral dose of these amino acids can significantly increase GH levels after 120 minutes in healthy men and women. Whether these GH changes persist over a longer duration or have other positive effects remains to be examined.

544-P
Gene Expression Correlations of Obesity BMI With Low and High Percentage of Body Fat

Karen L. Zanni *Vestal, NY*

Background: Obesity continues to increase in epidemic levels worldwide. The number of genes associated with human obesity continues to increase. Current studies that use Body Mass Index (BMI) as a standard for defining the overweight phenotype are limited in that patients with high muscle mass may be inappropriately classified as overweight/obese. BMI is most commonly used to quantify body anthropometrics due to its simplicity, but more refined measurements of body fat composition are needed to truly understand the variations in gene expression. **Methods:** We studied 58 subjects, between the ages of 14 to 40 years, mean age 24.1, BMI 25.9 ± 7.0 (18.8 – 43.2), % body fat 28.0 ± 11.8 (10 – 48), all Caucasian. Whole-body air displacement plethysmography (BOD POD ®) for determining percentage of body fat was completed on 58 participants. Height and weight was measured to calculate BMI. Morning fasting whole blood was collected peripherally using PAXgene™ blood RNA tube. RNA was extracted with PAXgene™ Blood miRNA Kit. Quantitative real-time PCR array (RT2 Profiler PCR Array) was used to determine gene expression in 92 genes related to obesity. Gene expression correlations between subjects with a high BMI and subjects with high body fat percentage were compared to appropriate controls. **Results:** ADCYAP1, CCK, CRHR1, GH2, HTR2C genes were upregulated in both high BMI and high body fat percentage subjects when compared to appropriate controls. IL-1A was upregulated in subjects with high BMI when compared to controls (low BMI), but was not noted in high body fat percentage subjects. **Conclusions:** This study reveals differences in gene expression between classifying a subject based on BMI versus classifying based on body fat percentage. The findings from this pilot study show the need for proper subjects' classification in genetic studies.

545-P
Persistence of Metabolic Syndrome in Obese Children and Adolescents

Sarah Tsai *Kansas City, MO*; Stasia Hadjiyannakis *Ottawa, Canada*

Background: The purpose of this project is to examine the persistence of metabolic syndrome (MS) in obese children and adolescents. **Methods:** A retrospective review using a clinical database established based on visits to the weight management clinic at the Children's Hospital of Eastern Ontario from 2005-2010. Patients were classified as: never having had metabolic syndrome, having intermittent metabolic syndrome (not consistently positive or negative for metabolic syndrome over 2 or more visits), or having persistent metabolic syndrome. The following information was collected for each patient: anthropometric data, blood pressure, pubertal state, presence of polycystic ovarian syndrome in females, oral glucose tolerance test, fasting insulin, A1C, fasting lipid profile, liver enzymes, and medications. **Results:** IDF federation guidelines were used to classify patients between ages 10-16 years as having metabolic syndrome. A patient must have a waist circumference >90th percentile, and two or more of the following: triglycerides >1.7 mmol/L, HDL <1.03 mmol/L, either systolic BP >130 mmHg or diastolic BP ≥85 mmHg, and fasting blood glucose >5.6 mmol/L. For the initial clinic visits of 520 patients, 35.9% met the IDF criteria for metabolic syndrome. Specifically, 36% had no IDF criteria, 37.8% met one criteria, 26.2% met two criteria, 8.6% met three criteria, and 1.1% met four criteria for MS in addition to having an enlarged waist circumference. **Conclusions:** There were 151 patients with complete data for 2 or more visits. Among these, 50.3% kept a negative diagnosis of metabolic syndrome, 15.9% acquired metabolic syndrome, 23.9% maintained metabolic syndrome over 2 visits, and 9.9% did not continue to meet criteria. The elements of criteria that were most stable were elevated waist circumference, elevated triglycerides and low HDL.

546-P
Evaluation of Anthropometric Measurements That Affects Respiratory Muscle Strength in Obese Women

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Background: It is well known that measures of weight, body mass index (BMI), waist circumference and waist / hip ratio (W / H) are negatively related to lung volumes in obese patients. However, it is still unclear the influence of these measures in respiratory muscle strength. To evaluate the anthropometric measurements (weight, BMI, waist circumference and W/H ratio) and correlate them with respiratory muscle strength in obese women. **Methods:** It was evaluated 166 women with class II and III obesity (BMI: 41.09 ± 3.71 kg/m2), aged 36.93 ± 10.03 years, candidates for bariatric surgery. The anthropometric measurements of weight, height, and waist and hip circumference were recorded. The respiratory muscle strength was evaluated by using measurement the maximal static respiratory pressures – MIP and MEP (Wika®, Ipero-SP, Brazil), calibrated in centimeter H2O (±300 cm H2O). For data analysis we used the statistical test of linear Pearson's correlation and considered results significant if $p < 0.05$. **Results:** The MIP was negatively correlated with age ($r = -0.21$, $p < 0.01$) and with the W/H ratio ($r = -0.29$, $p < 0.01$). There was no significant correlation of MIP with waist circumference, weight and BMI. The MEP did not correlate significantly with any anthropometric measurements. **Conclusions:** Through the results, we can conclude that general measures of obesity such as weight and BMI, as well as the waist circumference alone, did not affect MIP. However, the W / H ratio was the variable that most influencing the inspiratory muscle strength (MIP). The MEP does not seem to be influenced by obesity, since there was no significant correlation between this variable and any of the anthropometric measurements evaluated.

547-P
Cardiometabolic and Endocrine Effects of Increasing Age and Body Fat Mass: A Study of Healthy Men, Comparing Younger Overweight With Older Thin

Katie Glymph, Donna M. Lawson, Ali Iranamnesh *Salem, VA*

Background: Increased age and fat mass are recognized cardiovascular and metabolic risk factors. **Methods:** To explore preferential impact of age or adiposity, in the present study various cardiometabolic and hormonal parameters were compared in 2 separate groups of healthy men (11 each): (1) younger/overweight (age: 19-34 yrs; % body fat: 20.3-32.1); and (2) older/thin (age: 47-63 yrs; % body fat: 6.9-19.5). **Results:** Results in older/thin men were significant for: (1) no difference in systolic and diastolic BP; (2) lower triglyceride (148±58 v 52±10: P=0.0008), and higher HDL (42±11 v 60±13: P=0.003); (3) comparable fasting blood glucose (93±9 v 92±8) with lower insulin concentrations (7.1±2.6 v 3.7±2.3: P=0.005), and lower HOMA-IR (1.7 ± 0.7 v 0.9 ± 0.5: P=0.001); (4) higher serum GH concentration (0.45±0.45 v 2.0±1.3: P=0.002), but lower IGF-1 levels (192 ± 63 v 125 ± 28: P=0.001); (5) comparable serum LH and total testosterone concentrations, but lower calculated free (11.7±3.7 v 8.7±2.7: P=0.04) and bioavailable (276±80 v 198±67: P=0.02) testosterone, and a trend towards lower calculated free E2 (0.64±0.21 v 0.46 ± 0.23: P=0.07); (6) lower serum leptin (8.0±3.4 v 2.5±1.1: P=0.0003), but higher adiponectin (6.6 ± 2.9 v 11.2 ± 3.7: P=0.006) concentrations. **Conclusions:** Increased body fat appears as a more probable detriment to lipid, glucose, GH, and adipokines homeostasis. Lower free and bioavailable testosterone in older/thin men indicate more age-related vulnerability of the gonadal axis. However, biological and clinical effect of the latter could be offset by increased free E2, and as the result comparable levels of free testosterone/free E2 ratio. It could be therefore postulated that cardiometabolic derangements of advancing age are potentially due to associated increased fat mass in this population.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Population Based Intervention Studies — Behavioral/Environmental/Economic

548-P
Maternal Depression Affects Both Responsive Feeding Practices and Perceived Infant Negativity in a Sample of WIC Mothers
Jennifer S. Savage, Leann L. Birch *University Park, PA*

Background: Consistently feeding to soothe a highly negative distressed baby may promote excessive intake and weight gain. Infants who are higher on temperamental negativity (infants who fuss and cry more) are at increased risk for unhealthy, non-responsive, feeding practices. Maternal depression can interfere with responsive parenting, but less is known about how maternal depression is related to feeding practices. This study explores the impact of maternal depression and perceptions of infant negativity on responsive feeding among low income PA WIC mothers. **Methods:** A cross-sectional study of 60 low-income WIC mothers with formula-fed infants and toddlers aged 0 - 2 years. Mothers completed the Infant Behaviors Questionnaire (IBQ-R), to measure infant negativity, Caregiver Feeding Styles Questionnaire (Hughes) and the Infant Feeding Questionnaire (Hurley) to measure aspects of responsive feeding, and the Center for Epidemiological Studies Depression Scale. **Results:** The majority of mothers were white (75%), unemployed (50%), and on average overweight (BMI M=30.3); 37% were clinically depressed. Depressed mothers were more likely to put baby to bed with bottle, to report not getting enough sleep, and tended to add cereal to the bottle and use food to soothe more than non-depressed mothers. Depressed mothers were also less responsive and perceived their child to be more negative (fussy) than non-depressed mothers ($p < 0.05$). Use of food to soothe was positively associated with infant negativity. **Conclusions:** The proportion of mothers who were clinically depressed was high among these WIC mothers and was associated with both higher infant negativity and less responsive feeding practices. In addition to traditional feeding guidance, maternal mental health and perceptions of infant temperament need to be addressed when designing childhood obesity interventions.

549-P[DT]
Comparative Effectiveness of Afterschool Programs to Increase Physical Activity
Sabina B. Gesell, E. Warren Lambert, Ana Regina Vides de Andrade, Lauren Davis *Nashville, TN*; Bettina M. Beech *Winston-Salem, NC*; Nkiruka Arinze, Stevon Neloms, Colleen Ryan, Shari Barkin *Nashville, TN*

Background: We conducted a comparative effectiveness analysis to evaluate the difference in the amount of physical activity children engaged in when enrolled in a physical activity-enhanced afterschool program (ASP) based in a community recreation center versus a standard school-based ASP. **Methods:** The study was a natural experiment with N=46 elementary school children attending the community ASP and N=33 attending the school ASP. Accelerometry was used to measure physical activity. Data were collected three times over 12 weeks, with 91% retention. **Results:** At baseline, 43% of the sample was overweight or obese (BMI≥85thpercentile) and had a mean age of 7.9 years (SD=1.7). Children in the community ASP increased their physical activity by 13 percentage points (p=.003), whereas children in the school ASP had unchanged activity levels (flat slope). This increase in activity was largely due to increased moderate-to-vigorous physical activity. Children in the community ASP showed a 10 percentage point increase in MVPA (p=.02), whereas children in the school ASP had unchanged MVPA levels (flat slope). Cost analysis suggested that children attending traditional ASPs - at an average cost of $18.66 per day - would need an additional daily investment of $1.71 per child for three months to increase their moderate-to-vigorous physical activity. **Conclusions:** A low-cost, tax dollar-funded alternative ASP featuring adult-led activities in a community recreation center appears to increase physical activity in a multi-ethnic sample of public school children compared to standard-of-care school-based aftercare.

550-P
On the Relations Between Reward Discounting and Obesity: Evidence From a Large-scale Crowdsourcing Study
Warren K. Bickel, Eldon T. Mueller, Christopher T. Franck, David P. Jarmolowicz, Kirstin M. Gatchalian, Samantha J. Fede *Roanoke, VA*

Background: The value of rewards is known to be discounted as a function of delay to their receipt (delay discounting) and probability of their receipt (probability discounting). Moreover, the delay-discounting effect is modulated by social variables, and these are studied in situations where (1) the chooser between smaller-immediate versus large-delayed rewards is acting as a representative of a group with which she will share the reward (we-we discounting), or (2) the reward receiver chooses between receiving a smaller-immediate reward for herself alone versus a larger-delayed reward to be shared among her group (me-we discounting). Measures of reward discounting are much-used tools in the scientific study of addictions and other pathologies of reinforcement, and obesity is also a pathology of reinforcement. Studies of reward discounting, however, typically entail personal contact with participants, resulting in modest sample sizes. **Methods:** Data from 695 participants were collected by soliciting questionnaire responses, and providing study compensation via Amazon.com's on-line crowd-sourcing technology, known as Amazon Mechanical Turk. Collected data included demographic information and responses from which individuals' rates of reward discounting were calculated. Obesity was defined by a BMI score ≥ 30. **Results:** Discounting rates of the obese in our sample were larger than those of the non-obese for rates of delay discounting (p=0.00013), me-we discounting (p=0.02185), we-we discounting (p=0.00038), and probability discounting (p=0.01502). **Conclusions:** These results from an unusually large sample size confirm reward discounting rates as behavioral markers of obesity. Markers are valuable as diagnostic criteria and measures of therapeutic improvement.

551-P[DT]
Differences in the Decrease in Health Related Quality of Life (HRQOL) Associated With Obesity Between Black and White Adolescents
Elizabeth P. Parks, Rashikh A. Choudhury *Philadelphia, PA*; Nicolas Stettler *Washington, DC*

Background: Obesity has a deleterious effect on HRQOL in children and adolescents. Black children are more likely than white children to be obese although attitudes about obesity are reportedly more tolerant in black than white communities. This greater cultural tolerance for obesity may mitigate the adverse effects on quality of life. The objective of this study was to examine racial differences in the consequences of HRQOL among adolescents (ages 10-17 years) **Methods:** In this cross-sectional study, 243 very obese (body mass index [BMI] ≥97th percentile) and 68 healthy weight (BMI≤ 85th percentile) youth and their parents completed the Pediatric Quality of Life Inventory (PedsQL, 0 to 100, higher scores equate poorer quality of life). Standardized weight and height measures were collected on the youth. Differences in HRQOL between obese and non-obese subjects were analyzed using linear regression, controlling for age, sex, education, and income. **Results:** Obese youth reported poorer functioning on the total PedsQL and physical, emotional, and social functioning subscales than healthy weight youth. There was no interaction by race in association between obesity and total quality of life or any of the subscales (p=0.26). Both Black (β=13.90, 95%CI (7.18-20.61), p=0.001) and White obese subjects (β=13.36, 95%CI (5.89-20.83), p=0.001) had approximately a 13 point lower quality of life score than healthy weight subjects. **Conclusions:** Obesity impacts HRQOLin Black and White youth equally. Although the literature related to self-esteem and body-image in obese Black girls would suggest there may be a difference in the impact of obesity on HRQOL between races, our findings do not support this. Given the higher predominance of obesity in Blacks, the effect of obesity treatment on HRQOL is particularly of importance in this population and requires further study.

552-P
Social Support Therapy and Weight Loss: Systematic Review

Ivan Flores-Gomez, Montserrat Bacardi-Gascon, Maria Eugenia Perez-Morales, Ana Lilia Armendariz-Anguiano, Arturo Jimenez-Cruz *Tijuana, Mexico*

Background: Social Support (SS) therapy can be an effective method of weight loss compared with conventional treatment (CT). The purpose of this study was to evaluate RCTs using SS therapy for weight loss in subjects with overweight or obesity. **Methods:** We reviewed all original articles published in MEDLINE / PubMed, SciELO, EBSCO, and Google Scholar, from 2000 to August 2011, of RCTs on weight loss in adults using SS groups, with a minimum of five months of treatment, and compared them with another therapy or a CT. **Results:** Seven articles were analyzed. It was observed that there was heterogeneity in the design, differences in the components of the interventions, and cultural characteristics and ethnicity of each population. The difference in weight loss between groups, in five out of the seven studies, ranged from 8..3 kg (12m) to 2.7.3 kg (24m). However, the observed differences were found comparing control interventions that did not meet the accepted recommended guidelines. There was no allocation concealment in two studies, and no blindness in four. Most studies showed large dispersion in the results. Therefore, the quality of the evidence is low. **Conclusions:** These results warrant further studies with better quality that include treatment controls according to accepted professional guidelines.

553-P[DT]
The Grandmothers' Recipes Project. An Integrated Comprehensive Intervention Aimed at Counteracting the Obesity Epidemics in Childhood By Promoting Knowledge and Skills of Mediterranean Diet

Elena Alonzo, Guglielmo M. Trovato, Salvatore Cacciola, Virgina Cannizzaro, Giuseppe Emmanuele, Angela Ferro, Rosanna La Carruba, Patrizia Pisana, Agata Purrello, Maria Enza Raiti, AnnaMaria Santangelo, Paola Valvo, Maristella Fardella *Catania, Italy*

Background: Increasing prevalence of obesity and a trend toward a decreased adherence to Mediterranean Diet is present in Italy. The aim is to update prevalence among school-age children and assess effects of an integrated intervention. **Methods:** 5200 children (48.6% m) aged 3-14 years were assessed (2009-2011) by pediatricians: overweight and obesity (OO) prevalence were calculated using international BMI cut-offs. This community-oriented intervention was articulated with a core focus on Mediterranean Diet, a proxy of healthy nutrition recommendation. Traditional food and cookery recipes were collected and processed by children in collaboration with their grandmothers; all were adapted by SIAN also to celiacs. Recipes thereafter are now published in a freely available cookery book. Counseling and information action involved all children, teachers, mothers and stakeholders in the community. Recipes, and the overall approach benefits, were disseminated to all children and families; a symbolic reward was given to the best and suitable recipes. This preliminary report is based on data from a representative sample group of 399 subjects. **Results:** Initial prevalence of OO was 27.6%. At the second year of intervention, a significant drop to 21.27% was observed with a concurrent increase of Mediterranean Diet Adherence. No such effect was observed by the current educational programs provided nationwide (Italy prevalence: 34.0%). **Conclusions:** This integrated pro-active intervention has promoted knowledge and skills on Mediterranean Diet, a disappearing culture even in Sicily. It is aimed at counteracting the obesity epidemics in childhood, is sustainable at community level and moves beyond the nuclear family also by a comprehensive involvement of grandmothers. Within the limits of the sample size, the outcome is a significant decrease of prevalence of obesity in children.

554-P[DT]
Parents Under-Report Body Mass Index and Obesity

Jennette Moreno, Craig A. Johnston, Christian E. Holmes, John P. Foreyt, Maria A. Papaioannou *Houston, TX*

Background: Background: The rates of childhood overweight and obesity are epidemic in the United States, with approximately 34% of children classified as either overweight or obese. However, it is not clear if parents are able to accurately assess whether their child falls into the overweight or obese category. Objective: The current study sought to assess the amount of misclassification of weight classification by parents. **Methods:** Methods: Parents of children ages 5-12 completed a demographic survey and were asked to report their child's height and weight. Actual measurements of child height and weight were conducted. BMI percentiles were calculated for parent report and actual measurements of height and weight according to CDC guidelines. **Results:** Results: Significant differences were found for BMI percentiles based on parent report and actual measurements of child height and weight. Using parent reported height and weight, BMI percentile was under-reported by about 5 percentile points. Overall, Parents correctly classified their children 70% of the time. Of those who misclassified their children, 71% under reported their child's BMI. **Conclusions:** Conclusions: Parents to not appear to be accurate reporters of heights and weights for children in the overweight and obese range. This inaccuracy may lead parents to be less likely to seek treatment or take steps to address these health concerns.

555-P[DT]
Childhood Overweight and Obesity Prevention Interventions Among Hispanic Children: Literature Review

Maria Eugenia Perez-Morales, Montserrat Bacardi-Gascon, Arturo Jimenez-Cruz *Tijuana, Mexico*

Background: Obesity is considered an epidemic in the United States. Mexican-American children aged 6-11 years have higher level of obesity (22.1%), compared to non-Hispanic Whites (13.9%). The aim of this study was to conduct a literature review over childhood overweight and obesity prevention interventions among Hispanic children. **Methods:** An electronic literature search was conducted to identify articles published in the PubMED, CINAHL and EBSCO databases. Keyword that were used included "Latino", "Hispanic", "childhood", "obesity", "interventions". The inclusion criteria for this review were: published in English from January 2001 to January 2012, studies equal or longer than 6 months of follow-up, intervention studies (Randomized controlled trial or Quasi-experimental studies). **Results:** We found 10 studies for inclusion in this review, seven Randomized Controlled trial and three Quasi-experimental studies, published from 2005 to January of 2012. Among these studies, the overall findings were inconsistent improvements in BMI, z-BMI. In quasi-experimental studies it was found, among low-income Mexican-American children, statistically significant improvements in BMI. Only two studies had a follow-up longer than 3 years, and the most recent study showed an increase in the proportion of children classified as obese. The overall quality rate of evidence with respect to reducing BMI or the prevalence of childhood obesity among Hispanic children was low. **Conclusions:** In this minority population, more RCTs are needed with long term follow-up, and lower study limitations.

556-P
Weight Perceptions and Health Self-Efficacy in African American College Students

Joanne Hathway, Eleanor R. Mackey, Maria-Eugenia Hurtado, Amy Schweitzer *Washington, DC*; Kai Y. Lei *College Park, MD*; Catherine J. Klein *Washington, DC*

Background: During college, youth face the challenge of making autonomous health-related decisions. Research intimates that during this transition, students implement poor nutrition and exercise habits. To design health promotion programs for this population, it is important to evaluate their readiness for intervention, including perceptions of weight status, health behaviors, and self-efficacy. The current study utilized baseline data from an RCT of an internet-based intervention to prevent weight gain in African American college students in order to assess the population's readiness to participate in such interventions. **Methods:** Participants were 50 college students (76% female; 92% African American and 8% mixed ethnicity) ages 18 to 20 years old. Data collection included anthropometric measurements and questionnaires on the participants' perceptions of their health status, behaviors, and self-efficacy. **Results:** 39% were classified as overweight and 5% as obese (M BMI = 24.66; SD=3.83). When describing their weight, 46% responded "about right" and 46% "slightly overweight." 36% were somewhat or very dissatisfied with their weight status. Approximately 80% of participants reported trying to eat healthfully and 77% reported attempting to be physically active. Most participants reported that they were trying either to maintain or lose weight and were quite confident in their ability to modify nutrition and physical activity behaviors. **Conclusions:** Overall, this sample reported high self-efficacy and motivation for making improvements. Previ-

ous research indicates an association between high self-efficacy and higher likelihood of health behavior change; thus, these findings suggest that African American college students may be amenable to, and have the potential for success in interventions to improve health and weight-related behaviors.

557-P
Use of Different Treatement Modalities For Weight Loss Among Obese Mexican-American Women

Nangel M. Lindberg, Victor J. Stevens *Portland, OR*

Background: Mexican-Americans have a high prevalence rates of obesity, and high utilization rates of complementary and alternative medicine (CAM), including traditional Mexican medicine. This study examined the use of CAM and other treatment modalities used for weight loss by obese Mexican-American women. **Methods:** A sample of 31 obese women participating in a clinical intervention responded to a survey on their past weight-loss attempts. **Results:** A majority of participants (60%) reported attempting weight-loss without professional guidance or support; only 20% reported having used weight-loss programs. Most participants reported using some form of CAM for weight loss, with most using herbal remedies (70%), massages (55%), or seeking help of Mexican "hueseros" (35%). A large number of participants also reported using products, such as Herbalife (TM) (71%), diet pills (48%), and fasting (29%) to lose weight. **Conclusions:** Understanding the type of non-traditional weight-loss methods used by Mexican-American women will enhance the cultural competence of health care professionals, and improve effectiveness of interventions targeting this population.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Population Based Intervention Studies — Physical Activity and/or Diet

558-P
Physical Activity-Induced Reduction in Elevated Gamma′ (γ′) fibrinogen in Obese Children: A Randomized Controlled Study

Rehana Lovely *Fort Worth, TX*; Jobayer Hossain *Wilmington, DE*; Jonathen P. Ramsey *Springfield, MO*; Donald George *Jacksonville, FL*; David H. Farrell *Portland, OR*; Prabhakaran (Babu) Balagopal *Jacksonville, FL*

Background: Elevated plasma gamma' (γ') fibrinogen, an isoform of fibrinogen, is typically involved in the formation of more resistant clots. Its higher concentration confers a risk for obesity-related cardiovascular disease (CVD) and contributes independently to thrombosis risk. The aim of this study was to determine the effect of a physical activity-based lifestyle intervention on γ' fibrinogen levels in obese children. **Methods:** Randomized controlled 3-month physical activity-based lifestyle intervention in a total of 21 children (age 14-18 years; Tanner stage>IV); 15 obese (OB) and 6 normal weight (NW), BMI percentiles >95 and <85 respectively. γ' fibrinogen, total (T)-fibrinogen, glucose, insulin, inflammatory factors (IL-6&CRP) and body composition (DEXA) were determined before and after the intervention. Independent sample t-test, Pearson correlation coefficient and multiple regression analysis were performed after identifying significant principal components of the CVD risk factors. **Results:** γ' fibrinogen was higher in OB vs NW children (P<0.05). Correlations between γ' fibrinogen and other obesity-related risk factors for CVD (P<0.05; adjusted R2=0.9) were observed. γ' fibrinogen levels decreased (P<0.05) in the intervention group, but not in controls. Concomitant reductions in fat mass and inflammatory factors were also noticed. **Conclusions:** To our knowledge this is the first study showing a physical activity-induced reduction of elevated γ' fibrinogen in humans. The reduction in γ' fibrinogen, along with concomitant reductions in fat mass and inflammatory factors, in obese children is important considering its role in the formation of more resistant clots and the development of CVD. The data underscore the importance of an active lifestyle early in life.

559-P
Food Preferences Associated With Body Composition

Susanne B. Votruba, Colleen Venti, Jonathan Krakoff *Phoenix, AZ*

Background: It is known that excess intake of energy compared to expenditure results in increased body weight. It is not known, however, if body weight itself is associated with particular food preferences or choices in everyday life. **Methods:** After 6 days on a weight maintaining diet, 239 subjects (60% M; 96.8+/-24.9 kg; 33.9+/-8.1 kg/m2; mean+/-sd) with free access to a vending machine system self-selected their food for 3 days. Mean daily energy intake was calculated from the actual weight of foods consumed. Food choices were categorized into six specific food groups (high fat/high complex carbohydrate (HF/HCC); high fat/high protein (HF/HP); high fat/high simple sugars (HF/HSS); low fat/high complex carbohydrate (LF/HCC); low fat/high protein (LF/HP); low fat/high simple sugars (LF/HSS)). Body composition was assessed using DXA. **Results:** There was no significant association between BMI or percent body fat and intake of the HF/HCC, HF/HSS, LF/HCC, and LF/HP food groupings. In a general linear model, the intake of both HF/HP foods as a percent of total daily intake, adjusted for age and sex, was significantly positively associated with both BMI (p=0.0166) and percent body fat (p=0.0105). Likewise, LF/HSS foods as a percent of total daily intake was significantly related to BMI (p=0.0043) and percent body fat (p=0.0176), in a model including age and sex. Interestingly, BMI and percent body fat were not associated with these food groups when subjects were asked to rate their preference for these foods in free-living environments. **Conclusions:** While cross-sectional in nature, these data suggest a preference toward greater intake of high fat foods that are also high in protein (ie meats, cheeses, eggs) or simple sugars (cookies, candy, etc) with increasing BMI and percent body fat in an ad libitum research setting.

560-P
Resistance Exercise Training Increases Exercise Capacity and Reduces Exercise Pain Severity in Obese Older Adults With Low Back Pain

Heather K. Vincent, Amanda N. Seay, Cindy Montero, Bryan P. Conrad, Kevin R. Vincent, Robert W. Hurley, Steven Z. George *Gainesville, FL*

Background: Chronic back pain in obese older adults may preclude physical activity and perpetuate weight gain. This study examined whether total body or isolated resistance exercise could improve exercise capacity in obese, older adults with chronic back pain. **Methods:** This was a prospective, randomized, controlled study. Patients (N=30; 67.9±7.1 years) were randomized to four months of lumbar extension resistance exercise (LMB), total body resistance exercise (TOT) or a control group (CON). Participants trained 3Xweek for 16 weeks at 60% of maximal strength; the CON group did not exercise. Exercise capacity and duration, anaerobic threshold (AT) and resting and peak metabolic measures were collected during a maximal walking exercise test. Resting and peak exercise back pain during were captured using a numerical pain rating scale (NRSpain) from 0-10 (none-worst possible pain). **Results:** At month four, back pain severity during exercise decreased in the LMB and TOT groups compared to CON (85% and 46% vs 0.4%; p<0.05). Exercise endurance increased 1.2-1.8 minutes in the TOT and LMB groups compared with a reduction of 1.3 minutes in CON (p=.044) The rate of oxygen used at the AT decreased by 8.5-10% in the LMB and control groups, but increased in TOT by 36%. Training-induced changes in pain severity correlated with the peak rate of caloric expenditure achieved during exercise (r=.340, p=.05). **Conclusions:** Resistance exercise training reduces back pain and increases exercise endurance at a higher rate of caloric expenditure. This may facilitate participation in other physical activities for weight loss in this population.

561-P[DT]
Motivational Interviewing For Obesity Prevention in Families With 10-12 Year Old Children

Virginia P. Quinn *Pasadena, CA*; Kathleen Garrett *Aurora, CO*; Nirupa A. Ghai *Pasadena, CA*; Denise Barnes *Aurora, CO*; Anny H. Xiang *Pasadena, CA*; Carol Koprowski *Los Angeles, CA*; Kim Reynolds *San Dimas, CA*

Background: The importance of parents as role models and facilitators of children's diets and physical activity is well established. We sought to develop and test a family-based intervention to prevent obesity that would be acceptable to parents and their 10-12 year old children. **Methods:** We chose

motivational interviewing (MI) for delivering education about diet and physical activity, promoting intrinsic motivation for behavior change, and creating action plans. We used our experience from a large pilot study and focus groups conducted with parents and children. Parents and their children meet with a health coach and, subsequently, parents receive 5 MI calls over 3 months. To engage the children, we developed colorful handouts including an OPT Dinner Plate and Physical Activity Clock. Families are recruited from Kaiser Permanente Southern California, a large integrated health plan. **Results:** To date, 115 families completed a health coach visit. Parents are mostly female (86%) while there are equal proportions of boys and girls. On a 0-10 scale, both parents and children rated health as highly important (9.3 and 8.8, respectively), but were somewhat less confident in their ability to make healthy choices (7.4 and 7.8) or ready to change (8.8 and 8.0). Families chose 1 of 4 behaviors for their initial action plan—33% wanted to increase fruits and vegetables, 33% selected increasing physical activity, 23% wanted to decrease saturated fat and 10% chose to decrease sedentary behavior. **Conclusions:** A MI intervention for diet and physical activity designed for wide dissemination is feasible and well-received by families with preteen children.

562-P[DT]
Body Fatness and Fitness Improvements in Latina and African American Girls

Norma Olvera, Patrick Leung, Jian Liu, Stephanie Kellam *Houston, TX*

Background: The design of effective obesity interventions to reduce body fatness and increase fitness in minority girls is a public health priority due to the high prevalence of obesity in this population. This study assessed the effectiveness of a four-week intense summer intervention in lowering body fatness and increasing physical fitness in minority girls. **Methods:** The sample consisted of 99 overweight (BMI > 85th percentile) Latina and African American girls (Mean age = 11.2 yrs + 1.6 yrs). Over the course of the four-week BOUNCE intervention, girls attended daily three-four exercise sessions, a nutrition education session, and a behavioral counseling season. Pre-and post- intervention measurement of %BF, WC, and aerobic endurance were collected. A repeated measure analysis of variance was used to identify significant differences in adiposity indicators and aerobic endurance. **Results:** Findings from this study revealed a statistical significant reduction of 2.49% ($p < 0.000$) in %BF, 5.57 cm. ($p < 0.000$) reduction in WC, and a decrease of 2.16 minutes ($p=0.000$) in the time spent to complete the one-mile run/walk. **Conclusions:** This study addressed a gap in knowledge regarding the impact of interventions in reducing key body fat indicators in minority girls.

563-P
Associations of Sleep Quality and Total Sleep Time With Body Composition and Exercise Responses in the Training Intervention and Genetics of Exercise Response (TIGER) Study

Matthew P. Herring *Birmingham, AL*; Rod K. Dishman *Athens, GA*; Uma Srivastava, Molly S. Bray *Birmingham, AL*

Background: The relationship between sleep parameters, body composition, and exercise behavior is an understudied area of research. This investigation examined interrelations of sleep quality (SQ) and total sleep time (TST) with body composition and adherence to a standardized exercise protocol. **Methods:** Data from 913 ethnically-diverse participants (357 male/556 female, 18-35 y) in the TIGER Study were analyzed. SQ and TST were measured using self-report inventory. Higher scores indicated poorer SQ. Aerobic exercise training involved three 30-min sessions/week at 65%-85% heart rate reserve for 15 weeks. A heart rate physical activity score (HRPAS) was calculated by summing the product of relative exercise intensity and duration across all sessions. Using HRPAS, participants were empirically defined as adherent or non-adherent with the prescribed exercise dose. Regression models, adjusted for age, gender, and race/ethnicity, examined associations of SQ and TST with weight, BMI, waist and hip circumferences, waist-hip ratio, skinfold percent fat, DXA percent fat (%FAT) and adherence and total exercise dose (controlling for body size). **Results:** SQ was positively associated with all body size measures (all $p<.049$). BMI and %FAT were 13.2% and 17.4% higher, respectively, among participants in the highest SQ decile (worst sleep quality) compared to lowest SQ decile ($p= .001$). Poorer SQ was also associated with non-adherence, independent of BMI and %FAT ($z_{(765)}= 2.25$, $p= .024$). TST was inversely associated with exercise dose, independent of BMI and %FAT ($t_{(746)}= -2.06$, $p= .04$). TST was not associated with any body size measure. **Conclusions:** Poor SQ is predictive of increased body size and non-adherence to exercise. TST also contributes to reduced total exercise dose. Interrelations of sleep and exercise in predicting body composition warrant future research.

564-P
Leg Extension Strength is a Strong Predictor of 6 Minute Walk Distance in Older Overweight Adults With Knee Osteoarthritis

Cindy Montero, Kevin R. Vincent, Amanda N. Seay, Robert W. Hurley, Heather K. Vincent *Gainesville, FL*

Background: Obesity is an independent risk factor for knee osteoarthritis (OA), strength deficits and walking impairment. Low walking ability relates to lower functional capacity and likely continued weight gain. It is not presently clear which lower extremity muscle action best predicts walking performance in knee OA. **Methods:** This was a subset of a randomized, controlled study. Patients (N=34; 55% women; 67.4±6.1 years; 31.1±5.9 body mass index [BMI]kg/m2). One repetition maximum (1RM) tests were performed using three different lower extremity muscle actions: leg press, leg extension, and leg curl. A six-minute walks test was performed, with knee pain severity and heart rate assessed at minute intervals. Blood pressures and walking pace were collected at the onset and completion of the test. Body composition values were captured by air plethysmography. **Results:** Walk distance was lower in persons with higher BMI and adiposity. Normalized leg extension, leg curl and leg press values were lower with increasing BMI. Regression models adjusted for body mass index, age and gender revealed that all strength assessments were significant contributors to the variance for the models of walk test distance, but leg extension1RM accounted for the most variance at 24% (model $r=0.88$; $p<0.001$). Heart rates were highest in persons with BMI>35kg/m2. Knee pain severity did not significantly contribute to walk distance regression models. **Conclusions:** Leg extensions may be the most useful among lower extremity muscle actions for indicating walk performance. This simple assessment may be a clinically efficient tool in the overweight population with knee OA to identify those with ambulatory limitations.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Nutritional Epidemiology

565-P[DT]
Is Fast Food or the Fast Food Consumer to Blame?

Jennifer M. Poti, Kiyah J. Duffey, Barry M. Popkin *Chapel Hill, NC*

Background: While fast food consumption has been linked with many adverse nutritional outcomes, it is still unclear the extent to which the fast food itself, versus the rest of the diet, contributes to this association. **Methods:** We examined the association between fast food consumption and dietary pattern of non-fast foods in a nationally representative sample of 5,477 US children (2-18 y) in the 2005-2008 National Health and Nutrition Examination Survey. Cluster analysis identified two dietary patterns for the non-fast food segment of intake: Western (higher in sugar sweetened beverages, high fat sandwiches and meats, and salty snacks; 59.3%) and Prudent (higher in fruit and milk; 40.7%). Multivariate adjusted multinomial logistic regression models, accounting for survey design, were used to explore the association of frequency of fast food consumption, dietary pattern, and demographic characteristics. **Results:** Half of US children consumed fast food (38.5% on one day [episodic] and 12.1% on both days [frequent] of recall). Outside of fast food consumption, fast food consumers had higher intake of sugar sweetened beverages and candy and lower intake of milk, fruits, and vegetables than non-consumers. The odds of having a Western compared to a Prudent diet were significantly higher among episodic fast food consumers (OR=1.26; 95% CI = 1.06, 1.50) and frequent fast food consumers (OR=1.47; 95% CI = 1.07, 2.03) compared to non-consumers. The probability of being a Western fast food consumer was significantly higher among blacks than whites (OR=2.28; 95% CI = 1.41, 3.68), and for older compared to younger children (ages 7-12y, OR=1.94; 95% CI = 1.44, 2.62; ages 13-18y, OR=4.16; 95% CI = 3.02, 5.73). **Conclusions:** Fast food consumers eat

differently and have less healthy consumption patterns not only at the fast food restaurant, but also for the remainder of the diet.

566-P
Cooking and Away-From-Home Food Consumption in U.S Adults

Lindsey P. Smith, Shu Wen Ng, Barry M. Popkin *Chapel Hill, NC*

Background: Little is known about the effects of the "great recession" (since 2007) on patterns of food preparation and consumption amongst US adults. This study examines how the recession and related SES factors affects the impact of food preparation time on away-from-home (AFH) meal frequency. **Methods:** Nationally representative time use data from the American Time Use Study surveys from 2003 to 2010 were used to determine time spent cooking and proportion of AFH eating occasions unmarried, non-cohabitating US adults age 19 and older (N=58,644). T-tests were used to compare means of cooking time and eating occasions AFH pre-post the recession (since 2007). Linear regression was used to examine the percentage of eating occasions AFH with time spent in food preparation, gender, employment status, having a child, income group, and age. **Results:** Time spent cooking increased slightly after the recession from 25.6 min/day to 26.3 min/day (NS) while the proportion of eating occasions AFH decreased slightly (from 35.4% before the recession to 33.6% post-recession ($p < 0.01$)). Individuals who cooked 1 to 20 min/day, 21 to 90 min/day, and over 90 min/day consumed 10.5%, 17.9% and 23.0% fewer AFH meals than did those who never cooked ($p < 0.01$). Post-recession, individuals consumed 1.1% fewer meals away-from-home ($p = 0.05$); while food preparation time remained constant. The relationship between food preparation time and AFH eating did not change with the recession. Males, employed, childless, higher income and younger individuals were each positively associated with a higher proportion of eating occasions AFH (all $p<0.01$). **Conclusions:** People are eating AFH slightly less frequently now than they did prior to the recession; however, time spent in food preparation has not changed despite the national economic downturn.

567-P[DT]
Effects of Breast Feeding and FTO on Adiposity in Obese Hispanic Children

Ryan W. Walker *Los Angeles, CA*; Jaimie N. Davis *Austin, TX*; Hooman Allayee, Michael Goran *Los Angeles, CA*

Background: The single nucleotide polymorphism (SNP) rs9939609 [A>T] in the FTO gene has been associated with increased adiposity in both adults and children. Breast feeding (BF) has been shown to have a mixed effect on indices of obesity in Hispanics. We examined the effects of both FTO genotype and BF on measures of adiposity in obese Hispanic children in a longitudinal study. **Methods:** 131 obese (BMI percent 97.2±3.1), Hispanic boys (55%) and girls (45%) of mean age 10.9±1.7 years were followed longitudinally for 8 years. BF history was recorded by questionnaire and classified as greater or less than 4 months. Annual measures of anthropometry, intra-abdominal adipose tissue (IAAT), subcutaneous abdominal adipose tissue (SAAT) by MRI and total body fat by DEXA were obtained. DNA was analyzed via Taqman allelic discrimination to determine rs9939609 SNP genotype. ANOVA, linear regression and linear mixed modeling were used to examine between group differences and baseline and/or longitudinal effects of FTO and BF on obesity outcomes. **Results:** BMIpct and BMIz differed significantly at baseline by FTO (AA vs. AT/TT) (95.6±3.5 vs. 97.4±3, $p=0.03$ and 1.8±0.4 vs. 2.1±0.4, $p=0.01$, respectively). Adjusted IAAT, SAAT, BMIpct and BMIz differed significantly between FTO genotypes across Tanner stages 1-5 (p-trend=0.02, 0.008, 0.04 and 0.05, respectively). BF, for greater or less than 4 months, abolished the association of FTO with BMIpct and BMIz at baseline and across Tanner stages. **Conclusions:** The FTO variant rs9939609 contributes to higher BMIpct and BMIz in obese Hispanic children as young as 7 years and these effects are maintained longitudinally across Tanner stages. BF duration modifies the relationship between FTO genotype and adiposity indices in obese Hispanic children.

568-P[DT]
Longitudinal Association of Preschool Dietary Patterns With BMI in Mexican Children at Ages 7-15 Years

Karen E. Peterson, Zhenzhen Zhang, Brisa Sanchez, Yunyun Jiang *Ann Arbor, MI*; Adrienne S. Ettinger *New Haven, CT*; Alejandra Cantoral *Cuernavaca, Mexico*; Sung Kyun Park *Ann Arbor, MI*; Martha M. Téllez-Rojo *Cuernavaca, Mexico*

Background: Dietary patterns have been associated with obesity in cross-sectional studies in countries undergoing the nutrition transition. However, little research has considered the longitudinal impacts of diet on distribution of BMI across sensitive developmental periods in childhood. We examine the relationship of diet at 4 years of age and BMI at ages 7-15 among 575 Mexico City children. **Methods:** Principal components analysis of 100 FFQ items defined three dietary patterns: vegetable/fish; fruits/grains; meats/dairy/sweets. We used quantile regression to model the association of each preschool dietary factor with BMI at 10th, 25th, 50th, 75th, and 90th percentiles of the analytic sample, adjusting for child's sex, age, birth weight, energy intake and maternal BMI and schooling. **Results:** Mean (SD) child age at follow-up was 10.0 (2.4) yr and BMI 19.5(3.9); birth weight 3.1(0.4) kg, mother's BMI 28.1(4.6), and schooling 10.6 (2.9) yr. The vegetable/fish pattern was associated lower BMI at 10th (-0.51, p=<.0001) and 25th (-0.41, p=.003) quantiles; the meat/dairy/sweets pattern (higher in fat, protein and calcium) was associated with lower BMI at 10th (-0.33, p=.005), 25th (-0.42, p=.0004) and 50th (-0.42, p=.01) quantiles. The fruit/grains pattern (higher in carbohydrates) was related to higher adolescent BMI only at the 90th quantile (0.46, p=.049). **Conclusions:** Diet patterns during preschool years may have differential impacts across the BMI distribution during pre-adolescence and adolescence. Further research should assess how changes in dietary patterns and macronutrient distribution during sensitive periods, i.e., adiposity rebound, may impact development of obesity and measures of fat distribution during the pubertal transition.

569-P
Percent Body Fat Equations For Children Developed From Nhanes

Amy Roberts, Kimberly P. Truesdale, Jianwen Cai, June Stevens *Chapel Hill, NC*

Background: It is often not feasible for researchers to measure percent body fat using approaches such as DXA; therefore, methods that combine demographic and anthropometric assessments in prediction equations are often used. Several such equations have been developed; however, none have used a nationally representative sample. **Methods:** We created and validated equations using data from NHANES (1999-2004) for children 8-17y using 4 anthropometric variables (height, weight, waist circumference and triceps skinfold) plus age and race/ethnicity. Of the 6,153 children, 90.9% had complete DXA data. Following standard NHANES protocol, all analyses were repeated in 5 datasets that included imputed values for missing DXA, and the mean results were used. Analyses were stratified by gender and employed sampling weights. Squared terms and 2-way interactions were assessed resulting in a total of 62 candidate terms. Forward selection tested these terms as predictors of DXA measured percent body fat in a 2/3 random sample using criteria for inclusion of an increase in adjusted $R2 \geq 0.001$ or a decrease of $RMSE \geq 0.01$. Backward elimination was used to confirm selections. The final equations were validated in the remaining 1/3 sample. **Results:** In the complete data, the final equations resulted in adjusted R2= 0.82 and RMSE=2.77 in girls and adjusted R2= 0.89, RMSE=2.60 in boys. Bland-Altman plots indicated that the equations performed well across the range of percent body fat values. Both equations provided better prediction of percent body fat than BMI (girls: R2= 0.62, RMSE = 4.07; boys: R2 = 0.35, RMSE 6.33) or BMI z-scores (girls: R2= 0.0.62, RMSE = 4.07; boys: R2 = 0.52, RMSE 5.46). **Conclusions:** These equations provide a method for obtaining valid estimates of percent body fat in youth 8-17y, and are feasible to obtain in a variety of research settings.

570-P
School Meal and Household Income Influences on Adolescents' Fruit and Vegetable Intake

Madeline A. Dalton, Meghan R. Longacre, Keith M. Drake, Gail Langeloh *Lebanon, NH*; Karen E. Peterson *Ann Arbor, MI*; Kristy M. Hendricks, Michael L. Beach, Linda J. Titus *Lebanon, NH*

Background: Fruit and vegetable (FV) intake is promoted as part of child weight-management guidelines. Both school meals and household income influence adolescents' FV intake; however, few studies have considered these influences simultaneously. **Methods:** In 2007-08, we surveyed 1885 New Hampshire and Vermont students in grades 7-11, and their mothers, by telephone. Participants were randomly assigned to be surveyed during different months throughout the year. Adolescents self-reported their FV intake as the number of times they ate FV during the previous 7 days, and school meal consumption as the number of times per week they typically bought breakfast or lunch at school. Mothers reported their annual household income. We used Poisson regression to examine school meal and household income as predictors of FV consumption after adjusting for adolescent sex, age, race and school. **Results:** Eighty three percent (N=1546) of adolescents reported eating school meals. Among those who ate school meals, average FV intake was 8.0 (S.D.=5.9). Those with annual household incomes less than $50K had a lower FV intake than those with incomes greater than $75K (7.0 vs 8.9, respectively; p<0.001). The difference in FV intake by income was greater during the summer months (June-Aug) than the school months (Sept-June): mean summer FV intake was 5.7 for incomes < $50K vs 9.9 for incomes > $75K (N=253; p=0.02); mean FV intake during school months was 7.2 for incomes < $50K vs. 8.7 for incomes > $75K (N=1208; p=0.001). This interaction was significant even after adjusting for adolescent demographics (p = 0.001). **Conclusions:** Household income had a greater impact on adolescent FV intake during summer months. School meal consumption may attenuate income disparities in adolescent FV intake.

571-P
Neonatal Body Composition in Infants Born to Women Who Are Overweight or Obese

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Background: The aim of this study was to describe body composition of infants born to women who were overweight and obese utilizing body circumference and skin-fold thickness measurements. **Methods:** A cohort study nested within a multicentre randomized controlled trial (The LIMIT Trial). Women were recruited to the study between 10+0 and 20+0 weeks' gestation, with a body mass index (BMI) ≥25kg/m2, and were categorised as either overweight (BMI 25.0-29.9kg/m2), or obese (≥30kg/m2). Maternal weight was recorded at 36 weeks' gestation to calculate gestational weight gain, categorised according to the Institute of Medicine Guidelines (IoM) (below, within or above) for BMI category. After birth, infant body composition was assessed according to out standard protocol. **Results:** A total of 464 infants form the cohort for this analysis, with 187 women categorized overweight (40.3%), and 277 obese (59.7%). Mean birth weight (3505.9g + 527.4g Overweight Group versus 3556.3g + 532.7g Obese Group; p>0.05), and infant body composition measures were not significantly different between infants born to women who were overweight compared with infants born to women who were obese. However, birth weight significantly increased with increasing degrees of gestational weight gain (3371.0g + 557.5g below IoM recommendations; 3514 + 439.7g within IoM recommendations; 3669g + 517.7g above IoM recommendations; p<0.0001). **Conclusions:** In pregnant women who are overweight and obese, maternal gestational weight gain is a significant and important modifier of infant birth weight and measures of body composition.

572-P
Alcohol Intake and BMI Change During Late Adolescence and Early Adulthood

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Background: There is limited prospective research on the association between alcohol intake and weight gain during late adolescence and young adulthood, a period during which alcoholic beverage intake rises greatly. **Methods:** Using prospective data from an ongoing cohort study of adolescents, the Growing Up Today Study, we explored the association between change in alcohol intake and change in BMI among 2948 males and 5461 females using multivariate linear regression models adjusted for age, baseline BMI, and baseline drinking. Our sample consisted of participants who were ages 16 to 23 years in 2003 and reported BMI and alcohol intake in 2 consecutive waves between 2003 and 2007. Effect estimates reported represent the effect of a 1 drink change in total number of alcoholic drinks consumed per month. Level of alcohol consumption was categorized as follows: never, occasional (0<drinks/day<0.5), frequent (0.5≤drinks/day<1), or daily (≥1drink/day). **Results:** In 2003, 33% of males and 27% of females reported never drinking, while 20% of males and 14% of females reported daily drinking. In prospective analyses, change in alcohol consumption was positively associated with an increase in BMI in females (β=0.0018 kg/m2, 95%CI [-0.0002, 0.0039]) and males (β=0.0033 kg/m2, 95%CI [0.0013, 0.0053]). An increase in alcohol consumption level between survey years (eg from occasional to frequent) was also associated with an increase in BMI in females (β=0.11 kg/m2, 95%CI [-0.02, 0.24]) and males (β=0.27 kg/m2, 95%CI [0.11, 0.43]). Borderline significant findings observed in females did not remain after controlling for dieting. **Conclusions:** An increase in alcohol consumption during late adolescence and young adulthood predicts weight gain among males. Dieting in females may prevent alcohol-related weight gain.

573-P[DT]
Perceived and Measured Diet Quality in U.S. Adults: The National Health and Nutrition Examination Survey (NHANES)

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Background: The Dietary Approaches to Stop Hypertension (DASH) dietary pattern has been shown to promote weight maintenance and reduce cardiometabolic risk. Researchers have created different diet quality scores to reflect DASH adherence, but little is known about the relationship between perceived diet quality (PDQ) and diet quality measured by DASH score in US adults. **Methods:** We compared PDQ and a nutrient-based DASH score using 2005-06 NHANES data for adults ≥19 years (n=4419). Participants rated diet quality on a 5-point scale and PDQ scores were generated (low, medium, high). Day 1 of 24-h recall data was used to estimate DASH scores by assigning 0, 0.5 (DASH goals), or 1 point (optimal) for each of 9 energy-adjusted nutrients: total fat, saturated fat, protein, cholesterol, fiber, calcium, magnesium, potassium, sodium (scores ranged from 0-9 points). Scores and nutrient intake were compared across PDQ levels using linear regression, adjusted for age, sex, income, education, and race. **Results:** Thirty-three percent of adults had high PDQ. Those with high PDQ had higher DASH scores than those with low PDQ (3.0±0.1 vs 2.5±0.1,p<0.001), but their average score did not reflect DASH accordance. In particular, adults with high PDQ reported higher saturated fat(10.5±0.2% energy) and sodium intake(1596±36 mg/1000 kcal) compared to optimal DASH goals(saturated fat:6% energy; sodium:1143 mg/1000 kcal). Results for those with high vs low PDQ were similar for Whites (3.0±0.1 vs 2.5±0.1,p=0.001) and Blacks (2.7±0.1 vs 2.2±0.1,p=0.001), but there was no difference between PDQ groups for Mexican Americans (3.1±0.2 vs 2.9±0.1,p=0.4). **Conclusions:** Among Mexican Americans, there is scant evidence for a relationship between PDQ and DASH score. Among other racial/ethnic groups, high PDQ may be associated with a better diet, but not a diet sufficiently aligned with DASH goals.

574-P[DT]
Dietary Protein, Skeletal Muscle Mass, and Obesity Risk in Adolescent Girls

Syed R. Hasnain, Justin R. Buendia, M. Loring Bradlee, Lynn L. Moore *Boston, MA*

Background: Adolescence is a critical period for acquisition of skeletal muscle mass (SMM) as well as the development of obesity. Prospective data on the effect of dietary protein on these outcomes are sparse. **Methods:** The goal of the study is to estimate the effects of dietary protein on adolescent body composition, using data from the National Growth and Health Study, a prospective study of 2379 9-10 year old girls followed for 10 years. 3-day records were used to assess diet during 8 years of follow up. Bioelectrical impedance data from annual clinic visits were combined with age and height to estimate percent of total body weight from SMM. Analysis of covariance and logistic models were used to control for potential confounding by age, race, SES, height, baseline weight, activity, TV/video viewing time, age at menar-

che, and energy. **Results:** Percent body fat in late adolescence declined linearly with increasing quintiles of protein intake (in g/kg/day) in early adolescence (34.6, 32.3, 30.6, 29.8, 28.6 % body fat, respectively, for quintiles 1-5; p-trend<0.0001). Similary, waist circumference declined linearly (91.6, 86.5, 82.8, 81.1, 78.5 cm, for quintiles 1-5; p-trend<0.0001). Percent SMM increased from 31.0% to 35.8% with increasing quintiles of intake. Compared with the lowest quintile of intake, there was a striking 89% reduced risk (95% CI: 0.06-0.20) of being overweight (BMI ≥ 25 kg/m2) at end of follow up. **Conclusions:** These results suggest that higher dietary protein intakes may benefit acquisition of SMM and reduce the risk of acquiring excess body fat during adolescence.

575-P
Maternal Adherence to the Mediterranean Diet in Association With Offspring Birthweight and Infant Growth

Nansi Boghossian, Edwina Yeung, Paul Albert, Cuilin Zhang *Bethesda, MD*

Background: Little evidence examining the effect of dietary patterns during pregnancy on birthweight and infant growth from humans is available. **Methods:** We assessed the impact of Mediterranean diet (MD), high in fruits, vegetables and monounsaturated fats, during pregnancy on birthweight (N=1121) and infant BMI (N=796) in the Infant Feeding Practices Study II (2005-07), a longitudinal survey of US mothers of healthy singletons. Each mother's MD score (range 0-8) was calculated during late pregnancy from a modified version of the Diet History Questionnaire. Multiple linear regression models examined whether MD score, %intake from total fat, saturated fat, monounsaturated fat, carbohydrates and proteins were each associated with birthweight adjusting for gestational age, sex, race, energy intake, income, smoking, maternal education, and maternal age. Logistic regression was used to examine the associations between MD, SGA, and LGA while linear mixed models examined the association between MD and infant BMI at 3, 5, 7 and 12 months. **Results:** 85% of the mothers were white. Mean (SD) maternal age, pre-pregnancy BMI, MD score, infant birthweight, and birth length were 28.9(5.4), 26.3(6.5), 3.9(1.8), 3438(456) g, and 51(3) cm, respectively. Maternal age, education, income, BMI and caloric intake were significantly associated with the MD score. No association was detected between birthweight, SGA, LGA and MD. Of the other examined dietary components, intake of carbohydrates (-3.24g/percent increase, p=0.07) and protein (+8.54g/percent increase, p=0.07) were borderline significant in association with birthweight. However, neither maternal MD adherence, nor intake of the examined dietary components, was a significant factor in the trajectory of growth by infant BMI. **Conclusions:** MD adherence during pregnancy had no effect on birthweight, SGA, LGA and infant growth.

576-P
Causes of Increased Energy Intake Among Children in the US, 1977-2008

Kiyah J. Duffey, Barry M. Popkin *Chapel Hill, NC*

Background: Changes in total energy intake have been reported among children and adolescents, but the extent to which the components of total energy - energy density (ED), portion size (PS) and the number of eating/drinking occasions (EOs) - drive these changes is unknown. Our objective was to examine their relative contribution to changes in daily total energy over 30 years. **Methods:** Nationally representative data for children and adolescents (aged 2-18 y) from the Nationwide Food Consumption Survey (1977-78, n=12,036), Continuing Survey of Food Intake of Individuals (1989-91, n=4,008), and National Health and Nutrition Examination Surveys (1994-98 [n=8,621] and 2005-08 [n=6,744]) are mathematically decomposed for changes in total energy (kcal/d) to determine the relative contributions its three component parts: PS (g/EO), ED (kcal/g/EO) and EO (#). **Results:** Over the full period, there was an increase in total energy intake (+130 kcal/d) and the number of daily EO (+1). The average PS/EO increased between 1977-78 and 1989-91 then dropped by about 80g/EO between 1989-91 and 2005-08. The average ED/EO has fluctuated over time, reaching its highest level in 2005-08 (1.24 kcal/g/EO). Our decomposition results show that between 1977-78 and 2005-08 changes in the number of EO/d and PS/EO were the largest contributors to annualized changes in daily total energy (+20 kcal/d/y and -13 kcal/d/y respectively). Considerable differences were observed for race/ethnic and education (parents') subgroups. **Conclusions:** We find that increases in the number of eating occasions and decreases in portion sizes contributed significantly more to the shift in total energy intake than did changes in energy density. These findings highlight potentially important intervention targets for reducing energy imbalances in US youth.

577-P[DT]
Patterns of Dietary Intake Among U.S. 2-6 Year Olds, 2003-2008

Chris N. Ford, Barry M. Popkin *Chapel Hill, NC*

Background: Obesity is increasing among preschoolers in the U.S. We describe patterns of dietary intake among 2-6 year olds and select characteristics of individuals within each pattern. **Methods:** We included 3,478 children ages 2-6 from three nationally representative surveys of dietary intake in the U.S.: NHANES surveys 2003-2004, 2005-2006 and 2007-2008. Diet data from one 24-h dietary recall was categorized into 11 food groups. Cluster analysis was performed using Z-scores for energy intake. Food groups with Z-scores greater than ± 0.5 were considered meaningful. Multinomial logistic regression with race/ethnicity, income, mother's education and gender as predictors, and cluster as the outcome was used to estimate the predicted probabilities of being in each cluster for each value of race/ethnicity, income, maternal education and gender. **Results:** Five clusters were identified: 1) pizza (14%); 2) fast food (FF) (32%); 3) pasta 14%); 4) desserts and bread (DB) (31%); and 5) fruits, vegetables and dairy (FVD) (10%). The likelihood of being in the FF cluster among Blacks was 11% higher than that of Whites, and 16% higher than that of Mexican Americans (MA). The probability of being in the DB cluster among MA was 10% higher than that of Whites, and 20% higher than that of Blacks. The chance of being in the FF cluster among children with mothers in the lowest education group was 10% higher than that of those with mothers in the highest education group. The chance of being in the DB cluster among children with mothers in the highest education group was 15% higher than that of those with mothers in the lowest education group. **Conclusions:** The diets of children ages 2-6 in the US are predominated by foods of poor nutrient quality. Fast food and desserts and breads were the leading patterns, whereas fruits, vegetables and dairy were least frequently consumed.

578-P
Food Sources of Dietary Fiber in 2-18 Year Olds in NHANES 2003-2006 and the Association Between Fiber Density and Children's Chronic Disease Risk

Mary Brauchla, Sibylle Kranz *West Lafayette, IN*

Background: Increased dietary fiber (DF) intake has been linked with lower risk of overweight and obesity and attenuation of diabetes symptoms in adults, but data are sparse for children. **Methods:** NHANES data from 2003-2006 was evaluated in 2-18 year olds for DF density consumption and to estimate the association of the risk of being classified as overweight or obese with increasing DF density intake in plausible intake reporters. Logistic regression models were used to calculate the odds of being overweight/obese by DF density tertiles. Also, one 24-hour recall day was randomly chosen to examine food intake and food DF content to rank-order all foods consumed (n=52,315) from highest to lowest DF contributor (grams (g) of DF from food consumed/total g of DF consumed by the population). **Results:** Average DF density intake was 6.4g/1000kcals. Fiber density tertiles were 4.3, 6.1 and 8.8g/1000kcals, and children in the highest and medium tertile had a 21% and 18% reduced risk of overweight/obesity, respectively, compared to children in the lowest tertile (OR=0.79,p<0.031, OR=0.82 p<0.043). Foods providing the highest proportions of DF were low fiber-dense foods including French fries, pizza and white bread/rolls. Glucose metabolism was improved in children in the second or third DF tertile (OR=0.65 and OR=0.72, p-value <0.001 and <0.044, respectively) compared to the lowest tertile.
Conclusions: These results indicate reduced overweight/obesity and diabetes risk with increased DF density. However, our study was based on a cross-sectional design and random controlled clinical studies are needed to establish causality.

579-P[DT]

The Joint Effects of BMI, Waist Circumference and Cardiovascular Risk Factors on Mortality in Whites and Blacks: The Atherosclerosis Risk in Communities Study

Eva Erber, Kimberly P. Truesdale, Jianwen Cai, June Stevens *Chapel Hill, NC*

Background: In a 1998 Evidence Report the NIH recommended weight loss treatment for patients who 1) are obese; 2) are overweight and have ≥2 risk factors; or 3) have a high waist circumference (WC; women: >88cm, men: >102cm) and ≥2 risk factors. However, few studies have examined the utility of risk factors to determine if treatment is indicated in patients with high WC or overweight. **Methods:** Using data from the ARIC study (1987-2005) on 15,423 Whites and Blacks aged 45-64 years we examined the joint effects of BMI, WC and the following CVD risk factors: age (women: >55, men: >45), smoking, hypertension or medication, LDL ≥160mg/dl, HDL <35mg/dl and glucose ≥110mg/dl or diabetes. Mortality rates and hazard ratios (95% CI) were calculated using Poisson regression and multivariable adjusted Cox regression, respectively. Participants with normal BMI, normal WC and <2 risk factors were used as reference. **Results:** The crude mortality rate was 10.5/1,000 person-years (10.0-11.0). More than half the participants had ≥2 risk factors. Compared to the reference, hazard ratios were ~2-3 times higher for participants in the three categories recommended for treatment; however, the association was not significant for obese individuals with normal WC and <2 risk factors. The mortality rate among normal weight participants with normal WC and ≥2 risk factors and among overweight participants with high WC and <2 risk factors was significantly elevated, although these individuals would routinely not be recommended for treatment. **Conclusions:** This study of mortality demonstrates the complex relationship of overall and abdominal obesity with risk factors, and indicates that more research is needed to support or refute the current NIH recommendations. Furthermore, it is necessary to investigate how weight loss can influence levels of risk factors and risk of morbidity and mortality.

580-P[DT]

Diet Patterns and Weight and Waist Circumference Change Among Chinese Adults

Carolina Batis, Barry M. Popkin *Chapel Hill, NC*

Background: The role of overall dietary patterns in the rapid increase of obesity in China is not understood. Our aim was to examine the association between dietary patterns and weight and waist circumference (WC) change. **Methods:** We included 3,840 adults (18 to 65 years old) from the China Health and Nutrition Survey that had data in 2006 and 2009. Diet was measured by a combination of a household food inventory (detailed weighing of changes in household food) and 3 consecutive days of 24-h recall. Diet in 2006 was categorized in 39 food groups and exploratory factor analysis was conducted to identify dietary patterns. We run multivariate linear regressions for a 3-y change in weight and WC with dietary patterns were the main exposure. All models were adjusted by baseline weight or WC (respectively), age, gender, education level, income, physical activity, urbanization, geographical region and smoking. **Results:** Two dietary patterns were found; the first (low in flour and corn products and high in rice, leafy vegetables, red meat, poultry and fish) had a significant protective effect against weight and WC gain (weight change: β= -0.32, p=0.01; WC change: β= -0.55, p=0.007); the second dietary pattern (high in breads, pastries and cookies, fried wheat, corn and starchy products, nuts and seeds, fruits, seaweed, eggs, milk, and fast food) did not significantly predict either weight or WC change. **Conclusions:** The way foods are eaten in combination is population specific and these findings provide insight of the effects of these combinations in China. A traditional southern pattern high in rice, vegetables, meat and fish can be protective against weight gain; whereas a more modernized pattern that included a wider range of foods had no association with this outcome.

581-P[DT]

Characteristics Associated With Consumption of Sports and Energy Drinks Among US Adults

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Background: Sports and energy drinks (SED) are an increasing source of added sugar in American diets, yet little is known about factors associated with intake. Thus, we examined characteristics associated with SED intake among a nationally representative sample of US adults. **Methods:** This cross-sectional study was based on the 2010 National Health Interview Survey and included 25,492 adults (≥18 y). The outcome measure was SED intake during the past week, and the explanatory variables were sociodemographic characteristics, weight status, behavioral factors, and other beverage intake. **Results:** Nationally, 31.3% of adults drank SED >0 times/wk and 11.6% drank ≥3 times/wk. Based on multivariable logistic regression, factors associated with significantly greater odds for drinking SED >0 times/wk were younger age (OR=8.13 for 18–39 y, OR=3.10 for 40–59 y vs. ≥60 y), male gender (OR=2.73), being Hispanic (OR=1.14 vs. NH White), not married (OR=1.44), higher income (OR=1.14 for $35,000–74,999, OR=1.25 for $75,000–99,999, OR=1.29 for ≥$100,000 vs. <$35,000), region (OR=1.20 for Midwest, OR=1.35 for South, OR=1.26 for West vs. Northeast), engaging in physical activity (OR=1.37 for >0–2 times/wk, OR=1.36 for >2–4 times/wk, OR=1.29 for >4 times/wk vs. none), current smokers (OR=1.29 vs. never smokers), and better social relationships (OR=1.23 for Excellent/Very Good, OR=1.19 for Good vs. Fair/Poor). Other/multi-race (OR=0.73 vs. NH White) and being obese (OR=0.89 vs. underweight/normal weight) were associated with lower odds for drinking SED. Also, higher intake of regular soda, coffee/tea drinks, fruit drinks, milk, 100% fruit juice, and alcohol was associated with greater odds for drinking SED. **Conclusions:** The significant findings of various factors associated with SED intake can be used to inform public health education efforts to increase healthier beverage intake

582-P

Differences in Body Fat Explain Beneficial Effects of Dietary Protein on Adolescent Blood Pressure

Justin R. Buendia, Syed R. Hasnain, Martha R. Singer, Lynn L. Moore *Boston, MA*

Background: The prevalence of elevated blood pressure (EBP) has risen steadily for U.S. adults and children during the past 20 years. The goal of this study is to estimate effects of dietary protein on adolescent BP and to determine whether these effects are explained by differences in body composition. **Methods:** 2379 girls in the National Growth and Health study (9-10 years at baseline) were followed for 10 years. Eight sets of 3-day diet records were collected. BP was measured 3-4 times at each visit. Outcomes for these analyses were mean SBP, DBP, and EBP risk in late adolescence (mean age=18.3 years). Analysis of covariance and multiple logistic regression models were used to control for potential confounding by age, race, SES, height, physical activity, age at menarche, total energy intake, and TV/video viewing time. **Results:** Adjusted mean SBP and DBP levels declined linearly with increasing quintiles of protein intake per kg body weight (SBP: 113.0, 110.2, 108.5, 107.2, 106.0 mmHg; DBP: 67.8, 66.0, 65.3, 64.2, 64.0 mmHg, respectively; p-trend<0.0001 for both). These results were largely attenuated when waist size was added to the multivariable models (SBP: 109.1, 109.2, 109.0, 108.8, 109.0 mmHg; DBP: 66.5, 65.6, 65.5, 64.8, 65.0 mmHg, respectively; p-trend<0.0001 for both). Girls in the lowest quintile of intake (<1.0 g/kg body weight/day) vs. the highest quintile (>1.7 g/kg body weight/day) were 4.7 times as likely to develop EBP in late adolescence (95% CI: 2.8-8.0). These results were also attenuated by inclusion of waist size in the model. **Conclusions:** Increasing intake of dietary protein per kg body weight during adolescence was associated with lower BP levels and lower EBP risk at the end of adolescence. These effects were explained by intermediate effects of protein on central adiposity.

583-P

Does Waist Circumference Need To Be Scaled By Height in Reference to Measured Total Body Fat Mass?

Moonseong Heo, Geoffrey C. Kabat, Steven B. Heymsfield, Thomas E. Rohan *Bronx, NY*

Background: Body mass index (BMI), weight(kg)/height(m)^2, is widely used as a proxy anthropometric measure for total body fat mass (TBFM). Waist circumference (WC) is also highly correlated with TBFM. However, little is known about what scaling of x in WC(m)/Height(m)^x is optimally associated with measured TBFM. **Methods:** Using DXA-measured TBFM from the NHANES 1999-2004 data, we applied a grid search by increasing x from 0.0 to 3.0 by increments of 0.1 to the simple regression model, TBFM=b0+b1*(WC(m)/Height(m)^x). We then obtained an estimate of x that resulted in the greatest R-sq. For this fitting, complex survey design fea-

 For author conflict of interest information, see page S250

tures and a multiple imputation method were both taken into account. The sample size for this study was N=12,906 (6544 men and 6362 women) and participants were stratified by sex (men and women), race/ethnicity (non-Hispanic Whites, non-Hispanic Blacks, and Mexican-American) and three age groups (18-29y, 30-49y, 50-84y). **Results:** The estimated optimal scaling powers was 0, i.e., no scaling of WC with respect to height, for both men (R-sq=0.95) and women (R-sq=0.90). The prediction equations were: TBFM=-40.7+66.4*WC(m) for men and TBFM=-35.8 +71.7*WC(m) for women. In contrast, R-sq's for BMI were 0.86 for men and 0.92 for women. The optimal scaling powers across the nine combinations of the stratifying factors were all 0 for both men and women except for non-Hispanic black men aged 18-29 (x=0.1). **Conclusions:** Although BMI is more strongly associated with TBFM among women, WC is more strongly correlated among men. Therefore, the simpler anthropometric measure WC may be more useful for predicting TBFM among men.

584-P
Associations of DXA-Measured Percent Body Fat With BMI, BMI Z-score, BMI Percentile, and Percent Overweight Among US Boys and Girls From NHANES 1999-2004

Moonseong Heo, Judith Wylie-Rosett, Angelo Pietrobelli, Myles Faith *Bronx, NY*

Background: Age-sex-adjusted body mass index (BMI), BMI z-score, BMI percentile, and percent overweight (or BMI%) are commonly used as a proxy measure for children's total body fat. We sought for what BMI measure would be most highly associated with a reference measure of percent body fat at the US population level. **Methods:** We analyzed DXA-measured percent body fat of US boys and girls aged 96-215 (162 +/- 33) months, or 8-17.9 years, old from NHANES 1999-2004. The sample size for this study was N=6107 (3700 boys and 2407 girls). We fit piece-wise linear regression models to percent body fat using each BMI measure as the predictor, which was guided by observations form application of a non-parametric scatter plot smoothing method. The piece-wise linear regression models fit two different, yet connected, slopes between before and after a change point. Both the complex survey design features and the nature of multiply imputed data were taken into account. We applied a grid search strategy with moving change points to obtain an optimal change point for each BMI measure that resulted in the greatest R-sq. We then compared those greatest R-sq's across the four measures for boys and girls separately. **Results:** In boys, the greatest R-sq's were comparable across BMI percentile (R-sq =0.64), BMI z-scores (R-sq =0.66) and percent overweight (R-sq =0.65) except for that of BMI (R-sq =0.39). In girls, however, the greatest R2's were comparable across all measures: BMI percentile (R-sq =0.69), BMI (R-sq =0.70), BMI z-scores (R-sq =0.67), and percent overweight (R-sq =0.70). **Conclusions:** The anthropometric BMI measures, regardless of type and sex, were highly correlated with measured percent body fat, except for BMI in boys. Therefore, this finding should carefully be considered when BMI is used for a proxy measure of percent body fat for boys.

585-P[DT]
The Relationship Between Parental and Child Weight Status in South Korea: 2001-2009

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Background: Parents can influence a child's weight through genetic or behavioral (dietary and physical activity/inactivity) practices. In this study we examined the association between parent and child overweight status in South Korea. **Methods:** Data for households with children ages 2-18 years were derived from the 2001 (n=1,712) and 2009 (n=1,496) Korea National Health and Nutrition Examination Survey provided detailed Health Examination data. Comparisons of the prevalnce of children's overweight according to parental weight status (BMI ≥25 kg/m2, yes/no) using International Obesity Taskforce (IOTF) defined cut points. **Results:** The prevalence of overweight increased among adults to 31.3% (p=0.05) and declined non-significantly among children to 21.1% (p=0.4347) in 2009. In 2001, 40.2 % of children with overweight parents were also overweight, compared to 19.8% of children with normal weight parents (p<.0001). A similar pattern was observed in 2009, with the prevalence of overweight among children with overweight parents double that of children with normal weight parents (18.4% vs. 41.1% respectively, p<.0001). The influence of other adults (not parents) within household was smaller: 27.7 % of children living with overweight adults were also overweight in 2009. **Conclusions:** Child overweight was significantly related to parent's weight status with minimal shifts over this decade in the relationship. These results suggest that obesity-prevention programs should be focused on the family, as targeting the home environment may result in improvements in childhood overweight. Understanding the influence of parental dietary and physical activity patterns and the family socioeconomic environment (e.g. parent's education and employment status, income, etc.) needs to be explored.

586-P
Soda Consumption During an 'Ad Libitum' Food Intake Assessment Predicts Future Weight Gain

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Background: Soda consumption as a source of excess calories may contribute to weight gain. **Methods:** We investigated soda intake in 203 non-diabetic subjects (128M/75F; Age: 34.3±8.9y; BMI 32.5±7.4 kg/m^2; %body fat 31.6±8.6%) who self-selected their food over 3 days from an ad libitum vending machine system. Individuals were asked to choose one preferred beverage to be stocked in the vending machine. Mean daily energy intake (DEI) was calculated from food weight. Calories consumed from soda were recorded as were food choices that were low in fat (<20%) or high in simple sugars (>30%). Food choices were expressed as a percent of DEI. **Results:** The number of calories consumed from soda was negatively related to age (r=-0.28, p<0.0001), and choosing low-fat foods (r=-0.39, p<0.0001), but positively associated with choosing solid foods high in simple sugars (r=0.46, p<0.0001) and overall mean DEI (r=0.46, p<0.0001). DEI was higher in those who consumed calories from beverages and this increase was explained by the excess calories from the beverages as energy intake from food alone did not differ between the groups (p=0.11). A subset of 74 subjects had measurement of follow-up weights and OGTTs (47M/27F; average follow-up time=2.7±2.1yrs). Total DEI as measured with the vending machine paradigm was not related to change in weight (p=0.49) or change in glucose regulation (p=0.16). However, number of calories consumed from soda correlated with change in future weight (r=0.24, p=0.04), even after adjusting for initial weight and follow-up time. **Conclusions:** Soda consumption is associated with future weight gain. Whether this indicates that soda is a marker for dietary choices that contribute to future weight change or there is a continual lack of dietary compensation for calories consumed as beverages is yet to be determined.

587-P[DT]
Dietary Behaviors and Overweight/Obesity: A 5-year Longitudinal Study Among Adolescents of Ho Chi Minh City, Vietnam

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Background: Overweight/obesity is becoming a public health problem of children and adolescents in Vietnam. This study aims to examine the relationships between dietary behaviors and incidence of overweight/obesity among adolescents in urban areas of Ho Chi Minh City, Vietnam. **Methods:** A 5-year prospective cohort study, comprising 5 data collection points, one year apart was conducted between 2004 and 2009. Anthropometry, parental and child factors, child dietary behaviour information were collected from 718 junior high school students using questionnaires. Body mass index was assessed and overweight/obesity was defined using IOTF cut-offs. Dietary habits of consuming fruits/vegetables, soft-drinks, and snacks were classified as frequently; not frequently or rarely/don't consume. The frequency of having breakfast was divided into three levels: daily, most days, and seldom/some days. Generalized estimating equations using a hierarchical approach were employed to assess the longitudinal relationship between incidence of overweight/obesity and the predictors. **Results:** After controlling for family wealth index, age and gender, frequently consuming snacks increased the risk of overweight/obesity seven times (RR = 7.3, 95%CI = 4.4, 12.0) and consuming soft-drinks also increased the risk (RR = 1.6, 95%CI = 1.0, 2.5). In contrast frequently consuming fruit/vegetables decreased the risk of overweight/obesity by 60% (RR = 0.4, 95%CI = 0.2, 0.7) and having breakfast daily also decreased it by 60% (RR = 0.4, 95%CI = 0.1, 0.9). **Conclusions:** Obesity prevention programs in HCMC in the future should require messages

to promote consumption of fruits/vegetables and having breakfast as well as reducing the consumption of snacks and soft drinks.

588-P
Screening For Micronutrient Deficiencies Before and After Bariatric Surgery

Kimberly Gudzune, Mary Margaret Huizinga, Hsien-Yen Chang, Jeanne M. Clark *Baltimore, MD*

Background: Few studies have examined micronutrient laboratory testing (MLT) among bariatric surgery patients. We aimed to describe the prevalence of pre- and post-surgical MLT, and look for differences by bariatric surgery type. **Methods:** We used 2002-2006 claims data from 7 health plans to identify patients that received bariatric surgery. Our outcomes were claims for vitamin D, vitamin B12, folate, and iron MLT during pre- and post-surgical time periods using CPT codes. The independent variable was bariatric surgery type, categorized as restrictive, Roux-en-Y gastric bypass (RYGB), and malabsorptive. We calculated the prevalence of MLT, and then performed multivariate logistic regression to determine the association between MLT and surgery type. **Results:** Of the 21,345 eligible patients, 84% underwent RYGB. Few patients had vitamin D (7%), vitamin B12 (21%), folate (17%), or iron (21%) MLT before surgery. The odds of pre-surgical vitamin D, folate, and iron MLT were significantly lower for restrictive versus RYGB [OR 0.41, 0.90, 0.83; respectively]. The prevalence of MLT in the 12-month post-surgical period varied: vitamin D (12%), vitamin B12 (60%), folate (47%) and iron (49%). All declined 24 and 36 months post-surgery. The odds of vitamin D, vitamin B12, folate and iron MLT were significantly lower for restrictive versus RYGB 12 months post-surgery [OR 0.24, 0.08, 0.12, 0.14; respectively], which persisted in the 24- and 36-month periods. The odds of vitamin B12, folate and iron MLT were significantly lower for malabsorptive versus RYGB 12 months post-surgery [OR 0.16, 0.25, 0.30; respectively]. **Conclusions:** Many patients did not receive MLT pre- or post-surgery, despite their well-documented risk of micronutrient deficiencies. Additional studies need to evaluate if recent perioperative guidelines for bariatric surgery patients has improved the rate of MLT.

589-P
Diagnosis of Micronutrient Deficiencies After Bariatric Surgery

Kimberly Gudzune, Mary Margaret Huizinga, Hsien-Yen Chang, Jeanne M. Clark *Baltimore, MD*

Background: Many studies examining micronutrient deficiencies (MND) after bariatric surgery have used data from a single site. We aimed to describe the prevalence of post-surgical MND, and test for differences by bariatric surgery type in a large cohort of insured patients. **Methods:** We used 2002-2006 claims data from 7 health plans to identify patients who had received bariatric surgery. Our outcomes were claims for vitamin D, vitamin B12, folate and iron MND during the 12-, 24- and 36-month post-surgical periods. The independent variable was bariatric surgery type, categorized as restrictive, Roux-en-Y gastric bypass (RYGB), and malabsorptive. We calculated the prevalence of MND, and then performed multivariate logistic regression to determine the association between MND and surgery type. **Results:** Of the 21,345 eligible patients, 84% underwent RYGB. Among all eligible patients, 34% had vitamin D, 20% had vitamin B12, 13% had folate, and 10% had iron MND diagnosed 12 months after surgery. The adjusted odds of vitamin B12 [OR 0.53 95%CI 0.40-0.72], folate [OR 0.46 95%CI 0.30-0.72], and iron [OR 0.47 95%CI 0.30-0.73] MND were significantly lower for restrictive versus RYGB in the 12-month surgical period. These differences did not persist in the 24- and 36-month post-surgical periods. There were no significant differences in vitamin D MND between restrictive and RYGB. The adjusted odds of vitamin D MND were significantly greater for malabsorptive versus RYGB [OR 2.66, 95%CI 1.09-6.50] in the 12-month post-surgical period, which persisted in both the 24- and 36-month periods. There were no significant differences in vitamin B12, folate, or iron MND between malabsorptive and RYGB. **Conclusions:** MND were relatively common after bariatric surgery, especially vitamin D and vitamin B12, reinforcing the need to screen and treat patients for MND after bariatric surgery.

590-P
Sources of Saturated Fat, Trans-Fatty Acids, and Sugar Consumption in Brazil, 2008-2009

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Background: Little is known about the consumption of saturated fat (SAFA), trans-fatty acids (TFA), and sugars in Brazil. **Methods:** Using the first nationwide individual dietary survey (2008-09), we examined these factors in a probabilistic sample of individuals ≥ 10 years old (n=34,003). Food intake was assessed by means of two non consecutive food records. Foods providing >9.1% of energy from SAFA, or >1.3% of energy from TFA, or >13% of energy from added sugars per 100g were classified as high in solid fats and/or sugar (SoFaS). Beverages, cheeses, fats and oils, fried potatoes, savory snacks, milk and dairy, and ready-to-eat cereals were classified according to alternative criteria to ensure that low energy- or nutrients- dense products would not be misclassified. **Results:** Mean energy intake was 1,921kcal and 50% of the calories came from SoFaS foods. Contribution of SoFaS foods to total energy intake was higher among women (52%) and adolescents (54%). Individuals in rural areas (43%) and in the lowest quartile of per capita family income (43%) reported the smallest participation of SoFaS foods in total energy intake. SoFaS foods were large contributors to total SAFA (82%), TFA (85%), added sugar (75%), and total sugar (86%) consumption. The SoFaS food groups that contributed most to SAFA and TFA intakes were meats, fats and oils, and sweets and desserts, while most of the added and total sugar in the diet was supplied by beverages, sweets and desserts, and milk and dairy. **Conclusions:** This is the first attempt to define a food- and nutrient-based measure to characterize dietary intake in Brazil, with results suggesting that SoFaS foods are important contributors to food consumption in this country. This study offers potential approaches to improve the Brazilian diet and reduce nutrition-related non communicable chronic diseases.

591-P[DT]
Body Mass Index and Body Adiposity Index as Indicators of Percentage Body Fat in Peri-Pubertal Black Children

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Background: Whilst BMI is the most widely used indicator of overweight and obesity its limitation are well recognised. Recently the Body Adiposity Index (BAI = (hip circumference in cm) / (height in m)1.5 – 18) has been proposed as an alternative to BMI with the advantage that it "estimates %adiposity directly" and does so without the need to weigh individuals. To date the BAI has been tested in adult samples but its potential advantage in assessing adiposity during childhood and early puberty when weight measurement may be difficult has not been tested. Here we present a comparison of BMI, BAI, and %BF in a sample of peri-pubertal African (Black) children aged 9 to 10 years. **Methods:** The sample was composed of 475 Black children (252 boys; 223 girls) in whom %BF was estimated from dual X-ray absorptiometry (DXA) and pubertal status was assessed using Tanner scales. Pearson's correlations, adjusted R^2, Bland-Altman plots, and Lin concordance coefficients were used to compare BMI, BAI and %BF. **Results:** Correlations between BMI or BAI and %BF were not significantly different at 9 or 10 years in both sexes except for 10 year old boys in whom the correlation for BMI and %BF was significantly higher than for BAI ($p<0.05$). The relationship between BMI and %BF was also significantly greater in pre-pubertal rather than pubertal boys but not significantly related to the initiation of puberty in girls. Adjusted R^2 values were greater for BMI than for BAI in both age groups and for each pubertal status group. Lin concordance coefficients were considered poor (i.e. <0.90) but were similar for BMI and BAI for the whole sample by age (0.78, 0.73) and by pubertal status (0.80, 0.81). **Conclusions:** BAI demonstrated no consistent advantages over BMI in characterising %BF in Black peri-pubertal children aged 9 to 10 years.

592-P
Attitudes About Lifestyle Behaviors and Body Weight Among Youth in Georgia

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Background: Childhood obesity is particularly prevalent in the Southeastern United States. This study aims to assess attitudes and knowledge pertaining to diet and obesity, to investigate perceptions of healthy dietary habits and to examine dietary patterns among youth in the state of Georgia. **Methods:** This study comprises secondary analysis of focus group data collected by an Atlanta-based marketing company with children 4-15 years. Youth reports of family eating habits, including food preparation, meal frequency, eating environment, perceived facilitators and barriers of healthy diet, and knowledge about obesity and its complications were assessed. Thematic analysis was used to identify major themes in the audio and video transcripts. **Results:** Youth believed that obesity was a problem, yet the majority of overweight youth felt that their weight was healthy and attributed overweight to genetics or metabolism. Furthermore, knowledge of adverse health consequences resulting from obesity was limited. Many overweight youth expressed wanting to positively alter their dietary habits. **Conclusions:** Our analysis suggests that in the Southeast US, youth commonly recognize obesity as a problem but there is less understanding of the link to lifestyle choices or the connection to future morbidities. This suggests that more education connecting lifestyle behaviors and dietary choices to obesity is necessary.

593-P
Odds of Overweight Among US Children Vary By Type and Source of Dietary Sugar Consumed

Jean A. Welsh, Miriam B. Vos *Atlanta, GA*

Background: Added sugars consumed in beverages have been positively associated with risk of overweight but it is unknown if the association is similar with consumption of sugar-sweetened foods or foods and beverages high in naturally occurring sugars. **Methods:** We used cross-sectional data from children 2-19 y in the National Health and Nutrition Examination Survey 2003-2008 (n=10,971) and data from the MyPyramid Equivalents Database to estimate the proportion of total energy intake (%) obtained from (non-milk)sugars in sugar sweetened and naturally sweet foods and beverages. Complex survey procedures were used and weights were applied to obtain national estimates of mean intake. Multivariate logistic regression was used to assess the odds of overweight (BMI>85th age and sex percentile) adjusting for age, sex, race/ethnicity and intake of other sources of sugars, other carbohydrates, total energy, total fat, and fiber. **Results:** Among all children, sugar-sweetened foods were the leading source of dietary (non-milk) sugars, 9.4% energy (CI: 9.0, 9.9%), followed by sugar-sweetened beverages (SSBs), 8.1% (CI: 7.5, 8.6%), naturally sweet foods, 4.9% (CI: 4.6, 5.1%), and naturally sweet beverages, 1.9% (CI: 1.8, 2.1%). Odds of overweight were 2.8 (CI: 1.1, 6.8) times as great with each additional 1% increase in total energy consumed as sugar in SSBs; no increase was observed with increased intake of sugar from sugar-sweetened foods or naturally sweet foods or beverages. **Conclusions:** Sugars added to foods and beverages contribute approximately 2.5 times more calories to the diets of US children than sugars from natural sources. The results of our study suggest that liquid sources of added sugars may play a unique role in increasing obesity risk.

594-P
Mucosal Adherent Gut Bacteria Association With Body Mass Index

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Background: Evidence from recent studies suggests a link between the intestinal microbiota and obesity. The majority of previous studies were carried out using fecal samples, and few studies have investigated mucosal adherent bacteria that stay in close contact with colonic epithelium. We examined associations between mucosal adherent bacteria and body mass index (BMI). **Methods:** Participants were 31 healthy men and women who underwent screening colonoscopy at the University of North Carolina Hospitals, Chapel Hill. Subjects were 30 years or older, had no previous colon disease, did not use antibiotics during the three months prior to colonoscopy, and had normal results from the colonoscopy examination. Height and weight were measured prior to colonoscopy, and mean BMI in the sample was 26.4 (SD 5.5) kg/m2. Bacterial genomic DNA was extracted from mucosal biopsies, and the 16S rRNA gene was amplified and analyzed by 454 pyrosequencing. Spearmen correlations were used to examine the relationship between BMI and bacteria in 14 phyla and 178 genera. Multiple comparisons were adjusted with the false discovery rate (FDR) method. **Results:** At the phylum level, there was a positive correlation between TM7 and BMI ($r = 0.503$, $p = 0.055$) while at the genus level, megasphaera was significantly correlated with BMI ($r = 0.687$, $p = 0.003$). Other genera such as Dialister ($r = 0.533$, $p = 0.090$), Flavobacterium ($r = 0.547$, $p = 0.090$), Jeotgalicoccus ($r = 0.521$, $p = 0.094$) and Hydrogenophilus ($r = 0.544$, $p = 0.090$) also showed a trend toward correlation with BMI and warrant further investigation in larger studies. **Conclusions:** These findings suggest that mucosal adherent bacteria are associated with obesity.

595-P
Scaling Power For Weight-For-Height Indices Maximally Correlated With DXA-Measured Total Body Fat Mass in the US Adult Population From NHANES 1999-2004

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Background: Scaling of weight-for-height indices can be expressed as Weight(kg)/Height(m)^x where x is called a scaling power. Body mass index (BMI) with x=2 is widely used as a proxy anthropometric measure for total body fat mass (TBFM). We estimated the value of x that renders kg/m^x maximally associated with DXA-measured TBFM using the NHANES 1999-2004 data. **Methods:** We applied a grid search by increasing x from 0.0 to 3.0 by increments of 0.1 to the simple regression model, TBFM = b0 + b1*(kg/m^x), and then obtained an estimate of x that resulted in the greatest R-sq. For this fitting, complex survey design features and a multiple imputation method were both taken into account. The sample size for this study was N=12,906 (6544 men and 6362 women) and participants were stratified by sex (men and women), race/ethnicity (Non-Hispanic Whites, Non-Hispanic Blacks, and Mexican-American) and three age groups (18-29, 30-49, 50-84). **Results:** The estimated optimal scaling powers were 1.0 (R-sq=0.90) for men and 0.8 (R-sq=0.96) for women. The prediction equations were: TBFM=-23.7+1.00*(kg/m) for men and TBFM=-18.2+0.97*(kg/m^0.8) for women. In contrast, R-sq's for BMI were 0.86 for men and 0.92 for women. The optimal scaling powers across the nine combinations of the stratifying factors for each sex did not include 2, the power of BMI, but varied slightly: 0.8-1.3 for men and 0.5-0.9 for women. **Conclusions:** BMI may not be an optimal weight-for-height scaling for TBFM and may be over-calibrated by height. Therefore, the estimated scaling powers reported above may be superior.

596-P
Two-Thirds of Foods Consumed on MyPlate Contain SoFAS

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Background: Public health efforts focus upon improving diet quality to prevent chronic disease. MyPlate, which represents the 2010 Dietary Guidelines for Americans, encourages limiting the consumption of solid fats (SoF) and added sugars (AS). We examined nationally representative consumption data to examine the proportion of foods consumed from each MyPlate food group that contain solid fats, added sugars, or both (SoFAS). **Methods:** Consumption data from individuals (n = 8,528) over the age of 2 years of the NHANES 2007-2008 was analyzed to determine if the food codes consumed included (=1) or did not include (=0) SoFAS. The weighted proportion of the consumption of these foods was calculated and reported. **Results:** 61% of the food items consumed contained SoFAS, 43% of those had SoF, 38% had AS, 21% had both. Fruits were the least likely food group to contain SoFAS (93%), followed by the vegetable group (38% had no SoFAS). In contrast, 89% of grains contained either or both SoFAS. Surprisingly, 31% of the protein foods contained AS, which, combined with the foods having SoF meant that 77% of the protein foods had either or both SoFAS. Only 7% of the dairy contained no SoFAS (93% contained SoF and 28% AS). **Conclusions:** The high proportion of the foods with SoFAS within the vegetable, grains, protein and dairy MyPlate categories is likely promoting consumption of solid fats and added sugars. The ubiquity of foods containing SoFAS across food groups likely increases the difficulty of choosing healthy foods. More research is needed to understand how to help people make better food choices in the present high SoFAS food environment.

597-P
Weight Status and Pediatric Asthma: Insights From a Case Control Study

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Background: Previous epidemiologic evidence, mainly cross-sectional studies, supports the relationship between obesity and childhood asthma. The purpose of this case-control study was to investigate the relationship between weight status and childhood asthma, accounting for potential confounders. **Methods:** Five hundred three children (210 physician-diagnosed cases and 293 healthy controls), 5 - 11 years old, were recruited from the greater area of Athens, Greece. Anthropometric variables were measured and weight status was determined according to international cut off points for children's body mass index (BMI). Asthmatic-atopic symptoms and physical activity were evaluated using validated questionnaires. Potential confounding factors were assessed by structured interviews. **Results:** The proportion of overweight and obese children (46.1% vs 36.3%, p= 0.03) was higher among cases. After stratification by weight status, asthmatic overweight/obese children were more likely to have atopic mothers (47.5% vs 23.4%, p<0.001) or fathers (29.3% vs 16.8%, p=0.03), while the prevalence of breastfeeding was lower among cases both for normal weight (75% vs 86.7%, p=0.01) and overweight/obese children (77.8% vs 89.7%, p=0.02). Finally, asthmatic children were more likely to be overweight or obese (OR=1.52, 95% CI: 1.03 -2.70) and to have higher waist circumference compared to healthy children (beta= 1.04 cm, 95% CI: 1.01 -1.07) after adjusting for sex, age, breastfeeding during infancy, parental atopy and education, puberty, and physical activity. **Conclusions:** Our results support the relationship between pediatric asthma, weight status and abdominal adiposity. Future experimental studies are needed to elucidate the complex interplay between obesity status and asthma during childhood.

598-P
Drink Water Instead of Sugary Drinks: A Dietary Strategy For Economically-Disadvantaged Individuals Diagnosed With Obesity-Related Comorbidities?

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Background: US Dietary Guidelines recommend choosing water instead of sugary drinks. Water is a calorie-free, low-cost and widely available beverage; intake of sugar-sweetened beverages (SSB) is associated with adverse health conditions including diabetes and cardiovascular diseases (CVD). Economics and accessibility are common barriers to adopting healthy eating behaviors, yet it is uncertain if individuals living in a health-disparate region adhere to this dietary recommendation, particularly those diagnosed with diabetes or CVD. Objective: To determine if water and SSB consumption differs among individuals from a health disparate region according to disease status (i.e., diabetes, CVD). **Methods:** A random digit dialing telephone survey that included validated questions from the Behavioral Risk Factor Surveillance System and BEVQ was conducted in a health-disparate region. **Results:** Respondents (n=930, aged 56±17 yrs, 76% female, 63% white, 46% reported household income <$25,000/yr) were primarily overweight (BMI=29±7kg/m^2), and 52% reported at least one chronic disease (DZ): diabetes, 19%; hypertension, 45%; heart disease, 9%. Mean daily water and SSB consumption was 32 and 19 fl oz (~245 kcal/d), respectively. Water consumption did not differ among DZ compared to those not diagnosed (ND) with diabetes or CVD (33±19 vs 31±19 fl oz, P=0.13), however DZ consumed less SSB than ND (17±21 vs 22±25 fl oz; 216±272 vs 277±319 kcal, both P<0.05). Both groups exceeded the recommended 100-150 kcal/d of added sugars (AHA, 2009); water intake was comparable to national intake data. **Conclusions:** Promoting water as an alternative to SSB may be a viable dietary strategy, particularly among health disparate populations.

599-P^{DT}
Dietary Intake of African-American Women Living in the Deep South

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Background: African-American women in the Deep South are at high risk of diet-related health issues including obesity, diabetes, cardiovascular disease, and some cancers. African-American women residing in Alabama and Mississippi, in particular, have a greater burden than white women in the region and black women nationally, but little is known about their diets. **Methods:** This study assessed the dietary intake of African-American women across Alabama and Mississippi. A sample of 355 women participated. Demographic data, measured height and weight, and self-reported health history were collected in addition to 24-hour dietary recall. Trained research staff conducted one recall in-person and a second over the phone to capture weekend and weekday intakes. **Results:** Women participating were a mean age of 59.8 years and most had some education beyond high school. Half of the sample worked outside of the home, with 54% having a household income of at least $20,000. In our sample 20% were overweight and 75% obese. Most (72%) reported good to excellent health; however, 63% reported high blood pressure, 34% high cholesterol, and 28% diabetes. With respect to dietary intake, only 6.5% met USDA recommendations for 3 food groups, while 22.5% met for 2 groups, and 36% met only 1 group. There were no statistically significant differences in the overall percentage of participants meeting recommendation by age, weekday vs. weekend, or BMI status. **Conclusions:** A number of questions remain about barriers to meeting recommended dietary guidelines and limited differences in intake by weight status. Follow-up participant focus groups provide some insights. Findings from this study can facilitate further discussion and inform the development of future interventions.

600-P
Dietary Patterns and Body Fat in Middle-Age Women: A Factor Analytic Study

Larry A. Tucker *Provo, UT*

Background: Dietary patterns of consumption based on ADA Exchange Lists servings were studied in 281 women. Another aim was to examine the extent to which the dietary patterns predicted body fat percentage (BF%) and BMI, with and without statistical control of age, education, menopause status, energy intake, and objectively measured physical activity (PA). **Methods:** Diet was assessed using weighed food records for 7 days. BF% was measured by the BOD POD. PA was measured using Actigraph accelerometers over 7 days. **Results:** Factor analysis revealed 3 dietary patterns: 1) Prudent Pattern, 2) Low-fat Dairy, and 3) Meat. Factor 1 was defined by high intake of fruit, starch, fiber, and non-starchy vegetables, with low intake of fat, added sugars, and meat. Factor 2 was comprised of high intake of low-fat dairy, with low intake of meat, vegetables, and fat. Factor 3 was defined by high intake of very lean meat, other meat, and low intake of added sugars. Women with high or moderate intake of the Prudent Pattern (F=8.5, P=0.0038) had lower levels of BF% than women with low intake. With all the covariates controlled simultaneously, differences in BF% remained significant (F=8.3, P=0.0043). Women with high or moderate intake of Low-fat Dairy were leaner than those with low intake (F=5.4, P=0.0207). Adjusting for all the covariates together weakened the relationship (F=3.9, P=0.0488). Participants with high intake of Meat had higher BF% than their counterparts (F=4.5, P=0.0346). With all the covariates controlled, the relationship was borderline significant (F=3.1, F=0.0817). Substituting BMI for BF% resulted in similar findings for the Prudent and Meat Patterns, and a stronger relationship for Low-fat Dairy. **Conclusions:** Dietary patterns of consumption, particularly the Prudent Pattern, Low-fat Dairy, and Meat, are significant predictors of BF% and BMI in middle-age women.

601-P^{DT}
Body Weight Status and Its Consequences on Disability and Mortality in Brazil

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Background: Brazil is undergoing major demographic and nutritional changes. The population is aging fast and obesity rates have tripled among

men and almost doubled among women in the last three decades. The relationship between body mass index, disability transitions and mortality in older adults is not clear. We sought to explore these associations in Brazil. **Methods:** The sample was drawn from two waves (2000, 2006) of the dataset of Salud, Bienestar, y Envejecimiento (SABE), a large longitudinal study conducted in São Paulo, Brazil (N=2,143). Disability was assessed through a basic Activities of Daily Living (ADL) measure, the Instrumental Activities of Daily Living (IADL) scale, and the Nagi physical performance measure. Four body mass index (BMI) categories (underweight, normal, overweight and obese) were defined according to the adult criteria. We used multinomial logistic regression to assess the impact of BMI categories in subjects' trajectories between baseline and follow-up. **Results:** Prevalence of ADL and Nagi was highest among obese individuals (24% and 75%, respectively), followed by those underweight (21% and 64%, respectively). Prevalence of IADL was highest among underweight individuals (49%). Compared to normal weight individuals, those who were obese were 2.4 times (95% CI 1.52-3.80) more likely to develop ADL between waves. For all three disability measures, obesity was associated with a higher likelihood of remaining disabled. Mortality risks were higher among those who were underweight. Women faced higher incidence of disability and higher risk of remaining disabled, but lower mortality risks. **Conclusions:** Increased body weight was not associated with reductions in total life expectancy in the older Brazilians. However, increased body weight was associated with a higher risk of becoming and remaining disabled.

602-P
Sugar-Sweetened Beverage Intake Before 6 Years Old and Weight or BMI Status Among Older Children: Systematic Review of Prospective Studies

Maria Eugenia Perez-Morales, Montserrat Bacardi-Gascon, Arturo Jimenez-Cruz *Tijuana, Mexico*

Background: The increased consumption of sugar-sweetened beverages in preschool children has been proposed as a contributing factor to the overweight and obesity epidemic. The purpose of this study was to conduct a systematic review of prospective studies that examined the association between sugar-sweetened beverage intake before 6y of age and later weight or BMI status among older children. **Methods:** An electronic search at MEDLINE/PubMed, SciELO, and EBSCO data base of prospective studies, published from 2001 to 2011 was conducted. **Results:** Seven studies were analyzed. The study population was from 72 to 10,904 children. Three studies showed a consistent association between SSB intake before 6y of age and increased weight, BMI, or waist circumference later in childhood, one study showed a positive trend of consumption of SSB and childhood obesity, and three studies showed no association. **Conclusions:** In conclusion, to date, the trend of the reviews studies indicate an association between sugar-sweetened beverage intake before 6y of age and increased weight, BMI or waist circumference later in childhood.

603-P
Obesity, Dietary Habits, Physical Activity, and Nutritional Knowledge Among University Students

Najat Yahia, Melyssa Rapley, Daniel Wang, Robert Lee *Mt. Pleasant, MI*

Background: Diet, physical activity, and proper nutrition are important factors in the promotion and maintenance of good health. Nutritional knowledge can have a profound impact on dietary habits and food choices. The purpose of this study is to examine weight status, dietary habits and behaviors, physical activity, and nutrition knowledge among a sample of students from Central Michigan University. **Methods:** A sample of 250 students (73% female and 23% male), with a mean age of 20 years, was selected randomly from University campus during spring 2012. Students filled out a self-reported questionnaire that included questions about their dietary habits, physical activity, meaning of healthy and unhealthy dietary habits, and nutritional knowledge. Weight and height were measured to assess body mass index (BMI). Percentage body fat and visceral fat score were measured using Tanita body composition analyzer (SC-331S). **Results:** Outcomes of this study indicate that 78% of female students were within the healthy BMI range compared to 52% of males. Percentage body fat "above normal" and visceral fat scores were higher in males than in females. Students showed "satisfactory" dietary habits scores. Half of the students reported drinking two glasses of milk and consuming two cups of fruits and vegetables daily. Physical activity & lifestyle score indicates that most of the students were not physically active. Only 7% of students have a very active lifestyle and 4 % have quite good nutritional knowledge. **Conclusions:** Results indicate that students' dietary habits were satisfactory. However, physical activity, students' belief about healthy & unhealthy diet, and nutritional knowledge need to be improved.

604-P
Evaluation of Anthropometric Variables in a Sample of Abandoned Children in Caracas, Venezuela: Does Peripheral Adiposity Matter?

Marianella Herrera *Caracas, Venezuela*; Camella Rising *Raleigh, NC*; Hector A. Herrera, Pablo I. Hernandez, Yngrid Candela, Nora M. De la Fuente, Beatriz E. Gomez *Caracas, Venezuela*

Background: Exposure to nutritional deficits and other physiological and psychosocial stressors early in life are known to predispose individuals to chronic disease in adulthood. Worldwide, evaluating abandoned children is challenging, thus, there is a paucity of evidence-based literature available. The aim of this research is to define a cohort of institutionalized abandoned children and establish a nutrition diagnosis. **Methods:** : In a sample of 54 children, weight, height, BMI, triceps skinfold thicknesses, and subscapular skinfold thicknesses were measured. Twenty-nine children were accepted into the study; 25 were excluded because birthdates were unavailable. Descriptive statistics and t-tests were performed to determine differences between boys and girls. Percentiles were compared to WHO chart percentiles. **Results:** 15 boys and 14 girls were evaluated. Mean age: 2.51±1.52 years for boys and 2.63±0.97 years for girls. Height: 84.33±16.28 cm (85th-97th percentiles) for boys and 88.67±9.59 cm (above 97th percentile) for girls. Weight: 11.96±4.25 kg (above 50th percentile) for boys and 13.08±2.38 kg (50th-85th percentiles) for girls. BMI: 16.22±1.40 (above 50th percentile) for boys and 16.62±1.56 (below 85th percentile) for girls. Triceps skinfold thicknesses: 9.25±2.63 unit (below 85th percentile) for boys and 11.01±2.03 unit (85th-97th percentiles) for girls. Subscapular skinfold thicknesses: 6.86 ±1.89 unit (50th-85th percentiles) for boys and 6.32±1.39 unit (above 50th percentile) for girls. Triceps skinfold thicknesses were significantly different for girls in the t student test ($p < 0.05$). **Conclusions:** Further research is needed to establish a nutrition diagnosis and determine whether abandoned girls need specific interventions to prevent excess peripheral adiposity.

605-P
Who Is Using MyPlate?

Brian Wansink *Ithaca, NY*; Sibylle Kranz *West Lafayette, IN*

Background: Multiple public health efforts focus on decreasing childhood obesity by improving diet qualtiy. The release of MyPlate – the iconic representation of the 2010 Dietary Guidelines for Americans – could have high potential relevance for families with children. Important questions associated with the release are: Who are the innovators and early adopters of MyPlate?, What facilitates its use?, and who is finding it most useful? **Methods:** An online national convenience survey of 500 adult women with at least two children under the age of 18. Respondents reported their awareness and usage intentions toward MyPlate along with demographic characteristics, food preparation, nutrition-related attitudes, and their knowledge of MyPlate/Pyramid. **Results:** Three key findings emerged: 1) Awareness and usage of MyPlate was less related to demographic characteristics than to whether the mothers found it relevant and easy to understand, 2) There was a high correspondence between MyPlate and MyPyramid awareness, and 3) MyPlate usage was most strongly predicted by those who have a preference for vegetables as part of a meal. **Conclusions:** Regardless of demographic background, mothers who are innovators and early adopters of MyPlate may be those with pre-existing increased awareness and nutritional interest. Thus, expanding the use of MyPlate in families to improve dietary intakes of children and adults may entail focusing on easy preparation ideas, especially for vegetable-related dishes.

606-P
Both Food Secure and Food Insecure Individuals With Serious Mental Illness May Have Trouble Acquiring and Maintaining a Healthy Food Supply Throughout the Month

Lauren T. Ptomey, Jeannine R. Goetz, Debra K. Sullivan *Kansas City, KS*; Jaehoon Lee *Lawrence, KS*; Rachel Barkley *Kansas City, KS*

Background: Food insecurity is associated with poor nutrition and obesity. The common hypothesis is that inconsistent availability of food results in cyclic overeating. Individuals with serious mental illness (SMI) are more susceptible to food insecurity and the accompanying health consequences. The purpose of this study was to determine the effects of food insecurity on diet quality and to determine if food insecure individuals with SMI experience cyclic overconsumption patterns that lead to weight gain. **Methods:** 22 individuals with SMI, 9 food insecure and 13 food secure, completed the 8-week study. All subjects completed the U.S. Household Food Security Questionnaire to determine food security status. Weight was measured weekly, and 24 hour dietary recalls were collected at the beginning and end of months 1 and 2. The healthy eating index (HEI) was used to determine diet quality. A general mixed modeling analysis that accounts for dependence among observations was used for analysis. **Results:** A significant increase in weight over time and a significant decrease in energy intake from the beginning to the end of the month was found in both the food secure (2125 kcal vs. 1738) and food insecure groups (2188 kcal vs. 1619 kcal)($F(1, 21) = 9.12$, $p = 0.01$). There was no significant difference between groups in weight change or energy intake. There were no significant differences in HEI across the month or between groups. However, both groups scored lower than the average American's HEI score of 58.2 at all-time points (food secure 45; food insecure 40) . **Conclusions:** These findings suggest that all individuals with SMI may have trouble acquiring and maintaining a healthy food supply throughout the month.

607-P
Parental Physical Activity and Its Association With Children Weight Status

Marcela Perez-Rodriguez, Norma A. Vega, Elí Gámez, Daniela Barrera, Gerardo Leyva, Frania Pfeffer *Mexico City, Mexico*

Background: Childhood obesity might be influenced by the entire family environment. Little is known about the relation between parental physical activity and children weight status (WS). The aim of this study was to analyze the role of parental physical activity (PA) on children WS. **Methods:** 105 children from 8-10 yo underwent anthropometric and body composition measurements (BCM); Children WS (underweight, normal weight, overweight or obese) was defined using CDC BMI for age percentile criteria. Parental weight and height and education level was auto-reported and PA was obtained using the IPAQ questionnaire. **Results:** Data on 1 underweight, 92 normal weight, 24 overweight and 36 obese children was analyzed. Maternal BMI was associated with child weight ($r=0.307$ $p<0.01$), and BMI ($r=0.270$ $p<0.01$). Parental education level was not associated with children WS or BCM. Paternal PA status (low, moderate or high physically active) was not correlated with children WS, as oppose to maternal PA status that was significantly associated to children weight status ($r=-0.253$ $p<0.01$). More active mothers had lighter children. Maternal BMI was associated with child weight ($r=0.307$ $p<0.01$), and BMI ($r=0.270$ $p<0.01$). Parental education level was not associated with children WS or BCM. Paternal PA status (low, moderate or high physically active) was not correlated with children WS, as oppose to maternal PA status that was significantly associated to children weight status ($r=-0.253$ $p<0.01$). More active mothers had lighter children. **Conclusions:** Given that parental PA was significantly associated with children weight related measures, when trying to improve children WS or prevent excessive weight gain, strategies should target the parents as well as the children to improve the chances of success.

608-P
Evaluating the Validity of the "Categories" Method: A New Method For Self-Report Assessment of Daily Calorie Intake

Tzachi Knaan *Ramat-Gan, Israel*

Background: Weight loss is mainly a result of reduction in daily caloric intake. Hence many people are interested in counting and tracking their daily caloric intake but In fact only 9% of people in the USA can accurately estimate the number of calories they eat. We proposed a new self-assessment method of calorie intake called "The categories method": a single categorical estimation per meal based on a set of five categories: Category 1 less than 200 kcal, Category 2 200-500 kcal, Category 3 501-800 kcal, Category 4 801-1200 kcal, Category 5 above 1200 kcal. Giving the average value of each category (e.g., category 3: 500-800 Avg = 650 kcal) patients or even for professionals use can sum meals to estimate the total calorie intake. **Methods:** To assess the validity of this new method we designd a cross-sectional study.135 overweight participates, middle age interviewed face to face on 1 occasion to obtain 24 hours diary recall vs. self-category estimation. NIH clinicaltrials.gov #NCT01408784 **Results:** The total calculate intake and estimate weren't significant different (t-test) and the correlation (pearson) was $r=0.73$ ($p<0.05$) for The first 30 participants. **Conclusions:** This method can simplifies the process of counting calories, especially with assembled or cooked meal, it makes easier to track any given meal even to those who are not so familiar with the caloric value of a product.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Physical Activity Epidemiology

609-P
Use of Light Sensors and GPS to Differentiate Indoor vs Outdoor Locations of Physical Activity in Preschoolers at Child Care

Pooja Tandon, Brian E. Saelens, Chuan Zhou *Issaquah, WA*; Jacqueline Kerr *San Diego, CA*; Dimitri Christakis *Issaquah, WA*

Background: Being outdoors may be among the strongest correlates of physical activity (PA) for children and may have other benefits. Understanding the relationship between outdoor time and health outcomes is hampered by limited measures of outdoor time. **Methods:** 45 children (mean age 4.5 yrs) from 5 child care centers wore accelerometers with built-in light sensors (Actilux) and a separate GPS device around their waists for up to 5 days. ROC analyses were used to determine thresholds for defining indoors vs. outdoors using light sensor data. Signal-to-noise ratio and Personal Activity and Location Measurement System algorithms were used to define indoor vs. outdoor locations using GPS. Direct observation of indoor and outdoor time was conducted for 2 days at each center. Accelerometer data were used to define activity intensity. **Results:** Mean observed outdoor time was 63 [range 18-152] minutes/day. Mean light sensor levels were higher outdoors vs indoors under all weather conditions. The area under the ROC curve (AUC) for location based on the light sensor for all weather conditions was .82 (ranging from .70 on partly cloudy to .97 on sunny days). An Actilux cutoff of 110 had a sensitivity of 74% and specificity of 86%. GPS location had a sensitivity of 82% and specificity of 88%. Mean activity counts on accelerometers were more than twice as high outdoors, whether outdoors was determined by observation, GPS or light sensor. Children spent a greater proportion of time engaged in sedentary behavior (86% vs 63%) and less in MVPA (7% vs 24%) when they were indoors vs outdoors. **Conclusions:** A light sensor and a GPS device both distinguish indoor from outdoor time for preschoolers with moderate to high levels of accuracy. These devices can increase the feasibility and lower the cost of validly measuring indoor vs. outdoor location in studies of preschool children.

610-P[DT]
Pregnancy and Changes in Physical Activity in Overweight and Obese, Low Socio-Economic Status, African American and Caucasian Women

Lori A. Portzer, Arun Jeyabalan, Bethany Barone Gibbs, John M. Jakicic, James M. Roberts, Tracey L. Weissgerber *Pittsburgh, PA*

Background: Little is known about activity changes from preconception to pregnancy in low socio-economic status (SES), overweight and obese women. Study aims were to assess exercise and physical activity changes with pregnancy, and to determine whether these changes differ by race. **Methods:** African American (n=94) and Caucasian (n=57) women were recruited from the Magee-Womens Hospital Outpatient Clinic. Women were predominantly overweight (22%) and obese (66%). 76% lived in a household with an income <$50,000/year. 49% lived in a household receiving public assistance. Women completed the Kaiser Physical Activity Survey at 6-15 and

34-36 weeks' gestation to assess activity in the year prior to conception and throughout pregnancy. Values were compared using paired t-tests (activity indices) or the Wilcoxon Signed-Rank Test (% of women who exercised before vs. during pregnancy). **Results:** Exercise participation decreased with pregnancy (Sports & Exercise Index: 2.4±1.1 vs. 1.9±0.8, p<0.01). 38% of women reported exercise in the year before pregnancy, vs. 22% in pregnancy (p<0.01). 10% of women met exercise guidelines prior to pregnancy vs. 4% in pregnancy (p<0.01). The Household & Family Care Index decreased in pregnancy (2.5±0.6 vs. 2.3±0.5, p<0.01). The Occupational and Active Living Indices did not change. There were no racial differences in activity indices. Women had low levels of active living behaviors at both time points. 35-40% spent <5 minutes/day walking to and from work, school or errands. 65% watched TV for >2 hours/day. **Conclusions:** Predominately low SES, overweight/obese women have low activity levels prior to conception and decrease exercise in pregnancy. Activity promotion for predominately low SES, overweight/obese women prior to pregnancy, and activity interventions to prevent further decreases in activity during pregnancy, are urgently needed.

611-P
Objectively Measured Sedentary Behavior Predicts Body Fat Percentage in Female Adults

Jared Tucker *Fargo, ND*; Larry A. Tucker *Provo, UT*

Background: Research indicates that physical inactivity increases risk of obesity, but the contribution of sedentary behavior (SB) on adiposity is less clear. Furthermore, few studies have examined this relationship using objectively measured SB and precisely assessed body fat percentage (BF%). The present investigation was conducted to determine the association between objectively measured SB and BF% in middle-aged women. Another aim was to assess the influence of physical activity, including moderate (MPA) and vigorous (VPA), on the SB-BF% association. **Methods:** A cross-sectional design with 259 women was employed. BF% was measured using Dual-energy X-ray Absorptiometry (DXA). SB, MPA, and VPA were assessed objectively using Actigraph accelerometers worn for 7 consecutive days for a minimum of 12 hours per day. Participants were divided into quartiles based on SB, after which the middle two quartiles were collapsed forming three total groups (low, moderate, and high SB). **Results:** Mean BF% was 32.3±7.3 and average age was 41.6±3.0 yrs. On average, participants in the low, moderate, and high SB groups engaged in 136.5±20.0, 200.0±22.28, and 279.4±27.2 10-minute bouts of SB, respectively. When grouped by SB levels, BF% was significantly lower in participants with low SB (30.1+7.5) when compared to those with moderate (32.6±7.3) or high SB (33.7±6.5) (F=4.0, p=0.0198). This SB-BF% association remained significant after individually controlling for age, education, and MPA. However, adjusting for VPA nullified the relationship between SB and BF% (F=1.9, p=0.1489). **Conclusions:** Women with moderate or high SB have significantly higher levels of body fat than women with low SB. However, it appears that this association is due, at least in part, to higher levels of VPA among women with low SB.

612-P[DT]
Physical Activity Patterns of Inner-City Elementary School Children

Gary Foster, Tara Alexis McCoy, Stephanie S. Vander Veur, Maurice A. Denton, Meghan L. Duffy, Heather R. Wilson, Giridhar Mallya *Philadelphia, PA*; Stewart G. Trost *Corvallis, OR*

Background: Sedentary behavior and low levels of physical activity (PA) are major risk factors for childhood obesity. The purpose of this study was to objectively measure the PA characteristics of inner-city school children and examine the influence of gender, race/ethnicity, grade, and weight status on PA. **Methods:** Partcipants wore an ActiGraph GT3X+ accelerometer for up to 7 days. **Results:** Participants were 470, 4-6th graders (57.2% girls, 11.3±1.0 y) from six schools (82.1% ± 7.4% eligible to receive free or reduced price meals) in Philadelphia. 53.9% were Hispanic, 35.7% African American, 1.9% Caucasian, 5.4% Asian and 3% Other. Nearly half were overweight (17.2%) or obese (24%) while 58.7% were healthy weight and less than 0.1% underweight. On average, students accumulated 48 minutes of MVPA daily. Expressed as a percentage of monitoring time, students were sedentary for 63% of the time, in LPA 31% of the time, and MVPA 6% of the time. Across all races/ethnicities and grades, boys had higher levels of MVPA than girls (p<.0001); 5th grade boys had lower MVPA levels than 4th and 6th grade boys, and 6th grade girls had lower MVPA levels than 4th and 5th grade girls (p<.05). Hispanic children had lower levels of MVPA than children from other racial/ethnic groups; however, the only difference observed among boys was statistically significant (p<.05); and overweight and obese children had lower MVPA levels than children in the healthy weight range (p<.01). Only 24.3% met the current guidelines for physical activity. The risk for physical inactivity was greater among females (<.0001), Hispanics (< .01), and overweight and obese students (<.05). **Conclusions:** Fewer than one in four inner-city school children accumulate the recommended 60 minutes of MVPA daily. These findings highlight the need for programs to promote PA in inner-city youth.

613-P
Perceived Barriers to Physical Activity and Exercise Tolerance in the TIGER Study

Danielle N. Hessong *Bimringham, AL*; Rod K. Dishman *Athens, GA*; Matthew P. Herring *Bimringham, AL*; Daniel P. O'Connor, Andrew S. Jackson *Houston, TX*; Molly S. Bray *Bimringham, AL*

Background: People with perceived barriers toward physical activity (PA) are less active than those without them. This study examined the relationship between perceived PA barriers and objectively measured components of exercise. **Methods:** Participants (males=368/females=596, 18-35y) completed 15 wks of aerobic exercise training as part of the Training Interventions of Genetics of Exercise Response (TIGER) study. Intensity (% heart rate reserve, HRR) and duration (min) of exercise were recorded using computerized HR monitors. Total exercise dose was calculated by multiplying intensity by duration and summing over all sessions. Perceived barriers were assessed using a validated self-report questionnaire with three subscales related to time, motivation, and physical obstacles (PO). Regression analyses were adjusted for age, gender, race/ethnicity, and percent body fat. **Results:** All subscales were negatively associated with baseline self-reported PA and estimated VO2max (p<0.001). Perceived time barriers were significantly associated with average duration (t=-2.20, p<0.03) and HR (t=3.14, p<0.002) during exercise sessions. Higher PO barriers were associated with lower exercise intensity (p<0.05) and fewer minutes spent in high intensity exercise (>85% HRR; p<0.0001). Subjects in the lowest quintile of PO barriers spent an average of 8.5% of time in high intensity exercise compared to 5.7% for subjects in the highest PO quintile (p<0.001). Total exercise dose was significantly lower (p<0.006) for individuals in the highest PO quintile compared to those in the lowest quintile. **Conclusions:** The results extend the evidence on perceived PA barriers to the use of objective measures of self-regulated exercise intensity and duration. Further study is need to examine whether perceived barriers help explain health outcomes (e.g., lipids and weight loss) in exercise trials.

614-P[DT]
Method of Weight Loss and Mortality Risk

Amanda E. Staiano *Baton Rouge, LA*; Bruce A. Reeder *Saskatoon, Canada*; Susan Elliott *Waterloo, Canada*; Michel R. Joffres *Burnaby, Canada*; Punam Pahwa *Saskatoon, Canada*; Susan A. Kirkland *Halifax, Canada*; Gilles Paradis *Montreal, Canada*; Peter T. Katzmarzyk *Baton Rouge, LA*

Background: Successful weight loss improves a variety of health parameters, including cardiometabolic risk factors. Prescriptive strategies for weight loss involve diet, exercise, and medication. Yet it is unknown if reduction in mortality risk varies by method of weight loss. **Methods:** The sample included 3893 adults (18-74 y) from the Canadian Heart Health Surveys (1986-95) who self-reported currently attempting to lose weight during an interviewer-administered questionnaire. Participants were asked to list the methods they were using to lose weight. These responses were categorized as exercising, dieting, skipping meals, taking diet pills, or attending weight control programs. Mortality linkage was conducted using the Canadian Mortality Database. Cox proportional hazard regression models were used to estimate relative risk of all-cause and cardiovascular disease (CVD) mortality. Each model included a response category as the independent variable, controlling for age, sex, body mass index, alcohol use, smoking status, educational attainment, and examination year. **Results:** There were 379 deaths (133 CVD) over 13.6 (range 0.7-16.0) years of follow-up. Those who were trying to lose weight through exercise had a significantly lower all-cause mortality risk than those who were not exercising to lose weight (0.74, 0.61-0.91). There were no significant differences in all-cause or CVD mortality risk for any other method of weight loss. **Conclusions:** Exercise as a weight loss method

was significantly associated with reduced mortality risk. In contrast, no other weight loss method related to mortality risk. Future research should investigate surgical, pharmacological, and other weight loss methods and their link to mortality.

615-P
Physical Activity During Indoor and Outdoor Recess in School Children

Irene T. Tran, B. R. Clark, Michael J. Kim, Susan B. Racette *St. Louis, MO*

Background: Recess is important for promoting physical activity in children and may account for a large portion of the state-mandated physical activity time in public schools. The aims of this project were: 1) to evaluate physical activity in urban students during outdoor and indoor recess and 2) to evaluate a recess intervention. **Methods:** This prospective cohort study involved 106 students (49 boys, 57 girls; 32% overweight/obese) in grades 2-5 attending urban public schools. Physical activity was assessed using uni-axial accelerometer pedometers during recess in 3 locations: outdoors, indoor gym, and indoor classroom. Recess location was dictated by weather and school policy. An 8-week, multi-component recess intervention that included hip-hop dance was delivered twice per week outdoors and in the gym. Assessments were made 1-3 times weekly at baseline, mid-study, and end-of-study. Data were analyzed using mixed model factorial analysis of variance with adjustment for grade, sex, school, and weight status. **Results:** Students achieved the greatest amount of physical activity during outdoor recess (1147 ± 50 steps per recess period), less activity during indoor recess in the gym (784 ± 70 steps), and the least activity during indoor recess in the classroom (270 ± 64 steps, $p < 0.001$ for all comparisons). Males were more active than females (845 ± 45 vs. 622 ± 41 steps per recess period, $p < 0.001$). The recess intervention did not have a significant effect on physical activity when recess location was statistically controlled. **Conclusions:** Recess location was the strongest determinant of the amount of physical activity achieved by students. Public school policies should promote outdoor recess to maximize students' physical activity. When indoor recess is necessary, an open gym is superior to a classroom.

616-P
Physical Activity Monitoring in Extremely Obese Adolescents From the Teen LABS Study

Renee M. Jeffreys *Cincinnati, OH*; Molly S. Bray *Birmingham, AL*; Todd M. Jenkins *Cincinnati, OH*; Vedran Oruc, Andrew Douglas *Birmingham, AL*; Thomas Inge *Cincinnati, OH*

Background: Questions remain whether low levels of physical activity (PA) reported in extremely obese (EO) individuals via activity monitors are the result of true inactivity or low device sensitivity. To determine the accuracy of monitors to distinguish non-wear from very low PA, a validation study was conducted. **Methods:** 25 patients (9 male/16 female; age=16.5±2 y; BMI=51±8 kg/m2) seeking bariatric surgery wore 3 activity monitors (Actical [AC], Actiheart [AH], StepWatch [SAM]) during a pre-surgical treatment visit. Subjects completed a 400 meter walk test (400MWT), where steps were validated via direct observation. Activity/step counts for each device were also compared during observed bouts of sedentary (sitting) activity (SA), low/moderate physical activity, and non-wear. **Results:** Both SAM & AC steps were significantly correlated with observed steps during the 400MWT (SAM: $t=2.89$, $p<0.01$; AC: $t=2.67$, $p<0.02$); however, mean differences between the two methods differed greatly (SAM vs. observed: -26±32 steps; AC vs. observed: 292±137 steps). During SA, average counts per minute for the SAM, AC, and AH were 1.1±1.7, 34±30, and 45±145, respectively, and the percent of time the monitor registered zero counts/steps ranged from 31% (AH counts) to 77% (SAM steps) to 93% (AC steps). SA was characterized by bouts of zero counts punctuated by intermittent counts, while non-wear was represented exclusively by zero counts. **Conclusions:** Step-based activity monitors varied in their accuracy for assessing walking movement during a 400MWT. All activity monitors were able to differentiate low/moderate activity from non-wear. In EO adolescents, SA was represented by a pattern of activity monitor counts/steps that was distinct from non-wear, suggesting that the low activity counts observed in these individuals may represent true sedentary behavior.

617-P
Sedentary Activity Pattern in Obese and Nonobese Adolescents and Its Association With Sleep Duration in a Triethnic Population

Mona Eissa, Thong Q. Nguyen, Janet C. Meininger *Houston, TX*

Background: Studies in children showed that sedentary behavior is causally associated with obesity; however, the determinants of this behavior are not fully identified. **Methods:** Data on sleep and physical activities were obtained from 377 adolescents, ages 11 -16 years, using the wrist actigraph. Sleep and day activities were also recorded in activity diary by the participants. Sedentary activity was defined as accelerometer actrigraph activity count fewer than100 per minute during wake period. Multiple regression analysis was used with sedentary activity duration as a dependent variable. In addition to night sleep duration, age, ethnicity, sex, obesity status, sexual maturation status, mother's education variables were included in the model **Results:** The average duration of night sleep was measured (6.82 hours) and it was significantly longer in nonobese, female and non-Hispanic White groups. Average sedentary activity duration was 1.76 hrs and it was significantly longer in younger adolescents, 115.4 minutes, compared to 93.1 minutes in older adolescents. In multiple regression analysis, each minute of night sleep decreases 0.14 minute of sedentary activity. This association was only modified by age of the adolescents. **Conclusions:** Sedentary activity duration is inversely associated with sleep duration and this association is not modified by sex, ethnicity or obesity status. Identifying determinants of sedentary behaviors may be important for the development of effective obesity prevention and intervention programs in youth

618-P
Understanding the Role of Physical and Screen-Activity in Promoting Overweight in Children: An International Perspective

Dario Gregori, Ileana Baldi *Padova, Italy*

Background: Lack of physical activity and sedentariness are seen as promoters of children overweight. Using a unified protocol, a cross-sectional study has been performed on 960 children in India, Italy, Germany, France, UK, Argentina, Mexico and Brazil. **Methods:** Children CDC z-scores for Body Mass Index have been evaluated in association with physical activity and exposure to screen activities (TV, video games, internet/PC) and indirect effect of TV (brand-awareness due to advertising). Effects have been adjusted by several known factors of overweight (maternal/neonatal aspects, socio-economic status, BMI of parents, physical/screening activity, nutrition habits). Based on a random-effect mixed effect model the standardized effects of physical activity (none, greater or lower than 3 hours/week, hours/week of screen and IBAY-score for brand awareness) on CDC z-scores for BMI have been computed. **Results:** Screening activity and brand awareness are significantly associated with children's BMI only in UK ($p=0.04$). In emerging countries like India and Brazil what matter most is the physical activity level ($p=0.023$ and $p=0.033$). **Conclusions:** Research on the role of screening and physical activity should be specifically adapted to different cultural settings, where their role might be different, to promote sound and specifically targeted interventions.

619-P
Ankle Accelerometry: A Valid, Reliable, and Feasible Method For Assessing Physical Activity Among a Community Samples of Adolescent Girls

Erin R. Hager, Candice Gormley, LaShawna Epps *Baltimore, MD*; Margarita Treuth *Princess Anne, MD*; Soren Snitker, Fallon Rovel-Jones, Maureen M. Black *Baltimore, MD*

Background: Ankle accelerometry reduces participant burden (vs hip) and improves integrity/volume of physical activity (PA) data. Purpose: using the Actical accelerometer (Philips) on the ankle, to examine (1) validity/reliability vs energy expenditure and develop sensitive/specific thresholds; (2) feasibility of ankle accelerometry among low-income, urban, African American teen girls. **Methods:** Inclusion: 6th/7th grade girls. Validation study: 2 Acticals placed on the ankle (data in 15s epochs), Cosmed K4b2 fitted to girls (data smoothed to 15s intervals, Metabolic Equivalents (METs)), 10 activities (ranging intensity). Analysis: reliability-correlation between activity counts (AC) from 2 Acticals; validity-correlation between AC and METs. Thresholds generated by comparing mean AC/activity to METs (sedentary<1.5, light 1.5-3.0, moderate-vigorous (MV)>3.1). Sensitivity, specificity, and

 For author conflict of interest information, see page S250

kappa calculated and ROC curves plotted. Feasibility study: girls wore an Actical on ankle for >7 days (data in 1min epochs), 24 hour periods were retained. Thresholds were multiplied by 4 (due to difference in epoch length). Analysis: feasibility- frequencies of data/missing data. **Results:** Validation study: 24 girls (mean age 12.9 years). Actical reliability=0.92 ($p<0.001$), validity=0.81 ($p<0.001$). Thresholds (AC/minute): Sedentary<10; Light 10-800; MVPA>800 were sensitive (91%), specific (84%), and kappa=0.73 ($p=0.043$). Area under curve (ROC)=0.91 (95%CI:0.87-0.95). Feasibility study: 290 girls (mean age 12.2 years), 239 had valid data (83.4%, mean days=5.8). Missing data reasons: technical problems (11.7%), loss (8.4%), <2 days of data (1.3%). Using MVPA threshold (>3200AC/min), teen girls engaged in 35.3min of MVPA/day. **Conclusions:** Ankle accelerometry is a valid, reliable, feasible method of assessing PA in community studies. The MVPA ankle threshold is sensitive and specific.

620-P[DT]

Measures of Physical Activity, Adiposity and CVD Risk in a Rural Population From Nkwantakese, Ghana

Albert Kwansa *Kumasi, Ghana*; Lara Dugas *Maywood, IL*; Jacob Plange-Rhule *Kumasi, Ghana*; Ramon A. Durazo-Arvizu, Amy Luke *Maywood, IL*

Background: Countries in early stages of the epidemiologic transition may be more susceptible to obesity and its complications due to rapidly changing lifestyles than those countries with more developed economies. In many developing countries, traditional physical activity (PA) and dietary patterns are being supplanted by those of more industrialized countries. As part of the Modeling the Epidemiologic Transition Study, we explored how PA was associated with adiposity and CVD risk in a rural population in central Ghana. The village of Nkwantakese has about 25,000 residents, for whom the primary occupation is subsistence farming. **Methods:** Baseline measurements of PA using accelerometry, anthropometrics, body composition by bioelectrical impedance analysis, fasting glucose and blood pressure (BP) were completed on 500 men and women, aged 25-45 years. **Results:** Mean (±SD) PA was 32±14 J/kg/min. BMI in men was 22.2±2.7 and in women 25.5±5.0; less than 2% of men and 16% of women were obese (BMI≥30). Mean plasma glucose was 102±37 mg/dL, systolic BP (SBP) was 114±15 and diastolic BP (DBP) 67±11 mmHg. PA was significantly correlated with measures of adiposity such as BMI (r=-0.21), % body fat (r=-22), waist-hip ratio (r=0.21), and waist circumference (r=0.27, all $p<0.001$) but not measures of CVD risk such as SBP, DBP or fasting glucose in either men or women. Conversely, even in this relatively lean population, measures of adiposity were associated with CVD risk factors (all $p<0.05$). **Conclusions:** In this rural African population, PA is associated with adiposity which in turn is associated with CVD risk. It will be imperative to determine prospective associations between PA, diet and obesity to better understand determinants of CVD risk in rural lean populations.

621-P

Determinants of Physical Activity During and After Pregnancy in Overweight and Obese Women

Zhixian Sui, Lisa J. Moran, Jodie M. Dodd *North Adelaide, Australia*

Background: Being physically activity is recognized as an important part of healthy pregnancy. The physical activity patterns during pregnancy of women who are overweight or obese have been poorly described to date. The aim of this study was to examine the determinants of physical activity during pregnancy in women who are overweight or obese. **Methods:** This prospective nested cohort study evaluated self-reported physical activity during pregnancy and post-partum in 305 overweight and obese women. Women completed a short questionnaire assessing health enhancing physical activity (SQUASH) in each trimester of pregnancy and at 4 months post-partum. Maternal body mass index (BMI), and other baseline demographic variables were obtained in early pregnancy. Gestational weight gain was calculated at 36 weeks. **Results:** Physical activity declined significantly between early pregnancy and 28 weeks' gestation ($P<0.001$), followed by a further decline to 36 weeks' gestation ($p<0.001$), before increasing significantly at 4 months post-partum ($p<0.001$). However, reported activity at 4 months post-partum was significantly lower than that reported in early pregnancy ($p<0.001$). While there was no significant difference between reported physical activity among overweight and obese women, overall physical activity decreased with increasing maternal BMI. Women with high gestational weight gain reported significantly less activity ($p<0.001$). Significant determinants of physical inactivity included higher BMI, increasing parity, and increasing social disadvantage. **Conclusions:** Physical activity declines over the course of pregnancy, and while increasing post-partum, it remains below that reported in early pregnancy. Specific strategies to increase activity in overweight and obese women during pregnancy are required.

622-P[DT]

Physical Activity, TV Viewing and Obesity in Teenagers of Tijuana, Mexico: A Prospective Study

Ana Lilia Armendariz-Anguiano, Montserrat Bacardi-Gascon, Arturo Jimenez-Cruz *Tijuana, Mexico*

Background: Cross-sectional studies conducted in Tijuana have reported an association between food consumption and a sedentary lifestyle with childhood obesity (O). The purpose of this study was to assess the risk of physical activity (PA) and sedentary behavior with trends of body mass index in Mexican teenagers. **Methods:** We studied a cohort of 563 children. We randomly selected 20 7°-8° grade groups from public middle schools of Tijuana. PA was assessed with the YRBSS validated questionnaire at the beginning and at six months. Weight, height, and waist circumference were assessed from all students in each group and BMI was calculated. BMI and height z-cores for age and sex were classified according to WHO criteria (2006). **Results:** Mean age was 13.1y, (52.8% were female). The frequency of overweight (OW) and O was 44.5%. Obesity was higher in boys (23.1%) than in girls (18.7%). However, boys were more active than girls (≥4 days/week) (OR=2.26, CI 95% 1.61-3.18 p=0.0001) and also watched less hours of TV/day ≤ 1 h/day) (OR=0.65, CI 95% 0.43-0.98, p=0.04). Overall, watching TV was a risk factor for OW and O (OR=2.73, IC 95% 1.09-6.8, p=0.03). A higher number of physical education (PE) classes offered at the beginning of the study increased the likelihood of having normal weight (OR=1.67, IC 95% 1.16-2.4, p=0.006); and having OW or O reduced the likelihood of attending PE classes (OR=1.66, IC 95% 1.16-2.39, p=0.006). **Conclusions:** TV viewing was a risk factor for OW and O for both boys and girls, and having PE classes increased the likelihood of having normal weight.

623-P

Use of Emails to Improve Medical Controls For Weight Management on Fitness Facilities

Andrea Avila, Camilo Povea, Luisa F. Orjuela *Bogota, Colombia*

Background: In training centers most overweight and obese individuals trained under unsupervised conditions creating the need for strategies to control their progress and avoid dropouts. Bodytech is a group of fitness facilities in Colombia where individuals have access to medical feedback (free of charge) during their training. The purpose of this study is to establish if an email reminder of medical control has an impact on returning to medical visits in overweight/obese individuals on three fitness centers. **Methods:** Methods: From July to September 2011, 251 overweight/obese individuals assisted to medical controls on three fitness facilities. They were randomly assigned to one of two groups: Control Group (CG) and Intervention Group (IG). The intervention consisted on sending an email in December as a reminder to get soon a new medical control. **Results:** Results: After review medical records, the CG group was reduced to 100 individuals: mean age of 42 years (SD 13.9), weight 82,7kg (SD 13.8) BMI 29 (SD 3.9), 55% females and 45% men. The IG group had 51 individuals: 55.8% (29) females, age 44.1 years old (SD13.3), Weight 79.5kg (SD13.7) BMI 28.8 (SD3.3). Statistically there was no difference between groups. In the CG 23% (23) returned voluntarily to medical controls while 28.3% (15) from the IG returned after receiving the email, ($p>0.05$). The CG individuals that return changed their weight from 78kg to 76.9kg ($p<0.05$). For the IG, the change was from 73,8kg to 72,2kg ($p>0.05$). **Conclusions:** Conclusion: In fitness facilities an email reminder seems to have no impact on returning to medical controls in obese/overweight individuals. According to the results, the strategies to increase medical controls under unsupervised training conditions might focus on obtain weight changes.

624-P
Walking Program Improves Both Teacher and Student Activity Level

Jennifer McDuffie, Amanda McMillan, Rebecca Posada, Suzanne Schneider, William S. Yancy *Durham, NC*

Background: The NC State Legislature recommends (not requires) 30 minutes of activity daily for elementary school students. At some schools in Durham NC, physical education occurs only once weekly; meanwhile, overweight/obesity among students has climbed to almost 50%. Walking groups were encouraged to increase activity. We started a Smart Steps Walking Program to motivate teachers to move with their students. **Methods:** Organizing six competitive teams, weekly email encouragements, organized group walks, and bulletin board posting of team standings were used to increase participation and distances. In addition, teachers were encouraged to be active with their students by logging the laps their class walked or ran each day at recess. **Results:** Participation increased from 6-10 teachers turning in walking logs previous years to 24 teachers in 6 teams turning in logs: 21% of teachers turned in 55% of logs; 12.5% turned in 83.3% of logs. Over the school year, these logs totaled 4,854 miles. Teachers averaged 204.6±259.1 miles/person, but 54% (13) of teachers walked over 100 miles. Student laps increased from 1-3 to 11 of 17 classes. These eleven classes were taught by the more active teachers. Distances ranged from 1-3 miles/week. We observed children were more likely to remain active after starting the recess period with laps and encouraged to continue moving by playing freeze tag, etc. **Conclusions:** Teachers demonstrated more willingness to structure recess when they themselves were participating in organized physical activity. Children can acquire the recommended 30 minutes of activity if recess is structured to be active.

625-P[DT]
Seasonal Variation in Body Weight in Mexican American Women in Central Texas

Lisa K. Lloyd, Brian K. Miller *San Marcos, TX*

Background: Understanding times when Mexican American women are more likely to gain weight is important for the development of effective, culturally-sensitive strategies for weight control. To this end, this study examined the seasonal variability of both body weight and physical activity in Mexican American women living in central Texas. **Methods:** Fifty-nine women were measured five times at intervals of three months, so that change in body weight and three forms of self-reported physical activity could be determined for four consecutive seasons. Complete data were collected from 36 participants. **Results:** Repeated measures MANOVA with follow-up univariate repeated measures ANOVA revealed that during the year, body weight increased on average by 1.36 kg ($p < .01$), with the greatest increase occurring during the fall season (+0.80 kg). Vigorous-intensity aerobic activity also showed statistically significant overall changes, with the greatest increase occurring in the spring (+51.99 minutes per week) and the greatest decline (-30.11 minutes per week) occurring in the fall. Changes over a year in muscle-strengthening activity were marginally significant overall with a significant decline during the summer (-32.38 minutes per week). The amount or moderate-intensity aerobic activity remained relatively stable throughout the year and therefore changes were not statistically significant. **Conclusions:** Surprisingly, the increase in vigorous-intensity aerobic activity during the spring was not met with a concomitant reduction in body weight. However, the decline in muscle-strengthening activity during the summer and a subsequent decline in vigorous-intensity aerobic activity in the fall likely led, in part, to the observed increase in body weight during the fall.

626-P
Physical Activity, Obesity and Academic Achievement in School

José C. Ribeiro, Maria P. Santos, Jorge Mota *Porto, Portugal*

Background: There has been a lack of empirical evidence to support the notion held by most health and education professionals that excess physical activity (PA) affect learning and academic achievement (AA), as most of the existing studies are not extended to the general population. The need for research supporting the link between PA, obesity and AA is necessary, specially using more objective measures of PA, like accelerometers, instead of questionnaires. The purpose of this study is to find associations between moderate to vigorous physical activities (MVPA), obesity and AA, and to suggest that it is possible to be active with good AA in school. **Methods:** The sample comprised 151 children and adolescents, aged 10-15 years old 57.6% girls and 42.4% boys. PA was assessed by accelerometer (GT1M MTI Actigraph), for 7 consecutive days. Height, weight, body mass index and fat mass were evaluated. The scores of the AA (ranging 1-5) were obtained through the arithmetic average from 3rd term final grades (3FG) of all the curricular units. **Results:** The main results are: i) Girls present better results in 3FG comparing to boys, although not significant (3.56±0.68 vs 3.36±0.62; $p=0.08$); ii) boys present significantly ($p<0.01$) more daily MVPA than girls (101.7±33.4 vs 80.3±32.8); iii) in normal weight adolescents, the least actives (1st Quartile) and the most active (4th Q) present the higher score in AA (3.5) and in the overweight group the most actives present the higher scores (3.4 in 1st Q and 3.7 in the 4th Q), although in bought groups differences are not significant. **Conclusions:** The results are concordant with the hypothesis that PA doesn't harm AA, and most important the notion that it's possible to have a good academic performance and to be active. Grants MCTES/FCT: PTDC/DES/099018/2008 (FCOMP-01-0124-FEDER-009573)

627-P
Intensity of Physical Activity and Body Composition: A Cross-Sectional Analysis of Young Adult Women

Bruce W. Bailey, Pamela Borup, James D. LeCheminant *Provo, UT*

Background: The purpose of this study was to assess the relationship between intensity of physical activity and body composition in 239 young adult women. **Methods:** This study was cross-sectional. Participants were recruited from October 2009 to December 2011 and included women from 36 different states. Physical activity was objectively measured using accelerometers worn for seven days. Body composition was measured using the BOD POD. Height, weight, and circumferences were assessed. **Results:** Participants included 239 women (age: 20.6±1.6 yrs, BMI: 22.6±3.0 kg/m2, Body fat: 26.4±6.3%). Women averaged 169.4±43 min/day light activity, 55.6±19 min/day moderate activity, and 6±9.2 min/day vigorous activity. Total activity counts per day were inversely correlated with body fat ($p<0.05$). Light activity was positively correlated with both BMI and waist circumference ($p<0.05$). Moderate activity was inversely associated with body fat and hip circumference ($p<0.05$). Vigorous physical activity was inversely related to body fat ($p<0.05$). The best predictor of body fat was time spent in vigorous PA ($F = 9.45$, $p = 0.0024$). The best predictor of BMI was light activity per day, which was positively correlated with BMI ($F = 7.5$, $p = 0.0066$) followed by moderate activity per day, which was negatively correlated ($F = 4.25$, $p = 0.0403$). Young adult women who spent less than 30 minutes per day in MVPA had significantly higher body fat percentages and BMIs than those who obtained more than 30 minutes per day. For every 10 minutes spent in MVPA per day, the odds of being obese by body fat decreased by 33%. **Conclusions:** Vigorous PA and MVPA appear to be the most important aspects of PA associated with lower body fat and BMI levels. Young adult women should be encouraged to obtain at least 30 minutes of MVPA per day.

628-P
Detecting Relationships of Cardiovascular Fitness With Percent Body Fat and Body Mass Index

Kimberly P. Truesdale, June Stevens, Amy Roberts, Jianwen Cai *Chapel Hill, NC*

Background: Gold standard measurements of percent body fat (such as dual-emission X-ray absorptiometry; DXA) are not feasible in many study settings, and therefore alternative methods must be used. The objective of this study was to compare the relationship of cardiovascular fitness with percent body fat measured by DXA versus a newly developed equation that includes weight, height, waist circumference, triceps skinfold, age and ethnicity. We also compared results to BMI. **Methods:** We used NHANES data (1999-2004) in children 12 to 17 years of age (n=3,175). Fitness measurements were from a submaximal exercise test that estimated maximal oxygen uptake (VO2max; ml/kg/min). Linear regression models (PROC SURVEYREG) were run in SAS using 6-year sample weights. Models were stratified by gender and adjusted for age and ethnicity and used imputed DXA according to NCHS protocol. To compare changes in percent body and BMI, the results are presented per standard deviation (SD) change. **Results:** In boys, the crude correlation between fitness and DXA was -0.43 compared to -0.39 for the equation and -0.23 for BMI. In girls, the correlations with fitness were -0.23 (DXA), -0.19 (equation), -0.12 (BMI). For a 1 unit increase in VO2max in

boys, percent body fat decreased by 0.032 (95% CI: -0.036, -0.027) using DXA and 0.028 (-0.033, -0.023) using an equation and BMI decreased by 0.024 (-0.030, -0.019) SD units. In girls, estimates were significant for percent body fat measured by DXA (-0.017; -0.026, -0.007) or an equation (-0.014; -0.022, -0.005) but not for BMI (-0.009; -0.017, 0.0002). **Conclusions:** These results indicate that researchers examining associations between fitness and body habitus can substitute equation-measured for DXA-measured percent body fat and obtain similar results. Associations with BMI are likely to be smaller and may be null.

629-P
Influence of Cardiorespiratory Fitness and Parental Lifestyle on Adolescents' Abdominal Obesity

Jorge Mota, Luisa Soares Miranda, Rute Santos, Carla Moreira, Ana I. Marques, Paula C. Santos, Susana Vale *Porto, Portugal*

Background: The aims of this study were (1) to analyse the influence of cardiorespiratory fitness (CRF) and parental overweight status (POS) and socioeconomic status (SES) on abdominal obesity. **Methods:** This study was comprised of 779 adolescents (12-18 years). Waist-height ratio (WHtR), 20 m shuttle-run test to ascertain CRF, POS according to World Health Organization recommendations and SES of parents using level of education were analysed. **Results:** Using WHtR, the prevalence of abdominal obesity was 21.3% (23.5% girls and 17.9% boys; p = 0.062). Regardless of gender, participants who belonged to the WHtR risk group had significantly ($p \leq 0.05$) lower CRF scores than the WHtR non-risk group; 84.4% of girls who belonged to the WHtR risk group had one or two overweight parents ($p \leq 0.05$). Boys with low CRF (OR: 6.43; CI: 3.33-12.39) were more likely to belong to the WHtR risk group compared with their lean peers. Girls with low CRF (OR: 1.78; CI: 1.14-2.78) and with at least one overweight parent (OR: 2.50; CI: 1.07-5.85) or two overweight parents (OR: 4.90; CI: 2.08-11.54) were associated with the risk of abdominal obesity. **Conclusions:** This study highlights the influence of adolescents' family on abdominal obesity, especially in girls. Further, the data suggested that low CRF was a strong predictor of risk values of abdominal obesity in adolescence.

630-P
Sedentary Screen Time is Associated With Abdominal Obesity in Adolescents: A Multilevel Analysis

Augusto Cesar F. de Moraes, Heraclito Barbosa Carvalho *Sao Paulo, Brazil*; Luis Gracia-Marco, Juan Pablo Rey-Lopez, Luis A. Moreno *Zaragoza, Spain*; Kurt M. Widhalm *Vienna, Austria*; Laurent Beghin, Fréderic Gottrand *Lille, France*; Anthony Kafatos *Athenas, Greece*; David Jiménez-Pavón *Granada, Spain*; Stefaan De Henauw *Ghent, Belgium*; Jonatan R. Ruiz, Francisco Ortega *Granada, Spain*; Michael Sjöström *Stockholm, Sweden*; Angela Polito *Rome, Italy*; Ascensión Marcos *Granada, Spain*; Fatima Perez de Heredia *Rome, Italy*

Background: To examine the association between sedentary screen time (SST) and two markers of abdominal obesity, waist circumference (WC) and waist-to-height (WH), in adolescents. **Methods:** Participants were from two cross-sectional studies performed in Europe (n= 2186; HELENA study) and Brazil (n=938; BRACAH study). WC, height and SST were measured both in school and weekend days. The definition of abdominal obesity was based on a WC z-score ≥ 1.5 (calculated for gender and age) and a WH ≥ 0.5. Associations were examined by multilevel linear regression (school how context variable) including abdominal obesity as dependent variable (outcome), SST as independent variable; and gender, age and socioeconomic status as confounders, considering a complex sample and a significance level of 5%. **Results:** The prevalence of abdominal obesity by WC was 12.3% in BRACAH and 8.7% in HELENA (p= 0.001); and using the WH was 23.0% in BRACAH and 11.5% in HELENA (p= 0.001). The SST in BRACAH were: school day= 7.3 h/day; weekend day= 10.2 h/day; and in HELENA were: school day= 8.3 h/day; weekend day= 10.4 h/day. The WH was associated with SST school day in the BRACAH; B= 0.57 (p=0.033). In HELENA the SST total and SST in school days were positively associated with WH, B= 0.10 (p=0.018) and B= 0.18 (p=0.005), respectively. **Conclusions:** The time of SST and the prevalence of abdominal obesity in adolescents are higher. The magnitude of the association between abdominal obesity indicators and SST is different between studies.

631-P
Physical Activity and Sleep Patterns in Healthy, Preschool-Aged Children

Rachel M. Ruiz, Josef D. Tracy, Evan C. Sommer, Shari Barkin *Nashville, TN*

Background: To understand typical sleep and physical activity patterns in healthy American preschool-aged children. **Methods:** A systematic literature review of young children physical activity (PA) patterns was conducted. Findings were compared to objective data collected from 50 children 3 to 5 years of age between the 50th and 95th BMI percentile who were asked to wear a tri-axial accelerometer (15 second epochs) for 7 consecutive days. **Results:** The literature search (242 articles, 41 used accelerometry) yielded mixed results in characterizing daily moderate-to-vigorous physical activity (MVPA) of a healthy preschool-aged child (24-269 minutes/day). These were due to use of varying cut points, epoch length, accelerometer make and type, compliance, and child demographics. Objective prospective data were collected from children: mean age 4.69 years (SD 0.74), 60% female, 52% African-American, and 28% overweight. Forty of the 42 returned accelerometers met wear time criteria (≥ 6 hours/day for 4 days). Children, on average, wore accelerometers for 22.94 hours/day (SD 1.77 hours) for 6.75 days (SD 0.67 days). They expended 9% of wear time in MVPA during weekdays (1.9 hours) and weekends (2.1 hours). They spent 39% and 40% of each day asleep during weekdays (9 hours) and weekends (10.5 hours). No difference in MVPA or sleep was evident between normal weight and overweight children. Age and gender revealed no differences in PA patterns. **Conclusions:** The wide range of daily MVPA found in the literature review makes it difficult to confirm typical PA patterns in healthy young children. Our cohort appeared to meet daily recommendations of 60 minutes of MVPA, however failed to obtain the suggested 10-12 hours of daily sleep. Next steps include examining patterns of MVPA to better characterize normal baseline PA patterns in American preschool-aged children.

632-P
Is Bigger Really Better? Obesity and Team Success Among High School Football Players

Asheley C. Skinner, Stephanie Hasty, Jacob A. Lohr *Chapel Hill, NC*

Background: Although most athletic participation in adolescence is protective against obesity, football players may be encouraged to gain weight in order to improve performance. Our goal was to examine obesity among North Carolina high school football players, differences by position, and whether larger size conferred an advantage to teams, based on overall rank. **Methods:** We used 2011 NC High School Athletic Association data with team-reported heights, weights, and positions. We used adult criteria to define obesity, because age was not available. This is a reasonable approximation for older adolescents, and will underestimate prevalence among younger ones. **Results:** Obesity is prevalent among high school football players: 44% healthy weight (BMI<25), 34% overweight (BMI 25-30), 15% obese (BMI 30-35), and 7% morbidly obese (BMI>35). The majority of receivers and offensive and defensive backs and are healthy weight (75%). Only 22% of defensive linemen and 8% of offensive linemen are a healthy weight. Top-ranked teams have fewer overweight and obese players, and lower mean BMI among both their backs and linemen, compared to second-tier teams (p<0.01). **Conclusions:** Obesity is a significant problem among North Carolina Football players, although size, on average, does not confer an advantage to a team's success. Although we expect linemen to be larger than other players, the extreme prevalence of overall obesity among these athletes is cause for great concern. Obese athletes are at greater risk for hyperthermia and orthopedic injuries, which must be considered in the design of safety programs. In addition to immediate health needs of these young men, their obesity is likely to perpetuate and worsen into adulthood, when they no longer have the benefit of regular physical activity.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Behavioral and Social Epidemiology

633-P[DT]
Socio-Cultural Pressures and Adolescent Eating in the Absence of Hunger (EAH)
Samantha A. Reina, Lauren B. Shomaker, Mira Mooreville, Amber B. Courville, Sheila M. Brady, Susan Z. Yanovski, Marian Tanofsky-Kraff, Jack A. Yanovski *Bethesda, MD*

Background: From a socio-cultural theoretical perspective, parental feeding practices and pressures to be thin from family, friends, and media are important influences on eating behavior; yet whether these socio-cultural factors relate to EAH in adolescents has not been examined. We assessed if socio-cultural pressures and body image were associated with measured EAH in the laboratory. **Methods:** Participants were 90 non-treatment seeking youth aged 15.3±1.39y (48% female; 47% White; BMI-z 0.77±1.07). Parents completed the Child Feeding Questionnaire to assess parental feeding practices. Adolescents reported pressures to be thin from parents, friends, and media on the Perceived Socio-cultural Pressures Scale and the Socio-cultural Attitudes Toward Appearance Questionnaire. Body image was assessed with the Multidimensional Body Self-Relations Questionnaire. After an overnight fast on two separate days, snack food intake (EAH) was assessed 30 min after ad libitum consumption from a large buffet (~10,900 kcal) or a standard meal providing 50% estimated daily energy needs (in random order). **Results:** Linear mixed modeling analyses with repeated measures were used to examine the relationships of socio-cultural pressures and body image to EAH, controlling for percent body fat, fat-free mass, height, age, puberty, race, and sex. Parental restriction and family pressure to be thin were positively associated with EAH in both girls and boys (ps<.05). Media pressures and body image dissatisfaction were positively related to EAH in girls only (ps<.05). **Conclusions:** We conclude that socio-cultural pressures and body image are associated with adolescents' greater consumption of snacks in the absence of hunger, especially in girls, even after accounting for body composition. Experimental research is necessary to help elucidate the directionality of these associations.

634-P[DT]
Ethnic Differences in Body Mass Index Trajectories From Adolescence to Adulthood: A Focus on Hispanic and Asian Subgroups
Sandra S. Albrecht, Penny Gordon-Larsen *Chapel Hill, NC*

Background: While there are clear ethnic disparities in obesity in the US, little research has addressed within-group heterogeneity in longitudinal changes in body mass index (BMI) to understand when disparities emerge. **Methods:** Using nationally representative, longitudinal data from 1434 Hispanic: 790 Mexican (MX), 222 Puerto Rican (PR), 207 Cuban, 118 Central/South American (CSA), 97 Other Hispanic; 618 Asian: 179 Chinese, 261 Filipino, 178 Other Asian; and 5323 white participants from wave II (1996: 12-21 years) of the National Study of Adolescent Health who are followed into adulthood [wave III (2001-2002: 18-27 years), and wave IV (2007-2009: 24-33 years)], we examined differences in BMI (measured height and weight) by Hispanic and Asian subgroup. We investigated ethnic variation in growth trajectories using growth curve models to estimate baseline and slope of BMI change, adjusting for age, sex, immigrant generation, and study site region. **Results:** Compared to whites, baseline BMI was higher in MX (β=1.98 kg/m2, 95% CI: 1.44, 2.53), PR (β=1.79 kg/m2, CI: 0.886, 2.69), and CSA (β=1.35 kg/m2, CI: 0.224, 2.47) teens. These disparities were maintained into adulthood for PRs and CSAs, whereas in Mexicans, a higher BMI slope (β=0.04 kg/m2, CI: 0.01, 0.6) per unit increase in age suggested widening disparity. Although at baseline, Cubans and whites did not differ, the slope suggests rapid rise in BMI for Cubans relative to whites (β=0.1 kg/m2, CI: 0.01, 0.18). Among Asians, only Chinese adolescents had lower BMI (β= -1.85 kg/m2, CI:-2.86, -0.839) and flatter slope (β= -0.08 kg/m2, CI:-11, -.04) compared to whites. **Conclusions:** Overlooking within-group heterogeneity in the growth trajectories of Hispanics and Asians in the transition from adolescence to adulthood masks important differences regarding how and when ethnic disparities emerge.

635-P
Sleep and Changes in the Body Mass Index Distribution From Age 14 to 18
Jonathan A. Mitchell, Daniel Rodriguez, Kathryn H. Schmitz, Janet Audrain-McGovern *Philadelphia, PA*

Background: Research has indicated that less sleep is a risk factor for adolescent obesity, but most studies have used a cross-sectional design and modeled body mass index (BMI) as a dichotomous variable. The purpose of our longitudinal study was to determine if hours of sleep was associated with changes in the BMI distribution from age 14 to 18. **Methods:** Participants were sampled from suburban high schools in Philadelphia in 9th grade (n=1,390) and were followed-up every 6-months through 12th grade. Height and weight were self-reported, and BMI was calculated for each participant (kg/m2). Hours of sleep on school nights and weekend nights were self-reported and the average total weekly hours of sleep was determined. Longitudinal quantile regression was used to model the 10th, 25th, 50th, 75th and 90th BMI percentiles as dependent variables; and study wave and sleep (hrs/d) were the main predictors. Gender, race, maternal education, physical activity, and screen time were included as covariates. **Results:** BMI increased from age 14 to 18, with the largest increase observed at the 90th BMI percentile. More sleep was associated with decreases in BMI at the 10th (-0.04, 95% CI: -0.11, 0.03), 25th (-0.11, -0.20, -0.03), 50th (-0.14, -0.23, -0.06), 75th (-0.24, -0.37, -0.11) and 90th (-0.28, -0.46, -0.10) BMI percentiles. The strength of the association was stronger at the upper tail of the BMI distribution. **Conclusions:** In conclusion, more sleep was associated with non-uniform changes in the BMI distribution from age 14 to 18. Increasing sleep among adolescents could shift the upper tail of the BMI distribution to the left, and consequently reduce adolescent obesity.

636-P
Lower Inhibitory Control at Age 7 Predicts Poorer Physical, Cognitive, and Psychological Adolescent Outcomes in a Longitudinal Sample of Girls
Stephanie Anzman-Frasca, Lori A. Francis, Leann L. Birch *University Park, PA*

Background: Low inhibitory control is a plausible common antecedent of childhood obesity and negative child outcomes in other domains of development. We tested whether inhibitory control at age 7 predicted adolescent adiposity, school performance, and depression in a longitudinal sample of girls. **Methods:** Girls were included if their mothers provided inhibitory control data, using the Child Behavior Questionnaire when girls were age 7, and if they had data on each outcome of interest for at least one time point (n=190). Outcomes included percent body fat, assessed using dual-energy x-ray absorptiometry when girls were 11, 13, and 15; school performance, calculated from mother-reported grades at 11, 13, and 15; and depression, measured using the Children's Depression Inventory at 9, 11, and 13. SAS Proc Mixed was used to test whether lower inhibitory control predicted overall levels of and/or change in outcomes. Analyses were adjusted for family income and maternal education. **Results:** Girls with lower inhibitory control at age 7 had a higher percent body fat in adolescence (p<.001), as well as greater increases in body fat from age 11 to 15 (p<.01). Lower inhibitory control predicted poorer school grades (p<.0001) and higher depression scores (p<.001) in adolescence. There was also evidence that lower inhibitory control predicted lower scores on the Wechsler Intelligence Scale for Children and a greater likelihood of having tried cigarettes at age 15. Ongoing analyses are investigating these processes, as well as other outcomes, simultaneously using structural equation models. **Conclusions:** Results suggest that low inhibitory control is a common antecedent of risk in physical, cognitive, and psychological domains. Increasing inhibitory control abilities in young girls could lead to positive outcomes in multiple domains of well-being.

637-P[DT]
Primary Transmission of Risk For Overweight: Association Between Maternal BMI and Accelerated Baby Growth During the First Year of Life
Deborah Young-Hyman, Marlo M. Vernon *Augusta, GA*

Background: Risk for childhood overweight begins during the 1st year of life. First pregnancy and the first year postpartum is also the inflection point at which most women become overweight. The association between change

in maternal BMI and baby growth during the 1st year could partially explain increased risk for childhood overweight. **Methods:** 126 first time, healthy mothers (18-38y, 58% AA) and their babies (50% M) participated in the Primary Prevention of Overweight Development (PPOD) study. Mothers reported pre-pregnancy BMI (PreBMI X = 28.2±7.8, range=17-59), pregnancy wt gain (X=33.5lbs±16.3) and baby birth wt (X=7.2lbs±0.89) and length (X=19.9in±1.1) Mother BMI, baby wt and ht were assessed at 2m, 6m and 12m. Mother BMI, baby growth and change scores were compared at each time point. Using logistic regression, mother characteristics were used to model baby sex specific CDC Wt/Ht%Δ (Wt/Ht%) at 12m. **Results:** Pregnancy wt gain was associated with birth Wt% ($p<.009$) and Ht% ($p<.03$). BMI increased from pre-pregnancy to 12m (X BMIΔ= 2.2±3.4; t=-5.8, $p<.001$). Mothers with a BMI≥25 increased from 52% to 71% (t= -4.1, $p<.001$). Babies' growth accelerated the 1st yr (X 12mosWt/Ht% Δ=28%). 53% of babies crossed two major CDC age/sex specific % lines, indicating risk for future overweight (Taveras, 2011). BMIΔ from pre-pregnancy to 12m was significantly associated with Δ Wt/Ht% (r= .24 $p<.04$). Maternal race, age and education were not associated with Wt/Ht%Δ at 12m. PreBMI ($p<.01$) and BMIΔ from Pre to 12m ($p<.02$) were associated (R2=11%, $p<.02$). **Conclusions:** Results indicate that baby and maternal risk for overweight increase simultaneously during the 1st year of life. Primary transmission of risk is suggested. Evaluation of mother-baby environment during the first year may explain these findings.

638-P[DT]
Change in Impulsivity and Subjective Wellbeing in a Residential Camp For Obese Adolescents

Myutan Kulendran, Ivo Vlaev, Colin Sugden *London, United Kingdom*; Paul Gately *Leeds, United Kingdom*; Dominic King, Henry Lee, Paul Dolan, Ara W. Darzi *London, United Kingdom*

Background: In England a third of children are overweight or obese. Up to 40% of Britons could be obese by 2025. Obesity in adolescents can lead to poor subjective wellbeing (SWB). Obese individuals are thought to be more impulsive than normal weight children. We aimed to determine the role of impulsivity and SWB with successful weight loss. **Methods:** Thirty-one obese adolescents (m=21,f=17) with a mean age of 14.0 ±0.3 and a BMI of 33.6±0.9 were tested for impulsivity using two validated computerized tasks: a temporal discounting task analysed with MATLAB (Mathswork Inc, Natwick, MA) and the CANTAB Stop Signal Reaction Time Task (SSRT). The SWB of the adolescents was assessed using a self-reported questionnaire devised by The Children's Society. All tests were undertaken before and after a multi-dimensional weight loss intervention lasting 3-8 weeks **Results:** All residents saw a significant fall in BMI (2.6± 0.89, p=001) after the intervention. There was a significant reduction in impulsivity post-intervention (23.9±86.45,p=0.03) when age and length of stay in camp was controlled for. A longer stay in camp was associated with a greater reduction in impulsivity (r2=0.20,=0.03). Older adolescents did not show as great a reduction in impulsivity as younger individuals (r2=0.26,=0.01). **Conclusions:** Government funded residential multi-dimensional interventions do reduce weight loss in adolescents and increase their SWB. The stop signal task appears to be good predictor of impulsivity in adolescents. This is the first study to report a fall in impulsivity with weight loss. Further work in the topic will open the door for targeted interventions based on personality traits and environmental modulation.

639-P
Predicting the Dynamics of Obesity in the United States Through Infectious Disease Models

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Background: Similarities between the dynamics of the obesity "epidemic" and contagious diseases have been observed through social network analysis (Christakis & Fowler, NEJM 2007, 357(4):370-79). Here we investigate whether dynamic infectious disease models can capture the observed temporal trends in obesity prevalence within a population. Infectious disease models were originally developed in the late 1800's to predict the dynamics of the Bombay plague and have been successfully adopted to reflect dynamics of social phenomena such as ecstasy use, alcoholism, and crime. We attempt to advance this concept by developing and validating a dynamic model that predicts temporal trends in the U.S. obesity epidemic. **Methods:** The dynamic model describes interactions between three states of "infection"; overweight, obese, and morbidly obese compared to a population of normal weight individuals who are defined as susceptible to the disease. The model also includes a latent period that reflects the long time scale and slow changes in obesity prevalence. **Results:** Using baseline data from the 1985 CDC's Behavioral Risk Factor Surveillance System, we developed model simulations that suggested a plateau in new cases in 2008, preceded by a period of gradual changes that lasted about 25 years, a temporal trend similar to that actually observed. Additionally, the model revealed that the rate of appearance of new cases and the changes in obesity "prevalence" are critically dependent on the US birth and death rates, Model parameters can be altered to reflect prevailing conditions in individual countries world-wide with the aim of evaluating national and global obesity trends. **Conclusions:** The model offers new opportunities to predict or examine the impact of different obesity prevention or treatment strategies within a population.

640-P
Children's Attention Problems and Depressive Symptoms Relate to Distinct Eating Behaviors

Mira Mooreville, Lauren B. Shomaker, Marian Tanofsky-Kraff, Brittany E. Matheson, Sara Field, Samantha A. Reina, Merel Kozlosky, Sheila M. Brady, Susan Z. Yanovski, Jack A. Yanovski *Bethesda, MD*

Background: Children's attention deficits and depressive symptoms appear to be prospective risk factors for obesity; yet, the explanatory mechanisms underlying these associations are limited. The aim of this study was to test whether children's attention problems and depressive symptoms were associated with observed eating patterns that would be expected to promote excessive weight gain. **Methods:** Participants were 204 non-treatment-seeking youth aged 8-17 years (12.9±2.8 years; 49.5% female). Attention problems were evaluated using parent report on the Child Behavior Checklist - Attention Scale. Youth self-reported depressive symptoms on the Children's Depression Inventory. Observed energy intake was measured as consumption from a 9,835-kcal food array during a lunchtime meal. **Results:** Attention problems and depressive symptoms were correlated ($p<.001$), but were related to different aspects of observed eating. Using hierarchical multiple regression controlling for sex, age, race, percent fat, fat-free mass, and height, attention problems were related to greater total energy intake ($p<.01$). Depressive symptoms were not associated with total intake ($p=.21$). Instead, depressive symptoms were related specifically to greater energy intake from sweet snacks in girls ($p=.01$), but not boys ($p=.99$). **Conclusions:** These findings suggest that attention problems and depressive symptoms may differentially influence eating patterns that promote obesity. Children with attention deficits may have self-regulatory difficulties that lead to greater overall energy consumption, whereas youth, especially girls, with depressive symptoms may gravitate toward sweet snacks as a means of coping with negative affect.

641-P
This abstract has been withdrawn.

642-P
Alcohol Use and Abuse Before and One Year After Weight Loss Surgery

Christina C. Wee, Daniel B. Jones, Karen W. Huskey, Caroline Apovian, George L. Blackburn *Boston, MA*

Background: Evidence suggests that alcohol (Etoh) metabolism may be altered after weight loss surgery (WLS) with few studies suggesting a high prevalence of problem drinking post-operatively (post-op). However, these studies were methodologically limited by lack of pre-operative Etoh use data, high loss to follow-up and/or nonsystematic ascertainment of Etoh intake; thus, it is unclear whether reports of disordered Etoh use post-WLS represent incident cases or pre-existing behaviors. **Methods:** We studied 654 patients seeking WLS at 2 centers (75% response rate) as part of the Assessment of Bariatric Surgery (ABS) Study. In addition to demographic and clinical data, we systematically collected detailed data via telephone interview on alcohol drinking patterns before and after WLS using items adapted from the Alcohol Use Disorders Identification Test (AUDIT). We present interim data on the first 371 patients (of 538 who underwent WLS) who completed our 1-year post-op interview (72% retention). **Results:** At baseline, 73% reported cur-

rent alcohol use, 15% (n=54) exhibited high risk drinking and 2%(n=8) met criteria for Etoh abuse. At 1 year post-WLS, 11% (n=41) reported high risk drinking whereas 4% (n=14) met criteria for Etoh abuse. A subset of those who reported high risk drinking and Etoh abuse reported improvement in Etoh use after WLS, but 6%(n=23) of the cohort reported new high risk drinking and 3%(n=10) reported new alcohol abuse 1-year post-op (behaviors were not pre-existing in these patients during the year prior to WLS). **Conclusions:** A substantial minority of WLS patients exhibit high risk Etoh use and abuse at baseline. While Etoh use after WLS appeared to improve in a subset of these patients, new high risk drinking and Etoh abuse emerged in a notable percentage of patients after WLS.

643-P
Quality of Life Among Obese Patients Seeking Weight Loss Surgery: The Role of Obesity-Related Social Stigma and Functional Status

Christina C. Wee, Roger Davis, Karen W. Huskey, Daniel B. Jones, Mary Beth Hamel *Boston, MA*

Background: Obesity is a stigmatizing condition associated with adverse psychosocial consequences. The relative importance of weight stigma in reducing overall qualify of life is unknown. **Methods:** We conducted a telephone survey of 574 patients seeking weight loss surgery at 2 centers (75% response rate) as part of the Assessment for Bariatric Surgery (ABS) study. We assessed patients' health utility (preference-based quality life measure) via standard gamble scenarios assessing patients' willingness to risk death to lose various amounts of weight or achieve perfect health (range 0 to 1; 0=death and 1=most valued health/weight state). Multivariable models assessed associations between patients' utility and the following: 8 domains of physical and mental function using Short-form 36 (SF-36) and obesity-related public distress, self-esteem, physical function, and quality of work life and sex life using Impact of Weight on Quality of Life (IWQOL-lite). **Results:** The mean BMI was 46.5 kg/m2 and the mean health utility was 0.87 reflecting the group's average willingness to accept a 13% risk of death to achieve their most desired health/weight state. Of the IWQOL-lite subscales, Public Distress and Work Life were the only 2 subscales significantly associated with patients' utility after adjustment for sociodemographic factors. Among the SF-36 subscales, Role Physical, Physical Functioning, and Role Emotional were statistically significant. When the leading subscales on both IWQOL-lite and SF-36 were considered together, Role Physical and Public Distress were the two factors independently associated with patients' health utility. **Conclusions:** Interference with role functioning due to physical limitations and obesity-related social stigma appear to be relatively more important than other domains in driving reduced overall quality of life.

644-P
Dishabituating Properties of Cognitive and Interpersonal Stressors

Denise Feda, Leonard H. Epstein, James Roemmich *Buffalo, NY*

Background: Interpersonal stressors are especially effective at stimulating consumption of energy dense comfort foods, which may contribute to overweight or obesity. Stress may influence energy intake by acting as a dishabituator. One reason that people slow or stop eating is by habituating to the food being consumed. A dishabituating stimulus can resume motivated responding for, and eating of, the same food resulting in greater energy intake than otherwise would have occurred. It is not yet known whether cognitive and interpersonal speech stressors have different dishabituating properties for the motivating responding for food. The mental arithmetic, Stroop and interpersonal speech tasks produce stress through memory requirements, cognitive dissonance, and ego threat; respectively. The goal of this research was to test differences in the ability of cognitive and interpersonal laboratory stressors to dishabituate motivated responding to repeated presentations of a comfort food. **Methods:** Twenty adult females, ages 18-29, BMI 18-37 kg/m2, each completed 3 appointments where they engaged in motivated responding to earn portions of macaroni and cheese. After 24 minutes, one of three stressors was presented. The order of presentation of stressors was counterbalanced across participants. Motivated responding for macaroni and cheese was determined after the stressor (putative dishabituator). **Results:** Participants slowed their responding across time ($p < 0.04$). There was an increase in responding after the stressors with no significant difference in degree of dishabituation by type of stressor ($p > 0.3$). **Conclusions:** This suggests that both cognitive and interpersonal stressors can dishabituate motivated responding for food and eating behavior and increase energy intake at a meal.

645-P
The Relationship of Multiple Parent Stressors With Child Obesity and Related Behaviors

Elizabeth P. Parks, Shiriki Kumanyika, Renee H. Moore, Anne E. Kazak *Philadelphia, PA*; Brian Wrotniak *Buffalo, NY*; Nicolas Stettler *Washington, DC*

Background: Parents strongly influence potential obesity risk factors in their child's daily routine and home environment. The identification of factors associated with parental behaviors that might increase children's obesity risk may inform preventive strategies. Stress in parents has been associated with obesity in children. The objective of this study was to examine the association of the number of parent stressors with child obesity and with fast food consumption, fruit and vegetable intake and physical activity as behaviors that influence the risk of obesity **Methods:** This cross-sectional analysis used data from the 2006 Southeastern Pennsylvania Household Health Survey in which, 2,119 parents/caregivers answered questions about themselves and their child (ages 3-17). Survey data were used to assess the main exposure variable- the number of parent stressors as a sum of (financial status, physical health, mental health, and family structure); and study outcomes (child obesity, fast food consumption, fruit and vegetable consumption, and physical activity), which were examined in separate logistic regression models. **Results:** The number of parent stressors was related to child obesity (unadjusted odds ratio (OR): 1.12, 95% CI: 1.03-1.22, p=0.007). This association was unchanged when adjusted for child (age, race, health quality, and gender) and parent (gender, education, BMI, sleep quality, and food insecurity) covariates (OR: 1.12, 95%CI: 1.03-1.23), p=0.01). The number of parent stressors was not related to child fast-food consumption, fruit and vegetable consumption, or physical activity. **Conclusions:** Children of parents with more stressors were more likely to be obese. Practitioners who treat child obesity should consider the potential benefits of addressing parent stressors.

646-P
Maternal Employment and Work Conditions Predict Daughters' BMI

Julia A. Bleser, Jennifer S. Savage, Michele Marini, Leann L. Birch *University Park, PA*

Background: An increasing number of mothers of young children are working outside the home. This research investigated the associations between maternal employment outside the home between daughters' age 5 and 15 on daughters' BMI. **Methods:** Participants in this study were 197 non-Hispanic white families (daughters, fathers, mothers) assessed every two years from age 5 to 15. Repeated measures analysis of variance was used to examine the associations between of hours of maternal work outside the home and additional variables related to mother's employment and employment-related variables on daughters' BMI-for-age z-scores. **Results:** Average maternal hours worked outside the home increased over the span of the study, from 18 hours a week when girls were age 5 to 30 hours a week when girls were age 15. At age 5, the daughters of mothers who were working full time (> 30 hours/week) had higher BMI-for-age z-scores compared to daughters of mothers who did not work outside the home (< 8 hours/week) or who worked part-time (8-30 hours/week) and this trajectory continued through age 15 ($p < 0.01$). Increased hours worked by the mother were associated with work pressure and with maternal role overload ($p < 0.05$). **Conclusions:** Maternal work hours nearly doubled from daughter age 5 to 15, likely due to mothers returning to work when daughters start school. Higher levels of maternal work hours at age 5 were associated with a higher BMI for the daughter at the same age and through age 15. These findings bring to light the need for family-friendly workplaces and the additional opportunities for childhood obesity interventions at the family and workplace level.

647-P
Associations of Obesity With Poor Mental Health Are Not Mediated By Adiposity

Ellen A. Schur, Elizabeth J. Dansie *Seattle, WA*; Kathryn M. Godfrey *San Diego, CA*; Sherry Pagoto *Boston, MA*; Niloofar Afari *San Diego, CA*

Background: Obesity is associated with depression, anxiety, and greater overall stress. However, obesity, mental illness, and many physical health conditions run in families, with strong genetic and family environmental influences. We asked whether associations between high BMI and worse mental health were independent of genetic and familial factors by using an epidemiologic co-twin control study. **Methods:** Weight and height were self-reported by 2,831 twins enrolled in the University of Washington Twin Registry, who completed standardized questionnaires including the SF-8, Cohen Perceived Stress Scale, and PHQ-2. To mimic findings in unrelated individuals, generalized estimating equation regression models (adjusted for age, race, and education) were initially used to control for the correlated nature of twin data. Next, within-pair analyses examined associations of BMI with health measures, controlling for genetic and familial factors. **Results:** Among women, strong associations appeared between BMI and depression ($p = 0.002$) and perceived stress ($p = 0.01$), but not mental health functioning ($p = 0.07$) or anxiety ($p = 0.79$). BMI and depression were also associated among men ($p = 0.03$). Worse physical health, fatigue, and pain were strongly associated with high BMI in both men and women. In within-pair analyses, mental health outcomes were not significantly associated with BMI once genetic and familial factors were considered. In physical health measures, however, the relationship between BMI and worse overall ratings of physical health ($P = 0.01$) and increased body pain ($P = 0.004$) persisted in women. **Conclusions:** Once genetic and familial factors are accounted for, BMI itself is largely unrelated to poor mental health.

648-P[DT]
Dietary and Activity Behaviors Associated With Obesity Among Preschool Age Children in Korea

Yuni Choi *Seoul, Republic of Korea*; Zuunnast Tserend *Yongin, Republic of Korea*; Jung Eun Lee, Seungmin Lee *Seoul, Republic of Korea*; Hae-Ryun Park *Yongin, Republic of Korea*

Background: The obesity epidemic among preschool children in Korea has progressed gradually. The present study primarily aimed to investigate the prevalence of overweight and obesity among Korean preschoolers and its association with adherence to the 2009 Korean Dietary Action Guide for Children (KDAGC). **Methods:** We conducted a national level, cross-sectional study using data from child care center-based survey of 1,894 preschool children aged 4-7 years in Seoul, the capital city of Korea. We collected parent-report data on children's weight and height; frequency of fruit and vegetable consumption; and the quality of dietary and activity behaviors based on the 2009 Korean Dietary Action Guide for Children Adherence Index (KDAGCAI) developed as a proxy measure of adherence to the KDAGC consisting of key 19 recommendations. Children were categorized as lean/normal (< 85th), overweight (85th to < 95th), and obesity (≥ 95th) according to age- and sex-specific BMI percentile from the 2007 Korean national growth chart. Associations were assessed with generalized linear models and polytomous logistic regression models. **Results:** We found that 17.4% of Korean preschool children were overweight or obese. Obese preschoolers had lower adherence to the KDAGC compared to those with lean/normal weight. Preschoolers who had high quality of dietary and activity behaviors had a 54% decreased odds ratio (OR) of being obese (highest vs. lowest tertile of KDAGCAI-score, 95% CI: 0.29-0.74; P for trend = 0.001).Greater frequency of vegetable consumption was associated with borderline significant reduction in the prevalence of obesity (OR, 0.62; 95% CI: 0.38-1.03). **Conclusions:** Our findings support a potential beneficial effect of high compliance with the latest version of Korea national dietary and activity guideline in reducing the obesity epidemic among preschool children.

649-P[DT]
Maternal Body Size Perception and Infant Weight in a Low-Income African-American Population

Sherika N. Hill, Amanda Thompson, Margaret Bentley *Chapel Hill, NC*

Background: Maternal body size perception is an important factor to consider for early childhood obesity. Larger maternal body size perception is predictive of a preference for larger babies, which may in turn influence feeding practices and eventually child weight outcomes. We evaluated this association between maternal body size perception and infant weight and assessed feeding practices as a mediating pathway. **Methods:** Longitudinal analysis was performed on 217 first-time, low-income African-American mothers and their infants at 3, 6, 9, 12, and 18 months of infants' age. Mixed models measured the association between maternal body size perception, ascertained using body image silhouettes, and infant weight-for-age z-scores (WAZ) or infant perceived weight, scaled from very underweight to very overweight, controlling for maternal BMI, age, cohabiting, education, perception of being overweight as a child, breastfeeding, dieting, infant sex, and infant age. Mediation by age-inappropriate feeding was tested with mixed model estimation and bootstrapping. **Results:** Larger perceived maternal body size was significantly associated with lower WAZ and perceived weight, p-values=0.001 and 0.003 respectively. The relationship was significantly moderated by child sex; males had a higher weight/weight perception compared to females. Age-inappropriate feeding was a significant predictor for both outcomes (p-values<.05) and approached significance as a partial mediator for WAZ (p-value =.065). **Conclusions:** Larger maternal body size perception in a low-income African-American population does not result in infants being "fattened up" during the first 18 months. Counter-intuitively, an inverse relationship exists that is protective against early childhood obesity with daughters benefiting more than sons in these early years.

650-P[DT]
Relationship Between Poverty, Poor Sleep Hygiene, Shortened Sleep and Obesity in Low-Income Toddlers

Christina J. Calamaro, Erin R. Hager, Kristen M. Hurley, Maureen M. Black *Baltimore, MD*

Background: The current study examined how sleep duration and sleep hygiene (routine) are related to obesity among low-income toddlers. **Methods:** 240 low-income mother-toddler dyads participated. Mothers completed the Brief Infant Sleep Questionnaire (BISQ), hours of nighttime sleep and frequency of sleep hygiene items were calculated. Mothers also reported on income/dependents (poverty calculated, 2009 US Census Bureau). Toddler weight and length were measured in triplicate using standardized protocols. Gender-specific weight-for-length percentiles were calculated according to WHO growth standards. Obesity was defined weight-for-length 〉95th percentile. Linear and logistic regression models were used to determine the associations between toddler nighttime sleep duration, sleep hygiene and weight status (weight-for-length percentile and obesity), adjusting for poverty and toddler age. **Results:** Toddlers were 53% male, 69% Black, mean age (mo) 20.2±5.6, 68.1% living in poverty (poverty ratio <1.0), and 17.2% obese. Average nighttime sleep duration was 9.1hrs (5.5-13hrs), and 32.1% co-slept with a parent/sibling. Sleep duration was inversely related to weight-for-length percentile (-0.11; $p<0.05$) and a 23% reduction in obesity (OR=.77; $p =0.056$). Co-sleeping toddlers were 2.4 times more likely to be obese ($p<0.05$). **Conclusions:** Among low-income families, obesity was associated with shortened sleep duration and poor sleep hygiene among toddlers. Strategies are needed to incorporate sleep hygiene into pediatric services for low-income families with toddlers.

651-P[DT]
Health and Lifestyle Behaviors of Bariatric Surgery Patients After Surgery

Manuel Campa *Los Angeles, CA*; Karen J. Coleman *Pasadena, CA*

Background: Our study aims to investigate how demographic, health, and behavioral factors interact to affect long-term excess weight loss outcomes in bariatric patients. **Methods:** Eligible participants were 860 patients who had a Roux-en-Y Gastric Bypass (RYGB), were nonHispanic black, Hispanic, or nonHispanic white race/ethnicity, had no revisions to their RYGB during 2004-2009, and had at least one year of follow-up data for body weight after surgery. The main outcome of interest was total percent excess weight loss. **Results:** Participants were 47 + 11 years old, 54% nonHispanic white, 25% Hispanic, and 21% nonHispanic black, 82% female, 60% married, 82% had some college education, and 47% had an annual income between $35,000 and $80,000. At the time of surgery patients weighed 301 + 56 lbs and after an average of 54 months of follow-up had lost 50% + 29% of their excess weight. After accounting for weight at the time of surgery as well as all demographic, health, and behavioral factors, there was no difference in percent

excess weight loss between Hispanic and nonHispanic black men and women, however, nonHispanic white women had higher total percent excess weight loss (52.35%) than men (40.59%; p = .001). Although not significant, the pattern for nonHispanic black men and women was the opposite seen for Hispanic men and women. Nonhispanic black men (56.23%) had higher total percent excess weight loss than women (49.57%), while Hispanic men (47.07%) had lower than women (50.14%). **Conclusions:** Independent of health status and lifestyle behaviors, age, gender, ethnicity, and weight at the time of surgery, race/ethnicity and gender were the strongest predictors of total excess weight loss after bariatric surgery.

652-P
Parental Perceptions of Weight-Related Bullying Before and After a Mass Media Campaign to Raise Awareness of Child Obesity in Georgia

Jean A. Welsh, Carolina Cruxent, Hardy Trisha, Miriam B. Vos *Atlanta, GA*

Background: Georgia ranks second in prevalence of child obesity. In an effort to raise awareness of the problem, a statewide mass media campaign was implemented. The purpose of this study was to assess the impact of this campaign on the prevalence of bullying related to weight, as perceived by parents. **Methods:** A baseline (n=176) and follow-up (n=392) survey was completed among parents living in the metropolitan Atlanta area with a child between the ages of 4 and 15 years. Parents were asked to score "how much of a problem do you think bullying related to weight is in your child's school" using a Likert scale with 1=unsure and 5=a very serious problem. Those reporting 4 or 5 were coded as perceiving this to be a serious problem. Results were compared by parental perception of their child's weight status and by self-reported race and ethnicity. Differences were tested for significance using 2-sided Chi-square tests and a p-value <0.05. **Results:** A large proportion of parents reported that bullying related to obesity was a serious problem in their child's school. This proportion was significantly lower after vs. before the media campaign, 57.5% vs. 66.5%, respectively (p=0.04). Parental perception of bullying did not differ by child's perceived weight status (overweight, not overweight; p=0.43), by ethnicity (Hispanic/Latino; p=0.07), or by race (African-American, white, other; p=0.16). **Conclusions:** While in-school bullying related to weight is perceived by parents to be a serious problem in Georgia, our results suggest that a mass media campaign highlighting the importance of child obesity and the need to take action did not increase bullying as assessed by parental report.

653-P
Relation of Overweight to Symptoms of Mental Health Disorder: Analysis of Representative Data From Active Duty Military Personnel

Tracey J. Smith *Natick, MA*; Alan J. White *Durham, SC*; Laura Dotson *Alexandria, VA*; Louise S. Hadden *Cambridge, MA*; Andrew J. Young *Natick, MA*; Bernadette P. Marriott *Durham, SC*

Background: U.S. prevalence of mental health disorders (MHD) is increasing. Body fat (as measured by Body Mass Index, BMI) has been associated with risk of several MHD among civilians. We hypothesized that BMI>25 kg/m2 would be associated with MHD symptoms and attempted suicide among military personnel after accounting for demographics and lifestyle. **Methods:** Analysis of the 2005 Department of Defense Health Related Behaviors Survey in military personnel (n=15,195). **Results:** More men than women were overweight or obese (men: 50.2% and 13.7%; women: 32.9% and 8.2%, respectively). Women were more likely to meet the screening criteria for generalized anxiety disorder (GAD; OR=1.54, p<0.0005) and depression (95% OR=1.26, p<0.01) compared to men. Obese women were more likely to meet criteria for serious psychological distress (SPD; OR=1.85, p<0.01) and post-traumatic stress disorder (OR=1.80, p<0.05), and depression (OR=1.68, p<0.05) than normal weight women. For men, obesity was associated with GAD (OR=1.34, p<0.05), and overweight was associated with SPD (OR=1.34, p<0.05) compared to normal weight men. Self-reported high personal stress, not BMI or other select demographic/lifestyle variables, was the most consistent predictor of MHD symptoms and suicide attempts in the sample (OR = 3.86-8.34, p<0.001). **Conclusions:** In the U.S., 46% of individuals have a lifetime history of meeting MHD criteria. Military personnel experience the same home and lifestyle stressors confronting civilians that are compounded by unique professional expectations. Military healthcare practitioners should be cognizant of the association between stress, BMI and MHD. Personnel seeking mental health counseling may benefit from referral to weight management programs. Similiarly, personnel in military weight management programs may be candidates for referral to mental health services.

654-P
Obese Youths Are Not More Likely to Be Depressed, But Depressed Youths Are More Likely to Be Obese

Robert E. Roberts *Houston, TX*

Background: No prior study has examined the reciprocal association over time between obesitiy and depression among adolescents. We reexamine the question of whether there is such an association and the magnitude of this association. **Methods:** Data are analyzed from a large community sample of adolescents 11 17 at baseline (n = 4175) followed up a year later (n = 3134). Three indicators of depression were used: any DSM-IV mood disorder, major depression, and symptoms of depression. Using measured height and weight, overweight and obesity were examined in relation to depression. Covariates included age, gender, family income, physical activity, and dieting behavior. **Results:** Data from the two wave cohort indicate no evidence of reciprocal effects. Weight status did not predict clinical depression nor symptoms.However, mood disorders and major depression increased future risk of obesity more than twofold. Depressed males had a sixfold increased risk of obesity. Depressed females had a marginally increased risk of overweight but not obesity. **Conclusions:** Our findings, combined with those of recent meta-analyses, suggest that obese youths are not likely to be more depressed than that normal weight peers, but that depressed youths are at risk of weight problems. The available evidence points to a need tor interventions which target prevention of obesity to consider the role of depression.

655-P
Cumulative Social Risk, Behavior Problems and Obesity in Early Childhood

Shakira F. Suglia, Cristiane Duarte, Camille Gonzalez *New York, NY*; Earle C. Chambers *Bronx, NY*; Renee Boynton-Jarrett *Boston, MA*

Background: To examine child behavior as a potential mechanism explaining the relationship between cumulative social factors and obesity among preschool children in the Fragile Families and Child Wellbeing Study (N=1605). **Methods:** : A cumulative social risk score was created by summing maternal reports of intimate partner violence, food insecurity, housing insecurity, maternal depressive symptoms, maternal substance use and father's incarceration, obtained when the child was 3 years old. Mother's reported on the child's internalizing and externalizing behaviors with the Child Behavior Checklist (CBCL) at age 5. Child height and weight were measured at age 5. Regression models stratified by gender were used to estimate the association between: 1) cumulative social risk and obesity; 2) child behavior and obesity; 3) cumulative risk and obesity adjusting for child behavior. **Results:** Seventeen percent of children were obese, 16% had an externalizing T score greater than 65 and 40% had at least one social risk factor. In adjusted analysis, cumulative social risk was associated with obesity among girls (OR 1.2 95%CI 1.0, 1.3). High externalizing T score was associated with obesity among girls (OR 1.7 95%CI 1.2, 2.4) and boys (OR 1.6 95%CI 1.1, 2.4). In fully adjusted models, externalizing behaviors did not attenuate the relationship between cumulative social risk and obesity; a formal test of mediation was not statistically significant. No statistically significant associations were noted with internalizing behaviors. **Conclusions:** While externalizing behaviors are associated with obesity among both boys and girls they do not explain the association between cumulative social risk and obesity.

656-P[DT]
Associations of Television Watching and/or Internet Using Time With Bone Mineral Density in Chinese Adults

Sunyue Ye, Wei He, Yunjie Zhou, Aihua Song, Sha Zhang, Xinyu Zhao, Shankuan Zhu *Hangzhou, China*

Background: Low bone mineral density (BMD) is considered as the best clinical predictor of fracture risk. However, the relationships between sedentary related behavior and BMD are not clear. This study was to examine whether television watching (TV) and internet using (INT) time increased risk of having a lower BMD in Chinese adults. **Methods:** A total of 1014 subjects (men: 399, women: 615) aged 18-80 years were voluntarily re-

cruited. Anthropometric measurements were obtained using standard procedures. Total and body regional BMD were estimated using dual-energy X-ray absorptiometry scan. TV+INT was grouped as <60 (min), 60≤&<120, 120≤&<180, 180≤&<240, and 240≤. TV and INT were categorized as <60, 60≤&<120, 120≤&<180, and 180≤, respectively. Multiple linear regression was applied to analyze the associations of TV+INT, TV, INT with BMD. **Results:** After adjusting for sex, age, BMI, drink, smoke, education, occupational physical activity, and menopause in women, compared to the TV+INT<60 group, the 180≤TV+INT<240 group was significantly associated with lower BMD of total, spine, rib, trunk and leg but not for the ≥ 240 group. In TV and INT separate analysis, compared to the TV<60 group, 120≤TV<180 and TV≥180 were significantly associated with lower BMD of rib, trunk and pelvis. Compared to the INT<60 group, INT≥180 was significantly associated with a lower BMD of arm. **Conclusions:** TV and INT more than three hours per day are associated with a lower BMD in Chinese adults.

657-P
Breakfast Skipping and Obesity in Portuguese School Children Aged 6-11 Years: Associations With Behavioral and Family Characteristics

Cristina Padez, Maria Miguel Ferrão *Coimbra, Portugal*; Augusta Gama *Lisboa, Portugal*; Isabel Mourão *Vila Real, Portugal*; Helena Nogueira *Coimbra, Portugal*; Vitor Marques *Lisboa, Portugal*

Background: Portugal presents one of the highest rates of childhood obesity among European countries. This study examines the association between breakfast skipping and childhood obesity and with family characteristics and children behavior. **Methods:** Children aged 6-11 years were studied (n=11543). The International obesity task force (IOTF) cut-off points to define overweight and obesity were used. A questionnaire was filled out by parents about environmental, socioeconomic and behavioral characteristics. Qui-square tests and multivariate logistic regression analysis were used. **Results:** Breakfast skipping was 2.9% in boys and 3.8% in girls (qui-square=8.02, p< 0.01). After adjusting for sex and age, the following variables had independent and significant association with breakfast skipping: obesity (OR=1.58); parental education (reference 6 years), 9 years, OR=0.58; 12 years, OR=0.54; university, OR=0.20; number of children in the family (reference no other children), one children, OR=0.64; time at wake up during weekdays (reference less than 7 h), 7-8 h, OR=0.35; 8-9 h, OR=0.37; after 9 h, OR=0.31, TV watching during weekdays (reference 0-2 h), > 3h, OR=5.35; watching TV during breakfast (reference never), three days, OR=0.27; every day, OR=0.33; no physical activity outside school time, OR=2.69, not eating fruit at breakfast, OE=2.41. **Conclusions:** This study shows a significant association between breakfast skipping and childhood obesity, family and lifestyle characteristics, such as parental education, number of children in the family, TV watching, physical activity outside school and fruit consumption, showing that a unhealthy habit such as skipping breakfast is associated with other unhealthy habits.

658-P
Association of Obesity With Sedentary Behaviors and Play Outdoor Among Children

Cristina Padez, Maria Miguel Ferrão *Coimbra, Portugal*; Augusta Gama *Lisboa, Portugal*; Isabel Mourão *Vila Real, Portugal*; Helena Nogueira *Coimbra, Portugal*; Vitor Marques *Lisboa, Portugal*

Background: Sedentary behaviors such as television viewing is one of the major factors contributing to childhood obesity. This study aims to analyze the association between sedentary behaviors, passive play inside house, outdoor play and children obesity. **Methods:** A cross-sectional study was done in a sample of 11554 children, aged 6.0-10.0 y. Weight and height were measured, and parents filled out a questionnaire about family and child characteristics: TV viewing, passive play and outdoor play. Overweight and obesity, using cut-off points as defined by the IOTF, were used. Data was analyzed using the chi-square test and the multivariate logistic regression analysis. **Results:** We found 21.1% overweight and 9,0 % of obese children. The prevalence of obesity increased by time of TV viewing: < 2h, 26,9%, 2-4 h, 30.2%, and + 4 h 34.2 %, p< 0,001; decreased by time spent with passive play inside house: < 2h, 32.6%, 2-4 h, 30.3%, and + 4 h 27.7 %, p< 0,001 and decreased by active play outdoor: < 1 h/day 37.4%, 2-4 h/day 30.1%, > 3 h/day 26.4, p< 0.001. The odds ratio (OR) for childhood obesity increased by television viewing (reference < 2 h; 2-4 h: 1.18; > 4 h: 1.39), decreased by time spent in passive play inside house (reference < 2 h; 2-4 h: 0.72; > 4 h: 0.58). **Conclusions:** We conclude that TV viewing is positive associated with childhood obesity and either passive play inside house or active play outdoor are both effective ways to decrease childhood obesity.

659-P
No Association Between Sleep Duration and Adiposity in a Biracial Sample of Children and Adolescents

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Background: Lower sleep hours have been associated with higher levels of subcutaneous adipose tissue (SAT) in men and higher body mass index (BMI) in children. The relationship between sub-optimal sleep levels and abdominal SAT, visceral (VAT), and total (TAT) adipose tissue has not been elucidated in children. **Methods:** The sample included 362 children and adolescents 5 to 18 years of age (90 White males, 82 African-American males, 79 White females and 111 African-American females). BMI was calculated from height and weight, total body fat (BF) was measured by by dual-energy x-ray absorptiometry while TAT, SAT and VAT volumes were measured at the abdomen by magnetic resonance imaging (MRI). Due to the effects of race and sex, the analyses were stratified by race and sex. Self-reported sleep duration (hours/night) was adjusted for age using regression in each sex-by-race group, and the residuals were divided into tertiles. Analysis of covariance, with age as a covariate, was used to determine differences in adiposity across tertiles of age-adjusted sleep duration. **Results:** There were no differences in BMI, BF, TAT, SAT or VAT across sleep tertiles in any race-by-sex group. **Conclusions:** Self-reported sleep duration was not associated with adiposity in this biracial sample of children and adolescents. Strengths include the assessment of abdominal adiposity by MRI; however, limitations include the self-reported sleep duration in a small sample size.

660-P[DT]
Time Spent in Meal-Related Behaviors Among Employed Hispanic Mothers

Sarah Sliwa, Aviva Must, Flavia Perea *Boston, MA*; John Cawley *Ithaca, NY*; Christina D. Economos *Boston, MA*

Background: Time spent in meal preparation typically precedes family meals, which have been associated with higher diet quality and lower odds of obesity among youth/adolescents. Work-related time constraints have been cited as barriers to meal-preparation and family meals. These relationships have been under-explored in Hispanic families, wherein acculturation also influences diet. **Methods:** American Time Use Survey (2003-2010) data was used to understand the relationships among employment, meal-preparation, family dinner, and acculturation within employed Hispanic mothers (ages 18-55) with at least one child < 13 years old (n=1774). Ordinary Least Squares models tested the relationships among time in meal-related behaviors (log transformed), work hours, and acculturation (time in country: <10 years (ref), 10-14 years, 15+ years, U.S born), adjusting for socioeconomic, household, and secular trend covariates. Adjusted Wald statistics were used for pairwise comparisons. **Results:** Hours worked (OR 0.87, CI 0.85,0.91) and acculturation (for <10 years vs. U.S born OR 0.44,CI 0.29-0.66; P<.0001 for 10-14 years vs. U.S born; 15+ years vs. U.S. born) were inversely associated with meal preparation. Hours of work was positively associated with time spent in family dinner (OR 1.04, CI 1.01-1.08), except for mothers working after 6pm (OR 0.38, CI 0.28, 0.51). An increase in time spent in meal preparation was associated with an equal increase in time spent eating family dinner (working OR 1.01, CI 1.00-1.01). **Conclusions:** Work-related time constraints influenced meal preparation; however, mothers that found time to cook also spent more time in family dinner. Research linking these behaviors to dietary data and child weight status is needed.

661-P[DT]
Joint Associations of Race and Education With BMI Changes Over 20 Years: The CARDIA Study

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Background: Some studies find that socioeconomic status is differentially associated with weight across race groups. We hypothesized that changes in BMI among black and white adults would vary by educational attainment.

Methods: In a biracial cohort (n=5,115), we measured anthropometry, education, and covariates at baseline (1985-86; ages 18-30), and BMI at six follow-up examinations (through 2005-06). We used linear regression to predict 20-year changes in BMI, adjusting for baseline BMI, age, gender, smoking, total energy intake, and physical activity. We included a race-by-education interaction term to test the joint association with BMI change, and estimated stratum-specific mean BMI changes for four race-education combinations (black/white race, less than high school/high school graduate). We modeled education as the maximum attained (in years) from baseline through year 20. **Results:** Among whites, the prevalence of obesity (30≤BMI) increased from 7% to 28% from baseline to year 20, and among blacks from 16% to 50%. The association of education and 20-year changes in BMI differed by race (p-value for interaction <0.01). Whites who graduated high school had a non-significantly lower BMI increase (4.3 kg/m2; 95% CI: 4.1, 4.6) than whites who had not graduated high school (5.0: 4.2, 5.7). In contrast, blacks with a lower educational attainment had a significantly lower increase in BMI (4.9: 4.4, 5.5), as compared to blacks who graduated high school (6.0: 5.7, 6.3). **Conclusions:** Educational attainment may be differentially associated with BMI changes in black and white adults. Additional work is needed to identify risk factor differences that may help explain these results.

662-P
Brief Training in Obesity Counseling Improves Provider Self-Efficacy and Counseling Frequency at Well-Child Check-Ups

Stephanie Walsh, Jean A. Welsh, Holly Sealer, Wendy Palmer, Michael A. DeGuzman, Miriam B. Vos *Atlanta, GA*

Background: Many physicians feel ill-equipped to provide diet and health counseling and this is a substantial barrier to obesity prevention efforts in the primary care setting. We hypothesized that a brief training in patient-centered counseling would improve the frequency and quality of counseling at well-child check-ups. **Methods:** In 2011, 42 Georgia pediatricians and family practice physicians attended a 2-hour training on evidenced-based obesity prevention counseling techniques including patient-centered interviewing, action-oriented counseling, and goal setting. Self-administered questionnaires were used to assess physician perceptions of their treatment and counseling self-efficacy before and after training. Patient charts from well-child check-ups 6 months pre-and post-training from a random sample of trained providers (n=19) were independently and retrospectively reviewed. **Results:** The proportion of providers reporting high self-efficacy for treating and preventing obesity increased from 16.7% to 57.1% (p<0.0001) and from 16.7% to 47.6% (p<0.0001), respectively, with training. Similarly confidence in counseling and motivating patients to change diet and health habits increased from 40.5% to 78.6% (p=0.002) and from 28.6% to 64.3% (p=0.0001), respectively. Plotting of body mass index was high at baseline, 96%. After training, providers were significantly more likely to have documented a healthy habit goal. The greatest increase in goal documentation (from 0 to 23%; p<0.0001) occurred with overweight patients (vs. normal weight or obese). **Conclusions:** Targeted training for primary care providers improves self-efficacy and counseling frequency for obesity prevention at well-child check-ups. This brief, low cost intervention removes a critical barrier to promoting positive behavior change early in a child's life.

663-P[DT]
Prevalence of Overweight and Obesity in Indigenous and Non-Indigenous Mexican Population. The Comitan Study

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Background: Ethnic-related differences in the prevalence of overweight and obesity may be associated with differences in susceptibility and lifestyle **Methods:** From a base-population study, prevalence of overweight and obesity in indigenous (IND) and non-indigenous (NIND) populations from Comitan, Chiapas, Mexico was estimated. All eligible IND persons were invited to participate, whereas NIND persons were chosen randomly (from 3 and 4 localities, respectively). 1494 individuals (871 indigenous and 623 non-indigenous) aged ≥20 years (response rate 70%) were examined. Subjects were considered IND either by self-report or if they spoke an IND language. Body mass index (BMI) and waist circumference (WC) were measured. Self-reported data on diet and physical activity were obtained. **Results:** Age-sex adjusted prevalence of overweight and obesity was 32.6% and 2.6%, respectively, in the IND people, and 49.6% and 15.7%, respectively, in the NIND people. Prevalence of WC≥102 cm was higher in NIND (10.8%) than in IND (4.6%) men; the same occurred for WC≥88 cm in NIND (59.3%) compared with IND women (36.7%). After adjustment for age, sex, diet and physical activity, NIND people had 3.9 times (95%CI 2.9-5.3) and 12.5 times (95%CI 7.8-20.0) the probability of being overweight or obese compared with IND people. The probability of high WC was also higher in NIND people than in IND people (OR=2.8, 95%CI 2.0-3.9). **Conclusions:** Prevalence of overweight and obesity was significantly higher in NIND than in IND people. This is not explained entirely by differences in age, sex, and physical activity. Genetic susceptibility data from our study will permit to explain these differences.

664-P
This abstract has been withdrawn.

665-P
Childhood Temperament as a Risk Factor For Adolescent and Early Adult Overweight/Obese: Results From Two Longitudinal Studies

Kristin N. Javaras, Richard J. Davidson, Nicole Schmidt, Jeffrey M. Armstrong, Marjorie Klein, Marilyn J. Essex, H. Hill Goldsmith *Madison, MA*

Background: Despite numerous cross-sectional studies of adult personality and body composition, few large longitudinal studies of childhood temperament and adolescent/adult body composition exist. **Methods:** We examined two independent longitudinal samples. The Wisconsin Study of Families and Work (WSFW) consisted of approximately 350 participants (half female) followed from gestation to 18 years. The population-based Wisconsin Twin Project (WTP) consisted of approximately 600 twins (half female) followed from infancy to 12-15 years. Temperament scales from the Child Behavior Questionnaire were completed by multiple informants (the participant's mother and father and, for WSFW, also the teacher). Predictors of interest were two inversely-correlated temperamental factors assessed at 8-9 years in WSFW and 6-8 years in WTP. The first temperamental factor, referred to as 'control,' was the sum of average (across informants) attentional focusing and average inhibitory control, and the second temperamental factor, referred to as "approach," was the sum of average approach, average activity level, and average impulsivity. The outcome was age- and sex-adjusted body mass index (BMI) z-score or percentile, assessed at 18 years in WSFW and 12-15 years in WTP. **Results:** In both samples, higher control in childhood (and, to a lesser extent, lower approach in childhood) predicted significantly lower BMI z-scores and lower risk of being overweight/obese in adolescence or early adulthood in females, but not in males. This pattern of results held even after controlling for childhood BMI, childhood socioeconomic status, or childhood intelligence test scores. **Conclusions:** Low control and high approach in childhood are risk factors for later overweight/obesity, especially for females.

666-P
Healthy Lifestyles Camp Assessment For Obese Children and Their Families

Karen A. Lindsley *Atlanta, GA*; Cristiana Milone *Atlanta,, GA*; Andrew Muir *Atlanta, GA*; Courtney McCracken, Laura Colbert *Atlanta,, GA*

Background: Camp Strong4Life was a 3 stage intervention comprised of a family pre -weekend, 5-day camp for 8-15 year old obese children, and a post-camp family weekend. All camps addressed strategies for improving health through behavioral changes. The total number of campers attending at least one phase was 85. Seventy-seven campers and families attended camp and 49 campers and families returned to post-camp. Body composition, body-mass index (BMI) and body image perceptions of campers and mothers were studied. **Methods:** We hypothesized BMI and body fat would decline post-camp and mothers would perceive changes more accurately than campers. Maternal participation would also increase accuracy of mothers' perceptions of their child's image. Direct anthropometric measures and whole body air-displacement plethysmography (BodPod) determined BMI and body fat mass respectively. The Collins body image evaluation tool assessed mother and child perception of child body shape/image. **Results:** By BodPod measurement, campers finishing all 3 phases had a significant decrease in

percent body fat at post-camp (p<.006) and increased fat free body mass (p<.006). In many this represented lost fat and increased muscle mass/lbs. Despite BODPOD change, BMI change was not significant. Mothers' assigned higher Collins scores to their child than the child self-assigned. Compared to pre-camp scores, mothers' post-camp perception of a healthy image for their child moved closer to the healthy norm; from 4.16 ± .9 to 3.76 ± 1.0 (p<.0054). Changes between pre-post-camp bodyshape scores were not statistically different and there was no correlation between the individual changes of Collins and body fat. **Conclusions:** Mean fat mass of children decreased with camp intervention. Efforts to align perceptions of overweight children and mothers may be important to healthy behavior change.

667-P
Making Healthy Changes During Pregnancy: Enablers and Barriers Identified By Overweight and Obese Women

Zhixian Sui *North Adelaide, Australia*; Deborah Turnbull *Adelaide, Australia*; Jodie M. Dodd *North Adelaide, Australia*

Background: Overweight and obesity during pregnancy is associated with an increased risk of adverse maternal and infant health outcomes. The aims of this study were to explore the barriers and enablers identified by women who are overweight or obese to making healthy changes during pregnancy. **Methods:** A combination of self completed questionnaire and face-to-face interviews were utilized to explore women's beliefs and perceptions of behavior change during pregnancy. Questions were designed according to the health belief model, and a triangulation protocol followed to combine qualitative and quantitative data. **Results:** A total of 313 women completed self-administered questionnaires, and 26 women completed semi-structured face-to-face interviews at 28 weeks gestation. 58% of women indicated high gestational weight gain to be a concern, with 68% indicating this to be associated with complications during pregnancy or child birth. While women were aware of maternal complications, they were less aware of neonatal complications. While 89% of women indicated in questionnaires that healthy eating and physical activity were associated with improved health during pregnancy, they were unable to identify specific benefits at interview. Barriers to making healthy behavior changes were highly individualized, the most commonly identified being tiredness (69%). While 92% of women indicated that they would make behavior changes if their baby were to develop complications, only 58% felt confident in their ability to do so. **Conclusions:** Pregnancy interventions to facilitate behavior change in overweight and obese women should incorporate information about infant health consequences as well as strategies to enhance self-efficacy.

668-P
Perception of and Satisfaction With Body Image Among Pregnant Women Who Are Overweight or Obese

Zhixian Sui *North Adelaide, Australia*; Deborah Turnbull *Adelaide, Australia*; Jodie M. Dodd *North Adelaide, Australia*

Background: Maternal obesity and high gestational weight gain during pregnancy are associated with adverse health outcomes for women and their infants. There is little information describing how women who are overweight or obese in pregnancy perceive their body, and the effect of body image on gestational weight gain. **Methods:** This prospective nested cohort study evaluated self estimation of body weight, preferred body shape, dieting behaviour, satisfaction with body weight and shape, and gestational weight gain in pregnant women who were overweight or obese, through self-completed questionnaire in early pregnancy. Women were asked to indicate their perceived BMI and ideal body shape utilizing a series of images, with body image dissatisfaction identified as the difference between ideal and actual BMI. Additional questions related to baseline demographic characteristics. Gestational weight gain was calculated at 36 weeks gestation. **Results:** Of the 442 women who completed the questionnaire, 25.8% of women correctly identified their BMI, with 70.1% under-estimating and 4.1% over-estimating their BMI. Women who were obese were significantly less likely to correctly identify their BMI, as were younger women, and women who incorrectly identified their BMI were significantly more likely to have higher gestational weight gain (P<0.001). 45% of women indicated dissatisfaction about their weight or body shape, being more common in women of higher parity and higher BMI, although dissatisfaction was not significantly related to gestational weight gain. **Conclusions:** Strategies to enhance women's accurate perception of their BMI are critical to reducing the risk of high gestational weight gain.

669-P
Artificial Sweeteners: Sweet Taste Adaptation

Nicole Minckas, Carla Hirsch, Federico Prina, Rodrigo Nieto *Buenos Aires, Argentina*

Background: Ever since artificial sweeteners (AS) appeared in the market, there has been a change in people's food consumption patterns. The innate preference for sweet has been modified by a new substance six hundred times sweeter than sucrose. The essay intends to demonstrate that a high and sustained level of AS intake interferes with taste capacity. **Methods:** 20 volunteers who were accustomed to a large AS intake in hot drinks or cola beverages were evaluated to determine their threshold to sweet taste. They were asked to list any existing symptoms at the beginning of the study, their frequency of consumption per week of AS and the purpose of that consumption. After an 8-week AS free diet, the test and survey were retaken. **Results:** 70.6% of the volunteers managed to lower their recognition threshold for sweet taste and reduce 70.7% of the symptoms listed at the begging of the trial. There was also a change in their eating habits and in their preference for the initial beverages. **Conclusions:** It has been demonstrated that daily intake of AS alters sweet taste perception, and that daily and sustained consumption influences, not only general health condition, but also dietetic habits.

670-P
Public Awareness of Weight-Related Health Risk and the Effect of Brief Education

Adam G. Tsai *Aurora, CO*; Tracy F. Boyle, Jenny Mayo, James Heichelbech, Karl Weiss *Denver, CO*

Background: Individuals may not realize their own degree of overweight because of the high prevalence of overweight and obesity in the U.S. **Methods:** LiveWell Colorado is a nonprofit devoted to obesity prevention throughout the state. LiveWell commissioned a survey (n=1,107) in 2011, with oversampling of ethnic minority groups and of low income individuals. The purpose was to assess baseline knowledge of weight and health, prior to the Social Change Campaign sponsored by LiveWell in 2011. **Results:** 81% of respondents stated that obesity was a problem in Colorado, with female (vs male) and Latino (vs. Caucasian) respondents more likely to say it was a problem. 96% knew that obesity was associated with health risks (e.g., diabetes). Despite their concern, many respondents perceived obesity as not affecting them, and many judged obesity incorrectly. Specifically, 64% thought they ate enough fruits and vegetables, but only 32% thought that their friends ate enough. 53% thought they exercised enough, but only 35% thought their friends exercised enough. When given examples of height and weight, 43%, 70%, and 24% correctly identified an obese male, an obese woman, and an obese 10 year old child, respectively. After hearing the correct answer, 42% stated they were more concerned about their health. **Conclusions:** Many individuals underestimate their own weight-related health risk. Healthy eating and exercise appeared to be "someone else's problem," in that individuals overestimated their healthy behaviors, relative to others. However, brief education increased concern about health risk. Public education campaigns may facilitate individuals taking action to improve diet, physical activity, and weight. The Social Change Campaign will be evaluated with a follow-up survey to assess awareness of weight and behavior changes.

671-P[DT]
Predictors of Fat Mass Gain in Post-Renal Transplant Recipients

Patricia A. Cowan, Robin Bloodworth, Elizabeth Mulroy, Ann K. Cashion *Memphis, TN*

Background: Obesity in renal transplant recipients (RTR) is associated with significant morbidity and mortality. During the first year following transplant, RTR gain an average of 10 kg. It is unknown if weight gain is predominantly fat mass, and what the contributions of demographic and lifestyle behaviors are to fat mass gain in RTR. This longitudinal, prospective study examined predictors of fat mass change in RTR **Methods:** Prior to and 1-year post-transplant RTR (n=53; Male: 51%; Black: 53%; Age: 56.2±10.4 years), had body mass index (BMI) calculated, and completed the 7-day Physical Activity Recall and 3-day diet diary. Whole body densitometry (DXA) measures were taken at hospital discharge following transplant and 1-year later.

Multivariate prediction models for fat mass gain were developed using demographic, dietary, and physical activity measures. **Results:** At 1-year post-transplant, 66% (n=35) of RTR gained weight and 70% (n=37) gained fat mass. Of those who gained weight, 91% had some fat mass gain. Younger age (R2=0.084) and fewer days of 30+ minutes of moderate or more intense physical activity at 1-year post-transplant (R2=0.233) accounted for 32% of the variance in fat mass gain ($p<0.01$). Neither demographic characteristics (race, gender), baseline BMI, baseline activity, nor dietary intake predicted fat mass gain. **Conclusions:** Younger, less physically active RTR are at greatest risk for fat mass gain post-transplant. Interventions, specifically targeting physical activity, are needed to reduce and prevent post-transplant weight gain.

672-P
Choosing Bariatric Surgery: Patient Narratives About the Decision-Making Process

Deborah M. Gregory, Julia Temple Newhook, Laurie K. Twells *St. John's, Canada*

Background: Limited research has focused on factors considered in the decision-making process of individuals choosing to undergo bariatric surgery. To address this gap, we used qualitative methods to explore the decision-making processes of pre-operative bariatric surgery candidates in Newfoundland and Labrador, Canada. **Methods:** Fifty-four interviews were digitally recorded, transcribed verbatim and analysed using modified grounded theory and narrative analytic techniques, between June 2011 and March 2012. **Results:** Critical events or tipping points such as health deterioration, growing dissatisfaction with body image, or state of current self often precipitated the decision to seek surgery. For the majority of participants, the process of choosing surgery began with an introduction of the procedure by a family member, friend or complete stranger who had the surgery and had met with some measure of success, or on the recommendation of a family doctor or specialist. Subsequently, many participants researched the procedure via the internet and watched relevant TV programs. The primary reason for choosing surgery was a desire to significantly improve one or more aspects of their health and well-being (social, physical, psychological, spiritual, and emotional). Surgery was described as a "last resort", a "drastic lifesaving measure", "the only option", "a tool for personal change" offering hope for a return to the old, non-obese self or a transformation to a new self. For the most part, participants viewed surgery as the way to relinquish their control over eating. All participants were very positive about their final decision, which was often made in isolation from family and friends. **Conclusions:** Patient narratives provide valuable insight into the decision-making process of choosing bariatric surgery and greater understanding of the reasons for such a choice.

673-P
Expectations of Weight Loss, Health Outcomes, and Life Transformation After Bariatric Surgery

Julia Temple Newhook, Hilary I. Price, Deborah M. Gregory, Laurie K. Twells *St. John's, Canada*

Background: Recent research has indicated that bariatric surgery candidates tend to hold unrealistic expectations of weight loss after surgery; however, there has been little exploration of patients' expectations of health outcomes and life changes after surgery. **Methods:** Two complementary studies were conducted by the Newfoundland and Labrador Bariatric Surgery Cohort research team, based at Memorial University in St. John's, Newfoundland and Labrador, Canada. The first qualitative study explored reasons for choosing surgery and expectations and concerns for their lives after surgery. Fifty-four interviews were conducted. In the second study, 84 candidates completed the validated Goals and Relative Weights Questionnaire. Participants reported their "dream", "happy", "acceptable", and "disappointed" surgical weight loss expectations and rated the effect of weight on 20 indicators of health, quality of life, social functioning, and self-image. **Results:** The survey data indicates that candidates have unrealistic expectations of weight loss and body figure attainment from surgically induced weight loss. Candidates' "goal", "dream", "happy", "acceptable" and "disappointed" percentage of excess body weight loss were 84 ± 12%, 89± 11%, 76± 13%, 68± 16% and 41 ± 21%, respectively. The interviews suggested participants tend to see the surgery as an opportunity not only for weight loss and improvement of a wide variety of physical and mental health outcomes, but for "a new life." Life after surgery was envisioned as a dramatic transformation, including wide-ranging changes to their personal relationships, careers, family life, leisure activities, and self-image. **Conclusions:** These studies indicate that surgery candidates' may hold unrealistically high expectations for post-surgery weight loss as well as for transformation of multiple, complex aspects of their lives.

674-P
"Losing and Gaining:" Bariatric Surgery Candidates Talk About the Road to "Extreme Obesity"

Julia Temple Newhook, Hilary I. Price, Deborah M. Gregory, Laurie K. Twells *St. John's, Canada*

Background: Bariatric surgery candidates offer a unique viewpoint on the contributing factors to obesity and on the lived experience of becoming "extremely obese". Two complementary studies were conducted by the Newfoundland and Labrador Bariatric Surgery Cohort research team to explore their experiences with obesity prior to making a decision to have bariatric surgery. **Methods:** In the first study, 54 interviews were conducted with bariatric surgery candidates. In the second study, 84 candidates completed the Goals and Relative Weights Questionnaire. **Results:** Interview participants identified the cycle of weight loss and weight gain as a key element of their experiences prior to choosing bariatric surgery. Participants discussed methods of weight loss attempted, specific obstacles to weight loss, and their feelings about weight loss and weight gain experiences. Two distinct groups emerged: those who described being overweight since childhood versus those who described developing weight problems as adults. This second group identified several critical weight gain moments including pregnancy, personal injury, and lifestyle change. Other contributing factors to obesity identified by both groups included individual physiology (heredity, metabolism) and eating habits (cultural eating habits, "emotional eating," irregular eating times, specific food addictions, food quality, food quantity, and the dieting process itself). Among survey participants, 32% of respondents indicated that they had been overweight since childhood. The two most critical moments of weight gain for adults were identified as pregnancy (32% of women participants) and personal illness or injury (28%). **Conclusions:** From bariatric patients' perspectives, both cyclical weight loss/weight gain and critical weight gain moments play an important role in the road to "extreme obesity."

675-P
Exploring Bariatric Surgery as a Gendered Phenomenon

Julia Temple Newhook, Hilary I. Price, Deborah M. Gregory, Laurie K. Twells *St. John's, Canada*

Background: Eighty percent of bariatric surgery patients are women. The body of literature on gender and the "obesity epidemic" is increasing; however, we found no published research investigating bariatric surgery as a gendered phenomenon. **Methods:** The importance of gender in the results of two complementary studies conducted by the Newfoundland and Labrador Bariatric Surgery Cohort research team, based at Memorial University in St. John's, Newfoundland and Labrador, Canada is presented. In the first study, we conducted 54 interviews with 21 female and 6 male bariatric surgery candidates. Participants were questioned on the meaning of waiting for bariatric surgery, their reasons for choosing bariatric surgery, and their expectations and concerns for their lives after surgery. In the second study, 84 bariatric surgery candidates (69 female and 15 male) completed the validated Goals and Relative Weights Questionnaire. Participants reported their "dream", "happy", "acceptable", and "disappointed" surgical weight loss expectations and rated the effect of their current weight on 20 indicators of health, quality of life, social functioning, and self-image. **Results:** The interview study indicates that gender plays an important role in shaping women and men bariatric patients' reasons for choosing bariatric surgery, experiences of weight gain and weight loss, body image, perceptions of stigma, and expectations for weight loss, health outcomes, and life change after surgery. The survey findings suggest that male and female surgery candidates have significantly different expectations of "goal" and "acceptable" postsurgical body silhouettes ($p=0.004$, $p=0.029$), with women tending to expect slimmer silhouettes. **Conclusions:** The gender differences described in these studies may have important clinical and policy implications for bariatric care.

676-P
Maternal Child Feeding Practices, Parenting Style and Mother-Child Interactions as Predictors of Child Eating Behaviours, Food Intake and Weight: A Prospective Study

Helen Skouteris, Skye McPhie *Melbourne, Australia*

Background: The formative preschool years are now seen as crucial for the prevention of excessive weight gain during childhood. When focusing on the preschool years, it is not possible to ignore the influence of mothers on their children's development, because they are usually the primary care-givers. Hence, examining the associations between maternal parenting styles, parenting behaviours, child eating behaviours and child body mass index (BMI) is crucial from an ecological and preventive perspective. **Methods:** A sample of 117 mothers of preschoolers (63 girls, 54 boys) participated at two time points, 12 months apart. Mothers were on average 35-years-old (SD, 3.5 years), and mostly were well-educated, from a middle socioeconomic background, born in Australian or New Zealand and with a BMI <25. **Results:** The results suggest that child BMI (measured objectively) is predicted predominantly by maternal control, pressure to eat and family income. Our findings also showed that higher maternal pressure to eat was predictive of greater child enjoyment of food and lower maternal warmth predicted higher child intake of unhealthy food. **Conclusions:** Future research needs to be directed toward investigating other pathways which may link maternal behaviours to child weight gain. For example, nonresponsive feeding may be another mechanism that influences child weight, as children do not learn to self-regulate their eating in response to internal cues of satiety and hunger. To date, it is clear that childhood obesity is the result of a complex interplay between demographic, maternal, and child variables, and other potential variables not considered in the current study, instead of a direct influence by a few select variables.

677-P[DT]
Gender, Obesity, and Chronic Kidney Disease Among African Americans: The Jackson Heart Study

Marino A. Bruce, Bettina M. Beech, Melicia C. Whitt-Glover *Winston Salem, NC*; Derek M. Griffith *Ann Arbor, MI*; Jamy Ard *Birmingham, AL*; Sean L. Simpson *Winston Salem, NC*; Mario Sims *Jackson, MS*

Background: Obesity is highly prevalent among African Americans. The effect of obesity on kidney function has been increasingly concerning, particularly among African Americans. The purpose of this study was to examine the manner in which weight status has implications for chronic kidney disease (CKD) among this group. **Methods:** Data for this study were drawn from the baseline examination of the Jackson Heart Study (JHS), a single-site longitudinal study. The analytic cohort consisted of 3,430 African American men and women in the JHS with complete data to determine CKD status. **Results:** The prevalence of CKD in the JHS was 20% (865/3430 participants). The proportion of overweight, class I, and class II obese individuals was 32.5%, 26.9% and 26.2% respectively. In a pooled model, weight status was not found to be associated with CKD; however, there was a significant interaction between sex and weight status. Subgroup analysis revealed that class II obesity was associated with CKD among males (OR 2.37, CI 1.34–4.19) but not among females (OR 1.32, CI 0.88–1.98) **Conclusions:** Obesity is associated with CKD among African American in the JHS; however, the patterning of relationships varies by sex. Additional research is needed to explore manner through which gender has implications for the study of obesity and its relationship with CKD and other cardiovascular outcomes.

678-P
Prevalence Rates of Obesity in Upper Socioeconomic Primary Care Clinics in Southern California

Tanja V. Crockett, Ken Fujioka *San Diego, CA*

Background: Obesity rates in the United States are well documented. But there is little current data on prevalence rates of obesity in primary care. This study examines the prevalence rates of obesity in primary care clinics located in 3 different socioeconomic regions of San Diego County. San Diego County has lower rates of obesity compared to the US population, 22% verses 35%. **Methods:** Height, weight and gender data was collected from the electronic health record for 100 consecutive patients from 5 different physician panels. The physicians practiced at three different sites within the same large multispecialty group. **Results:** The prevalence rate of obesity from the primary care clinic in the highest socioeconomic region averaged 18.7% which compared to 15.5% for this region's population. The primary care rate in the moderate socioeconomic region was 16% compared to 20.1% for its general population. The primary care rate in the lowest socioeconomic region was 37% compared to 25% for the general population. **Conclusions:** Primary care physicians working in higher socioeconomic regions may see less than expected rates of obesity from what is represented nationally. Even within the same multispecialty group, prevalence rates of obesity varied by 23%.

679-P[DT]
Differences in Eating Behavior Patterns Between Obese and Normal Weight African American (AA) Women and Obese and Normal Weight European American (EA) Women

Kathryn A. Kaiser *Birmingham, AL*; Susan Franks *Fort Worth, TX*

Background: Outcomes from traditional weight loss programs are less effective for minority groups. The reasons for this are not clear, although various researchers have pointed to culturally determined differences in beliefs, attitude, and behaviors. We previously reported significantly lower mean scores in the Eating Inventory (EI) in AA women compared to EA women of all weight categories. Our aim was to compare and contrast eating behavior patterns including flexible (FR) and rigid restraint (RR) between obese (OB) and normal weight (NW) AA and EA women to understand potentially differing therapeutic approach targets. **Methods:** EA (n=105) and AA women (n=75) were recruited from a metropolitan area in the southwestern U.S. NW (n=79) and OB (n=96) participants were analyzed for weight category by race differences in EI scores and supplemental FR and RR items (Westenhoefer, 1999) using one-way ANOVA and Games-Howell (post-hoc). **Results:** Overall results: Cognitive Restraint (CR) $F(3,176) = 4.145$, $p=.007$; Disinhibition (DI) $F(3,176) = 26.10$, $p<.001$; Hunger (HN) $F(3,176) = 5.780$, $p=.001$. Post-hoc tests revealed: CR: EA OB = EA NW ($p=.818$); but AA OB > AA NW, $p = .013$. DI: EA OB > EA NW ($p<.001$); similarly AA OB > AA NW ($p<.001$). HN: EA OB > EA NW ($p=.002$); but AA OB = AA NW ($p=.364$). FR and RR both different overall, $p<.001$. **Conclusions:** Eating behavior patterns of AA OB women vs. their NW counterparts differ from EA OB women and their NW counterparts. AA OB women are higher in CR and DI but equivalent in eating in response to HN cues vs. their NW counterparts. Reducing rigid restraint in obese AA women should be a therapeutic aim. Results have implications for the development of culturally-relevant weight loss interventions.

680-P
Poor Perception of Overweight in an Adult Caribbean Population and Risk Factors

Philippe Carrère *Gourbeyre, Guadeloupe*; Michelle Kelly-Irving *Toulouse, France*; André Atallah *Gourbeyre, Guadeloupe*; Thierry Lang, Jocelyn Inamo *Toulouse, France*

Background: Our objectives were to describe the perception of overweight in an adult Caribbean population and to identify factors associated with the underestimation of overweight. **Methods:** We used data from a population-based cross-sectional study, involving 1,005 Guadeloupeans aged 25-74 years. Anthropometric measurements were collected at respondents' home. Perception of overweight was assessed using a closed-ended question. **Results:** Among normal weight subjects - Body Mass Index (BMI) <25 kg/m^2 - 7.2% of men and 26.8% of women overestimated their weight status. Among overweight subjects (BMI ≥25 kg/m^2) 51.1% of men and 30.4% of women underestimated their weight status. These proportions fell to 18.5% among overweight men and 16.9% among overweight women who stated having previously received a medical diagnosis of overweight, but only 36.2% and 57.2%, respectively, stated having received such a diagnosis. Multivariate analysis showed that the underestimation of overweight was associated with: the absence of previous diagnosis for overweight (OR: 5.35, $p <10^{-3}$), an age ≥55 years (OR: 2.91, $p <10^{-3}$), a BMI <30 kg/m^2 (OR: 2.26, p: 0.001), the male gender (OR: 1.86, p: 0.004), and a low income level (OR: 1.62, p: 0.030), but not the lack of awareness regarding cardiovascular benefits of weight control. Similar results were observed if waist circumference was taken as adiposity indicator. **Conclusions:** The lack of medical diagnosis of overweight was therefore the leading factor associated with underestimation of overweight. Informing patients of the health risks related to over-

weight is not enough. Health professionals should take particular care to make and communicate the diagnosis of overweight.

681-P
Eating Behaviour in Individuals With Psychotic Illnesses

Natasha Park, Sabrina Hassan, Rohan Ganguli *Toronto, Canada*

Background: Individuals with psychotic illnesses have rates of obesity 2-3 times higher than the general population. Their life span is also 20% shorter, with cardiovascular disease as the most frequent cause of death. Hypotheses for the increased risk of obesity include lifestyle factors, poverty (which restricts access to healthy food), and the side effects of certain antipsychotic medications. However, individual differences in eating behaviour have not yet been investigated in those with psychosis. **Methods:** The study was approved by the Research Ethics board. A convenience outpatient clinic sample was recruited (N=64, 71% Male; mean age 45.9). The Dutch Eating Behaviour Questionnaire was administered along with measurement of height and weight. **Results:** Emotional eating and body mass index (BMI) were significantly correlated ($r = 0.361$, $p < .006$). Additionally, there were significant differences among males and females, with females endorsing higher rates of emotional eating ($r = 0.388$, $p < .003$). **Conclusions:** The relationship between emotional eating and BMI suggests that interventions aimed at reducing emotional distress via adaptive coping strategies and increasing distress tolerance abilities may benefit those obese individuals, as well as those at risk for obesity. Understanding of individuals' specific emotional triggers can assist clinicians, and those taking antipsychotic medication for serious mental illness, with managing eating behaviours associated with weight gain. Assessing this component of disordered eating might help to individualize the treatment approach to weight loss in this population, as well as identify subgroups for whom novel treatment strategies can be developed.

682-P
The Association Between Perception of Weight Status and Weight Control Strategies Among Overweight and Obese High School Students – United States 2010

Allison J. Nihiser, Sherry Everett Jones, Leah Michele Maynard *Atlanta, GA*

Background: To determine if overweight (OW) and obese (OB) students who perceive themselves as OW are more likely to try to lose weight (WT) or engage in healthy (e.g., exercising; eating more fruit) or unhealthy (e.g., smoking; fasting; vomiting) WT control strategies. **Methods:** CDC's 2010 National Youth Physical Activity and Nutrition Study was a nationally representative sample of students in grades 9-12 (N=11,429). T-tests examined whether trying to lose WT among OW and OB students (defined by measured height and WT and CDC growth charts) differed by perception of WT status. Logistic regression models examined the association between WT perception and WT control strategies among OW and OB students. Significance reported at $p<0.05$. **Results:** 52% of OW and 82% of OB students perceived themselves as OW. The percentage of OW students trying to lose WT was higher among students who perceived themselves as OW (83%) than those who did not (53%). Results were similar for OB students (87% vs. 63%). 86% of OW and OB students used ≥1 healthy WT control strategy; 38% used ≥1 unhealthy strategy. OW students who perceived themselves as OW were more likely to engage in 2 of 5 healthy WT control strategies compared to OW students who did not perceive themselves as OW. OB students who perceived themselves as OW were more likely to engage in 4 of 5 healthy WT control strategies compared to OB students who did not perceive themselves as OW. OW students who perceived themselves as OW were not at increased odds of engaging in 4 of 5 unhealthy WT control strategies compared to those who did not perceive themselves as OW. OB students who perceived themselves as OW were not at increased odds of engaging in any unhealthy WT control strategies compared to those who did not perceive themselves as OW. **Conclusions:** Awareness of WT status might affect WT management among OW and OB students.

683-P
Impact of Parental Obesity on Weight Status, Dietary Habits, Body Shape Concerns, and Lifestyle Behavioral Choices of Female University Students

Najat Yahia, Kara Schneider, Phame Camarena *Mt. Pleasant, MI*

Background: Dietary habits and behavioral factors are important determinants of body weight and are usually acquired at an early age. The purpose of this study is to examine the impact of parental obesity on weight status, dietary habits, body shape concerns, and lifestyle choices in a sample of female students at Central Michigan University. **Methods:** A sample of 150 female students with a mean age of 20 ±1.4 years was recruited randomly from University campus during fall 2011. Students filled out a self-reported online questionnaire that included questions related to their dietary, physical activity and smoking habits, nutritional knowledge, body shape concerns, and parental obesity. Weight, height and waist circumference were measured. Percentage body fat and visceral fat score were assessed using a Tanita body composition analyzer SC-331S. **Results:** Outcomes of this study indicate that only 79% of students with parental obesity were of normal weight compared to 90% of students with no parental obesity. Means of body mass index, waist circumference, percentage body fat and visceral fat scores were slightly higher for students with parental obesity. Students with parental obesity reported less daily consumption of fruits & vegetables, drank less water, and consumed more fast-food. Smoking and physical inactivity were more common among students with parental obesity. Students with parental obesity were not worried about their body shapes and scored high on the nutritional knowledge questionnaire. **Conclusions:** Collectively, results indicate that students with parental obesity may benefit from a health promotion program tailored to improve their dietary and lifestyle choices.

684-P
To Weigh or Not to Weigh: Associations Between Self-Weighing Frequency and Eating Disorder Symptomology Among Young Adults

Lori A. Klos *Milwaukee, WI*

Background: Regular body weight monitoring – particularly self-weighing – has been associated with improved weight control, as well as weight preoccupation and body image disturbance. The purpose of this cross-sectional study was to examine the relationship between self-weighing frequency and eating disorder symptomology in the general population. **Methods:** In 2009, 270 undergraduates (193 women, 77 men) at a midwestern university reported their self-weighing frequency (SWF; several times a week or more, one time a week, less than once a week, less than once a month, never), and completed the Eating Disorder Examination-Questionnaire (EDE-Q). **Results:** More frequent weighing was significantly associated with higher levels of Restraint ($r=.31$, $p<.001$), Eating Concern ($r=.13$, $p<.05$), Weight Concern ($r=.14$, $p<.05$), Shape Concern ($r=.17$, $p<.01$), and total score on the EDE-Q ($r=.22$, $p<.001$). Adjustment for BMI attenuated all relationships but those between SWF and Restraint ($r=.27$, $p<.001$), and overall score ($r=.14$, $p<.05$). Regression analyses revealed SWF to be a unique, significant predictor of Restraint even after adjustment for participants' gender, age, BMI, and weight management approach, $F(5,264) = 16.65$, $p<.001$. The relationship between SWF and total EDE-Q score remained significant after adjustment for gender, age and BMI, but was no longer significant after participants' weight management approach was entered into the model. **Conclusions:** Results suggest that frequent weighers may be at risk for co-morbidities primarily associated with higher levels of restraint. Relationships between SWF and other eating disorder risk factors were not evident within this young adult population. Longitudinal analyses should examine if frequent self-weighing exacerbates dietary restraint and/or if restraint motivates frequent weighing.

685-P
Predictors of Meeting Physical Activity and Fruit and Vegetable Recommendations in Fifth Grade Students

Jimikaye Beck, Peter DeWitt *Denver, CO*; Janise L. McNally, Scott Siegfried *Greenwood Village, CO*; James Hill *Denver, CO*; Nanette Stroebele *Stuttgart, Germany*

Background: Childhood obesity represents a significant public health problem. Understanding fifth grader's behaviors and attitudes surrounding physical activity and nutrition, as well as the variables that impact those behaviors

will allow researchers to develop interventions to improve child behaviors, health and reduce the risk for obesity. The purpose of this study was to examine physical activity enjoyment and behaviors, as well as nutrition attitudes and behaviors of fifth graders. Additionally, we examined variables that influence these constructs. **Methods:** Fifth graders recorded 7 days of pedometer step counts and completed a physical activity enjoyment questionnaire, a food attitudes questionnaire and a FFQ. Logistic regression, analysis of deviance and odds ratios were utilized to determine predictors of meeting physical activity and fruit/vegetable intake recommendations. **Results:** Of the 467 participating fifth graders, 40.9% of boys and 45.4% of girls met step count recommendations. Overall physical activity enjoyment score increased the odds of meeting step recommendations between an average of 8 and 9%. 17.1% of students met both fruit and vegetable intake recommendations. Parental intake and encouragement to eat fruits and vegetables and more lbs of vegetables provided for students at school significantly increased the odds of students achieving intake recommendations. **Conclusions:** The majority of fifth graders fail to meet physical activity or fruit/vegetable intake recommendations. Future interventions could focus on improving child enjoyment of physical activity, parental intake and encouragement to consume fruits/vegetables, as well as the availability and variety of fruits/vegetables provided for students in order to alter physical activity and eating behaviors to improve their overall health and reduce their risk for obesity.

686-P
The Impact of Body Mass Index on Constipation Among Community-Dwelling the Elderly

Hyo Jeong Song *Jeju-si, Republic of Korea*

Background: The purposes were to identify the prevalence of constipation on the basis of Rome II criteria and to identify the impact of body mass index on constipation. **Methods:** The subjects consisted of 39 elderly at the Korean American Senior Center in Houston, US and 187 elderly from 5 Senior Centers located at Jeju-si, Korea. This was community-based cross sectional study. This study was carried out from February to November in 2010. Researcher visited Senior Centers to collect data. Interview took about 20 minutes. A well-structured questionnaire included demographic characteristics, self-reported measurements of height and weight which were converted to body mass index (BMI, kg/m2), and constipation. Univariate analysis was used to examine the relationship between the constipation and each variable. **Results:** A total of 226 elderly were enrolled in this study. The mean age of the elderiy was 76.6 years old, ranging 61-94. The prevalence of constipation was 27.9% by the Rome II criteria. Mean BMI was 23.9 and 33.3% were over 25 in BMI. In the univariate analysis, Women were 1.8 times (95 percent CI: 0.89, 3.72) more likely to constipation as compared with men. BMI ≥25 group were 2.79 times (95 percent CI: 1.41, 5.54) more likely to constipation than BMI <25 group. **Conclusions:** The study showed that Female and the subjects over 25 in BMI were the risk factors for constipation in the elderly.

687-P
Association of Area, Income, Occupation and Education Levels With Obesity in Jilin Province in China

Hai-yan Chen, Qi Wei, Hai-yan Zhou, Yu-lian Liu, Xing-xing Liu, Jie Sun *Changchun, China*

Background: Nowdays the economy has been obviously improved in both rural area and urban area in China. To explore the association to obesity is necessary among area,monthly income occupation type and education level in Jilin province. **Methods:** A cross-sectional study (n=7556) has been conducted in Jilin Province of China. Each participant underwent a standard questionare and physical examinations.The associations of demographic and clinical factors with body mass index (BMI) were tested using multivariate logistic regression. **Results:** City people had a high prevalence of obesity (16.2%) than people in rural area (11.2%). High monthly income, high education level and brain work had a high prevalence compared to low monthly income, low education level and physcial work, respectively. In multivariate analysis, increasing age, female gender, high monthly income and urban area were associated with a greater odds of obesity, but education level and occupation type were not. **Conclusions:** The prevalence of obesity in urban is higher than rural area. Occupation type and education level were not associated with obesity in this survey. The association between area and obesity may be explained by monthly income, not occupation type and education level.

688-P
Diet and Physical Activity Choices and Attitudes of Overweight Women in Rural South Carolina

Moreen Joseph *Orangeburg, SC*

Background: The prevalence of obesity among U.S. adults (34%) is twice that observed in children and translates into nearly 73 million adult men and women. The aim of this study was to obtain an in-depth understanding of eating and physical activity choices and habits of overweight African American women in selected rural counties in South Carolina. **Methods:** Overweight and obese (BMI=25-30); age =45-65; participants (n=36) women were recruited from the Family Health Centers in Orangeburg, Calhoun and Bamberg counties in rural South Carolina. A total of twelve participants were recruited from each county and asked to participate in a focus group interview. A trained researcher conducted interviews by asking each participant a total of 14 guided questions on healthy and unhealthy eating and physical activity habits and behaviors. **Results:** Six themes resulted from the focus group interviews: 1) lack of healthy foods in supermarkets; 2) participants could not afford the cost of healthy foods; 3) did not understand what a serving or portion size was; 4) did not know how many fruits and vegetables they needed to eat every day; 5) did not engage in regular exercise; 6) did not know how much exercise was needed per week. **Conclusions:** All participants had a positive attitude to eating better and exercising more and cited a need for access to healthy lifestyles information in an understandable and interactive manner to help reach this goal. The need for a television show on healthy cooking to teach them how to prepare healthy meals for specific diseases, e.g., diabetes, hypertension and high cholesterol, was expressed.

689-P
BMI Status and Expectations About Weight Gain and Peer Acceptance of Body Diversity Among Black Female Incoming College Students

Jennifer B. Webb *Charlotte, NC*; Phoebe Butler-Ajibade *Greensboro, NC*; Seronda A. Robinson *Durham, NC*

Background: Black college women appear to be disproportionately affected by overweight and obesity. Research has yet to clarify how elevated weight among prospective black college women may affect beliefs about anticipated weight-related changes during the first-year transition and views on future college peers' acceptance of various body sizes. **Methods:** The current study sought to address these evidentiary gaps in a sample of 209 black female recent high school graduates (M = 17.9 years, SD = 0.47) planning to attend a North Carolina Historically Black College or University (HBCU). Participants completed self-report measures via a web-based survey. **Results:** Descriptive analyses documented prevalence rates of overweight and obesity at 19.2% and 25% respectively. Roughly 84% of participants agreed that weight gain (M = 15.3 lbs., SD = 6.13) was a common first-year experience. In terms of weight change expectancies, more overweight (57.5%) and obese (71.2%) participants believed they would lose weight versus the underweight/normal weight participants (6%) during their first college year. Females with heavier body weights also tended to express both greater concern about weight loss ($p < 0.001$) and weight gain ($p < 0.01$) during this transition. Perceived male and female college peers' acceptance was rated between "somewhat" and "moderately" accepting across the three groups. **Conclusions:** These findings raise important questions about the role of peers in black females' views regarding their weight. Additional questions regarding the views that black females lack weight concern evolve. Implications of this study for promoting positive body image and healthy weight management among ethnic minority first-year women during the initial college transition period will be described.

690-P
Effect of TV Exposure and Advertising on Food Intake in Georgia: An Experimental Ad-libitum Study During Snacking Time

Dario Gregori *Padova, Italy*; Irakli Rtskhiladze, Ivane Chkhaidze *Tbilisi, Georgia*

Background: TV and advertising are suspected to promote children's overeating and overweight. Evidences from both cross-sectional and behav-

ioural experimental studies are available for USA, Europe and Australia, no such data exists for emerging countries in the former Soviet Union, like Georgia. **Methods:** Therefore 120 children (balanced according to gender and age groups 3-6 and 7-11 years old) have been randomized in a outpatients clinic in Tibilisi, Georgia, to be exposed to TV or not during an afternoon break. Children were asked to eat ad libitum, for a time of 20 minutes. In the TV group, children were also randomized to be exposed to three increasing levels of commercials (1, 2 or 3 times). Advertising was related to the snacks offered, and all children received the same meal during lunch time. **Results:** In the control group (No TV, no advertising) children ate an average of 249.88 Kcal (88.79 – 357.65 95% C.I). Linear effects on Kcal eaten are given in the Table. Effect (Kcal) SE p-value No TV, No Advertising 30.13 45.56 0.519 TV, No Advertising -39.54 46.64 0.398 TV+1 Advertising -47.36 46.62 0.302 TV+2 Advertising 21.64 64.62 0.644 Control (TV+3 Advertising) Ref. **Conclusions:** No significant differences have been found according to TV and increased exposures to advertising. In Georgia, etiological pathways related to children obesity might be worth reconsidering the role of behavioural interactions of children with TV and advertising. Study was supported by unrestricted Grants of Prochild ONLUS and the University of Padova.

691-P
Why Do Moms Eat What They Do? A Qualitative Study of Low-Income Mothers' Eating Patterns During Pregnancy

Naomi R. Reyes, Garrett Gerney, Alicia Klotz, Sharon J. Herring *Philadelphia, PA*

Background: Several studies have found that higher energy intakes during pregnancy are associated with greater absolute gestational weight gains and/or increased risk of gaining above recommended levels. Any effort to prevent higher gains must consider what social contextual factors and beliefs influence mothers' eating habits in pregnancy. **Methods:** We conducted semi-structured interviews in 2011 with 24 low-income, pregnant African-Americans in Philadelphia. Using open- and closed-ended questions, we examined: 1) how mothers determined what to eat and the amount to eat in pregnancy; 2) why some mothers changed their eating habits in pregnancy; and 3) what facilitators and barriers existed to eating healthy. Two readers independently coded the interview transcripts to identify recurrent themes. **Results:** Mothers believed that consuming healthy foods, like fruits, vegetables, yogurt, and baked chicken/fish, would lead to healthy babies and limit the physical discomforts of pregnancy (e.g., acid reflux). However, more often than not, mothers chose foods that were high in fats and sugars because of taste, cost, and convenience. Additionally, several misconceptions existed about the definition of healthy (e.g., juice is "good for baby"), which led to overconsumption. Many feared they might "starve" their babies if they ignored hunger signals and didn't get enough to eat, promoting persistent snacking, late night eating, and larger portions. Family also routinely pressured mothers to eat more. **Conclusions:** Interventions emphasizing mothers and babies true energy needs during pregnancy, accurate definitions of healthy foods, and cost-effective, tasty choices may help reduce the risk of excessive gestational weight gain and subsequent obesity.

692-P
Impact of Winchester Hospital Weight Management Participants on Members of their Households

Nancy Maddox, Ayla Withee *Winchester, MA*

Background: The number of adults who are overweight or obese is increasing dramatically. Healthcare professionals need to find economical, creative and effective ways to promote changes in eating behavior that lead to healthy weight. Exploring how one person's weight loss and lifestyle changes effects their household members could lead to a way to affect a greater number of people indirectly. **Methods:** Ten subjects who maintained a weight loss for at least 6 months while enrolled in the Winchester Hospital Weight Management Program were recruited. The time subjects had spent in the weight management phase of the program ranged from 6 months to 6 years, while keeping off an average of 50.7 pounds. Subjects consented to participate in a taped interview with set questions **Results:** Three common themes emerged. Program participants perceived their household members now, ate more fruits and vegetables, were more physically active and were more health conscious than before, all of which positively impact weight **Conclusions:** Participants in a long-term weight management program do perceive that they have a positive influence on the health behaviors of their household members.

693-P
Parent Weight-Related Talk: Helpful or Harmful?

Jerica M. Berge *New Brighton, MN*; Rich MacLehose, Katie Loth, Marla Eisenberg, Dianne Neumark-Sztainer *Minneapolis, MN*

Background: Little is known about parent weight-related talk (e.g. conversations about healthy eating, comments on child's weight/size) and whether weight-related talk has the same negative effects on youth health behavior outcomes as weight teasing. The purpose of this study is to investigate associations between parent weight-related talk and adolescent BMI and weight-related behaviors. **Methods:** Data from EAT 2010 (Eating Among Teens) and F-EAT (Families and Eating and Activity in Teens) were used for the current analysis. Mothers and fathers (n = 3,424) and adolescents (n = 2,182) participated in the linked multi-level population-based studies. Parents and adolescents were socio-economically and racially/ethnically diverse. Linear regression was used to estimate the association between parent weight-related conversations and adolescent BMI, dietary intake, physical activity, disordered eating behaviors and psychological outcomes adjusted for possible confounding variables. Additional regression models were fit to test for interactions by adolescent gender. **Results:** Adolescents whose mothers and fathers talked with them about healthy eating and physical activity had higher fruit and vegetable intake and breakfast consumption and fewer sedentary behaviors. In contrast, adolescents whose mothers and fathers talked with them about weight/size or losing weight ate breakfast less often, did less physical activity, had higher BMI, utilized more unhealthy weight control behaviors, dieted more, had higher levels of depression, lower body satisfaction, and lower self-esteem. Interactions by adolescent gender were nonsignificant. **Conclusions:** Future intervention research may want to focus on teaching parents about the importance of conversations that focus on eating and physical activity as opposed to conversations focused on weight loss or size/shape change.

694-P
Obesity Has Few Effects on Future Psychosocial Functioning of Adolescents

Robert E. Roberts *Houston, TX*

Background: Evidence for negative effects of obesity on well-being of adolescents is mixed. We reexamine the effect of obesity on a wide range (n = 17) of indicators of functioning drawn from five broad domain: interpersonal problems, pscyhological problems, suicidal behaviors, academic performance, and psychiatric disorders. **Methods:** Data are analyzed from a large community sample of adolescents 11 - 17 at baseline (n = 4175) followed up a year later (n = 3134). Using measured height and weight, overweight was defined as 85th - 94th percentlle and obese at 95th percentile or above. Covariates examined were age, gender, family income and functioning problems at baseline. **Results:** Weight status had few effects on functioning. At baseline, obesity was associated only with poor perceived mental health. Results from the cohort analyses revealed only increased odds again for poor perceived mental health. No other effects were found. There were few gender effects. **Conclusions:** The results suggest that overweight or obesity per se have little impact on the future psycosocial functioning of adolescents. It may be there are such effects, but that these effects are mediated by other factors such as body image or stress exposure such as weight-related teasing or bullying.

695-P
A Lifestyle and Behavior Properties of the Young-Adult Overweight Students Who Participate Weight-Loss Program

Toshiharu Eto *Miyazaki, Japan*; Keiko Aoishi *Nagoya, Japan*

Background: Participating in a weight-loss program is effective for weight loss for an overweight person. We investigated the characteristic of the weight-loss program participant. It is important to know a lifestyle and behavior properties of candidate in order to increase a participant to the program. **Methods:** We intended for 286 students with BMI 27.0 kg/m2 or more by a medical examination. The analytical subject was 96 who received obese instruction. **Results:** Eighty five obese students out of 96 candidates wished to weight loss. Twenty four students (men 20 and women 4) participated to

the weight-loss program, the absentee were 61 people (men 46 and women 15). The characteristic of the weight-loss program participant did not exercise ($p < 0.05$) and tended to like fatty diets. The student who did not participate to the weight-loss program thought that exercise was the most important for weight loss ($p < 0.05$). **Conclusions:** The idea of exercising by oneself may have barred the participation to the weight-loss program. The opinion that busyness and a program seem to be difficult was the factor which lessened participation to the weight-loss program. It seemed that the explanation using High Lambda Style is important. The purpose of this weight-loss program that the student who thinks only exercise is important recognized the methods of controlling themselves synthetically, such as fundamental food, exercise, and stress relief. And the recognition was considered to contribute to future lifestyle related diseases prevention.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Genetic Epidemiology

696-P
Meta Analysis of MetaboChip SNPs in 210,086 Individuals Identifies 33 Novel Waist Hip Ratio Loci

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Background: Waist-hip ratio (WHR), a measure of adipose tissue distribution, is associated with metabolic and cardiovascular (CV) diseases independent of total adiposity. **Methods:** We genotyped 67,163 individuals from 28 studies using the Metabochip, an array of single nucleotide polymorphisms (SNPs) pre-selected for CV and metabolic traits. Each SNP was tested for additive association with WHR, adjusted for body mass index and other study specific parameters. **Results:** All 14 previously established WHR loci replicated with directionally consistent effects (13 at $P < 5.0\times10^{-8}$). In addition, SNPs selected to follow up suggestive GIANT consortium WHR signals (Heid *et al* 2010), showed more directional consistency than expected by chance (1,409 of 2,377 independent SNPs ($r^2<0.1$) compared to 1,189 expected, $P=2.0\times10^{-19}$). We also performed a fixed-effects meta-analysis of the Metabochip studies together with genome-wide association studies (total n=210,086). We identified 33 novel WHR loci ($P<5.0\times10^{-8}$), including SNPs near *PPARG* and *CEBPA*. The *CEBPA* signal is located near two subunits of the transcription factor C/EBP, which is essential for adipocyte differentiation and also binds promoters of adiponectin and leptin, suggesting a range of effects on downstream pathways. Two of the new WHR loci are located 5' and 3' of *PPARG* and are in low linkage disequilibrium with each other ($r^2=0.18$) and with the Pro12Ala variant, an established type 2 diabetes locus ($r^2=0.11$ and 0.07 respectively). At most but not all loci, effects are stronger in females than in males. In addition, several loci show evidence of association with other traits including triglycerides, cholesterol levels, and blood pressure. **Conclusions:** This meta-analysis further elucidates the genetic architecture of fat distribution and provides exciting clues regarding underlying biological mechanisms.

697-P
The Importance of Weight Loss For Effecting Molecular Change During Intensive Cardiovascular Risk Reduction

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Background: Obesity is a major risk factor for cardiovascular (CV) disease. Behavioral lifestyle change is the cornerstone of therapy for weight management. Currently little is known about molecular responses accompanying weight loss that may be important in weight control and CV risk reduction. **Methods:** Patients (n=89) participated in a prospective, nonrandomized, lifestyle change program designed to stabilize or reverse progression of CV disease through dietary changes, exercise, and stress reduction. Nonintervention controls (n=63) were matched to patients based on age, gender, and disease status. CV risk factors (BMI, blood pressure, lipids) and peripheral blood gene expression profiles were assessed at three time points over one year. **Results:** Most patients were obese (63%; BMI>30) or overweight (25%; 25<BMI<30 kg/m2) at baseline, but showed significant improvement in CV risk factors compared to controls during the program. Following stratification based on weight loss, we observed significant expression changes (FDR $P<0.05$) for 41 genes in participants who lost the most weight (mean weight loss=11%) from baseline to three months and for 3223 genes in those who lost the most weight (mean weight loss=15%) from baseline to one year. No significant expression changes were observed in patients who lost the least weight (mean weight loss<4%) or in controls. Functional ontologies of genes showing the most significant changes in expression included immune/defense response and symbiosis at three months and metabolism/biosynthesis at one year. **Conclusions:** Intensive lifestyle modification can effectively alter CV risk factors, but successful weight loss may accentuate molecular change. Defining the role of weight loss in molecular response to lifestyle modification provides another dimension to understanding complex biological processes involved in CV health.

698-P
A Systematic Mapping Survey of GWAS Loci For Body Mass Index in More Than 20,000 African Americans Reduces the Number of Potential Functional Variants and Identifies Independent Second Signals: Metabochip Results From the Population Architecture Using Genomics and Epidemiology (PAGE) Study

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Background: Genome-wide association studies (GWAS) performed in European-ancestry populations (EA) have identified numerous loci that are associated with body mass index (BMI). However, the putative functional variants in these loci remain under investigation. The generally lower linkage disequilibrium in African-ancestry population compared with EA provides the opportunity to home in on functional variants and to identify second independent signals. **Methods:** We genotyped 20,488 African Americans (AA) on the Metabochip, resulting in 13,566 SNPs across 21 BMI GWAS loci. As part of a systematic survey of SNPs discovered in GWAS (index SNPs) we first tested association between BMI and all SNPs correlated with each index SNP (r2>0.2 with index SNPs in EA; on average 117 SNPs per locus). Then we tested association between BMI and all other SNPs in each locus (on average 529 SNPs per locus) to test for second independent signals. We used linear regression to model an additive genetic effect adjusted for age, sex, study site, and ancestry, and used Bonferroni correction to control for multiple comparisons. **Results:** In only two loci was the index SNP the most significant SNP (P=1.0×10-8 and 1.8×10-4). In 17 loci a SNP other than the index SNP was most significant (P= 1.0×10-8 to 0.04). Among those, 11 remained significant after multiple comparison correction. On average only 3 SNPs were correlated with the most significant SNP at r2>0.8 in AA, substantially reducing the number of promising variants for functional follow up studies. At 7 loci we observed significant evidence for a second independent signal (multiple comparison adjusted P=6.0×10-6 to 0.03). **Conclusions:** This systematic mapping study in AA has substantially reduced the number of candidates for likely functional variants and provided evidence for additional independent signals in several of the BMI loci.

699-P[DT]

Acanthosis Nigricans and Its Association With Obesity and Other Metabolic Correlates in Mexican American Children: A Genetic Epidemiologic Investigation

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Background: Acanthosis nigricans (AN) is a skin disorder characterized by thickened, coarse, and darker skin, which typically occurs on the neck, axilla, knuckles, elbows, and knees. It is strongly associated with obesity, insulin resistance, and type 2 diabetes (T2D). The prevalence of AN is high in US ethnic minorities including Mexican Americans (MA), a population at high-risk for obesity and T2D. However, the genetic basis of phenotypic correlations between such traits and AN is not well-understood. **Methods:** We conducted a genetic epidemiologic study of AN, using data from 670 non-diabetic MA children, aged 6-17 years (49% girls). In this study, the presence of AN on a child's neck was used as the criterion for this condition, since inter-observer concordance was found to be highest in this area. The neck area was graded on a severity score of 0-5. We analyzed AN both as discrete (ANd) and continuous (0-5, ANc) traits. We assessed the genetic correlations between AN measures and obesity-related traits using SOLAR. **Results:** The prevalence of ANd was 33%, and it increased by the BMI category: Normal weight (11%), overweight (31%), obese (61%), and severely obese (75%). Both AN measures were found to be significant and highly heritable (h2=ANd: 1.00 and ANc: 0.78, (P<0.0001). ANc was significantly (P<0.05) genetically correlated with the following MS risk factors: waist circumference (0.81), fasting insulin (0.43), insulin resistance (i.e., HOMA-IR, 0.38), Matsuda Insulin Sensitivity Index (-0.50), HDL cholesterol (-0.30), triglycerides (0.43), and systolic (0.33) and diastolic (0.30) blood pressure measures. **Conclusions:** Our data reveal that AN has strong common genetic influences with obesity and other metabolic traits in MA children. AN can be used as a a non-invasive easily assessed biomarker for susceptibility to obesity and MS related traits.

700-P[DT]

The Missense Variation Landscape of *MC4R* and *TMEM18* in Obese Children of African Ancestry

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Background: Common variation at the loci harboring *FTO*, *MC4R* and *TMEM18* is consistently reported as being statistically the most strongly associated with obesity. Following on from our negative results with *FTO*, we investigated if *MC4R* and *TMEM18* harbor rarer missense variants that confer substantially higher risk of common childhood obesity in African American (AA) children. **Methods:** We sequenced the exons of *MC4R* and *TMEM18* in an initial extreme subset of our cohort i.e. 200 obese (BMI≥95th percentile) and 200 lean AA children (BMI≤5th percentile); however, all subjects were between -3 and +3 standard deviations of CDC corrected BMI i.e. outliers were excluded to avoid the consequences of potential measurement error or Mendelian causes of extreme obesity. Any missense exonic variants that were uncovered went on to be further genotyped in a further 768 obese and 768 lean (BMI≤50th percentile) children of the same ethnicity. **Results:** A number of exonic variants were observed from our sequencing effort: thirteen in *MC4R*, of which six were non-synonymous (V103I, N123S, S136A, F202L, N240S and I251L) and four in *TMEM18*, of which two were non-synonymous (P2S and V113L). Follow-up genotyping of these missense variants revealed no significant difference in the frequency of these SNPs between cases and controls. **Conclusions:** In summary, as with *FTO* moderately rare missense variants within the *MC4R* and *TMEM18* genes observed in our study do not confer risk of common childhood obesity in African Americans.

701-P

Impact of DRD2/ANKK1 Gene Variants on Eating Behaviors and Adiposity in the Quebec Family Study

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Background: Evidence from both animal and human studies suggest that dopamine plays a crucial role in feeding behaviors and obesity. The DRD2/ANNK1 TaqIA polymorphism (rs1800497), which is associated with a lower density of dopamine D2 receptor and reduced dopamine binding, has been found to be related to obesity and brain response to food intake an food cues. The objective of the present study was to test for associations between SNPs in the dopamine receptor D2 (DRD2) and the adjacent ankyrin repeat and protein kinase domain-containing protein 1 (ANKK1) genes with eating behaviors, energy and macronutrient intakes as well as adiposity. **Methods:** Body mass index, waist circumference, percent body fat and abdominal fat assessed by CT-scan were measured in 885 adult subjects from the Quebec Family. Eating behaviour traits and dietary intake were evaluated using the Three Factor Eating Questionnaire and a three-day dietary record, respectively. Six SNPs in DRD2 and 7 SNPs in ANKK1 were tested for association with age-adjusted data in men and women separately using mixed linear model methods implemented in the GWAF software. **Results:** In women, two polymorphisms in DRD2 (rs6277 and rs1800498) and four in ANKK1 (rs17115439, rs4938013, rs2734848 and rs2734849) were associated with adiposity. The strongest associations were observed with DRD2 rs6277 (0.03<p<0.05) and ANKK1 rs17115439 (0.0005p<0.02) polymorphisms, which were consistently associated with higher values of adiposity in women. In men, ANKK1 rs17115439 was associated and with a higher percent fat intake. No association was observed between any of the polymorphisms and eating behavior traits. **Conclusions:** The results suggest that DRD2/ANKK1 genomic variants influence adiposity in a sex-specific manner.

702-P

Established Obesity Loci and Incident Severe Obesity Risk: Findings From the National Longitudinal Study of Adolescent Health

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Background: Genome-wide association (GWA) studies have identified BMI-associated susceptibility loci, yet how these loci relate to incident severe obesity in the years spanning adolescence and adulthood is unknown. Indeed, much of the literature on severe obesity has focused on rare single gene disorders. **Methods:** We evaluated 4,107 European American participants of the National Longitudinal Study of Adolescent Health, aged 12-21 years at baseline (1996) and followed over 13 years (3 waves; mean=2.9 measurement visits) into adulthood (24-33 years, 2007-09). We examined the association between 43 established obesity SNPs (Speliotes et al. 2010) with incident severe obesity risk across adolescence and adulthood [measured height and weight; 120% of BMI ≥ 95th percentile ≤ 20 years (Flegal et al., 2009) and BMI ≥40 for individuals > 20 years] using mixed-effects logistic regression models with random intercepts and unstructured covariance for school and family and controlling for sex, smoking, age and age squared, assuming an additive genetic model. **Results:** In the 13-year period, 285 (6.9%) severe obesity incident cases were observed. Findings suggest more directional consistency in effect estimates than expected by chance (consistency of direction for 24/43 BMI loci with OR≥1.0; p=0.09). Even with the small number of incident cases, notable associations were observed for MTCH2 (rs3817334; OR=1.91, CI: 1.07, 3.41, p=0.028) and LMX1B (rs867559; OR=1.81, 95% CI: 0.99, 3.32, p=0.054). **Conclusions:** Our findings suggest that some of the previously identified GWA BMI loci might play a role in pathogenesis of severe obesity in European American individuals in the high risk period between adolescence and young adulthood. R01HD057194

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703-P
Differential Genetic Effects Influence BMI From Birth to Middle Adulthood: The Fels Longitudinal Study

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Background: Over 30 common genetic variants associated with BMI have been identified through genome-wide association studies. Previous work suggests genetic effects on BMI tend to increase during childhood and then plateau or decline in later adulthood. That is, there may be gene-by-age interactions. This study examines the covariate effect of a genetic risk score (GRS), comprised of 32 well-replicated BMI single nucleotide polymorphisms (SNP), on BMI assessed longitudinally across the lifespan in participants of the Fels Longitudinal Study. **Methods:** For 1,233 (602 males, 631 females) participants with SNP genotypes, BMI was calculated at birth, at 6 months, and at 1.5, 3.5, 7, 11, 15.5, 21.5, 30, 40, and 50 years. Birth year, sex, and age differences in each age category were adjusted for in all genetic analyses. All analyses were implemented in SOLAR. Univariate analyses were used to estimate the covariate effect of the GRS and additive genetic effects. Bivariate analyses, re-parameterized to include genetic and environmental variances, were used to estimate the influence of shared additive genetic effects while adjusting for the GRS effect. Finally, bivariate models were compared to models in which the GRS effects were set equal to each other for each age pair. **Results:** At each age, BMI was influenced by additional genetic effects after adjusting for GRS ($p < 0.0001$, h^2 ranged from 0.41 to 0.77). The GRS effect was significant ($p < 0.02$) at all ages except birth and 1.5 years, and generally increased from 3.5 years to 40 years. Bivariate analyses indicate that additive genetic effects vary across age. The GRS effect also differed by age. **Conclusions:** In summary, our results indicate that there are differential genetic effects on BMI over the lifespan, where the effects of the GRS tend to increase with age.

704-P[DT]
Resequencing of FABP4 and its Association With Adiposity Phenotypes in African Ancestry Men

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Background: Obesity and type 2 diabetes (T2D) disproportionately affect African Ancestry populations compared with Caucasians. However, in contrast to women, the race gap in T2D risk among men is greatest at low levels of total adiposity. Emerging evidence indicates that ectopic adipose tissue (AT) accumulation in skeletal muscle is greater in African compared with European ancestry men, and may be a novel risk factor for T2D. Specific genetic factors contributing to variation in skeletal muscle AT remain to be defined. A growing body of evidence suggests that adipocyte fatty acid binding protein-4 (FABP4) may be crucial for ectopic AT accumulation and general adiposity. **Methods:** We resequenced the coding and untranslated regions of FABP4 using Sanger sequencing to develop a comprehensive inventory of variations in a population-based cohort of African Ancestry men (N=1695) residing on the island of Tobago. Additionally, we tested for association between common FABP4 variants and DXA (total and trunk fat) and quantitative computed tomography (total, subcutaneous, and intermuscular AT cross-sectional areas; and skeletal muscle attenuation) measured adiposity phenotypes. **Results:** Eighteen rare (<1% frequency) and 4 common (≥1% frequency) variants were identified, including 4 novel synonymous mutations and 2 novel non-synonymous mutations. The presence of the minor (T) allele of rs8192688 (minor allele frequency=7.57%) in intron 1 was associated with lower total body and trunk fat, independent of age and height (both $P<0.012$), and with increased intermuscular AT, independent of age, height and total body fat ($P=0.015$). **Conclusions:** We identified several novel genetic variants in FABP4, and found preliminary evidence for the contribution of common FABP4 variants to decreased total and central adiposity and increased skeletal muscle AT infiltration.

705-P
Obesity Susceptibility Loci and Associations Across the Pediatric Body Mass Index Distribution

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Background: Most studies investigating obesity susceptibility loci studied the mean BMI z-score in children. We aimed to determine if previously identified obesity susceptibility loci are associated uniformly with pediatric BMI across the BMI distribution. **Methods:** Children and adolescents were recruited from the Children's Hospital of Philadelphia (n=7,225). In this population *FTO* (rs3751812), *MC4R* (rs12970134), *TMEM18* (rs2867125), *BDNF* (rs6265), *TNNI3K* (rs1514175), *NRXN3* (rs10146997), SEC16B *(rs10913469), and* GNPDA2 *(rs13130484) have been associated with BMI using linear and logistic regression. In the present study these associations were re-assessed using quantile regression. BMI z-score was modeled as the dependent variable, and genotype risk score (sum of risk alleles carried at the 8 loci) was modeled as the independent variable.* **Results:** Each additional increase in genotype risk score was associated with an increase in BMI z-score at the 5th, 15th, 25th, 50th, 75th, 85th and 95th BMI z-score percentiles by 0.04 (+/-0.02, P=0.08), 0.07 (+/-0.01, $P=9.58 \times 10^{-7}$), 0.07 (+/-0.01, $P=1.10 \times 10^{-8}$), 0.09 (+/-0.01, $P=3.13 \times 10^{-22}$), 0.11 (+/-0.01, $P=1.35 \times 10^{-25}$), 0.11 (+/-0.01, $P=1.98 \times 10^{-20}$), and 0.06 (+/-0.01, $P=2.44 \times 10^{-6}$), respectively. Each additional increase in genotype risk score was associated with an increase in mean BMI z-score by 0.08 (+/-0.01, $P=4.27 \times 10^{-20}$). **Conclusions:** In conclusion, obesity risk alleles were more strongly associated with increases in BMI z-score at the upper tail compared to the lower tail of the distribution. Previous studies may have underestimated the strength of the association between these obesity-susceptibility loci and pediatric BMI in the context of obesity.

706-P[DT]
Polymorphisms in INADL Associated With Adiposity Phenotypes in Hispanic Children: Follow-Up of the Total Energy Expenditure QTL on Chromosome 1p31

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Background: In a previous genome-wide linkage scan of energy expenditure in Hispanic children from the Viva La Familia Study, we identified a quantitative trait locus (QTL) on chromosome 1p31 which contains positional candidate genes such as leptin receptor (LEPR), InaD-like (Drosophila) (INADL), FGGY carbohydrate kinase domain-containing (FGGY) and sterile alpha motif domain-containing 13 (SAMD13). We conducted a follow-up fine mapping study to identify potential functional variants that might affect energy metabolism and adiposity phenotypes in this population. **Methods:** A total of 384 single nucleotide polymorphisms (SNPs) were genotyped in the QTL region of 1p31 in 934 children from 319 Hispanic families. We used measured genotype analysis (MGA) implemented in the software package SOLAR to investigate the association between variants in the candidate genes and phenotypes related to energy metabolism and adiposity. Bayesian quantitative trait nucleotide (BQTN) analysis was used to identify variants that are most strongly associated with adiposity and energy metabolism phenotypes and are likely to be functional. **Results:** Evidence of association was found between SNPs in INADL, FGGY and SAMD13 and body weight, percent body fat, fat mass, fat free mass, energy expenditure, leptin and BMI (p values ranging between 1.2 x 10-7 and 8.3 x 10-6). BQTN analysis showed rs1056513 of INADL to be strongly associated with fat mass (Posterior probability of functional effect = 1). Although the exact function of INADL protein is not known, it has been previously associated with adipocyte differentiation during adipogenesis. Linkage analysis conditional on the SNP rs1056513 did not reduce the linkage signal for energy expenditure. **Conclusions:** These results indicate an important role for INADL in the variation in adiposity but not energy expenditure.

707-P[DT]

X-Linked Genetic Effects on Adiposity-Related Phenotypes in Mexican Americans of the San Antonio Family Heart Study

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Background: Humans typically display well-defined sexual dimorphism in many measures of body composition and body fat distribution. Our aim was to investigate the potential role of genes on the X-chromosome in mediating this observed sexual dimorphism in participants in the San Antonio Family Heart Study (SAFHS). **Methods:** We employed a modification of our maximum-likelihood based variance decomposition approach for the statistical genetic analysis of quantitative traits to detect sex specific differences in the variance for these traits and evaluate whether these differences were due to genetic or environmental factors. For traits showing significant sex-specific genetic effects, we further tested the hypothesis that the differences were due to allele sharing on the X-chromosome **Results:** Our analyses revealed that the genetic variances for anthropometric (BMI, waist circumference, weight, waist-hip ratio, medial and lateral calf, skinfold thickness), glucose-related phenotypes (fasting glucose and insulin, 2 hour glucose and insulin) and leptin were significantly different between the sexes ($p < 1.9 \times 10\text{-}11$). Additive genetic effects of the X chromosome were significant for BMI, waist circumference, body weight and waist-hip ratio ($p < 0.009$). When allowing for dosage compensation in women we found additional significant genetic effects for medial calf ($p < 0.05$). **Conclusions:** These results indicate significant additive genetic effects of loci on the X chromosome which may have implications for differential sex-specific metabolic regulation in energy storage and utilization.

708-P

Association of Body Weight With Transcript Abundance Shows Cross-Species Replication in Baboons and Humans

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Background: Body weight regulation is a complex process involving various neural and hormonal signals that balance energy intake and expenditure. Integrating phenotypic and transcriptomic data, we conducted a study to identify genes for which expression is associated with body weight in both humans and baboons. **Methods:** Data for this study came from 499 adult pedigreed baboons at the Southwest National Primate Research Center. In addition to body weight, we used transcript abundance data for 10,641 RefSeq transcripts found in previous studies to be heritable and located in regions of the baboon genome orthologous to their genomic positions in humans. We used a pedigree-based robust regression approach, implemented in the statistical genetics package SOLAR, to identify transcripts likely to exert effects on body weight in these pedigreed baboons. **Results:** Focusing on a subset that included only the top 1% of test results ($n = 106$; p values ranging between $1.6 \times 10\text{-}4$ and $7.8 \times 10\text{-}3$), we found a number of transcripts that we previously had found to be significantly associated with body weight in Mexican Americans from the San Antonio Family Heart study: e.g., syntenin (SDCBP), adenosine A2 receptor (ADORA2A), SNF-related kinase (SNRK), solute carrier family 9 (sodium/hydrogen exchanger) member 8 (SLC9A8) and guanine nucleotide-binding protein, alpha Z polypeptide (GNAZ). **Conclusions:** We interpret these results as important additional evidence that variation in the expression of such genes contributes to body weight variation in humans. We also view these results as yet another indication of the relevance and utility of baboons for basic translational research with implications for our own species.

709-P[DT]

Burden of Obesity and Its Co-Morbid Conditions, and Their Genetic Determinants in Mexican American Children

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Background: Childhood obesity and its co-morbidities have become major public health issues and genetic studies of such traits have been limited. **Methods:** In this study, we examined the occurrence of obesity and its co-morbid conditions. We explored common genetic influences on obesity and its correlates, using data from 670 non-diabetic Mexican American (MA) children (ages 6-17 years; 49% girls) who were participants of the SAFARI Study. All genetic analyses were conducted using SOLAR program and traits were adjusted for covariate effects of age sex and puberty. **Results:** The occurrence of overweight/obesity (OW/OB, ≥85th percentile for age and sex); obesity, including severe obesity (OB/SOB, ≥95th percentile); and severe obesity (SOB, ≥99th percentile) were 53%, 34% and 11%, respectively. Overall, 13% of children had pre-diabetes (PD: impaired fasting glucose, impaired glucose tolerance, or both), and 19% had metabolic syndrome (MS) defined as presence of 3 or more of the following 6 risk factors: abdominal obesity, insulin resistance, glucose intolerance, low HDL-cholesterol (HDL), elevated triglycerides (TG), and elevated blood pressure. PD rates rose with increasing obesity: 11% in normal–weight children (NW; <85th percentile):; 11% in OW (≥85th-<95th percentile); 17% in OB (≥95th-<99th percentile):; and 19% in SOB).: MS rates rose alarmingly with rising BMI: 1% in NW:; 9% in OW, 40% in OB: ; and 68% in SOB All key MS risk factors exhibited significant heritabilities, and several obesity trait pairs exhibited significant genetic correlations [p-value]: BMI-insulin: 0.57 [<0.0001]; BMI-HDL:-0.50 [0.0003]; BMI-TG=0.47 [0.0002]; and BMI-MS:0.69 [0.0006]). **Conclusions:** Thus, obesity drove profound increases in metabolic syndrome and its related risk factors in MA children, and several of these correlated traits were found to be under pleiotropic influence.

710-P

Interaction of rsLRP1B and Smoking in Association With BMI in European American Adolescents: Findings From the National Longitudinal Study of Adolescent Health

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Background: Adolescence is a high risk period for weight gain and for health risk behaviors, such as smoking. While many genetic predisposition to obesity studies control for smoking status, few have examined interaction of smoking with obesity susceptibility loci in association with obesity during adolescence. **Methods:** Using 5,260 participants of European descent from the National Longitudinal Study of Adolescent Health (ages 12-21, 52.5% female), we examined the interaction of current smoking status (at least 1 cigarette/day) and 43 well-established BMI-related SNPs (Speliotes et al. 2010) in association with BMI (measured height and weight) using likelihood ratio tests. We assumed an additive genetic model adjusted for age, sex, self-reported BMI, and region, and allowing random intercepts for clusters by family and school. When interaction was detected (likelihood ratio tests, α=0.05), estimated effects of SNPs were examined in stratified models for smokers and non-smokers. **Results:** Prevalence of obesity was 12.3% and smoking was 27.1%. Of 43 SNP*smoking interactions, one (rsLRP1B) was significant after Bonferroni correction ($p = 0.0006$). The association for rsLRP1B with BMI had greater effect size in nonsmokers (β=0.183, SE =0.152) than smokers (β =0.021, SE =0.257). **Conclusions:** Our findings suggest that smoking behavior may interact with obesity susceptibility loci to influence BMI during adolescence. LRP1B codes for a low density lipoprotein receptor, which, in addition to contributing to BMI, has demonstrated associations with tumor formation, healthy cognitive ageing, insulin resistance, and notably, smoking cessation. Understanding the interaction between obesity susceptibility variants with modifiable health risk behaviors including smoking has potential for obesity prevention and treatment efforts.

 For author conflict of interest information, see page S250

711-P

Genetic Linkage and Association of Serum Resistin Levels in the Fels Longitudinal Study

Miryoung Lee, Audrey C. Choh *Dayton, OH*; Ellen W. Demerath *Minneapolis, MN*; Joanne E. Curran, Thomas D. Dyer, John Blangero *San Antonio, TX*; Bradford Towne, Stefan A. Czerwinski *Dayton, OH*

Background: Resistin levels, mainly expressed by macrophages in humans, are known to be associated with obesity, inflammation, and insulin resistance. Recent studies report that serum resistin levels are also under strong genetic control. In this study, we performed genome-wide association and quantitative trait linkage analyses on serum resistin levels in a sample of 1,189 non-Hispanic white family members (550 males, 639 females) aged 18-97 years. **Methods:** Each participant was genotyped with the Illumina Human 610-Quad BeadChip containing more than 550,000 single nucleotide polymorphism (SNP) markers. Association analyses were conducted using the measured genotype method implemented in SOLAR, allowing for residual non-independence among relatives. Variance-component linkage analyses were conducted using a subset of 17,561 SNP markers selected from the genome-wide association set. **Results:** Serum resistin levels were significantly heritable (h^2±SE, 0.35±0.06). While no locus achieved genome-wide significance (χ^2>27.85) in the association analysis, we observed a suggestive association (χ^2>22.70) for rs1801239, located in the cubilin gene (CUBN, 10p12.31). This SNP causes a missense mutation (A to G, I2984V), and was reported to be associated with albuminuria in the general population and in diabetics. Significant evidence for linkage was found on chromosome 19p (LOD=4.59 at 16cM) close to marker rs166992410 in the hepatoma-derived growth factor-related protein 2 gene (HDGFRP2, 19p13.3). Significant linkage was also found on chromosomes 17q (LOD=3.61 at 87cM) and 18q (LOD=3.25 at 121cM). **Conclusions:** In summary, we identified several significant linkage signals and one suggestive association for serum resistin levels. Future work will focus on replicating these results in other populations and examining associations between resistin levels and cardiorenal risk.

712-P[DT]

D2 Dopamine Receptor (DRD2) Taq1a Allele Is Associated With Eating Behavior and Greater Total and Visceral Adiposity in a Racially Diverse Sample of Children

Michelle Cardel, Yann C. Klimentidis *Birmingham, AL*; Dominick Lemas *Fairbanks, AK*; Jose R. Fernandez *Birmingham, AL*

Background: Obesity prevalence differs according to race and little is known about the genetic factors underlying these observations. The Taq1a polymorphism of the dopamine D2 receptor (DRD2) gene is associated with binge eating and weight status and is more prevalent among African Americans (AA) and Hispanic Americans (HA) relative to European Americans (EA). Given its associations with pathologic eating and weight, we propose that Taq1a may contribute to racial differences in obesity phenotypes. **Methods:** We examined the relationship between Taq1a, diet, and adiposity in a racially diverse sample of 289 peripubertal children ages 7-12. Body composition, abdominal fat distribution, and dietary intakes were assessed by dual energy x-ray absorptiometry, computed tomography scans, and two 24-hour recalls, respectively. Multivariate linear regression analyses examined independent associations of the Taq1a allele with adiposity and dietary intakes. All analyses were adjusted for socioeconomic status, pubertal stage, age, sex, caloric intake, and genetic admixture. **Results:** Children with both Taq1a risk alleles (EA=11%; AA=46%; HA=43%) had significantly higher total fat (p=0.0264), percent fat (p=0.0489), intra abdominal adiposity (p=0.0431), subcutaneous abdominal adiposity (p=0.0201), total abdominal adiposity (p=0.0195), and consumed significantly more sugar (p=0.0040) and total calories (p=0.0033), relative to children with one or no Taq1a risk allele. **Conclusions:** Our results indicate the Taq1a polymorphism is associated with greater intakes of sugar and total calories and may increase total and visceral adiposity in multi-ethnic children, suggesting the Taq1a allele is a potential risk factor for early development of excess adiposity among children that is mediated, in part, by the effect of Taq1a on eating behavior and increased sugar and calorie consumption.

713-P[DT]

FTO Genotype Is Associated With Body Mass Index and Waist Circumference in Mexican Young Adults

Margarita Teran-Garcia *Urbana, IL*; Flavia Cristina D. Andrade *Champaign, IL*; Michelle A. Mosley, Itzel Vazquez-Vidal *Urbana, IL*; Celia Aradillas-Garcia, Eduardo Medina-Cerda *San Luis Potosí, Mexico*

Background: Individual variations in the fat mass and obesity-associated (FTO) gene have been associated with obesity and BMI in diverse populations. There is only one report on Mexican adults and the association of FTO polymorphisms with obesity. In addition, there are inconsistent results of FTO variants associated with metabolic abnormalities. The purpose of this study was to explore the association of a common FTO single-nucleotide polymorphism (SNP) with BMI and metabolic parameters in apparently healthy Mexican young adults (n=260, 18-25 yrs). **Methods:** The FTO SNP rs8057044 was genotyped using the fluorescent polarization method (MAF 0.33). Anthropometric measures were performed by health professionals. **Results:** The A/A homozygotes, 14% on this sample, were significantly heavier (1.49 kg/m2 and 5.5 kg) and had a larger waist circumference (WC, 4.1 cm) than the heterozygotes and the G/G homozygotes combined. The FTO genotype was associated with BMI, weight and WC (p<0.05; adjusted for age and sex) and explained 2.5% of the variance in obesity-related phenotypes. No associations were found for fasting glucose levels or other metabolic traits. **Conclusions:** Despite the small sample size, our data confirms the observations that the FTO obesity-susceptibility genotype influences body mass in young Mexicans. It is possible that the observed FTO associations with glucose or other metabolic traits likely represent the long-term consequences of obesity. Longitudinal studies in diverse populations are still needed to identify individuals at risk of metabolic complications of obesity.

714-P

Genetic Basis of Postprandial Metabolism: Progress Report From the Genetics of Metabolic Diseases in Mexico (GEMM) Family Study

Raul Bastarrachea *San Antonio, TX*; Esther C. Gallegos-Cabriales, Edna J. Nava-Gonzalez *Monterrey, Mexico*; Karin Haack, V. Saroja Voruganti *San Antonio, TX*; Hugo A. Laviada-Molina *Merida, Mexico*; Juan Carlos Lopez-Alvarenga *Mexico City, Mexico*; Rosa A. Veloz-Garza, Velia M. Cardenas-Villareal, Salvador B. Valdovinos-Chavez *Monterrey, Mexico*; Harald H. Göring, Shelley A. Cole, John Blangero, Anthony G. Comuzzie, Jack W. Kent *San Antonio, TX*

Background: The GEMM family study aims to investigate gene expression before and after a well-defined meal to characterize normal variation in postprandial metabolism in extended families in Mexico, in order to define novel phenotypes for future genetic analysis. **Methods:** Preliminary postprandial data performed in the first 6 adults (2 male, 4 female; age 46.5±10.7 y; BMI 26.4±4.5) recruited in Monterrey is presented. **Results:** Baseline measurement of weight (65.8±22.1kg); waist circumference (87.4±13.4 cm); systolic BP (116.1±14.8 mmHg); diastolic BP (70±11.7 mmHg); energy expenditure (EE) (MEDGEM) (1150±382.8 Kcal); VO2 (ml/(kg*min) (166±55.3); %fat, fat free mass and fat mass (DEXA) (36.8±6.9 %, 39.5±13.9 Kg, 23.3±9.5 Kg); and fasting blood glucose (mg/dl) (87.3±8.8) were taken after a 12h fast. Next, a defined mixed meal (57% CHO, 28% fat, 15% protein) corresponding to 30% of the subject's EE (345±114.8 Kcal) was offered. Postprandial glucose measurements were made at 15' (103.8±15.0), 30' (118.1±16.9), 45' (121.7±26.1), 60' (122±31.2), 90' (121.6±22.5), 120' (115.1±20.4), 180' (110±16.5), 240' (100.5±16.3), and 300' (82.8±11.7). EE and VO2 were measured at 120' (1398.3±456.3 Kcal; 201.6±65.9), and 300' (1366.6±626.7 Kcal; 197±90.1). Biopsies of rectus femoris muscle (168.3±46.7 mg) and subcutaneous fat (361.1±71.8 mg) were taken at fasting and 3h post-meal for transcriptional and metabolomic analysis. **Conclusions:** We have standardized a complex protocol for recruiting probands, and for postprandial phenotypes/biopsy collections. This approach expects to find genes contributing to the metabolic flexibility of individuals following the consumption of a defined meal through an integrated systems approach to human biology.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Cardiovascular and Cancer Epidemiology

715-P
Post-diagnosis Body Mass Index and Survival After Breast Cancer: The Long Island Breast Cancer Study Project

Patrick T. Bradshaw, Joseph G. Ibrahim, June Stevens, Rebecca Cleveland, Page E. Abrahamson *Chapel Hill, NC*; Susan L. Teitelbaum, Alfred I. Neugut *New York, NY*; Marilie D. Gammon *Chapel Hill, NC*

Background: Previous studies have implicated weight gain in mortality after breast cancer diagnosis, yet little research has been done to identify optimal body size after diagnosis. **Methods:** We investigated the association between body mass index (BMI) at and 1-year after diagnosis and survival among a population-based cohort of 1,436 women from Long Island, NY who were diagnosed with breast cancer in 1996-1997. Subjects or their proxies were interviewed near diagnosis and again after about 5 years to assess pre- and post-diagnosis breast cancer-related factors, including self-reported anthropometric measures. Mortality through December 31, 2005 was determined by the National Death Index, yielding approximately 8 years of follow-up. We used proportional hazards regression to estimate adjusted hazard ratios (HR) and 95% confidence intervals (CI) to relate body size over time to all-cause (n=292) and breast cancer specific (n=156) mortality. Multiple imputation was employed for missing covariate data. **Results:** In this cohort, women with BMI >=30 kg/m2 had the greatest mortality rate [compared to BMI 18.5-24.9 kg/m2 all-cause HR (95% CI): 1.32 (0.83, 2.09); breast cancer HR: 1.22 (0.67, 2.22)] while the rate among women with BMI 25.0-29.9 kg/m2 was near that of those with BMI 18.5-24.9 kg/m2 [all-cause HR: 1.06 (0.67, 1.67); breast cancer HR: 1.05 (0.55, 1.97)]. Using continuous coding we calculated the BMI for the nadir of the all-cause mortality rate to be 22.19 kg/m2 (95% CI: 14.71, 29.67). **Conclusions:** Compared to normal weight breast cancer survivors, obese women tended to have a higher mortality rate while overweight women did not; however these estimates were not statistically significant. The observed trends support the recommendation that breast cancer survivors should maintain a healthy weight after diagnosis.

716-P[DT]
Relative Contribution of Obesity and Adiponectin to the Development of Hypertension

Dong Hyuk Jung, Hye-Ree Lee *Seoul, Republic of Korea*

Background: Adiponectin is one of the few adipokines that possesses a protective role against atherosclerosis and cardiovascular disease. Recent studies have demonstrated adiponectin level is associated blood pressure. The aim of this study was to investigate the association between serum adiponectin level and new-onset hypertension and the relative contribution of obesity and low adiponectin level to the development of hypertension in a normotensive Korean cohort. **Methods:** We studied 1,553 adults (584 men and 969 women) without hypertension, aged 40 to 70 years, who had participated in health surveys in both 2005 to 2008 for baseline and 2008 to 2011 for follow-up. We divided serum adiponectin levels into sex-specific tertiles. We defined the highest tertile of serum adiponectin as 'high adiponectin'. Participants were stratified into 4 groups: non-obese/high adiponectin, non-obese/low adiponectin, obese/high adiponectin, and obese/low adiponectin. **Results:** At 3year, baseline serum adiponectin level is independent predictor of new-onset hypertension (P=0.004) in men. Obese subjects with baseline adiponectin in the lowest tertile had a higher risk of new-onset hypertension compared with non-obese subjects with adiponectin in the highest tertile (OR: 1.99; 95% CI 1.03-3.86) in men, and (OR: 2.41; 95% CI 1.16-5.04) in postmenopausal women at year 3. **Conclusions:** Our data showed that low adiponectin level is associated with a higher risk of the development of hypertension in 3-year prospective study. In addition, our study provides evidence of the relative contribution of low obesity and adiponectin level to development of new-onset hypertension in men and postmenopausal women.

717-P
Age at Menarche Is Associated With Blood Pressure and Body Mass Index in Young Adult Women

Holly Gooding, Courtney E. Walls, Tracy K. Richmond, Alison E. Field *Boston, MA*

Background: Early age at menarche has been independently associated with cardiovascular risk factors, including hypertension, but whether the mechanism is solely due to increased adiposity is unknown. **Methods:** This is a prospective study of 6877 girls, ages 11-19 at baseline, followed to ages 24-32 as part of the National Longitudinal Study of Adolescent Health. Information on age at menarche was assessed in 1994-5 and blood pressure was measured in 2007-8. **Results:** Mean age at menarche was 12.2 years (standard error (SE)=0.12); 9.1% of participants experienced early menarche, defined as occurring at age 10 or younger. In young adulthood (mean age 28.8, SE=0.12), 12.7% of participants met criteria for hypertension (systolic blood pressure>140mm/Hg and/or diastolic blood pressure >90mm/Hg). Girls who had early menarche had increased odds of hypertension in young adulthood (odds ratio (OR)=1.42, 95% confidence interval (CI)=1.07-1.89). Young adult women with early menarche also had body mass indices (BMI) that were 1.12kg/m2 (95%CI=0.47-1.78) higher than young adult women with menarche at age 11 or older, even after controlling for BMI in adolescence, age, race/ethnicity, physical activity, and income. When we adjusted for young adult BMI, the association between early age of menarche and hypertension was no longer significant (OR=1.11, 95% CI=0.81-1.51). **Conclusions:** Early age at menarche is associated with hypertension in young adulthood but the mechanism appears to be through gains in adiposity in the intervening years.

718-P
Added Sugars in the Diet Are Associated With Cardiometabolic Risk Factors in Children

Kenneth Kell, Jose R. Fernandez, Michelle Cardel *Birmingham, AL*

Background: The prevalence of obesity in the U.S. has increased during the past 30 years. Concomitant with the increase in obesity have been overall increases in added sugar consumption and the prevalence of adult cardiovascular disease, the number one cause of U.S. deaths. Excessive consumption of added sugars in children's diets may impact cardiometabolic outcomes at early stages of the lifespan, resulting in increased risk for the development of cardiovascular conditions later in life. **Methods:** This study explored the relationship between added sugars (sugars not naturally occurring in foods) and cardiometabolic health outcomes. Blood pressure (BP) and blood lipids (BL) were obtained from 310 children aged 7-12 of diverse backgrounds. Multivariate regression analyses were performed to evaluate the relationships between added sugars and BP, sodium and BP, and both sodium/sugars with BP. Additional multivariate regression analyses evaluated the relationship between added sugars and triglycerides, LDL, HDL, and total cholesterol. Models were controlled for sex, pubertal stage, race/ethnicity, socioeconomic status, physical activity, total calories, and percent body fat. **Results:** Added sugars were positively associated with diastolic BP, with and without sodium (p=0.0442, p=0.0199), and sodium approached significance with diastolic BP (p=0.0923). A positive relationship was observed between added sugars and triglycerides (p=0.0165). No significant associations were observed between added sugars and the remaining cardiometabolic risk factors. **Conclusions:** These results suggest that increased consumption of added sugars is correlated with adverse cardiometabolic health outcomes in children. Identification of such factors influencing cardiometabolic health during childhood could serve as a tool to detect and reduce cardiovascular risk.

719-P
Body Mass Index and Sex Predict Elevated Blood Pressure Among College Undergraduate Students

Ann Y. McDermott, Soma Roy, Shawna Perry, Karen J. McGaughey, Toria Mock, Aydin Nazmi *San Luis Obispo, CA*

Background: The FLASH College Health Study is a longitudinal cohort that examines health behaviors, health perceptions and change in health status beginning in freshman year. The purpose of this analysis was to determine predictors of pre-hypertensive (preHTN) or hypertensive (HTN) blood pressure (BP) at ages 17-19 years. **Methods:** Freshman and sophomores voluntarily competed a: 1) 126 question online survey on demographics, health, physical

 For author conflict of interest information, see page S250

activity (IPAQ), diet, stress, screen time and sun exposure; and 2) standardized physical measures included resting BP, anthropometry and other health markers. Cross-sectional data included in these analyses were collected at the subject's baseline visit (n=681; 49.7% male; 83.5% White/Asian; 13.1% Hispanic). American Heart Association BP guidelines were applied. Video games, screen and text time, physical activity, alcohol, race, sex, BMI and their interactions were examined using logistic regressions. **Results:** BP was elevated in 65% of males (preHTN = 54.9%; HTN = 10.1%) vs. 17.1% of females (preHTN = 15.9%; HTN = 1.2%). Males were more likely to have elevated BP than females (CI: 6.7, 13.3; $p < 0.001$). Mean BMI was 22.9 (SD 3.3), with no difference by sex. With each unit increase in BMI, risk of having preHTN or HTN increased (CI: 1.1, 1.4; $p < 0.001$). Playing video games (CI: 0.83, 0.99), but not web or TV, was associated with lower risk in men. Race, stress score, IPAQ score (High: 48.9%, Moderate: 28.6%, Low: 22.4%) and alcohol were not significant in either sex. In females, only BMI was a significant predictor. **Conclusions:** Among young, healthy college students, two in three males and one in six females had elevated BP. Higher BMI was associated with increased risk of elevated BP, even when BMI values fell in the normal or overweight classes. This phase of life offers a window of opportunity for health intervention.

720-P
Elevated Random Blood Glucose Exacerbates the Effect of Central Adiposity on Risk For Obesity-Associated Cancers in the Framingham Offspring Study

Susan Chadid, Martha R. Singer, Gerald V. Denis, Lynn L. Moore *Boston, MA*

Background: Obesity has been linked with the development of certain cancers, but little is known about the influence of metabolic impairments and central adiposity. **Methods:** Data from 55-69 year-old Framingham Study adults were used to estimate risk of obesity-related cancers associated with a larger waist size (WC ≥91.4 cm), glucose intolerance (GLI) or both (vs. neither). Subjects were classified into four groups based on WC and the presence of GLI. Obesity-related cancers included breast, female reproductive cancers, colorectal, stomach, liver, pancreas, and other less common types. GLI was defined using a cutpoint of >125 mg/dl for random blood glucose. Cox models were used to control for potential confounding by age, education, height, activity, smoking, and alcohol intake. **Results:** Men and women with larger WC plus GLI (vs. smaller WC/no GLI) had a higher risk of obesity-related cancers: an 80% increased risk for men (HR=1.81; 95% CI: 0.96-3.42) and a two-fold increased risk for women (HR=2.04; 95%; CI: 1.20-3.45). The effects of larger WC remained after controlling for BMI in the multivariable models. In separate analyses, women with a larger WC and GLI had a 3.31-fold increased risk of developing breast or female reproductive cancer (HR=3.31; 95%CI: 1.60-5.58) compared with those having a smaller WC and no GLI. In this fully-adjusted model, women with a larger WC but without GLI had only 49% increased risk (HR=1.49; 95%CI: 0.97-2.28) of these cancers. **Conclusions:** An elevated random blood glucose (>125 mg/dl) promoted the risk of obesity-related cancers, especially female reproductive cancers, that was seen among individuals with greater central adiposity.

721-P[DT]
Assessing the Change in Prevalence of Hypertension Over Twenty Years in an African-American Community

Sean McGrath, Lara Dugas, Regina Harders, Ramon A. Durazo-Arvizu, Richard S. Cooper, Amy Luke *Maywood, IL*

Background: Hypertension disproportionately affects African-Americans with a prevalence of 42.5% compared to 30.5% in the US, according to NHANES. We present 20-year longitudinal data exploring changes in hypertension and obesity prevalence from the early 1990's to present and determine its relationship to obesity in an African-American community **Methods:** Data are pooled from 2 studies exploring the determinants of hypertension and obesity in African-origin populations. The International Collaborative Study of Hypertension in Blacks (ICSHIB), was initiated in 1992, and Modeling the Epidemiologic Transition Study (METS), is currently ongoing. Because METS is recruiting only adults ages 25 to 45, all analyses from ICSHIB were restricted to this age group. Along with a host of physical activity, diet and socioeconomic characteristics, blood pressure and BMI were measured in both studies. **Results:** ICSHIB enrolled 818 adults and METS has enrolled 498 to date. Unemployment rates were comparable, 40% (METS) vs. 39% (ICSHIB) in the two studies. Mean BMI increased by > 2.5 units for both men (26.7 to 29.6) and women (29.8 to 34.1)($p<0.001$ for both); obesity prevalence in men almost doubled from 22.6 to 40.8% and women increased from 42.1 to 64.0% ($p<0.001$). The prevalence of hypertension in men doubled, from 14.5 to 27.3% ($p<0.001$), while for the women the increase was from 15.8 to 18.7%. Overall both in men and women this represented a total increase of 44% ($p<0.001$). **Conclusions:** These studies, conducted in the same low-income, predominantly African-American community, demonstrate a dramatic increase in the prevalence of both hypertension and obesity over the past two decades. In this young adult population, weight control may be essential for prevention of hypertension.

722-P
Associations of Serum Lipid Levels With Cancer Mortality in Korean Adults

Kyung Eun Yun, Hye Soon Park *Seoul, Republic of Korea*

Background: The association between serum lipid and mortality remains unclear particularly in the death from cancer. Our aim was to assess risk of cancer mortality according to serum lipid levels in middle-aged Koreans. **Methods:** We conducted a retrospective cohort study of 27,944 Korean men and 21,586 Korean women aged ≥40 years without cancer, who had undergone health examinations between 1999 and 2000. They were then followed from 1999 through 2007. **Results:** There were 570 cancer deaths during the 7.4-year period. In men, there were significant inverse associations of total cholesterol, triglyceride, and LDL cholesterol with cancer mortality rates. These inverse associations remained significant after excluding death through year one. After adjustment for age, past history of hypertension and diabetes, smoking, alcohol consumption, exercise status, education and income, the relative risks (95% CI) for cancer mortality were 0.86(0.74 to 0.99, according to 36.3mg/dl (1SD) higher total cholesterol level), 0.80(0.71 to 0.89, according to 56.4mg/dl (1SD) higher triglyceride level), and 0.87(0.77 to 0.99, according to 33.0mg/dl (1SD) higher LDL cholesterol level), respectively. In women, there were significant inverse associations of total cholesterol with cancer mortality (RR (95% CI) 0.82(0.71 to 0.95), according to 38.3mg/dl (1SD) higher total cholesterol level). **Conclusions:** The serum lipid levels are associated with lower cancer mortality in Korean adults. Overall, these inverse associations weakened when deaths within the first year were excluded from the analysis. Whether the inverse association is explained by preclinical diseases or other factors or whether this association is causal requires further investigation.

723-P
Study of Heart Size and BMI, Among 30 and More Years Old Asians in Japan, From the Database of Perioperative Autologous Blood Donation

Naohito Saito, Kimie Kumagai, Kazuyoshi Watanabe, Daisuke Horiguchi, Chieko Matsumoto, Satoru Ozeki *Koshigay, Japan*

Background: Enlarged Heart (EH) is believed to relate to short human life span. Perioperative Autologous Blood Donation (PABD) is common in Japan. Physical check is also performed before surgical procedures. We generated database of PABD (DBPABD), in which we analyzed relationship of BMI and heart size. **Methods:** We analyzed 192 Asians (115 women, 77 men) in Japan who were engaged in PABD from 1st June 2010 to 30th May 2011. Physical checks were performed three or less weeks in advance of surgical procedures, including electrocardiogram (ECG), chest radiograph (CXR), height, body weight and BMI. EH group included patients of Left Ventricular Hypertrophy (LVH) and/or increased Cardiothoracic Ratio (CTR). Diagnoses were made by reading patient's records, with or without by interviewing patients. The population (N 192) was classified into one of the groups of BMI, which was divided by every 2 kilograms per square meter. Some of the people (N 159, 30≦Age) were classified again into two groups, 250 (BMI<25), or 251 (25≦BMI). **Results:** BMI increased as age increased in DBPABD. The ratio of EH was the least in the group 23 (23≦BMI<25) and showed U-curve. Age ($p=0.3426$), sex ($p=0.6505$) and height ($p=0.3005$) were compared between 250 and 251, and showed no difference. The 251 had an increased risk for EH (Pearson chi-square test 10.17, $p= 0.0017$, odds ratio=3.273, 95% CI=1.559-6.999). **Conclusions:** In the present study, EH included EH of ECG, and EH of CXR. EH also consists of clinical EH and pathological EH. The definition of EH and its relationship

with BMI remain unclear. Since ECG and CXR are very available, the significance of EH should be learnt more.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Population-Based Studies of Metabolic Diseases

724-P[DT]
Obesity and Diabetes in Modernizing China: A Multilevel Analysis to Determine Which Elements of Urbanization Are Most Associated With Diabetes

Samantha Attard, Amy H. Herring, Elizabeth J. Mayer-Davis *Chapel Hill, NC*; James Meigs *Cambridge, MA*; Barry M. Popkin, Penny Gordon-Larsen *Chapel Hill, NC*

Background: Urbanization is associated with obesity in China. Less clear is how urbanization relates to consequences of obesity and whether specific dimensions of urbanization relate to diabetes. **Methods:** Anthropometry, fasting blood glucose (FBG), and community-level data were collected in 7,741 adults across 9 provinces and 217 communities in the 2009 China Health and Nutrition Survey to examine overweight (BMI≥25kg/m^2) and diabetes (FBG≥126 mg/dL or doctor diagnosis). Sex-stratified multilevel models (clustered at community and province levels) were used to examine associations of diabetes with an overall multicomponent measure of high, medium and low urbanization and 12 distinct components of urbanization (e.g., population density, employment, markets, infrastructure, and social factors), controlling for individual-level age and household income. **Results:** Prevalent overweight and diabetes were higher in more (overweight; men: 33% women: 30% diabetes; men: 12% women: 9%) versus less (overweight; men: 24% women: 28%; diabetes; men: 6% women: 4%) urban areas. In sex-stratified multilevel models adjusting for community and province of residence, age, and household income, this 2-fold increase was maintained (men: odds ratio (OR)=2.02; 95% Confidence Interval (CI): 1.47, 2.78; women: OR=1.94; CI: 1.35, 2.79). All urbanization components (e.g., economic climate, community infrastructure, food and health environments) were positively associated with diabetes; strongest associations were among measures of economic activity and diversity and, in general, for men. **Conclusions:** Despite high rates of diabetes in rural and urban areas, findings suggest that diverse aspects of urbanization are positively associated diabetes in China and offer opportunities for possible policy targets for community-level diabetes prevention efforts.

725-P[DT]
High Prevalence and Racial/Ethnic Disparities in Vitamin D Deficiency Among Overweight US Children

Christy B. Turer, Hua Lin, Glenn Flores *Dallas, TX*

Background: Although overweight and minority race/ethnicity are known risk factors for vitamin D deficiency (VDD), the national prevalence of and specific risk factors for VDD among OW minority children are unknown. **Methods:** Cross-sectional analysis of 2003-6 NHANES data. 6-18 year old children with a 25-hydroxyvitamin-D [25OHD] result (N=12,292) were categorized as healthy weight or overweight (defined, respectively, as BMI 5th-<85th and ≥85th percentile), and by race/ethnicity (white, African-American [AA], and Latino). VDD was defined as 25OHD <20 ng/dL. Bivariate analyses were performed to determine the prevalence of VDD in healthy weight and OW white, Latino, and AA children. Multivariable analyses were used to identify modifiable race/ethnicity-specific risk factors associated with VDD in OW children, after adjustment for age, gender, poverty, season of serum collection, activity levels, vitamin D supplementation, and milk intake. Sample weights were used to generate nationally representative estimates. **Results:** The prevalence of VDD among healthy weight and OW children is 9% and 19% in white; 62% and 81% in AA; and 32% and 50% in Latino children, respectively. Modifiable risk factors associated with VDD in white children include physical activity <5 hours/wk (OR, 2.6; 95% CI, 1.2-5.9), no vitamin D supplement use (OR, 999; 95% CI, 999-999), and milk intake (2-<3 cups/d [vs. <2] OR, 0.4; 95% CI, 0.2-0.7; ≥3 cups/d OR, 0.01; 95% CI, 0.01-0.01); and in AA children include physical activity <5 hrs/wk (OR, 2.2; 95% CI, 1.3-3.7) and no vitamin D supplement use (OR, 2.6; 95% CI, 1.5-4.7). No modifiable risk factors appear to be associated with VDD in Latino children. **Conclusions:** Vitamin D deficiency is highly prevalent in overweight minority US children. The findings suggest the need for vigilance in vitamin D deficiency screening and treatment of these children.

726-P
Heritable Epigenetic Modifications of the Heart-Type Fatty Acid-Binding Protein Gene (FABP3) Influence Metabolic Syndrome Phenotypes and interaction With Nuclear Factors From Heart Tissue

Yi Zhang *Milwaukee, WI*; Jack W. Kent *San Antonio, TX*; Adam M. Lee *Rochester, MN*; Diana Cerjak, Omar Ali *Milwaukee, WI*; Robert B. Diasio *Rochester, MN*; Michael Olivier *Milwaukee, WI*; John Blangero, Melanie A. Carless *San Antonio, TX*; Ahmed Kissebah *Milwaukee, WI*

Background: Fatty acid-binding proteins play important and diverse roles in metabolic homeostasis and their genes are under tissue-specific regulation. Differential expression of the gene encoding heart type fatty acid binding protein (FABP3) may lead to substantial alteration in metabolic and cardiac performance. We hypothesized that this highly tissue-specific and environment-sensitive gene is under epigenetic regulation. **Methods:** We applied the EpiTYPER® system to quantify the methylation status of a CpG island that spans the promoter region of FABP3 using blood-derived genomic DNA from approximately 500 members of Caucasian families phenotyped for 42 Metabolic Syndrome traits. **Results:** Methylation levels at several individual CpG sites as well as the regional average are heritable in our families. Age and gender have significant effects on the methylation of several of these CpG sites. Regional methylation status was strongly associated with plasma levels of total cholesterol (p=0.00028) and LDL-cholesterol (p=0.00495). CpG methylation at individual sites was associated with subcutaneous fat, insulin sensitivity, lipid particle sizing and diastolic blood pressure (p<0.0028, confidence interval 95%). Suggestively significant (p<0.0056, confidence interval 90%) associations were also found between individual CpG methylation and circulating TNF-alpha, disposition index and systolic blood pressure. Electrophoretic mobility shift assay (EMSA) using DNA containing transcription regulatory elements showed differential methylation may modify its binding affinity with nuclear proteins isolated from left ventricle heart tissue. **Conclusions:** Methylation status of the FABP3 promoter region is strongly heritable, is associated with multiple MetS traits, and modifies binding with cardiac nuclear extract.

727-P
Body Mass Index (BMI) Trajectories in Minnesota: An Analysis of a 35-Year Birth Cohort

Katherine Andrade, J. Michael Oakes *Minneapolis, MN*; Slavica K. Katusic, Cynthia L. Leibson *Rochester, MN*

Background: Childhood and early adolescence are considered pivotal in the development of obesity. Our objectives were to 1) estimate life-course trajectories of body mass index (BMI) through early adulthood, and 2) estimate the effect of BMI trajectory from birth through age 5 on risk of obesity in early adulthood. **Methods:** We used unique, longitudinal, high quality clinical data from a population-based retrospective birth cohort study of 5,718 individuals born to mothers residing in Olmsted County, MN between 1/1/1976 and 12/31/1982. We abstracted all occurrences of height and weight from patient's provider-linked medical records from birth through earliest of death, emigration, or final visit. We calculated and plotted observed BMI trajectories and used the Q-sort method to identify trajectory classes. **Results:** Mean age at final visit was 26.4 years (range: 2 months-35.2 yrs.); mean number of measures per person was 28 (range: 1-114). Extensive preliminary analyses revealed no distinct differences in BMI trajectories before age 5, thus precluding estimates of the relationship between trajectory before age 5 and obesity risk in early adulthood. However, BMI trajectories begin to diverge at age 5; by age 7, three trajectories are clearly observable. By end of follow-up, the mean BMI for the largest group (46%) falls within the range of normal weight. The mean BMI of the second group (26%) falls within the range of overweight, and the mean BMI of the third group (28%) falls within the range of obese. Of note, this distribution mirrors the broader US population of adults. **Conclusions:** Thus, obesity status at age 35 can be predicted by trajectory class at age 7 with some precision. We find that BMI trajectory alone becomes a useful tool to predict adult obesity status only after age 7, but not before.

728-P[DT]

China's Burgeoning Hidden Risk: The Obese With Undiagnosed Diabetes?

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Background: Prevalence of diabetes is increasing rapidly in China, while undiagnosed diabetes remains unknown. **Methods:** To explore the determinants of undiagnosed diabetes in Chinese population, we used a subgroup data of 9,244 participants aged 7 and older who provided blood samples in the 2009 China Health and Nutrition Survey. Fasting HbA1c was measured with fresh whole blood samples by using Ion exchange high-performance liquid chromatography system (HPLC) and fasting serum glucose was measured with Hitachi 7600 automatic analyzer. Medication treatment and previous diagnoses were collected through face-to-face interview. Diabetes was measured by glucose (serum glucose ≥ 126 mg/dL or taking diabetes medication); impaired fasting glucose (IFG) (≥100&<126 mg/dL); HbA1C (≥5.7%). Standardized weight and height were measured by trained physicians with identical equipment. **Results:** Obesity, especially extreme obesity, is growing most rapidly among the low income and educated in rural and urban China. Those under treatment or having diagnosed diabetes was below 1.0% ; however diabetes and prediabetes (glucose-based) and A1C diabetes were 0.6%, 7.4%, and 15.8% among children and adolescents aged 7-17 y, respectively, and 7.1%, 20.0%, and 38.3% among adults aged 18 y and older. Logistic regression models revealed that low-income and low-educated people were less likely to be either treated or diagnosed for diabetes or prediabetes. **Conclusions:** Undiagnosed diabetes is prevalent in Chinese population. Those experiencing the most rapid increases in obesity are least diagnosed for diabetes and IFG (glucose-bases) and diabetes (A1C based).

729-P[DT]

African Men Have A Lower Waist Circumference of Risk For Cardiometabolic Disease Than African-American Men

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Background: Although waist circumference (WC) is a criterion widely used to identify cardiometabolic risk, the WC which predicts risk in African ancestry populations is unknown. Furthermore no studies have simultaneously compared the WC of risk in African and African Americans (AA). **Methods:** Data on 895 non-diabetic men (Africans: n=448, age=45±12y, AA: n=447, age=42±12y) were analyzed. The WC of risk was defined by the presence of ≥2 risk factors (hypertension, hyperglycemia, hypertriglyceridemia, low HDL). Receiver Operating Characteristic (ROC) curves were used to identify optimal WC thresholds. As cardiometabolic risk is also closely linked to visceral adipose tissue (VAT), the relationship of WC to VAT was compared in the 141 men (51% African) who had abdominal CT scans. **Results:** BMI was lower in the African than AA men (24.8±4.3 vs. 27.8±5.3 kg/m^2, P<0.01). After adjusting for BMI, WC did not differ by ethnicity (90±6 vs. 91±6 cm, resp. P=0.11). The WC threshold which predicted cardiometabolic risk was lower in African than AA men (88 cm vs. 94 cm). To explore this ethnic difference, VAT adjusted for BMI were compared and found to be higher in Africans than AA (94±44 vs. 73±47 cm^2, P<0.01). Multiple regression analyses which included WC and ethnicity as independent variables and VAT as the dependent variable were performed. With an adjR^2=0.66, the interaction term between ethnicity and WC approached significance (P=0.06). Most importantly, for every unit increase in WC, the increase in VAT was greater in Africans than AA (4.89 vs. 3.85, resp). **Conclusions:** Overall, the WC of risk for cardiometabolic disease is lower in African than AA men and might be explained by a steeper relationship of VAT to WC in Africans. The difference in WC of risk in Africans and AA suggests that there may not be a single WC threshold for all populations of African descent.

730-P[DT]

Adipokines Are Associated With Adiposity Across the Epidemiologic Transition

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Background: The relationship between hormones and adipokines (insulin, leptin and adiponectin) and adiposity are known in industrialized societies but these associations have rarely been examined in populations at various stages of the epidemiologic transition. **Methods:** The Modeling the Epidemiologic Transition Study (METS) seeks to examine the association between physical activity (PA), obesity and CVD risk in five populations of African origin: US (suburban Chicago), Jamaica (JA), Ghana (GH), South Africa (SA) and Seychelles (SEY). Secondary aims explore the association of SES with markers of obesity. Measurements of PA using accelerometry, anthropometrics and body composition by bioelectrical impedance analysis were measured at baseline on approximately 500 men and women, aged 25-45 years, in each site. In a subset of 371 participants (70-74/site) we measured plasma insulin (uU/ml), adiponectin (ng/l) and ghrelin (ng/l). **Results:** In the subset, mean BMI ranged from 22.0 to 28.5 (men, SA and US, respectively) and from 25.9 to 33.2 (women, GH and US, respectively) and PA ranged from 21 to 37 kJ/kg/min (p<0.001, SA vs. GH, respectively). Insulin and adiponectin varied across sites (p<0.001 for both), after adjusting for gender and BMI. The association of site with leptin was attenuated after adjusting for BMI in men, but not women. Years of education remained positively associated with obesity (p<0.05) after adjusting for age (p<0.05). While only leptin was positively influenced by PA after adjusting for site and BMI. **Conclusions:** Obesity and metabolic risk, as well as potential determinants, vary significantly in populations at differing stages of the epidemiologic transition and this may require different public health policies.

731-P

Predictors of Elevated Liver Fat Content in the Fels Longitudinal Study

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Background: Given the alarming increase in the prevalence of obesity in the United States, identifying physiological mechanisms relating obesity to chronic disease risk is of prime public health importance. Considerable recent work has focused on the major role of liver fat in insulin resistance, dyslipidemias, type 2 diabetes, cardiovascular disease, and non-alcoholic fatty liver disease. The purpose of this analysis is to determine the prevalence of elevated liver fat content and to identify which factors significantly predict elevated liver fat content in apparently healthy participants of the Fels Longitudinal Study. **Methods:** The sample consists of 250 (100 males, 150 females) adult participants ranging in age from 18 to 90 years. Each participant was assessed for liver fat content and measured for a number of cardio-metabolic risk factors. Liver fat content was measured using magnetic resonance imaging following a modified Dixon protocol. We used logistic regression analysis to determine significant predictors of elevated liver fat (defined as liver fat content greater than 5.56%). All models were adjusted for age. **Results:** In our sample, approximately 27% of the participants had elevated liver fat levels. There was no significant sex difference in the prevalence of elevated liver fat. Significant predictors (p<0.0003) of elevated liver fat included: age, BMI, percent total body fat, visceral abdominal adipose tissue volume, subcutaneous abdominal adipose tissue volume, fasting levels of insulin and glucose, HOMA-IR score, triglyceride level and HDL-C. **Conclusions:** In summary, we have presented a moderate prevalence of elevated liver fat in a sample of adults over a wide age range. Furthermore, we have identified a number of significant predictors of elevated liver fat even among apparently healthy adults.

732-P[DT]
Does A1C Over Diagnose Impaired Fasting Glucose in Black Women?

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Background: Black women (BW) have higher A1C than white women (WW) for the same glucose concentration. The current guidelines for diagnosing prediabetes with A1C (>=5.7 and <=6.4, %) are the same regardless of ethnicity. **Methods:** We examined the relationship between A1C and impaired fasting glucose (IFG) in 32 BW and 29 WW without diabetes (by fasting glucose or A1C) using nomial logistic regression analyses. **Results:** BW [mean ± SD] (46 ±10, yr) were younger than WW (53 ± 9, yr). BMI (kg/m2) was not significantly different in BW (34 ± 5) and WW (32 ± 6). Fasting glucose (BW = 88 ± 2, WW = 96 ± 3 mg/dL, p < 0.001) and A1C (BW = 5.7± 0.1, WW = 5.7 ± 0.2, %, p = 0.56) levels were adjusted for age and BMI. The prevalence of IFG was lower in BW (9%) than WW (31%). Prediabetes prevalence diagnosed by A1C was 63% in BW and 55% in WW. The sensitivity and specificity for an A1C diagnosis of prediabetes were lower in BW (25 and 39%) than WW (67 and 50%). Positive and negative predictive values were 6 and 79% in BW, and 38 and 77% in WW. Our nominal logistic regression model using A1C, ethnicity and A1C*ethnicity to predict IFG (Y = glucose >= 100 and <= 125, and N = glucose < 100 mg/dL) showed an ROC-AUC = 0.75 for the whole cohort without an ethnicity*A1C interaction. In the individual groups, ROC-AUC was lower in BW (0.60) than WW (0.68) and generated optimal A1C cut-off values that were higher in BW (5.8%) than WW (5.5%) for A1C in diagnosing IFG. **Conclusions:** We conclude that A1C may be a less sensitive test and over diagnose prediabetes due to IFG to a greater degree in BW than WW. Further investigations of the relationship between glucose metabolism and A1C are needed to delineate the role of racial differences in A1C related to diagnosing prediabetes.

733-P
Association of Fat Pattern With Bone Strength in Young Girls

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Background: Childhood obesity may impair bone growth although the effect of adiposity on bone remains unclear. Failure to account for fat pattern may explain the conflicting results. Our objective was to examine associations between weight-bearing bone parameters and an android fat pattern (surrogate for intra-abdominal visceral adiposity), and muscle fat content of the calf and thigh. **Methods:** Cross-sectional data from 417 girls aged 9-12y from the Jump- In: Building Better Bones study were analyzed. Peripheral quantitative computed tomography (pQCT) was used to assess bone strength index (BSI, mg2/mm4) and strength-strain index (SSI, mm3) at metaphyseal and diaphyseal regions of femur and tibia, and muscle density (MD, mg/cm3), an index of skeletal muscle fat content. Android fat, total body fat (TBF) and ratio of android fat mass (FM) to lean mass (LM) were assessed using dual-energy X-ray absorptiometry. **Results:** Multiple regression with using height, bone length, whole body LM, and maturity as covariates showed that TBF (r=0.151 to 0.276; p≤0.001), android FM (r=0.133 to 0.241; p≤0.009) and android FM to LM (r= 0.108 to 0.239; p≤ 0.020) were positively associated with bone strength, except at distal femur. Higher MD (reflecting lower fat content) was associated with greater bone strength at metaphyseal regions of the femur (r=0.107 to 0.114, p≤0.017) and tibia (r=0.130 to 0.143, p≤ 0.004). **Conclusions:** Whereas TBF and android pattern may promote bone through added mass on the skeleton, muscle fat is a pathogenic depot that may impair bone. This research was supported by NIH/NICHD #HD-050775. DRL is supported by the United States department of Agriculture (USDA) National Needs Fellowship: Graduate Training in Nutritional Sciences.

734-P
Sex-Specific Associations of Maternal Glucose Tolerance During Pregnancy With Offspring Adiposity

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Background: Offspring of women with impaired maternal glucose tolerance during pregnancy may be at higher risk of obesity later in life. **Methods:** Among 1070 women in the pre-birth cohort Project Viva, we examined associations of maternal glucose tolerance with child overall and central adiposity. We assessed glucose tolerance in 2nd trimester by non-fasting 1h glucose challenge test (GCT), followed if abnormal by fasting 3h oral glucose tolerance test (OGTT). We categorized women as Normoglycemic (Norm: 83.3%) if GCT was normal, 'Isolated Hyperglycemia' (IH: 8.8%) if GCT was abnormal but OGTT normal; Impaired Glucose Tolerance (IGT: 3.3%) if 1 abnormal value on OGTT, or Gestational Diabetes (GDM: 4.6%) if 2+ abnormal OGTT values. At age 7 years we measured children's overall (subscapular + triceps skinfold [SS+TR]) and central (SS:TR ratio) adiposity. We adjusted for parental BMI, race/ethnicity, gestational weight gain, child age, and SS+TR when SS:TR ratio was the outcome. **Results:** At age 7, girls (50% of sample) had higher overall adiposity than boys (Adjusted SS+TR: 22.6 v. 18.9 mm, P< 0.01) but lower central adiposity (SS:TR 0.71 vs 0.75, P< 0.01). In girls, compared with Norm, overall adiposity was higher in offspring of IGT (SS+TR : 6.8 mm; 95%CI: 1.4, 12.3), but not GDM (-1.6 mm; 95%CI:-5.4, 2.2). In contrast, in boys, SS+TR was higher in offspring of GDM (4.1 mm, 95%CI: 0.8, 7.4), but not IGT (-0.5mm; 95%CI: -4.0, 2.9). Weight and height trajectory analysis suggested that the sex differences start to appear between 3 and 4 years of age. We did not find associations of glucose tolerance with central adiposity in boys or girls at age 7. **Conclusions:** Gestational glycemia had different associations with offspring adiposity in girls v.boys. Our findings suggest that girls may be more sensitive to maternal hyperglycemia but also more responsive to treatment.

735-P
Investigation of Associations of Phthalate Exposures and Obesity and the Role of Endogenous Sex Hormones Behind Them in Children and Adolescents in China

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Background: Obesity of children and adolescents in China is of extensive concern. Endocrine disrupting chemicals may be associated with obesity, but the direct evidence for this in human population was rare. **Methods:** In this study, we chose 135 subjects 8-15 years of age from primary or middle schools in Shanghai City, among whom normal weight subjects accounted for 50%, overweight for 17% and obesity for 33%. We determined the urinary concentrations of 14 phthalate metabolites and 4 sex hormones, including 2 androgens (testosterone and androstenedione) and 2 estrogens (estrone and β-estradiol). After corrected by urine creatinine and Log-transformed, these concentration values were investigated for the associations of body mass index and phthalate metabolites and the role of sex hormones behind them using multiple linear regression, adjusted for age and gender. **Results:** All phthalate metabolites except mono-octyl phthalate and mono-benzyl phthalate were found in 135 urine samples and their total concentrations ranged from 77.4 to 4873 ng/mL (median: 539 ng/mL). Mono-butyl phthalates and mono-isobutyl phthalate were the major metabolites found in urine, and their median concentrations were 68.6 and 87.2 ng/mL, respectively. The urinary concentrations of mono-(2-ethylhexyl) phthalate (MEHP, one metabolite from diethylhexyl phthalate, DEHP) were associated with both increased body mass indexes (P<0.02) and the urinary concentrations of androgens (P<0.002). Furthermore, urinary concentrations of androgens showed statistically significant correlations with increased body mass indexes (p<0.002). **Conclusions:** These results suggested that DEHP exposure can promote BMI and contribute to obesity burden, and the mechanism of action might be by accelerating the excretion of androgens by urine.

736-P[DT]
Effectiveness of the MEND Weight Management Program in Ethnically Diverse Children in the US

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Background: Given the disproportionate rates of obesity among US minority children, intervention strategies should be evaluated for effectiveness across ethnically diverse groups. The MEND program is a family-centered, community-based weight management program that uses education, skills training, and motivational enhancement to address nutrition, physical activity and behavioral targets. Our study objective was to compare MEND program outcomes between African-American and Hispanic children. **Methods:** Twenty-three obese African-American and 44 obese Hispanic children (8-12 y) participated in the ten-week MEND program at a Houston YMCA. Each session consisted of behavior modification skills and nutrition education for parents and children (1-h), followed by structured exercise for children (1-h)

and facilitated discussions for parents (1-h). Outcome measurements at baseline and after 10-weeks included anthropometry by standard techniques and nutrition, physical activity, and psychosocial questionnaires. **Results:** Body mass index (BMI) (p=0.04) and percent fat (p=0.02) improved to a greater degree in Hispanics than African-Americans, although both groups improved in BMI status defined as % of 95th BMI percentile following the 10-wk intervention (n=44; -3.6 ± 3.2; p=0.001 and n=23; -1.8 ± 3.1; p=0.01). Few group differences were observed for reported nutrition, physical activity, or psychosocial outcomes, except for the change in physical scaled score (Zeller 2009) (p=0.05) and hyperactivity needs scale (Goodman 1997) (p=0.05). **Conclusions:** The MEND program is effective in improving BMI status among African-American and Hispanic children. Similar outcomes suggest that the MEND program is culturally competent and therefore applicable in US ethnically diverse communities with high prevalence of childhood obesity.

737-P
GDM Among Women Who Are Overweight and Obese: The Effect of BMI Category

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Background: The aim of this study was to evaluate the role of maternal body mass index (BMI) on the development of gestational diabetes (GDM) in pregnant women who are overweight or obese. **Methods:** A prospective cohort study nested within the LIMIT randomized control trial. Women were recruited between 10+0 and 20+0 weeks' gestation, with a BMI ≥25kg/m2, and were categorized as either overweight (BMI 25.0-29.9kg/m2) or obese subclass 1 (BMI 30.0-34.9kg/m2), obese subclass 2 (BMI 35.0-39.9kg/m2), and obese subclass 3 (BMI ≥ 40.0kg/m2), utilizing World Health Organization criteria. Women underwent a fasting oral glucose tolerance test at 26–28 weeks' gestation, and a diagnosis of GDM was made if the results of fasting blood glucose were ≥ 5.5 mmol/L or blood glucose ≥ 7.8 mmol/L after two hours. Maternal antenatal and postpartum complications, and neonatal outcomes were evaluated. **Results:** A total of 628 women formed the cohort for this analysis, with 240 (38.2%) categorized as overweight, 185 (29.5%) obese subclass 1, 111 (17.7%) obese subclass 2, and 92 (14.6%) obese subclass 3. The incidence of GDM increased with increasing maternal BMI (11.25% overweight vs 17.84% obese subclass 1 vs 17.12% obese subclass 2 vs 22.83% obese subclass 3), as did the risk of adverse pregnancy outcomes. **Conclusions:** Increasing maternal BMI is a significant independent risk factor for the development of gestational diabetes, which in turn is a major contributor to adverse pregnancy outcome.

738-P[DT]
Interaction Between Maternal Smoking During Pregnancy and Fetal Growth and the Effect of This interaction on Childhood Growth: A Multilevel Analysis

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Background: Recent studies suggest that intrauterine growth retardation (IUGR) is not involved in the association between maternal smoking during pregnancy and childhood obesity. However, in reality, maternal smoking during pregnancy is a major risk factor for IUGR. An interaction might exist between maternal smoking during pregnancy and fetal growth, and this interaction might affect childhood growth. This study aimed to examine the effect of this interaction by using data from a prospective cohort study in Japan. **Methods:** The study population included children born between 1991 and 1999, in Koshu City, Japan, and their mothers. We compared the trajectories of body mass index (BMI) z-score, as defined by WHO, of appropriate for gestational age (AGA) babies and small for gestational age (SGA) babies of smoking and non-smoking mothers, from birth to 9 years. SAS Proc Mixed was used for statistical analysis. **Results:** The study included 1644 women and their children. The BMI z-score trajectories of AGA babies of smoking mothers were significantly different from those of AGA babies of non-smoking mothers, especially for male children. However, the BMI z-score trajectories of SGA babies of smoking mothers were not significantly different from those of SGA babies of non-smoking mothers. Maternal smoking during pregnancy did not have an apparent effect on the childhood growth of female children. **Conclusions:** We concluded that the interaction between maternal smoking during pregnancy and fetal growth and the effect of this interaction on childhood growth differ according to gender.

739-P
Association of Childhood High Body Mass Index and Bronchial Asthma With Perioperative Respiratory Complications

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Background: The interaction between obesity and asthma in the surgical patient has not been characterized despite the rising prevalence both conditions in the general population. Obesity and asthma have the potential to increase perioperative respiratory adverse events (one of the major causes of morbidity and mortality responsible for approximately 30% of perioperative cardiac arrests in children). Since the rising prevalence of childhood obesity and asthma in the general population increases the possibility of coexistence of these disorders in pediatric surgical patients, this study compared the occurrence of peri-operative respiratory adverse events between children based on the presence or otherwise of obesity and asthma. **Methods:** Using clinical and anthropometric data, children aged 6-18yr were classified into 4 groups based on the presence or absence of asthma and according to body mass index category thus: High BMI asthmatic children (OBA), Normal BMI asthmatic children (NWA), Non-asthmatic High BMI children (NWA), Non-asthmatic, normal BMI children (NW). Occurrence of airway adverse events (significant desaturation, laryngospasm, upper airway obstruction) was compared between the groups. **Results:** Among 1102 children, 107 (9.7%) were OBA, 118 (10.7%) were NWA, 309 (28.0%) were OB and 568 (51.5%) were NW. There was no significant difference in age between or within the groups (p=0.07). Children belonging to the OBA and OB groups were more likely to have at least one perioperative respiratory complication compared to the other groups (Fig 1). **Conclusions:** Conclusion: These preliminary data indicate that obese asthmatic children have a higher incidence of perioperative adverse events compared to their lean peers. Future investigations into the mechanistic basis for these observed complications are needed.

740-P
DXA Visceral Adipose Tissue: Cross-Sectional Association With Cardiometabolic Disease

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Background: Visceral adipose tissue (VAT) is a leading indicator of cardiometabolic disease. Recently a DXA based approach, CoreScan (GE Healthcare), has been introduced and shown to be highly correlated with CT measurement of VAT volume. A critical next step for this technology is to demonstrate similar findings between CoreScan VAT and previously reported VAT studies using CT or MRI measures. This study describes the cross-sectional relationship between CoreScan VAT and cardiometabolic disease. **Methods:** A retrospective analysis was conducted on a sample of 939 subjects who had previously undergone a total body scan using the Lunar iDXA (GE Healthcare) system as well as measurements of key cardiometabolic risk factors. Subjects were a mix of healthy volunteers and individuals with hypertension, dyslipidemia, metabolic syndrome (MetS) and diabetes mellitus type 2 (DM). **Results:** Multivariate regression analysis was performed on men and women separately to determine the odds ratios for hypertension, impaired fasting glucose, MetS and DM. In men and women, VAT was significantly associated with increased odds of hypertension, impaired fasting glucose, MetS, and DM (p<0.001). After adjustment for BMI and WC, the odds ratio for DM was 2.07 for women and 2.25 for men. The odds ratio for METs for women was 3.46 and for men was 1.75. **Conclusions:** CoreScan VAT is strongly associated with an adverse metabolic risk profile even after accounting for BMI and WC. CoreScan may provide a low-cost tool for characterizing visceral adiposity and may be a useful in longitudinal or intervention clinical trials.

741-P[DT]
Sarcopenia By Appendicular Skeletal Mass/Trunk Lean Mass as a New Diagnostic Marker Has Associated With Metabolic Syndrome in a Population Study

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Background: Sarcopenia is believed to be associated with metabolic, physiological, and functional impairments and disability. In this study, we compared 2 sarcopenia definitions [i.e., appendicular skeletal mass

(ASM)/(height (ht))2 vs. ASM/trunk lean mass (TLM)] regarding their relationship with metabolic syndrome, insulin resistance. **Methods:** The data from a population-based survey, namely, The Korea National Health and Nutrition Examination Survey (KNHANES) IV (3,290 subjects), were analyzed. To define sarcopenia, we used ASM/(ht)2 and ASM/TLM at a value more than 2 SD below the mean of a young reference group. Metabolic syndrome was defined according to the International Diabetes Federation definition, and insulin resistance was measured using the homeostasis model assessment of insulin resistance (HOMA-IR). **Results:** The prevalence of sarcopenia in men and women as determined by ASM/(ht)2 was 31.2% and 8.8%, respectively, and by ASM/TLM was 32.6% and 28.5%, respectively. When adjusted by age, exercise, smoking, alcohol, and fat mass index, sarcopenia as determined by ASM/TLM values increased the risk of metabolic syndrome 1.132 times (95% CI = 1.123–1.141) in men and 2.383 times (95% CI = 2.306–2.463) in women. HOMA-IR was positively correlated with ASM/(ht)2 (men: B = 0.0.094, p = 0.029; women: B = 0.265, p < 0.001) and negatively correlated with ASM/TLM (men: B = −2.308, p < 0.001; women: B = −1.003, p < 0.001). **Conclusions:** Conclusion: ASM/TLM was more valid than ASM/(ht2) in observing metabolic changes associated with decreasing muscle mass.

742-P
Associations of Skeletal Muscle Mass With Prediabetes in Chinese Adults

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Background: Previous study from the third national health and nutrition examination survey indicated that higher relative muscle mass was associated with lower risk of prediabetes (PDM). It is not clear whether the relationship reported from the relatively heavier westerns can be confirmed in Chinese population. This study investigated gender-specific relationships of relative muscle mass and PDM in Chinese adults, and further assessed the contribution of fat mass and fat distribution on this association. **Methods:** Data from 1,100 Chinese adults, 398 males and 612 females, were evaluated. Whole-body scans were performed by DEXA to measure body composition. The estimated total-body skeletal muscle was calculated using previously reported equation which was derived from DEXA measurements. PDM was defined as 5.6 mM≦fasting plasma glucose<7.0 mM and without DM history and medication. **Results:** Compared to the subjects in the lowest tertile of skeletal muscle index group (SMI, the ratio of total skeletal muscle mass (estimated by DEXA) to total body weight), the participants in the highest tertile group had significantly lower prevalence of PDM both in males (18.1% vs. 40.2%, OR:95%CI, 0.3:0.2-0.6, p value <0.001) and females(18.6% vs. 32.4%, OR:95%CI, 0.5:0.3-0.8, p value=0.002) in crude analysis. The relationships remained when age was adjusted. However, the inversely association disappeared when the model was further adjusted with percentage body fat or percentage body fat plus percentage trunk fat. Percentage body fat or percentage body fat plus percentage trunk fat significantly increased the risk of having PDM. **Conclusions:** Compared to the skeletal muscle mass, fat mass and fat distribution showed more close relationships with PDM in Chinese adults.

743-P[DT]
Diet Quality Is Associated With Fitness Level But Not With Obesity in Hispanic Children in WI With High Prevalence of Obesity

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Background: One third of US children are overweight or obese and the burden is even greater for Hispanic children at 42.4%. The objective of this study was to compare two existing measures of diet quality: 1) Healthy Eating Index (HEI) and; 2) Children Diet Quality Index (C-DQI) in its ability to correlate to obesity, fitness level and risk for diabetes. **Methods:** A validated food frequency questionnaire (Block FFQ for Kids) was administered to 188 children (aged 10-14 years) to measure dietary intake. Physical measures of height and weight, fitness level assessed by a 20-meters shuttle run (PACER) and fasting blood samples for glucose and insulin were obtained. CDC growth charts were used for the definition of childhood obesity. **Results:** The total score was of 62.5 ± 8.5 for the HEI and 53.1 ± 6.9 for the C-DQI (maximum points of 100 and 70, respectively). Low diet quality measured using the C-DQI was associated with low fitness level determined by PACER (P<0.05). The C-DQI, however, was not associated with obesity or risk of diabetes. No association was found between diet quality and obesity, fitness level or risk for diabetes when diet quality was measured with the HEI. **Conclusions:** Fitness level measured by PACER in this community is positively associated with diet quality measured with the C-DQI but not the HEI. Overall diet quality measured by both indexes was low. A more cultural appropriate diet quality index may be needed to better measure Hispanic children diet quality to assess risk of obesity.

744-P[DT]
Prevalence Estimates of Diabetes During Pregnancy in United States Women, 1980 to 2008

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Background: Our objective was to estimate the prevalence of diabetes during pregnancy in non-Hispanic white (NHW) and non-Hispanic black (NHB) women in the United States, 1980-2008. **Methods:** Using data from births to SC mothers aged 15-44 from 2004-2008 we fit a regression model estimating the risk of diabetes during pregnancy as a function of age, race/ethnicity, and body mass index (BMI). Diabetes during pregnancy was defined by either gestational or pre-pregnancy diabetes reported on the birth certificate, the inpatient hospital discharge records, or prenatal records. Next, we applied the risk of diabetes during pregnancy to a simulated population to estimate maternal diabetes prevalence at the US population-level using Rockwell's Arena software version 13.5. Race- and age-specific maternal BMI was assigned based on NHANES data. Pregnancies were assigned to women according to race- and age-specific US Natality data and US Census data was used to obtain the age structure of the United States population. **Results:** Our estimates of diabetes during pregnancy in 1980 were 5.1% (95% CI: 5.0, 5.1) in NHW women and 5.6% (95% CI: 5.6, 5.7) in NHB women. This compares to 8.3% (95% CI: 8.2, 8.4) in NHW and 9.6% (95% CI: 9.5, 9.6) in NHB in 2008. **Conclusions:** While the prevalence of recognized diabetes is impacted by reporting, screening and diagnostic practices as well as actual changes in the prevalence of diabetes during pregnancy, our estimates are based on the age, BMI and natality structure of the US population as well as our regression model for diabetes risk. As the prevalence of diabetes during pregnancy increases it is important to understand its public health impact on the offspring exposed to diabetes in utero and on the mothers who have either developed frank diabetes at a young age or are at high risk for development of type 2 diabetes.

745-P
Increased Fat-free Mass and Resting Energy Expenditure in Severely Obese Women

James L. Hopkins, Paul N. Hopkins, Eliot A. Brinton, Lance E. Davidson, Ted D. Adams, Steven C. Hunt, M. N. Nanjee *Salt Lake City, UT*

Background: Obesity is a powerful determinant of the metabolic syndrome (MetS), but not all severely obese persons develop MetS. Prospective studies in normal and moderately obese subjects have shown that high fat-free mass (FFM) and high 24-hour adjusted resting metabolic rate (REE) are protective in regards to weight gain and the acquisition of MetS-related factors. We studied 949 severely obese women in the Utah Obesity Study to determine if FFM and REE were negatively associated with MetS and its risk factors. **Methods:** Pearson partial correlations were used to determine partial r values and p-values for FFM, fat mass (FM), and REE with Metscore, a scale from 1-5 assigned to each subject depending on the number of MetS factors they had and other MetS-related factors. Partial correlations were adjusted for age, height, and FM for FFM calculations, FFM for FM calculations, and both FFM and FM for REE calculations. **Results:** REE had correlations with p-values < 0.0001 for metscore, waist-to-hip ratio (WHR), glucose, triglyceride, systolic BP, GGTP, and hemoglobin A1c and a p-value < 0.01 with waist. FFM had correlations with p-values < 0.0001 with metscore, waist, and systolic BP, and with the negative of HDL. P-values with triglyceride, diastolic BP, uric acid, insulin, HOMA-IR, and hemoglobin A1c were all < 0.05. FM correlations had p-values < 0.001 for waist and WHR, and < 0.05 with uric acid and the negative of triglyceride. **Conclusions:** FFM and REE are markers of MetS rather than protective factors. FM is protective with respect to triglycerides.

746-P
Metabolic Screening Labs For Obese Children Under Five Years of Age

Jeanhee Park, George Datto, Sandra Hassink *Wilmington, DE*

Background: Guidelines for routine screening for obesity-related risk factors are limited. We wish to determine the prevalence and characteristics of obesity-related metabolic risk factors in patients less than five years of age attending a comprehensive weight management program. **Methods:** We performed a descriptive and retrospective cohort study of 69 obese patients (mean BMI 24.7, SD 3.7) under the age of five years (0.8-4.92) enrolled in a weight management program between 2010 and 2011. Fasting screening labs were obtained for lipids, glucose, HgA1c, insulin, liver function tests, thyroid stimulating hormone, elevated sedimentation rate, and vitamin D. Descriptive statistics were used. **Results:** The mean age of patients was 3.5 years. Forty-four percent were males. The mean BMI was 24.7kg/m^2 (>99%). Of the 58 patients who had screening labs done, 62% had at least one abnormal screening laboratory measure. The most common abnormalities were 36% hypercholesterolemia (> 170mg/dl), 32% low HDL (<40mg/dl), 24% elevated LDL (>110mg/dl), and 74% hypertriglyceridemia (>75mg/dl, with 41% of those > 100mg/dl). Thirteen percent were pre-diabetic (≥ 5.7%), and 30% had hyperinsulinemia (>10uIU/ml). Fifty percent of patients had either vitamin D insufficiency (20-30ng/ml) or deficiency (<20ng/ml). Twenty-four percent had ALT >40. **Conclusions:** Laboratory screening tests identified various obesity-related risk factors in the obese children studied. Early laboratory screening is necessary to identify patients of all ages at risk for future disease. It can also guide practitioners to work with parents in addressing lifestyle behaviors as a way to modify their risk factors as well as improve weight.

747-P^{DT}
The Presence of Metabolic Syndrome Is Associated With a More Atherogenic Lipoprotein Cholesterol Distribution in Postpartum Hispanic Women

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Background: The study was conducted to evaluate the association between lipoprotein cholesterol distribution and metabolic syndrome (MS) in postpartum Hispanic women using baseline data from Madres para la Salud, a randomized controlled social support physical activity intervention for sedentary Hispanic women between 6-weeks and 6-months postpartum. **Methods:** Of the 140 Madres para la Salud participants, 44 were randomly selected for the current study (age=28.1±5.5y; weeks postpartum=13.6±8.2; BMI=29.6±5.0kg/m^2; body fat=38.2±4.7%; fasting glucose=90±10 mg/dL; total cholesterol=164±37 mg/dL; LDL cholesterol=106±33 mg/dL; HDL cholesterol=43±9 mg/dL; triglycerides=116±63 mg/dL; hsCRP=4.5±5 mg/L) and were classified by the presence (n=17) or absence (n=27) of MS according to NCEP criteria. Cholesterol in LDL and HDL subfractions was measured using polyacrylamide gel electrophoresis followed by densitometry. **Results:** Participants with MS had significantly smaller mean LDL particle size (266.2±3.7 Å vs. 270.9±4.1 Å; p<0.001), and significantly less cholesterol in larger, less dense LDL particles (14.8±3.4% vs. 18.5±3.6% of total cholesterol; p=0.002). Whereas about 93% of individuals without MS (25 of 27) had a pattern A LDL phenotype, only 29% of individuals with MS (5 of 17) presented the same less atherogenic phenotype (χ^2=21.082, p<0.001). Participants with MS had a lower percentage of HDL cholesterol in large HDL particles (20.8±8.3% vs. 27.6±8.9; p=0.016), but a greater proportion of HDL cholesterol in small HDL particles (20.3±8.1% vs. 14.2±7.1%; p=0.012). **Conclusions:** The presence of MS among postpartum Hispanic women results in a more atherogenic distribution of cholesterol among LDL and HDL subclasses. Interventions focused on reducing CVD risk through mechanisms that shift the distribution of cholesterol towards the less atherogenic particles are warranted.

748-P^{DT}
Obesity-Inflammation Relationships Are Similar in Adolescent and Young Adult African Americans

Scott W. Keith, Stephanie DeLoach *Philadelphia, PA*; Samuel S. Gidding *Wilmington, DE*; Bonita Falkner *Philadelphia, PA*

Background: High sensitivity C-Reactive Protein (hsCRP) is related to adiposity and predicts cardiovascular and metabolic diseases in adults. It is not known if the relationships between adiposity and hsCRP have similar magnitudes in adolescents and adults. **Methods:** Two cohorts of healthy African Americans (484 adults and 282 adolescents) were recruited from similar urban environments. After stratification by hsCRP (<1, 1-<3, >3 mg/dl), the adults and children were compared with regard to adiposity, as measured by body mass index (kg/m2; BMI) and waist circumference (cm; WC). Also, hsCRP was regressed on BMI and WC with covariates including cohort, age, sex, blood pressure, insulin resistance, smoking, alcohol, and other biomarkers. Interaction terms and a subset of the covariates were subject to a supervised variable selection procedure to reach a final model. Skewed variables were log-transformed and summarized by geometric means (GMs) with first and third quartiles [Q1, Q3]. **Results:** Among the 46 (16.3%) adolescents and 165 (34.1%) adults having high hsCRP (≥ 3 mg/dl), BMI was distributed similarly (GM=36.4 [32.7, 43.1] and GM=34.7 [28.8, 40.8], respectively) as was WC (GM=104.2 [93.0, 119.0] and GM=104.9 [93.0, 117.2], respectively). In an adjusted regression model, for a given BMI, elevated WC was associated with elevated hsCRP (p=0.02). Elevated BMI was significantly associated with elevated hsCRP, but the relationship was somewhat stronger among the adolescents (interaction p=0.04). **Conclusions:** Adiposity related significantly and similarly to hsCRP in both adolescent and adult African Americans. The dampening of the relationship of hsCRP to BMI in adults may reflect chronic exposure to other factors associated with inflammation.

749-P^{DT}
Body-Mass Index and Waist Circumference Are Associated With Impaired Glucose Metabolism in Chinese Adults With Normal Body Weight

China National Diabetes & Metabolic Disorder Study Group *New Orleans, LA*

Background: It is known that obesity measures such as body mass index (BMI) and waist circumference are associated with impaired glucose metabolism and risk of type 2 diabetes in the general population. However, information is lacking whether such associations remain among individuals with a normal body weight. **Methods:** Fasting glucose and post-load 2 hour glucose were measured in a large, nationally representative sample (10,098 men and 17,454 women) of Chinese adults with a normal body weight (BMI < 25 kg/m2). General linear model and logistic regression model was used to examine the associations of impaired glucose metabolism (impaired fasting glucose or impaired glucose tolerance). **Results:** The associations of BMI and waist circumference with fasting and 2-hour post-load glucose are strong, linear, and highly significant (P<0.01). For each standard deviation increase in BMI (2.1 kg/m2) and waist circumference (8.3 cm), fasting glucose levels increased by 0.128 and 0.170 mmol/L, respectively, in men, and by 0.112 and 0.167 mmol/L, respectively, in women; the corresponding increases for 2-hour post-load glucose levels were 0.121 and 0.217 mmol/L in men, and 0.241 and 0.362 mmol/L in women. When simultaneously included in the same model, these associations with waist circumference remained stronger than with BMI. **Conclusions:** Obesity measures are associated with abnormal glucose metabolism even in people with a normal body weight. In addition, central obesity plays a more prominent role than general obesity for risk of abnormal glucose metabolism in a Chinese population with normal body weight.

750-P^{DT}
Overweight, Gestational Weight Gain, Elevated Fasting Glucose in Pregnant Women and their Association With Neonatal Macrosomia in Kunshan, China, 2006-2010

Peng Shi, Weili Yan *Shanghai, China*; Wenhong Yang, Qian Yu *Kunshan, China*; Qian Zhao *Shanghai, China*; Chunying Li *Kunshan, China*

Background: Excessive maternal weight and elevated fasting glucose are risk factors for offspring birth weight and later obesity. However, few evidences were based on Chinese population. This study is to investigate the distribution of those risk factors among pregnant women and the association between these risk factors and macrosomia in Kunshan, a county-level city in China. **Methods:** Based on the routine data of prenatal examination and pregnant outcomes from Kunshan Maternal and Child Health Care Hospital from 2006 to 2010, we described the prevalence of maternal overweight (BMI>=25 kg/m2), elevated fasting glucose (>= 5.1 mmol/L), elevated blood pressure(>=135/85 mmHg) and neonatal macrosomia among 28193 pregnant women (18~45 years) with first prenatal visit being within 8~12 gestational

weeks and termed delivery. Multivariable logistic regression was used to analyze OR (95% CI) between maternal overweight, gestational weight gain, elevated fasting glucose and neonatal macrosomia. **Results:** Mean maternal age was 27±4 years. The percentage of pregnant women with overweight, elevated fasting glucose, and elevated blood pressure at first visit was 10.67%, 22.14%, 2.89%, respectively, and 8.72% of their newborns were macrosomia. Multivariate logistic regression adjusting for maternal age and gestational age at delivery showed that maternal overweight and gaining more weight in pregnancy significantly increased odds of delivering macrosomia(OR=1.833, 95%CI:1.298,2.588 and OR=1.167, 95%CI:1.103,1.235, respectively). **Conclusions:** The metabolic risk factors and macrosomia are common among Chinese pregnant women. Further well-designed observational and interventional studies are expected to identify their association and policy for prevention in China.

751-P[DT]
Prevalence of Metabolic Syndrome in Obese African American Adolescents and the Role of Fast Food Consumption

Yulyu Yeh, Kathryn Brogan, Sylvie Naar-King, Kai-Lin, Catherine Jen *Detroit, MI*

Background: Limited research regarding metabolic syndrome (MS) has been conducted in obese African American adolescents (OAAA). MS is a constellation of risk factors that increase the risk for chronic diseases and is defined as presence of any 3 or more of the 5 criteria: fasting glucose ≥ 110mg/dl, waist circumference ≥40 inches for males or ≥ 35 inches for females, triglycerides ≥150 mg/dl, blood pressure (BP) ≥130/85 mmHg and HDL <40mg/dl in males or <50 mg/dl in females. The aim of this study was to assess the incidence of MS in OAAA and the relationship with fast food (FF) consumption. **Methods:** Fifty seven OAAA (mean age: 13.9 ± 1.4 yr, 60% girls, mean BMI: 38.1±7.4 kg/m2) in a metropolitan area took part in this study. Anthropometric data and fasting blood samples were collected. Participants also reported amount of FF consumption for the past week. **Results:** All of the 57 participants met at least 1 criteria for MS, 31.6% met 2 criteria; and 61% (n=35) met the clinical diagnosis of MS. With the exception of HDL, all the other risk factors were significantly higher ($p<0.05$) in participants with MS. Average FF consumption for a week was 1.4 ± 1.1 times (range 0-4). Participants with MS reported significantly higher consumption of FF (1.8 ± 1.6 vs 0.7 ± 0.7, $p<0.001$). The number of MS risk factors were significantly correlated to the frequency of FF consumption ($r=0.42$, $p<0.001$). Individuals who consumed FF more than 3 times a week had a significant higher number of MS factors ($p<0.05$). **Conclusions:** Prevalence of MS in this sample of OAAA is high. OAAA with MS are consuming higher frequency of FF compare to those without MS. Thus reducing consumption of FF or improving FF quality may be one strategy to target when working with obese adolescents with MS.

752-P[DT]
Associations Between Fasting Glucose and Adiposity For 5 Countries

Ruth Verner, Lara Dugas *Maywood, IL*; Pascal Bovet *Victoria, Seychelles*; Terrence Forrester *Kingston, Jamaica*; Estelle Lambert, Naomi Levitt *Cape Town, South Africa*; Jacob Plange-Rhule *Kumasi, Ghana*; Ramon A. Durazo-Arvizu, Amy Luke *Maywood, IL*

Background: Obesity and its complications, such as Type 2 Diabetes, are increasingly prevalent in African-origin populations worldwide. Several predictors have been identified to classify those most at risk. **Methods:** We examined the cross sectional association between fasting glucose, adiposity indices, bioimpedance and physical activity (accelerometry) at baseline in participants of the Modeling the Epidemiologic Transition Study (METS) in five populations of African origin: US (suburban Chicago), Jamaica, Ghana, South Africa, and Seychelles. **Results:** Baseline data were gathered in approximately 500 men and women, aged 25-45 years, at each site. Mean glucoses ranged from 83 to 106 mg/dL (men) and 84 to 100 mg/dL (women) (South Africa and US, respectively) and were significantly higher in the US compared to South Africa and Seychelles ($P<0.001$ for both). Mean BMI ranged from 22.2 to 29.8 (men) and from 25.5 to 34.0 (women) (Ghana and US, respectively). In the total sample, 45.2% were considered normal weight and 54.8% were overweight/ obese. In men only, plasma glucose differed by site ($p < 0.01$). Mean physical activity did not correlate with glucose in men or women ($r=-0.002$ for both). Modest but significant correlations between glucose and adiposity indices such as BMI ($r=0.07$), waist-hip ratio ($r=0.15$), and waist circumference ($r=0.12$) were observed in both men and women (all $p < 0.05$). In contrast, while percent body fat was associated with plasma glucose in men ($r = .18$, $p<0.05$), it was not among women ($p>0.7$). **Conclusions:** Understanding those characteristics that may predict diabetes-related factors in different populations, such as location and degree of adiposity, will likely improve the ability to detect and prevent the complications of obesity.

753-P
Prevalence of Obesity and Abdominal Obesity From Four to 16 Years Old Children Living in Tijuana, Mexico

Montserrat Bacardi-Gascon, Elizabeth Jones, Arturo Jimenez-Cruz *Tijuana, Mexico*

Background: The objectives of this study were to determine the levels of overweight, obesity and abdominal obesity in pre-school (PS), elementary (ES), and middle high (MHS) public school children from Tijuana. **Methods:** From February to April of 2011, a bietapic random sample was selected by cluster method of 30 PS, 30 ES, and 30 MHS. And a sample of 30 groups for each level was chosen. Twenty elementary teachers and 6 graduate students were trained at one central location in taking anthropometric measurements using a portable scale, a stadiometer, and a measuring tape to determine weight, height, and waist circumference. BMI values were computed and compared to age/gender BMI percentiles according to the WHO criteria. Waist circumference for-age at the 90th percentile from CDC was used to define abdominal obesity. **Results:** The sample was composed by 646 PS children, 961 ES children, and 1095 MHS children. Their ages ranged from 4- 16 years. Results showed overall prevalence of overweight and obesity in younger than 5y pre-school children (>2 SD) was 23.1%, in ≥ 5y PS (>1SD) was 33.8%, in ES children was 46.3%, and in MHS children was 41.9%. Abdominal obesity in PS children was 18%, in ES children was 16.7%, and in MHS children was 15.2%. **Conclusions:** These results warrant immediate and comprehensive actions to prevent a critical public health problem in Mexico.

754-P
A Positive Relationship Between Height and Percent Fat in Children Mediated By Insulin-A Potential Antecedent of Health Disparities?

Krista Casazza *Birmingham, AL*

Background: African Americans (AA) not only suffer from a disproportionate burden of CVD and T2D relative to European Americans (EA), but also have higher rates of the perinatal health disparities known to be the antecedents of adult stature. The objective of this study was to compare the relationship between height and percent fat between AA and EA boys and girls. Insulin, key in growth signaling, is known to circulate in greater concentration in AA relative to EA. As hyperinsulinemia is a known risk factor for metabolic disease, a secondary objective was to evaluate the relationship is mediated by insulin concentration. **Methods:** Seventy-two pre-pubertal children age 4-10 years (μ=6.6+0.2) participated. Percent fat was assessed by DXA and fasting insulin by serum assay. **Results:** Unlike the inverse association in adults, height was positively associated with percent fat in the overall sample ($p=0.04$). When evaluated according to age, the most significant association was identified at age eight years ($p=0.08$). When analyzed according to race, the relationship was apparent in AA, but not EA. When further stratified by sex, a positive relationship between height and adiposity was significant only in AA girls. Inclusion of insulin in the model attenuated all significant associations, except for that between height and adiposity in AA girls ($p=0.06$). **Conclusions:** The age in which the strongest relation between height and adiposity was found represents greatest acceleration of linear growth. The extent to which developmental mechanisms linking growth-related processes in childhood and adult race-based health disparities in CVD and T2D warrants further study.

 For author conflict of interest information, see page S250

755-P
Obesity Incidence and Prevalence in Amerindians

Antonio Arnaiz-Villena, Cristina Areces, Mercedes Enriquez-de-Salamanca, Manuel Algora, Diego Rey *Madrid, Spain*

Background: Hundred of thousands of Amerindians have immigrated to Spain in the past ten years.The normal waist circunference measurement for a simple obesity diagnosis was not even properly standardized for them:the IDF Epidemiology Task Force Consensus Group recommended using southern Asians values.We standardized these values by using genetic (specific Amerindian HLA genes) and metabolic control of volunteer blood donors.We have aimed to find out the incidence and prevalence of obesity in recently arrived to Spain Amerindians . **Methods:** ROC curves were used to establish cut off points,which came out to be different from South Asians.Amerindians were discarded for the study after genetic and metabolic (HDL-cholesterol) data and a questionaire,including family metabolic syndrome symptoms and recent weight gaining . **Results:** Waist circunference was meassured in 448 Amerindians,who gave a obesity simple incidence of 52.23 %.Calculations were also carried out by sex.Females presented a higher incidence and prevalence.It is discussed the value of our obesity values for other Amerindian groups, Na-Dene,Eskimo or Aleut First American Inhabitants **Conclusions:** 1-A definition of obesity in Amerindians for waist circunference measurement was calculated and found different from those of South Asians. 2-Obesity incidence and prevalence were calculated for Amerindias according to specific Amerindian cutt of values for the first time. 3-Amerindian inheritance and waist meassurement cut off points were controled by using genetics and metabolic methods.

756-P
Is it Truly Effective the Non-Invasive Mechanical Ventilation in Determining Weight Loss In Obese Patients With Obstructive Sleep Apnea Syndrome?

Giuseppe Fiorentino, Mariano Mazza, Anna Annunziata, Rosa Cauteruccio, Gianfranco Scotto Di Frega, Maria Antonietta Mazza, Anna Michela Gaeta, Mario Caputi *Naples, Italy*

Background: OSAS is closely associated with obesity and often there is a cause-effect relationship.We want to analyze retrospectively the compliance to the nocturnal non invasive mechanical ventilation and long-term effects of this on the body weight reduction and of the arterial pressure values **Methods:** Were selected by simple randomization 20patients,all obese,with moderate to severe OSAS and systemic hypertension,practicing nocturnal NIMV.50% of them had earned a high school diploma or a degree.These subjects were administered a telephone questionnaire in which we asked:total hours number of nocturnal ventilation;body weight evolution;blood pressure pattern and any changes of their therapy.The data were then analyzed using the Chi-Square test with 95%confidence interval **Results:** In 50%of cases have been reported weight loss,while 35%reported weight stationarity and in only 15%of cases it was found weight gain.85%of patients reported that there were no changes in their hypertension and its treatment or an improvement and;in 15%there was a decline in blood pressure.Was observed adherence to nocturnal ventilation for at least 4 hours a night in 60%of patients;30%reported to tolerate it for a shorter duration,and 10% had actually suspended it arbitrarily.The Chi-Square test showed:no correlation between the non-gain weight and the application of NIMV(p=1);no correlation between the non-deterioration of blood pressure and the application of NIMV(p=0.521). **Conclusions:** The level of education affect adherence to night ventilation and observation of a hypocaloric diet.Weight loss,whatever the starting degree of obesity,however,seems to be independent from the adherence to ventilation therapy in the sample analized.This information requires confirmation also on a wider sample of the population and a larger study with this purpose is work in progress at the moment.

757-P
Increased Metabollically Obese Normal Weight (MONW) and Cardiometabolic Risks in Normal BMI Body Fat Adults

Sang-Hwan Han *Incheon, Republic of Korea*; Ji Young Kim *Seoul, Republic of Korea*

Background: This study was conducted to investigate the number of metabolically obese normal weight(MONW)in Korean adults and to verify their increased risk factors for cardiovascular diseases. **Methods:** This cross-sectional study was based on 17,206 subjects (10,439 men and 6,767 women) between 30 and 49 years of age. Subjects with normal BMI (12,386 subjects; 6,534 men and 5,852 women) were categorized into two groups by body fat percentage(BF%), and cardiometabolic parameters were estimated in each group. **Results:** 4.8% of the total study subjects were metabolically obese normal weight(MONW). Adjusted odds ratios for MONW in normal BMI high BF(%) were 4.87(95% CI:3.65-6.60) in male and 4.98((95% CI 3.40-7,26) in female. The proportion of subjects with a normal BMI and high BF% was 21.9% in women. A standardized residual analysis showed that high BF% was related to an increase in several cardiometabolic parameters regardless of abdominal obesity in normal-weight adults. **Conclusions:** In conclusion, body fat percentage was related to increased cardiometabolic parameters in normal-weight Korean adults and MONW was increased in normal BMI high body fat group.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Policy: Environmental/Economic/Health Policy

758-P[DT]
Relationship Between Income and Childhood Overweight: Looking Beyond Prevalence

Eric Finkelstein, Marcel Bilger, Eliza Kruger *Singapore, Singapore*

Background: Studies that have analyzed the relationship between income and child overweight have focused on overweight prevalence. New methods that account for the distribution of BMI above the overweight threshold have been recently applied to the study of adult obesity. We revisit the relationship between income and child overweight by means of these new methods. **Methods:** We pooled data from 11,407 children aged below 19 from the 2003-2010 NHANES. The dependent variable is the child's BMI z-score, and gender- and family income was expressed relative to the poverty line and three Poverty Income Ratio (PIR) categories were created to deal with the upper censoring of this variable (PIR≤1.3, 1.3<PIR<5, PIR≥5). Bivariate analysis was performed by comparing the prevalence, depth and severity of at-risk for overweight and overweight among the poor (i.e. PIR≤1.3) and non-poor overall and separately by gender and race. Multivariate regression of the BMI z-scores on income was performed using Unconditional Quantile Regression (UQR) while controlling for age, gender and race. **Results:** We find that the poorest white girls have higher prevalence, depth and severity of overweight. For white boys, similar differences are found for depth and severity. UQR results are consistent with these findings, and also show that among blacks, the poorest boys are more likely to be overweight than the richest income category. **Conclusions:** Prevalence-based analysis reveals an inverse relationship between child overweight and income for white girls only. When the depth and severity of child overweight is taken into account, the case for an inverse relationship is strengthened. This new evidence supports the need for policy interventions directed at lower income children.

759-P
Association Between State Laws Governing School Meal Nutrition Content and Obesity: A Difference-In-Difference Analysis

Daniel R. Taber, Jamie F. Chriqui, Lisa M. Powell, Frank J. Chaloupka *Chicago, IL*

Background: Federal school meal nutrition standards were recently updated for the first time since 1995, to align them with current Dietary Guidelines for Americans, but the stringency of standards has been widely debated. Some states previously enacted laws with standards similar to updated federal standards. Our objective was to determine if such laws were inversely associated with student weight status. **Methods:** Objective height and weight data were obtained from 5550 adolescents in 38 states in 2007 within the Early Childhood Longitudinal Study. Students were categorized by type of school lunch they usually obtained – free/reduced-price, regular price, or none. School meal laws were obtained from legal databases; states were categorized by whether 2006-07 laws encouraged or required nutrition standards similar to 2012 USDA meal standards (e.g., lower trans fats). A difference-in-difference analysis was conducted by modeling the interaction between state law and student lunch status to determine if states with stronger standards

had smaller differences in obesity prevalence or mean body mass index (BMI) percentile between students who obtained school lunches and students who did not. Models controlled for state fixed effects and several demographic/behavioral variables. **Results:** In states with laws similar to 2012 USDA standards, the obesity prevalence difference between students who obtained free/reduced-price lunches and students who did not obtain school lunches was significantly smaller (β (95% CI) =-13.1 (-23.4, -2.9)). Differences in mean BMI percentile were also smaller for students who obtained lunches for free/reduced-price (-12.7 (-20.0, -5.3)) or regular price (-7.3 (-14.3, -0.3)). **Conclusions:** Updated school meal standards that reflect the latest nutrition science have the potential to improve weight status among students who obtain school lunches.

760-P
HOPE2 Nutrition-Focused Policy and Curricula Improve Consumption of Nutrient-Rich Foods By Children, and Dietetic Practices (Menu Creation) in Elementary Schools

Danielle Hollar *Fort Lauderdale, FL*; Michelle Lombardo, Caitlin Heitz *Duluth, GA*; Lucas Hollar *Fort Lauderdale, FL*

Background: Childhood obesity continues to be a major clinical and public health issue. Schools provide ideal settings to implement obesity prevention strategies to large and diverse pediatric audiences. Healthier Options for People through Extension (HOPE) 2 is a 4-year (2009-2012), 6-state (AR,FL,LA,MI,MS,NM) prevention intervention with policy, nutrition, and physical activity components. **Methods:** HOPE2 is an elementary school-based obesity prevention intervention targeting ethnically diverse children in Kindergarten-5th grade. Elementary school Foodservice (FS) Managers completed FS Surveys fall/baseline and spring/follow-up, assessing child consumption of nutrient-dense foods (targeted HOPE2 interventions in meals and curricula), use of federal feeding/nutrition programs, and collaborations with outside organizations in support of policy changes. 38 FS Managers participated in 2010-2011 data collection. **Results:** Results (2010-2011) of 38 FS respondents show schools serve nutrient-rich foods as part of government-funded programs to model educational activities, such as skinless meats (94.7% 2010; 97.4% 2011), sweet potatoes (100.0% 2010; 97.4% 2011), and spinach (94.7 % 2010; 100.0% 2011). Eighty percent agreed/strongly agreed students enjoy and consume fruits/fruit juice, skim/reduced milk, and whole grains. Nutrient-rich sweet potatoes, legumes, and spinach were least liked foods at baseline; but were more strongly preferred by follow-up (increases by 13.5%, 20.0%, and 12.5%, respectively; increase in preference for spinach significant at.05 level). **Conclusions:** HOPE2 shows positive effects of nutrition components of obesity interventions in elementary schools resulting from policies and curricula that support such efforts – namely, increases in consumption by children and menuing of items as part of government feeding programs.

761-P
Underrecognition and Underreporting of Obesity By Medical Residents

Gitanjali Srivastava, Derek P. Guanaga, Lee M. Kaplan *Boston, MA*

Background: Obesity is a leading cause of morbidity and mortality causing more than 60 medical disorders. Despite its medical importance, efforts to address obesity occur primarily outside the medical community, with limited physician directed care. To explore the contribution of physician perceptions to this phenomenon, we first sought to determine the recognition of and response to obesity in patients (pts.) evaluated during the comprehensive inpatient admission evaluation. **Methods:** We analyzed admission and discharge notes prepared by the admitting resident for all 207 pts. on the inpatient medicine service with documented evidence of obesity status during a single month. We identified all references to weight, obesity, BMI and body fat in these notes and the pt.'s global medical record. **Results:** The prevalence of obesity was 30%. No pt. had weight or BMI documented in the admission or discharge notes. Among pts. with BMI > 30, residents noted obesity in 6% of their assessment plans and documented weight status on the physical exam in 24%. Documentation of obesity anywhere in the inpatient chart was significantly higher in pts. with obesity recorded elsewhere in the medical record (66% vs. 34% p=0.016). Obesity was incorrectly reported by residents in 4.3% of those with BMI < 30. **Conclusions:** These observations demonstrate a severely limited focus on obesity among residents. Whether from inadequate recognition or understanding, this lack of attention impedes effective medical intervention for this important problem. Since residency training establishes lifelong professional habits, changing perception and behavior among physicians-in-training should have long-term benefits. Moreover, since obesity reporting anywhere in the pt. record enhances its continued recognition, such educational efforts will likely create a positive effect across the medical community.

762-P[DT]
TV Food Advertisements Address To Younger Than 5y Old Children's Mothers in Mexico and the Consumption of Foods By Mothers and Children

Glenda Díaz-Ramírez, Montserrat Bacardi-Gascon, Maria D. Souto-Gallardo, Arturo Jimenez-Cruz *Tijuana, Mexico*

Background: High exposure to unhealthy food TV advertisements geared toward children has been documented in Mexico. To assess the association between the TV foods advertised in Mexico and address to younger than 5y old children's mothers and the consumption of foods by mothers and children. **Methods:** Two national, Mexican channels were recorded during the schedule of highest audience during April and May of 2010. The foods advertised were classified as either healthy or unhealthy. Interviews were conducted on mothers who had children ranging in age from eight months to five years old, and who were present at a primary care center. It was collected, the type of foods administered to the child during the first year of life, TV watching habits of the mother, and the frequency of the consumption of foods advertised on TV targeting mothers and children. Anthropometric measurements of both mother and child were taken. **Results:** A total of 365 mothers and their children were evaluated. A total of 5249 advertisements were registered, of which, 25% corresponded to foods and 67% were unhealthy foods based on the criteria that they had high levels of fat and sugar, and they had moderate to high levels of sodium. A positive correlation was found between the frequency of the foods advertised on TV and the consumption of these by the mothers (r=0.73, p=0.0001). Also observed was that the higher the number of advertisements, the higher the consumption of these foods by children (r=0.66, p=0.0001). **Conclusions:** The exposition of food advertisements on TV is associated with their consumption by mothers and children.

763-P
This abstract has been withdrawn.

764-P
Assessing Children's Weight Status in Somerville, MA: A Decade Retrospective in an Intervention Rich Community

Virginia R. Chomitz *Boston, MA*; Jaime Corliss *Somerville, MA*; Lisa N. Arsenault *Cambridge, MA*; Nicole Rioles *Somerville, MA*; Christina D. Economos *Boston, MA*

Background: Somerville, MA, a dense, diverse, urban city near Boston has participated in multiple community-engaged initiatives to promote healthy eating, active living, and healthy weight over the past decade. Known collectively as Shape Up Somerville (SUS), the initiatives have served as an exemplar national model of community-based systems change. Monitoring weight outcomes over time is important to inform obesity planning and policy. **Methods:** Data from three independent longitudinal cohort studies conducted from 2002-2011 were used to assess changes in children's body mass index (BMI) z-scores concurrent with SUS. Study 1 conducted a non-randomized controlled trial among 1st-3rd grade students in Somerville (intervention) and two control communities over one school year (2002/03). Study 2 followed a longitudinal cohort of 4th-7th grade Somerville-only students over two school years (2005/06-2006/07). Study 3 followed a longitudinal cohort of kindergarten-7th grade Somerville-only students over two school years (2009/10-2010/11). **Results:** Study 1 demonstrated intervention BMI z-scores decreased by -0.1005 (p=0.001) over 9 months compared with children in control communities after controlling for baseline covariates. Study 2 demonstrated BMI z-scores decreased by -0.029 (p<0.05) over 12 months. Study 3 demonstrated BMI z-score decreased by -0.062 (p<0.05) over 12 months. **Conclusions:** Although different research methods and study populations were used to assess change, the three studies, conducted sequentially throughout a decade of community-engaged intervention, demonstrated significant decreases in BMI among school-aged children and underscored the importance of continuous outcome monitoring. The SUS model of commu-

nity engagement and systems change continues to demonstrate promise for combating childhood obesity.

765-P
Prioritization and Willingness-to-Pay For Bariatric Surgery: The Patient Perspective

Richdeep S. Gill, Sumit R. Majumdar, Xiaoming Wang, Rebecca Tuepah, Scott W. Klarenbach, Daniel W. Birch, Shahzeer Karmali, Arya M. Sharma, Raj S. Padwal *Edmonton, Canada*

Background: Access to publicly funded bariatric surgery is limited, potential candidates face lengthy waits, and no universally accepted prioritization criteria exist. We examined patients' perspectives regarding prioritization for surgery. **Methods:** Consecutively recruited subjects approved for and awaiting bariatric surgery completed a self-administered survey. After reviewing nine scenarios describing hypothetical cases of patients wait-listed for surgery, respondents were asked to rank these hypothetical patients relative to themselves in the surgery queue. Scenarios examined variations in age, clinical severity and socioeconomic prominence. Willingness-to-pay for faster access was assessed along a 5-point ordinal scale and analyzed using multivariable logistic regression. **Results:** The 99 respondents had mean age 44.7y, most (76%) were female, and mean BMI was 47.3kg/m2. Mean duration in queue was 34.4mo. Respondents assigned similar mean scores (relative to themselves) to hypothetical patients with characteristics identical to themselves ($p=0.22$) and higher mean scores (indicating greater urgency) to those exhibiting greater clinical severity ($p<0.001$) and functional impairment ($p=0.003$). Lower mean scores were assigned to patients at the extremes of age ($p\leq0.006$), on social assistance ($p<0.001$) and of high socioeconomic prominence ($p<0.001$). 85% of respondents disagreed that payment to expedite access should be available and 67% disagreed with paying for faster access for themselves. **Conclusions:** Most wait-listed patients consider greater clinical severity and functional impairments related to obesity to be important prioritization indicators for bariatric surgery and disagreed with others paying for faster access. These findings may help inform future efforts to develop acceptable prioritization strategies for publicly funded bariatric surgery.

766-P
Public Opinions of Responsibility For Obesity and Solutions to the Problem

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Background: Personal choices play a major role in risk for obesity. However, ongoing debate centers around the degree to which institutional and environmental factors (e.g., schools, built environment) affect these choices. Public opinion regarding the importance of institutional factors impacts the willingness of policy makers to create regulations to prevent obesity. **Methods:** LiveWell Colorado is a nonprofit whose mission is obesity prevention throughout the state. LiveWell commissioned a survey (n=1,107) in 2011. Respondents were asked to indicate who they thought was responsible for solving the obesity problem: individuals; parents; school systems; food manufacturers; fast food restaurants; government; land developers; or law enforcement. They also were asked to comment on the utility of specific solutions to the problem. **Results:** A large majority thought that individuals and parents (91% and 84%, respectively) were responsible for solving the problem. However, 50% also thought that schools were responsible, and 45% and 39%, respectively, thought that food manufacturers and fast food restaurants were responsible. When asked about specific solutions, 65% and 71% of respondents stated that improved food choices and drinking less soda would "definitely help" to prevent obesity, but 62% of respondents also thought that improved school food would definitely help. **Conclusions:** The greatest percentage of Coloradoans thought that individuals and families are responsible for dealing with obesity. However, large percentages also thought that there was some institutional responsibility for the problem and for solutions. These findings give support for the role of policies to prevent obesity. For example, a bill was passed in Colorado in 2011 that mandates daily physical activity in elementary schools.

767-P
Quality of Life Among Participants in a Mississippi Bariatric Surgery Pilot Program

Katie S. McClendon, Melissa S. Kay, Jacinda Roach, Whitney Byars, William H. Replogle *Jackson, MS*

Background: The Impact of Weight on Quality of Life-Lite (IWQOL-Lite) is a survey instrument that is used to quantitatively assess an individual's perception of how their weight affects their day-to-day life. IWQOL-Lite measures 5 domains on a 1 to 5 scale: physical function (PF; score range 11-55), self-esteem (SE; range 7-35), sexual life (SL; range 4-20), public distress (PD; range 5-25), and work impact (WI; range 4-20). Total score range is 31-155. A validated measure, the IWQOL-Lite was chosen to evaluate QOL in a pilot program in Mississippi that evaluated bariatric surgery for up to 200 state employees. **Methods:** IWQOL-Lite was administered at baseline, 6 months, and 12 months. As some patients' surgical index date was prior to study IRB approval, there were some who were not administered a baseline IWQOL-Lite. **Results:** The IWQOL-Lite was administered to 31 patients pre-surgery, 56 patients at 6 months, and 55 patients at 12 months. Mean results are reported: PF (initial 27.58; 6 months 38.68; 12 months 41.93); SE initial 16.83; 6 months 21.51; 12 months 25.06); SL (initial 12.32; 6 months 13.70; 12 months 15.23); PD (initial 13.5; 6 months 17.65; 12 months 20.98); WI (initial 13.10; 6 months 15.65; 12 months 16.76); Total (initial 82.46; 6 months 105.6; 12 months 120.53). Among patients with all three measurements, the differences from baseline to 6 months and 12 months were significantly different for all items except SL. No significant changes were present between 6 and 12 months. **Conclusions:** In this pilot program, among patients who did have the IWQOL-Lite administered at all 3 timepoints, the 6 and 12 months' scores for both the individual domains and the overall score were significantly improved, with the exception of the 6 months for sexual life.

768-P
Weight Loss Among Participants in a Mississippi Bariatric Surgery Pilot Program

Katie S. McClendon, Annette Low, Micki Johnson, Dena Trusler, William H. Replogle *Jackson, MS*

Background: Mississippi is the most obese state in the nation. The State of Mississippi passed legislation in 2009 which funded bariatric surgery for up to 200 state employees in a pilot project. **Methods:** This prospective, observational, multi-center, longitudinal study conducted at the three accredited Bariatric Surgery Centers of Excellence in Mississippi collected data from medical records for health outcomes at 6, 12 and 24 months. The surgical procedure performed was based on patient and surgeon choice and for this study includes gastric banding (LAP-BAND® or REALIZE®), Roux-en-Y gastric bypass and sleeve gastrectomy. **Results:** Data for 122 patients was available. Mean baseline weight was 142.79 kg. Six and 12 months post surgery, mean weights were 117.42 kg and 107.24 kg, respectively. Only 48 patients had weight measurements at the baseline, 6 month, and 12 month visits. For these patients, the difference between weight at baseline and 6 months, at baseline and 12 months, and at 6 months and 12 months were all statistically significantly different. For LAP-BAND®, weight at baseline to 12 months went from 136.44 kg (95% Confidence Interval [CI] 125.78-147.10) to 114.89 kg(95% CI 105.72-124.06); this was significantly different . For Roux-en-Y, the weight difference from initial visit, 149.62 kg (95% CI 123.52-175.73) to 91.74 kg (95% CI 69.28-114.21) at 12 months was significant as well. No significant change was seen for the REALIZE® band or sleeve gastrectomy. Mean percent Excess Weight Loss (%EWL) at 6 months was 30.07% EWL (range -4.94 to 96.88) and 37.99% EWL (range -4.09 to 108.39) at 12 months . **Conclusions:** Patients in this pilot study showed significant weight loss at 12 months. The study will continue to follow patients until 24 months after the last surgery (June 2013).

769-P
The Effects of the Food Stamp Program on Energy Balance and Obesity

Joanna C. Parks, Julian M. Alston, Aaron D. Smith *Davis, CA*

Background: Between 2001 and 2006, women participating in the U.S. Food Stamp program (FSP) weighed 15.5 pounds more than eligible nonparticipants on average. We make three contributions to the large and growing liter-

ature that addresses this weight difference. **Methods:** First, we use a dataset (NHANES) that contains detailed information on a wide variety of demographic, socioeconomic, health and behavioral characteristics and are thus not limited to sparse reduced-form regression models. Second, we specify a physiological model of weight gain with which we show that average differences in caloric intake and physical activity are much too small to explain the weight difference. Third, we use an instrumental variables framework to show that individuals with a genetic predisposition to obesity are more likely to participate in the FSP and that the magnitude of this effect is large enough to explain the weight difference. **Results:** We do not find that participation in the FSP causes participants to gain weight by consuming significantly more calories or expending significantly less calories in physical activity. The magnitude of the differences in energy consumption and expenditure are too small to explain the differences in body weight between participants and nonparticipants. **Conclusions:** We conclude that participation in the FSP does not cause weight gain.

770-P[DT]
Are Minority Children Getting Enough Sleep?
William W. Wong, Christina L. Ortiz, Debra L. Lathan, Louis A. Moore, Karen L. Konzelmann, Anne L. Adolph, E. O'Brian Smith, Nancy F. Butte *Houston, TX*

Background: Childhood obesity is more prevalent among minority children and short sleep duration is associated with increased risk of childhood and adult obesity. **Methods:** In the Healthy Kids-Houston project, we measured the habitual sleep duration among 483 minority children (333 Hispanic/150 black; 9-12 years; 51% male) enrolled at 14 City of Houston community centers over 5-7 days using accelerometry (Actical). **Results:** The majority of the children (72.9%) wore the activity monitor for 7 consecutive days. The children slept on average 8.81±0.61 hours/day (95% CI: 8.75-8.86 hours/day). In a general linear model to assess the effects of age, gender, race/ethnicity, socio-economic status (SES) and obesity status or BMI z-scores, Hispanic children slept longer (+0.26 hour/day, P<0.001) than the black children. Obese children slept less (-0.18 hour/day, P=0.02) than the normal-weight children. Sleep duration decreased 0.09 hour/day with each unit increase in BMI z-score (P=0.001). SES had no effect on sleep duration (P=0.26). There was a significant interaction between age and gender: girls aged 11-12 years slept less (0.24-0.27 hour/day, P<0.04) than boys aged 9-12 years and girls aged 9-10 years. Children also slept longer (+0.63 hour/day, P<0.001) during the weekend than weekdays. **Conclusions:** Minority children living in a large metropolitan area are not meeting the National Sleep Foundation recommended sleep duration of 10-11 hours/day. Sleep duration was associated with race/ethnicity, age, gender and obesity status, but not SES. Therefore, sufficient sleep duration should be part of the strategy to prevent childhood obesity among underserved communities with increased risk of obesity and obesity-related co-morbidities.

771-P
Patients' Perceptions of Waiting For Bariatric Surgery
Deborah M. Gregory, Julia Temple Newhook, Laurie K. Twells *St. John's, Canada*

Background: In Canada waiting lists for bariatric surgery are common, with wait times > 5 years. The significance of waiting for bariatric surgery from the patients' perspective must be understood if health care providers are to act as facilitators in promoting satisfaction with care and quality care outcomes. This is the first qualitative study conducted in Canada examining the waiting period for bariatric surgery from the patient's perspective. **Methods:** 54 interviews were digitally recorded, transcribed verbatim and analysed using a constant comparative analysis between June 2011 and March 2012. **Results:** Waiting for surgery was characterized negatively by the majority of participants. Although excited about their acceptance as candidates for surgery, the waiting period was described as stressful, anxiety provoking, and frustrating. Anger was expressed towards the health care system for the long waiting times. Participants voiced confusion and a lack of understanding of the wait list process and how patients are prioritized. They expressed frustration about the lack of information concerning their position on the waitlist and the timeline for surgery. Many felt as if their lives were placed "on hold". A number of participants expressed fears that the surgery would never happen or that they would not live to have the surgery. Participants' recommendations included periodic updates from the surgeon's office about their position on the wait list; a counselor who specializes in helping people going through this surgery; a support group; a patient mentor who had been through the surgery, and; dietitian support and further information on expectations after surgery. **Conclusions:** Understanding patients' experiences waiting for surgery can be valuable in informing bariatric care teams and may increase the likelihood of positive health outcomes.

772-P
12-Year Trends in Energy Content of Menu Offerings at Eight Leading Fast Food Restaurants in the U.S.
Katherine W. Bauer *Philadelphia, PA*; Mary O. Hearst, Alicia A. Earnest, Simone A. French, J. Michael Oakes, Lisa J. Harnack *Minneapolis, MN*

Background: Over the past decade there has been increasing attention to the role that fast food plays in individuals' poor dietary intake and risk for obesity. Accompanying this increased attention, there has been a rise in legislative and media-based efforts to improve the healthfulness of food sold by fast food restaurants. However, no studies have been undertaken to evaluate changes in the energy content of fast food restaurant menu items during this period. Therefore, the objective of this study was to examine changes in the energy content of lunch/dinner menu offerings at eight of the leading fast food restaurants in the U.S. between 1997/1998 and 2009/2010. **Methods:** Menu offerings and nutrient composition information were obtained from archival versions of the University of Minnesota Nutrition Coordinating Center Food and Nutrient Database. Nutrient composition information for menu items was updated in the database biannually. Changes in mean and median energy content of all lunch/dinner menu offerings and specific categories of menu items among all restaurants and for each individual restaurant were examined. **Results:** Menu offerings and nutrient composition information were obtained from archival versions of the University of Minnesota Nutrition Coordinating Center Food and Nutrient Database. Nutrient composition information for menu items was updated in the database biannually. Changes in mean and median energy content of all lunch/dinner menu offerings and specific categories of menu items among all restaurants and for each individual restaurant were examined. **Conclusions:** Although there has been a considerable increase in the number and variety of foods offered by many of the leading fast food restaurants, there has been little improvement in the energy content of fast food menu offerings in the U.S. over the past 12 years.

773-P
Taxing and Labeling Unhealthy Food: Making Public Policies More Effective
Brian Elbel, Tod Mijanovich, Beth Dixon, Courtney Abrams, Morgan Hills, Matthew Beyrouty *New York, NY*

Background: Taxing and labeling unhealthy food and drinks have been proposed to shift food choices towards healthier items and address obesity rates. Preliminary evidence suggests such methods could be minimally effective depending on how they are structured. **Methods:** We constructed a snack shop in a large, urban public hospital. Customers could purchase healthy and less healthy beverages and snacks from October - December 2011. We examined experimental conditions testing relative influence of price changes via a 30% tax on less healthy items; labels highlighting less healthy products; and labels indicating the product is taxed because it is less healthy. The five experimental conditions were: baseline (A); tax only (B); "less healthy" labels (C); tax plus "less healthy" labels (D); and tax plus "less healthy" labels with details of tax highlighted on the label (E). We recorded every purchase: 2,151 unique sales transactions. **Results:** At baseline, 47% of items sold were not healthy. Analysis is underway and will be complete before the meeting. We will examine sales data to indicate differences in food purchases, beverage purchases, composition of transactions, total price per transaction, calories, and fat. We will be able to determine whether taxes affected sales, signage alone impacted sales, and whether tax salience improved the effect. **Conclusions:** This experiment allows us to see results not only of taxing less healthy items, but of highlighting the taxes in different methods suggested by behavioral economics research. We will tease out whether taxes, labeling and/or tax salience could shift purchases towards healthier items.

774-P
Using Tax Credits to Introduce Supermarkets in Low-Income Areas: The Influence on Healthy Eating

Brian Elbel, Tod Mijanovich, Beth Dixon, Courtney Abrams, Kamila Kiszko *New York, NY*

Background: New York City recently implemented an incentive program to introduce supermarkets into high-need areas, aiming to change the food environment and improve healthy eating. This policy is being considered nationally, with little known about effectiveness. This project examines the influence of recently-introduced supermarkets on shopping and food consumption among residents of a low-income area of the Bronx, NYC. **Methods:** We collected data from the intervention and a control community before and after the supermarket opening in 2011, using a difference-in-difference design to examine impacts on adults and on children 3-10. Prior to opening, data was collected from 2200 adults (850 parents) via street-intercept surveys assessing fruit, vegetable and snack consumption (using dietary screeners), along with shopping patterns. We also included follow-up 24-hour dietary recalls of 603 participants (207 parents). After opening, data was collected from 2130 adults (838 parents) with 839 follow-up dietary recalls (346 parents). **Results:** For children, respondents were 56% Hispanic and 39% Black. Half of families had an annual household income <$25,000. Most children (90%) consumed at least one homemade meal daily. Over half consumed 1 or fewer servings of vegetables and 2 or fewer servings of fruit daily. We will present difference-in-difference results for children and for adults. **Conclusions:** With similar fresh food financing initiatives being implemented nationwide, we expect the results of this study to inform policy. We will provide an in-depth analysis of food consumption in a low-income area with little access to fresh food before and after a full-service supermarket is introduced.

775-P
Healthy Eating Design Guidelines For School Architecture

Terry Huang *Omaha, NE*; Dina Sorensen, Stephen Davis *Charlottesville, VA*; Leah Frerichs, Jeri Brittin *Omaha, NE*; Kelly Callahan, Joe Celentano, Matthew Trowbridge *Charlottesville, VA*

Background: This paper describes the development and application of a new Healthy Eating Design Guidelines for School Architecture, covering multiple domains of the school food environment and schools' connection to the surrounding community. The aim is to provide architecture and public health new insights into strategies for making school environments more conducive to healthy eating. **Methods:** We worked collaboratively with leading architects to determine theoretically-driven design strategies that are geared towards healthy nutrition in Buckingham, VA. We will discuss the process of design, the production of design guidelines, the final construction of the school, and evaluation strategies for the impact of such design on institutional and individual outcomes. **Results:** Design principles include: 1) Provide equipment and spaces that facilitate the incorporation of fresh and healthy food choices into the school and its community; 2) Provide facilities to directly engage the school community in food production and preparation; 3) Apply behavioral economics to 'nudge' the school community towards healthy-eating; 4) Use building and landscape features to promote awareness of healthy and sustainable food practices; and 5) Conceive and articulate school spaces as community assets to multiply the benefits of school-based healthy food initiatives. The design guidelines cover 10 domains with specific strategies within each. The school will be completed in Summer 2012. **Conclusions:** Implementation of guidelines is expected to improve schools' ability to adopt healthy nutrition practices and increase the likelihood that children will improve their diet and health. Hypothesis-driven design and practice-based research can set new standards for school design throughout the U.S.

776-P
The Development of a National Integrated Health Care Standard For Severely Obese Children and Adolescents and Their Families in the Netherlands

Jutka Halberstadt, Jacob C. Seidell *Amsterdam, Netherlands*

Background: The objective was to develop a national integrated health care standard for the management of severe obesity in children and adolescents (2-19 years). **Methods:** Starting point was the evidence-based national guideline for the diagnosis and treatment of obesity, published in 2007. In 2008 we established a partnership of 18 relevant national healthcare professional organizations, patient organizations and the national health insurance association to develop criteria for the content, organization and quality assurance of obesity care. Representatives of the partners and experts were consulted in regular meetings, thematic working groups and yearly conferences. In addition, we consulted experts from several other countries. **Results:** The resulting health care standard contains a section on severe childhood obesity. The standard includes flow charts following the principles of stepped care. The preferred treatment for severe childhood obesity is a one year long intensive family based combined lifestyle intervention with a focus on self management and with the option of referral to specialized pediatric obesity centers. All interventions must be followed by one year of supervised relapse prevention and subsequently by long-term behavioral and weight maintenance support delivered locally. Defined outcomes are, apart from weight goals, improved health, quality of life and social participation. **Conclusions:** This is an example of multisector consensus development resulting in optimal care for severely obese children and adolescents.

777-P
Translational Research in Bariatric Care

Laurie K. Twells *St. John's, Canada*; Deborah M. Gregory *St.John's, Canada*; Carla M. Dillon *St. John's, Canada*; Elizabeth Hatfield, Raleen M. Murphy, Rhoda Crawley, David Pace, Darrell Boone, Maria H. Tracey, Elaine Warren, Christopher S. Kovacs, Don M. MacDonald *St.John's, Canada*; Raj S. Padwal, Arya M. Sharma *Edmonton, Canada*; Blair Fleming *St. John's, Canada*

Background: For health services researchers, translational research or "translating research into practice" is important. An innovative program of translational research in bariatric care has been developed in Newfoundland and Labrador (NL), Canada with the aim of improving; health care delivery, long- term patient health outcomes and ultimately population health. **Methods:** A new multidisciplinary research team at Memorial University consisting of researchers, health care professionals, decision-makers and policy makers,database management experts and linkage specialists was formed. Research partnerships were developed with researchers in Alberta and knowledge translation experts - "Canadian Obesity Network". **Results:** Through extensive stakeholder consultation, a vision of translational research in bariatric care emerged. The multidisciplinary team developed a comprehensive research program to capture the patient's total experience of waiting for, undergoing, recovering from, and adjusting to life after bariatric surgery. The program captures not only the clinical outcomes post-surgery but patient-reported outcomes (perceptions of physical, emotional, and psychosocial health and well-being) and how this relates to the overall success of the surgical intervention. These are important aspects of translational research. This is being achieved using both qualitative and quantitative research methods. **Conclusions:** Our translational research program in bariatric care is well-established with a number of research studies underway. Relationships have been developed encouraging teamwork and information sharing at the clinical/epidemiologic interface. Conducting translational research is challenging; however, with continued engagement of stakeholders, the potential to positvely impact clinical practice and healthcare decision-making is a very realistic outcome.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Imaging and Biomarkers

778-P[DT]
Optimal Thresholds of Visceral Adipose Tissue For the Identification of Cardiometabolic Risk in White and African American Adults

Peter T. Katzmarzyk, Steven B. Heymsfield, Claude Bouchard *Baton Rouge, LA*

Background: Visceral adipose tissue (VAT) has been identified as a risk factor for the development of cardiovascular disease and premature mortality. However, the clinical utility of VAT in the identification of individuals at elevated risk has not been established, especially in different ethnic groups.

Thus, the purpose of this study was to identify the optimal thresholds of VAT for the identification of elevated cardiometabolic risk factors in white and African American (AA) adults. **Methods:** The sample included 429 white women, 311 AA women, 406 white men and 100 AA men aged 18 to 74 years from the Pennington Center Longitudinal Study. Abdominal VAT cross-sectional areas were measured using computed tomography at the L4-L5 level. Elevated cardiometabolic risk was defined as ≥2 risk factors (blood pressure ≥130/85 mm Hg; glucose ≥100 mg/dl; triglycerides ≥150 mg/dl; high-density lipoprotein-cholesterol <40 mg/dl (men) or <50 mg/dl (women)). Receiver Operating Characteristic (ROC) curve analysis was used to identify optimal VAT thresholds in each sex-by-ethnicity group. **Results:** The areas under the ROC curve ranged from 0.76 to 0.82 across the four sex-by-ethnicity groups. The optimal VAT thresholds were 116 cm2 in white women, 93 cm2 in AA women, 138 m2 in white men, and 90 cm2 in AA men. The sensitivities and specificities at the optimal thresholds ranged from 69% to 73% and from 69% to 72%, respectively. **Conclusions:** Optimal thresholds of VAT for the identification of elevated cardiometabolic risk differ by sex and ethnicity. African American men and women have a lower threshold for increased risk compared to white men and women. Given that VAT is now measured more routinely as a clinical risk factor, these results demonstrate that ethnic-specific thresholds may be useful.

779-P
Association of Dysfunctional Adiposity With Incident Pre-diabetes or Type 2 Diabetes Mellitus in Obese Adults: The Dallas Heart Study (DHS)

Ian J. Neeland *Dallas, TX*; Tiffany M. Powell-Wiley *Washington DC, DC*; Colby Ayers, Ramin Farzaneh-Far, Anand Rohatgi, Aslan T. Turer, Jarett D. Berry, Sandeep Das, Gloria L. Vega, Amit Khera, Darren K. McGuire, Scott M. Grundy, James A. de Lemos *Dallas, TX*

Background: Insulin resistance is heterogeneous and body mass index (BMI) cannot discriminate type 2 diabetes mellitus (T2DM) risk among obese individuals. **Methods:** Among obese participants without impaired fasting glucose (IFG) or T2DM (n=732) in the DHS, we examined the associations of 1) circulating adipokines, markers of insulin resistance, dyslipidemia, and inflammation; 2) body composition by dual energy x-ray absorptiometry; 3) fat distribution, cardiac, and vascular structure by magnetic resonance imaging, and 4) coronary artery calcium by computed tomography at baseline with incident pre-diabetes (PD) and T2DM over a median 7 year follow-up. Odds ratios were adjusted for BMI, blood pressure, T2DM family history, and fasting glucose, HDL cholesterol, and triglyceride levels. **Results:** The cumulative incidence of T2DM and PD was 12% and 39%, respectively. PD and T2DM were positively associated with baseline visceral fat mass, uric acid, insulin resistance, and dyslipidemia, and inversely associated with lower body fat mass and adiponectin ($p<0.05$). Adverse cardiac remodeling and subclinical atherosclerosis were more common in those with incident PD or T2DM ($p<0.05$). In multivariable models, visceral fat mass was independently associated with PD (OR per 1-SD [95% CI]: 1.41 [1.03, 1.94], p=0.03) and T2DM (1.62 [1.13, 2.32], p=0.009) and uric acid was associated with PD (1.36 [1.02, 1.81], p=0.04). Fructosamine (1.85 [1.34, 2.56], p=0.0002) and insulin levels (1.52 [1.09, 2.13], p=0.01) were associated with T2DM independent of IFG. In contrast, higher BMI, total fat mass, subcutaneous fat, and C-reactive protein were not associated with PD or T2DM. **Conclusions:** Markers of dysfunctional, not general, adiposity are independently associated with the development of PD and T2DM in obese adults and may contribute to clinical risk prediction in this population.

780-P
Retinal Vascular Changes in Patients With Obesity

Maria Elena Romero Ibargüengoitia, M. Elena Martinez-Perez, Alfredo Arturo Dominguez Mota, Maria Estela Arroyo Illanes, Antonio González Chávez, Maria Santa Juana Quiñones Alvarez, Mireya Leon, Fabiola Serrato *México D.F, Mexico*; Jazmin Chiu-Ugalde *Naucalpan Edo. Mex., Mexico*; Juan Carlos Lopez-Alvarenga *México D.F, Mexico*

Background: Recent studies demonstrate retinal abnormalities in obese subjects without diabetes or hypertension. We explored if this changes can be easily identified by specialists in retinal disease (raters), and which of the studied parameters were associated with retinal vascular abnormalities (ORA) not related with diabetes or hypertension. **Methods:** We included 4 subjects with BMI < 25 and 4 with BMI > 30, without hypertension or diabetes. They underwent retinal fundus photography and three independent retinal-disease ophthalmology specialists reviewed 16 photographs. Raters were blinded to patient's clinical characteristics. Kappa coefficient for multiple raters and intraclass correlation coefficient were calculated for concordance. Digital measurements of arteriolar and venular diameter, tortuousness, curvature, expansion factor, asymmetry and arteriolar/venular ratio were performed with RISA load software (V4.0). Forty-eight arteries and forty-eight veins were registered and measured. All data were log-normalized and compared by Student t Test for independent groups. **Results:** Raters showed an overall kappa of 0.59 ($p< 0.01$), and intraclass coefficient of 0.85 ($p< 0.01$). Obese subjects presented significant reduction in arterial diameter (-1.54 pixels, $p< 0.01$), increased arterial expansion factor (0.58, $p<0.018$) and lost arterial-vein ratio (-1.04, $p<0.001$) as compared with normal BMI subjects. Effect size favored obesity in >15% for arterial and vein diameter, curvature, expansion and asymmetry factor. **Conclusions:** Retinal vascular changes were found in obese subjects without hypertension or diabetes. Software was sensitive to discriminate between groups. This non-invasive method can be useful to detect microvascular damage. Possible pathological causes of vascular damage in obese subjects should be explored, for example chronic inflammatory state.

781-P
Obesity and Total Cholesterol Are Predictors of Ultrasound Vascular Endothelial Abnormalities in Children

Arturo Herrera-Rosas, José Damián Carrillo Ruiz, Esther Ocharan *México D.F., Mexico*; Ana Luisa Sesman Bernal *Mexico City, Mexico*; Joselín Hernández Ruíz, Juan Carlos Lopez-Alvarenga *México D.F., Mexico*; Araceli Arellano-Plancarte *Naucalpan Edo. Mex., Mexico*

Background: Obesity in children is associated with increased risk of diabetes mellitus, hypertension and cardiovascular disease. Early vascular endothelium abnormalities potentially leading to atheromatous plaque formation could be detected by non-invasive methods, such as ultrasound. This study evaluated the effect of serum lipid concentration and anthropometric variables over vascular endothelium parameters (VEPs) in obese children. **Methods:** 172 children (age 10.5±3, female 43%) were classified according to BMI percentiles: 27 with normal weight; 22 were overweight (75th 84th), 63 obese (85th 98th) and 60 morbidly obese (99th 100th). Serum lipid profile was determined. Ultrasound-derived intima media thickness (IMT), artery stiffness index (Sβ), and peak systolic velocity (PSV) were obtained from carotid artery; flow-mediated dilatation (FMD) after 3-min ischemia was measured from brachial artery at minute 1 and 3. Multiple linear regression with backward variable selection was performed including age, gender, BMI, HDL-c, triglycerides (TG) and total cholesterol (TC). **Results:** In four models, BMI and TC showed a positive correlation (R2 from 0.47 to 0.79) with IMT, Sβ and PSV. Standardized b coefficients were between 0.38 and 0.46 for BMI and from 0.31 to 0.45 for TC; a negative slope was found for FMD (b=-0.51 and -0.30, respectively). No correlation was found between TG or HDL and VEPs. **Conclusions:** This study shows that that obesity degree and TC have an important effect over VEPs in Mexican children and can be considered as early predictors of subclinical atherosclerosis.

782-P[DT]
Thigh Intermuscular Fat Predicts Declines in Gait Speed: Results From the Health ABC Study

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Background: In older adults, every 0.1 m/s lower gait speed is associated with 12% higher mortality. However, little data exist identifying modifiable risk factors for gait speed decline. In this study we assessed the relationship between several measures of adiposity and gait speed decline. **Methods:** Data are from older (70-79 years), well-functioning men and women participating in the Health, Aging and Body Composition (Health ABC) study and followed for 4 years (n=2315, 50% women, 38% black). Usual walking speed (m/s) over 20-meters was measured in years 2-6. Measures of adiposity included baseline and change in body weight, BMI, DXA-acquired total body

fat mass and percent body fat, and CT-acquired abdominal subcutaneous and visceral fat area, and thigh intermuscular and subcutaneous fat area. Mixed effects models, including standardized measures of adiposity, adjusted for demographics, height, year, and baseline gait speed, were used. **Results:** Gait speed declined by 0.08±0.00 m/s over the 4-year period. At baseline, thigh intermuscular fat area predicted gait speed decline in both men and women (-0.01±0.00 and -0.02±0.00 m/s per 1.77 cm2, respectively; p<0.01). In men, but not women, this relationship was independent of weight, BMI, and total body fat mass. In both sexes, increased thigh intermuscular fat area was the only adiposity measure that predicted gait speed decline (-0.01±0.00 m/s per 5.67 cm2; p<0.01 for genders combined). **Conclusions:** High and increasing thigh intermuscular fat are important predictors of gait speed decline, implying that fat infiltration into muscle strongly contributes to loss of mobility with age.

783-P
Composition of Oral Microbiota Associated With Obesity in Kuwaiti Children

Jo Max Goodson, Maryann Cugini, Hatice Hasturk, Pramod M. Soparkar, Mary Tavares *Cambridge, MA*; Sabia Al-Mutawa, Jitendra Ariga, Jawad Behbehani, Roula Barake, Osama Alsmadi, Kazem Behbehani *Kuwait City, Kuwait*

Background: Evidence suggests that Kuwaiti people are among those who are exposed to the highest risk for development of obesity and type 2 diabetes. **Methods:** A longitudinal cohort study was designed to evaluate metabolic status of 10 year old Kuwaiti children in a longitudinal cohort design. Prior the initiation of this study, a pilot study of 95 girls was conducted. Saliva and dental plaque samples were collected for analysis of 42 oral bacteria by DNA probe analysis. **Results:** The salivary bacteriodites proportions were significantly reduced in proportion to waist circumference. The main effect was seen in the species Prevotella melaninogenica. Analysis by linear regression indicated a significant (p<0.0002) reduction of 1.3 cm waist circumference /% of salivary P. mel. The predictive diagnostic potential of this measure will be evaluated when the longitudinal cohort design of the study is implemented 2 years hence. At this time, the sensitivity in identifying obese children is 86% (salivary P.mel. < 9.3%) and the specificity is 46% with a 55% false positive rate. Considering that reduced Bacteriodites with increasing obesity has been reported from the analysis of fecal samples (Ley et.al. 2006), it seems possible that the composition of microbiota throughout the oral-gastro-intestinal tract may be modified as obesity develops. **Conclusions:** Bacteroidetes species (especially P. melaninogenica) were significantly reduced in the saliva of Kuwaiti children as their waist circumference increased suggesting an association with developing obesity.

784-P
Comparison of Percent Body Fat Measurements By DXA in Children in STRONG Kids Program

Anthony Wang, Margarita Teran-Garcia *Urbana, IL*

Background: Dual Energy X-ray Absorptiometry (DXA) provides a more accurate method for measuring body fat composition than traditional anthropometric measurements and has been used in some studies of pediatric populations. The present study aims to detect differences in body fat percent measurements between normal (n=5) and overweight/obese (n=7) (ow/ob) children (3-6 yrs) and to investigate the correlation between central adiposity measurements. **Methods:** Caucasian children (n=12, female n=7) were selected from the larger STRONG (Synergistic Theory and Research on Obesity and Nutrition Group) Kids cohort. Height and weight measurements were taken on the same day as the DXA scan. DXA scan analysis was performed with Hologic software version 12.7.3.1 to determine whole body fat percent (WBFATPCT), percent trunk fat (TRUNKPFAT), and percent fat in a region defined between L 1 and L 4 of the spine(region 1). Differences in the percent fat measurements between normal and ow/ob children were evaluated using t-test and correlations between central adiposity measurements were conducted with Pearson's correlation in SAS version 9.2. **Results:** Analysis of the DXA scans revealed a difference between normal and ow/ob children in WBFATPCT (25.77 ± 3.76 vs. 31.38 ± 3.76, p = 0.02) and mean percent fat in region 1 (17.52 ± 3.83 vs. 22.7 ± 3.61, p = 0.03) respectively. Additionally, correlation analysis demonstrated a positive linear relationship between TRUNKPFAT and percent fat in region 1 after controlling for sex (r=0.88, p = 0.0003). **Conclusions:** These preliminary results seem to validate the use of either TRUNKPFAT or region 1 measurements in assessing central adiposity in children. Categorization by BMIPCT into respective weight categories separated children with significantly different percent body fat.

785-P
Serum IL-17, Obesity and Metabolic Risk in Mexican Young Adults

Margarita Teran-Garcia *Urbana, IL*; Diana P. Portales-Perez, Ana Gabriela Cerda-Vessi, Sergio Rosales-Mendoza, Celia Aradillas-Garcia *San Luis Potosí, Mexico*

Background: Inflammation seems to link obesity to the development of insulin resistance (IR), type 2 diabetes (T2DM) and cardiovascular disease (CVD). IL-17 is a pro-inflammatory cytokine which upon binding to its receptor activates a cascade of signals that include MAPK, NF-kB and other cytokines such as IL-1β, IL-6 and TNF-α. Recently, the role of IL-17 in the induction of low-grade inflammation has been reported to be involved in the pathogenesis of CVD and it might participate on the pathogenesis of IR. **Methods:** A cross-sectional was conducted in a cohort of young Mexicans (n=406, 18 to 25 yrs., 54% females). Anthropometric measures were performed by health professionals. Glucose, insulin, and serum lipid profile was measured after a 12 hours fasting. Serum IL-17 was determined by ELISA. Correlation coefficients were used to quantify the relationship of IL-17 with anthropometric and metabolic variables, all adjusted for age and sex. A log10 transformation was applied to all non-normally distributed data. Incidence of Metabolic syndrome (MetS) was assessed according to the harmonized definition. **Results:** Compared to healthy controls, IL-17 levels were higher among individuals with MetS (22%), (30.5±0.1.9 and 22.2±0.7, p<0.0001). There were positive correlations of IL-17 with BMI, waist circumference, systolic and diastolic blood pressure (SBP, DBP), triglycerides and HOMA index (all p<0.005) and negative correlation with HDL (r=-0.13, p=0.01). The correlation of IL-17 with SBP and DBP was stronger among individuals with IR (13%), (r=0.36, p=0.01 and r=0.46, p=0.001, respectively). . **Conclusions:** We suggest a role for IL-17 as an early biomarker for the risk of morbidities associated with obesity in young individuals. More studies need to be done to investigate the long-term consequences of increased IL-17 in the pathogenesis of metabolic diseases and obesity.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Statistical Methods

786-P
Using Latent Class Analysis to Characterize Infant Feeding Mode and Its Relationship With Infant Weight Status and Demographics

Stephanie Anzman-Frasca *University Park, PA*; Ian M. Paul *Hershey, PA*; Leann L. Birch *University Park, PA*

Background: Feeding mode is linked to early weight gain. Many infants are fed both breastmilk and formula, but there are different ways of engaging in "mixed" feeding. Repeated measures latent class analysis (LCA) was used to explore these groups. **Methods:** Data were from 147 primiparous mother-infant dyads intending to breastfeed at infant birth. At 1, 2, 4, 6, and 9 months and 1 year, mothers reported on indicator variables: whether they were breastfeeding (BF) and whether they were using formula. Multiple imputation was used to address missing data on covariates: infant weight-for-length percentiles at baseline and 1 year and maternal education, intended BF duration, and infant fussiness. LCA was used to identify the number of feeding classes, describe classes of feeding patterns over time, and test whether covariates related to the likelihood of being in the classes. "Late switchers" who breastfed to 6 months were the reference group, based on the median intended BF duration at infant birth. Results were aggregated across imputations. **Results:** A 5-class model best fit the data. Classes were: exclusive breastfeeders (23%), late switchers (13%), mixed feeders (9%), early switchers (25%), and formula-feeders (30%). Compared to late switchers, mixed feeders, who fed both breastmilk and formula for multiple months, had heavier infants at 1 year (p<.05). Compared to late switchers, formula-feeders had less education (p<.001); exclusive breastfeeders (p<.05) and mixed feeders (p<.05) had less fussy infants; and formula-feeders (p<.0001), early switchers

(p<.01), and mixed feeders (p<.05) had shorter intended BF durations. **Conclusions:** There are qualitative differences between breastfeeders, formula-feeders, and different types of "mixed" feeders. This approach can provide insights about demographics and outcomes associated with infant feeding decisions.

787-P
Two-Method Measurement Design For BMI Estimates in Large Epidemiologic Studies

Keith M. Drake, Meghan R. Longacre, Madeline A. Dalton, Gail Langeloh *Lebanon, NH*; Karen E. Peterson *Ann Arbor, MI*; Linda J. Titus, Michael L. Beach *Lebanon, NH*

Background: Objective: To optimize estimates of adolescents' body mass index (BMI) z-scores, overweight, and obesity using both self-reported and measured height and weight data. **Methods:** Self-reported height and weight were obtained from 1,840 adolescents through telephone surveys. Height and weight were objectively measured for a subsample (n=422) of these adolescents. BMI z-scores were calculated from self-reported and from measured heights and weights. Using self-reported BMI z-scores and demographic information, we predicted measured BMI z-scores, overweight/obesity (measured z-score≥1.04), and obesity (measured z-score≥1.65) in the subsample. We then used these models and multiple imputation to estimate the mean BMI z-score, the prevalence of overweight/obesity, and the prevalence of obesity for the full sample. Finally, we compared the precision (standard errors) of estimates based on measurement with and without multiple imputation. **Results:** In the subsample, the overweight/obesity prevalence (31.2% versus 36.3%, p< 0.001) and obesity prevalence (14.7% versus 20.9%, p < 0.001) were lower when using self-report compared to actual measurements. Regression models accurately predicted measured BMI z-scores (R2=0.77), overweight/obesity (percent agreement=87.9%), and obesity (percent agreement = 94.5%). In the full sample, estimates from multiple imputation were more accurate than estimates from self-report (e.g. obesity prevalence = 19.9% versus 12.2%, respectively). Multiple imputation estimates also had lower standard errors than estimates based solely on the observed measured data (e.g. SE of obesity prevalence = 1.5% versus 2.0%, respectively). **Conclusions:** Multiple imputation offers a strategy for improving accuracy and precision of BMI parameter estimates without needing to measure height and weight in the full sample.

788-P
The Relationship Between Body Weight and Quality of Life in Older Adults With Medicare Supplement Insurance

Kevin Hawkins, Frank G. Bottone, Shirley Musich, Ronald J. Ozminkowski, Yan Cheng *Ann Arbor, MI*; Richard J. Migliori *Minnetonka, MN*; Charlotte S. Yeh *Washington, DC*

Background: The objective of this study was to estimate the relative impact that each body mass index (BMI) category has on health-related quality of life. **Methods:** A mail survey was sent to 60,000 adults with an AARP®-branded Medicare Supplement Insurance (i.e. Medigap) plan provided by UnitedHealthcare Insurance Company (for New York residents, UnitedHealthcare Insurance Company of New York) in 10 states. The Medicare Health Outcomes Survey instrument was used, but renamed the Health Update Survey, for use with a Medigap sample. Casemix-adjusted comparisons were made between each BMI category versus those with normal BMI. **Results:** A total of 22,827 (38%) eligible sample members responded to the survey. Respondents had the following BMI categories: 2.2% were underweight, 37.0% were overweight, 18.5% were obese, 1.9% were morbidly obese, 38.5% had a normal BMI and 1.9% were missing BMI information. Factors associated with being underweight or carrying excess body weight were generally consistent with past reports. Quality of life was assessed using the average physical component scores (PCS) and mental component scores (MCS) obtained from the VR-12 health status tool. Respondents' PCS values were 5.01, 0.16, 3.60 and 9.50 points lower on average, respectively, for the underweight, overweight, obese and morbidly obese BMI categories, compared to the normal BMI group. Respondents' MCS values were 3.28, +0.52, 0.32 and 1.39 points lower on average, respectively for the underweight, overweight, obese, and morbidly obese BMI categories, compared to the normal weight group. **Conclusions:** The greatest impact on quality of life was on those in the underweight and morbidly obese categories, with the greater negative impacts were on the physical rather than mental aspects of quality of life.

789-P
BMI Trajectories From Birth to Early Adulthood: An Analysis of the National Longitudinal Survey of Children and Youth

Andrew Tu, Louise C. Masse *Vancouver, Canada*; Scott Lear *Burnaby, Canada*; Chris G. Richardson *Vancouver, Canada*

Background: There is a great deal of interest in examining the relationship between changes in body mass index (BMI) during childhood and the development of obesity. Although researchers have examined trajectories of BMI, most investigations have typically relied on statistical methods that assumed a homogenous trend and thus produced a single trajectory to describe the entire population. More recently, researchers have identified multiple BMI trajectories in childhood using growth mixture modeling. However, differences in methodology and study sample have made it difficult to integrate the results into a comprehensive characterization of changes in childhood BMI and associated risk for obesity. This study will address this gap in the scientific literature by identifying the different types of BMI trajectories across the entire childhood period. **Methods:** The National Longitudinal Survey of Children and Youth (NLSCY) is a nationally representative, biannual survey which started collecting information of Canadian children ages 0 to 11 from 1994 (initial cohort n=16,903). This study will analyze data collected from eight cycles of the NLSCY to estimate BMI trajectories from birth to early adulthood (ages 0-20). Growth mixture modeling will be used to identify distinct BMI trajectories by sex. **Results:** The different types of childhood BMI trajectories present in the Canadian population will be presented as well as factors associated with trajectory membership with a focus on key risk factors for escalation of BMI into obesity. **Conclusions:** This study will help identify subpopulations of children at greatest risk of developing obesity in adulthood. Understanding common growth patterns will inform the development of prevention and early intervention strategies tailored to specific subpopulations of children on high risk BMI trajectories.

Friday, September 21, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

Environmental Determinants of Health

790-P[DT]
Development of a Rapid Assessment Audit Instrument to Evaluate the Food Environment in Uganda

Mary J. Christoph, Diana S. Grigsby-Toussaint *Champaign, IL*; James M. Ntambi *Madison, WI*

Background: Although local food environments have been evaluated to inform population-based obesity interventions in the US, limited studies exist in sub-Saharan Africa. The dearth of such studies are possibly due to an absence of validated tools that incorporate foods or food sources that may be atypical in many Western countries. As a growing number of countries in sub-Saharan Africa struggle with the dual burden of over- and under-nutrition, an improved understanding of the food environment is critical for developing comprehensive public health programs to address this problem. **Methods:** Following an extensive literature review, a food audit instrument was developed and field-tested in urban and rural areas in Uganda in January 2012. Geotagged photos were used to document the availability of fresh fruits and vegetables, snack foods, staples, types of food sources, and food marketing. Latitude and longitude data from the photographs were used to geocode food sources to permit visualization of the food environment, supplemented by observations recorded in a journal. **Results:** Our results indicate outdoor food markets, convenience or grocery stores, and street vendors constitute the primary sources of purchased foods in Uganda. Although a list of culturally relevant foods was previously developed, our modified list based on the pilot accounts for fresh, processed, and prepared foods present in both rural and urban areas of Uganda. Further, due to lack of street signs, geotagging photos is crucial in order to assess the availability of food on a city- and country-wide scale for targeting possible interventions. While marketing was not common, it was exclusively used for processed foods and beverages. **Conclusions:** This instrument should be further validated to as-

sess the food environment in Uganda, and perhaps modified for use in other developing countries.

791-P
Married With Children: Contributions of Diet, Physical Activity, and Neighborhood Environments to Weight Gain. The CARDIA Study

Janne Boone-Heinonen *Portland, OR*; Cora E. Lewis *Birmingham, AL*; Catarina Kiefe *Worchester, MA*; Penny Gordon-Larsen *Chapel Hill, NC*

Background: Entry into marriage and parenthood are associated with weight gain. Shifts in diet and physical activity behaviors, potentially explained in part by changes in neighborhood environments, may contribute to weight gain during these transition periods. **Methods:** We used 15 years of data from the Coronary Artery Risk Development in Young Adults (CARDIA) study (n=5,115, 18-30 years at baseline, 1985-86; 13,857 person-exam observations from 4 exams), with linked time-varying geographic information system-derived environment measures. Using regression with fixed effects for individuals, we modeled body mass index (BMI) as a function of marital status and children (<18 years) in the household, controlling for sociodemographics. We then added 1) individual-level fast food consumption, diet quality index (DQI), and physical activity; and 2) neighborhood-level fast food restaurant, supermarket, and physical activity facility availability; development density; and median household income to the model. **Results:** Compared to remaining unmarried with no children, marriage, children, and marriage & children combined were associated with 1.7 (95% CI: 1.6-2.0), 1.6 (1.4-1.8), and 2.7 (2.5-2.8) additional BMI units between exam periods, respectively. These relationships were attenuated by 3-13% after adjusting for individual-level DQI and physical activity behaviors and 38-51% after adjusting for neighborhood-level variables, but remained statistically significant. Findings were similar in men and women. **Conclusions:** Targeted approaches to addressing barriers to healthy diet and physical activity that arise with new marriage and parenthood may reduce weight gain during these critical periods. Improvements targeted to neighborhood areas with young families or designing health-promoting communities to be appealing to young families may be promising approaches.

792-P
Family and Community Predictors of Parental Support For Children's Physical Activity in Low-Income Families

Amy M. Lampard *Boston, MA*; Janine M. Jurkowski *Rensselaer, NY*; Hal A. Lawson *Albany, NY*; Karin Pfeiffer *East Lansing, MI*; Kirsten Davison *Boston, MA*

Background: Parental support for children's physical activity (PA) has been associated with increased PA in children of all ages, including preschool-aged children. Parental support behavior occurs in a social-ecological context, but little is known about the role of salient family and local community factors. This study examined parent, family and community factors associated with parental support for children's PA. **Methods:** Low-income parents (N = 131) of preschool-aged children (mean age = 3.62 years, SD = .96) were recruited from five Head Start centers. Guided by the Family Ecological Model, parents completed surveys assessing support for children's PA and relevant social-ecological factors. **Results:** Hierarchical multiple regression analysis identified independent predictors of parental support; analyses controlled for child weight status and parent leisure time PA (minutes per day). The sequential addition of parent stress variables (depression and perceived life pressures), family support, and community variables (neighborhood play safety and resource empowerment to promote PA) was associated with significant ($p < .05$) successive improvements in model adjusted R-squared. Parent-perceived life pressures and parent resource empowerment for PA (i.e., greater perceived access to resources to promote children's PA) were significant predictors of parental support in the final adjusted model. Together, social-ecological factors accounted for 39.1% of the variance in parental support beyond parent PA and child weight status. **Conclusions:** Intervention research is needed to determine whether targeting these social-ecological factors increases low income parents' support for children's PA.

793-P
Predictors of Parent Restriction of Child Screen Use: A Theory of Planned Behavior Framework

Amy M. Lampard *Boston, MA*; Janine M. Jurkowski *Rensselaer, NY*; Kaigang Li *Bethesda, MD*; Kirsten Davison *Boston, MA*

Background: Child television, DVD, video game and computer use (screen time) has been associated with increases in child body mass index over time. Importantly, parental rules regarding screen time have been associated with less child screen use, yet few parents adopt such rules. This study therefore examined parent attitudinal factors associated with parent restriction of child screen time using a theory of planned behavior framework. **Methods:** Low-income parents (N = 154) of preschool-aged children (mean age = 3.59 years, SD = 1.01) recruited from five Head Start centers in upstate New York completed self-administered questionnaires examining child screen time, parent restriction of screen time, theory of planned behavior constructs (perceived control over child screen time and perceived importance, social norms and intentions specific to restricting screen time) in addition to parent screen time and parent perceived risk of child obesity. **Results:** Path analysis results indicated that greater perceived control over child screen time, greater perceived importance of restricting child screen use, and greater perceived risk of child obesity were associated with greater restriction of child screen use, which, in turn, was associated with less child screen time. Less parent screen time was also directly associated with less child screen time. **Conclusions:** Family-based interventions that address broader attitudinal factors around child screen time may be necessary to encourage and support parents to restrict screen use and decrease child screen time.

794-P
How Should We Find Food Establishments For Longitudinal Research? A Comparison of Data Sources

Jason P. Block, A. James O'Malley, S. V. Subramanian *Boston, MA*

Background: Few studies are available to determine the accuracy of data sources used to identify food establishments, especially for longitudinal research. **Methods:** For the period 1971 to 2001, we created a longitudinal database of food establishments in the Framingham Heart Study Offspring Cohort's 4 principal towns. We gathered information on food establishments in 2007 and 2008, using 2 data sources: 1) local Boards of Health records combined with a review of historical Yellow and White Pages, and 2) a commercial database purchased from the company Dun and Bradstreet. We combined all sources to create the longitudinal database and then verified this data by conducting site visits for open establishments in 2007 and 2008 and circulating the database to the Boards of Health for final review. This database served as our gold standard, from which to calculate sensitivities of the data sources. **Results:** The final database included 158 fast-food restaurants, 218 full service, 96 bakeries, 94 convenience stores, 62 grocery stores, and 19 chain supermarkets. The sensitivity of the Board of Health/Yellow Pages/White Pages data source was 94%, 83%, 92%, 86%, 83%, and 89%, respectively for each of the food establishment types. Sensitivity was consistent across time, from Wave 1 of the cohort (1971 to 1975) to Wave 7 (1998 to 2001). The sensitivity of the Dun and Bradstreet data source was 68%, 82%, 46%, 53%, 60%, and 74%, respectively. Sensitivity improved from Wave 1 to Wave 7 for all of the food establishment types except for grocery stores. For fast-food restaurants, sensitivity improved from 38% at Wave 1 to 68% at Wave 7. However, for grocery stores, sensitivity declined from 68% to 43%. **Conclusions:** Combining Board of Health records with Yellow and White pages is a better method of identifying food establishments than a commercial data source.

795-P
The Influence of Media on Food Intake and Obesity in Young Adults - An Experimental Study

Suman Ahuja *Jefferson City, MO*; Padmini Shankar, Jody Langdon *Statesboro, GA*

Background: Obesity is a growing epidemic and while the causes of obesity are multi-factorial, the present study focuses on the influence of media on the quality and quantity of foods consumed. Research suggests that exposure to media at meal time promotes overeating, thus influencing the ability to regulate energy intake. Such research has led to recommendations for life style changes that involve lowering media consumption during mealtime.

Methods: Sixty-seven participants were randomly assigned to one of two experimental conditions, television watching (group1), and no television watching (group 2). They were provided with an unlimited supply of foods, including both low and high caloric foods. Group 1 watched television (TV) programming for 60 minutes during food consumption, while group 2 consumed food in the absence of any media exposure. **Results:** Using the groups as independent variables and BMI as the covariate, ANCOVA revealed a significant effect of TV watching on the total amount of low caloric foods consumed, $F(1, 64) = 5.55$, $p < .05$. Planned simple contrasts revealed that group 1 consumed significantly lower amounts of low caloric foods compared to group 2, $t(64) = -2.36$, $p < .05$. **Conclusions:** It has been speculated that total number of hours spent watching TV may have a direct correlation with adiposity. While most studies have reported correlations between the two variables, to the best of our knowledge, this is one of the few experimental studies suggesting that mealtime media exposure results in decreased consumption of nutrient dense foods.

796-P
Obesity and the Corporation: A New Look at Medical Consequences of Wages and Work Conditions

Maureen A. Scully, Emily J. Jones, Gerald V. Denis *Boston, MA*

Background: The link between socioeconomic status (SES) and obesity is well-established; however, SES is a byproduct of employment status, shaped by corporations. SES is often taken as an exogenous variable, but we examine the mechanisms that determine SES – specifically employment status – and how they bear upon health and obesity. **Methods:** We used meta-analysis of case studies, and the economic and sociological literature to develop hypotheses about the links between (1) obesity in families and (2) corporations as employers, not as food producers, distributors or as providers of health care benefits, which is how they have been heretofore considered in health and obesity studies. **Results:** We find that three mechanisms in particular are strongly correlated with the prevalence of childhood obesity: 1. long work hours of parents, 2. low wages of parents, and 3. inflexible or unpredictable work hours of parents. We find that structural variables, such as SES, class and poverty, are heavily defined by corporate policy in hiring and the setting of wages and contribute significantly to obesity, particularly in family settings. These variables do not represent 'behaviors' or 'choices' as traditionally understood in population science, but are predictable, structural outcomes of well-considered corporate policy and employment practices. **Conclusions:** This area of research, at the intersection of labor economics, energy balance and preventive medicine is seriously understudied, yet it likely represents a major factor that contributes to the increased prevalence of childhood obesity in the US and internationally. The role of corporations as stakeholders in public health has received insufficient attention and demands further study to develop interventions and to shape corporate policy to combat obesity.

797-P
This abstract has been withdrawn.

798-P
Garment Design For Measuring Toddler Physical Activity and Language in Child Care

Bronwyn Fees, Sherry Haar *Manhattan, KS*; Stewart G. Trost *Corvallis, OR*; Linda K. Crowe *Kearney, NE*; Ann D. Murray *Manhattan, KS*

Background: Child care environments are critical settings to prevent obesity in very young children. A comfortable and nondistractible apparel product was needed for researchers to simultaneously collect valid and reliable data on intensity of movement and child voice and language articulations in toddlers (18 to 36 months) during their typical daily routines within child care settings. **Methods:** A series of garment prototypes were developed and evaluated that housed two brands of accelerometer-based motion sensors and a digital transmitter with microphone accompanied by an accelerometer housed in a band around the child's wrist. In total 56 toddlers (35 female; 21 male; 16 to 36 months of age) participated in two pilot studies in three center-based child care programs. Each toddler wore the garment for 20 minutes during morning play providing baseline data. **Results:** The approved test garment was a sleeveless top constructed from loop fabric with extended side panels for sizeability and comfort. The design included interior pockets (two at child waist) for accelerometers and an embedded microphone at neckline and transmitter in center back. Pairwise comparisons indicated mean activity counts recorded during light intensity intervals were significantly greater than counts recorded during sedentary intervals ($p<.05$). Activity counts recorded during moderate/vigorous intervals were significantly higher than those recorded during either light or sedentary intervals ($p<.05$). Wristband data was limited thus not analyzed. **Conclusions:** The test garment is comfortable, easy to don and doff, and provides a snug fit on range of toddler body sizes. Placement of accelerometers (except wristband) provides accurate data detecting the full range of movement suggesting the garment is an effective and reliable method for data collection with toddlers in child care settings.

799-P
Influence of Household Characteristics and Food Insecurity on the Relationship Between Inflammation and Obesity in Children

Lauren Connell, Lori A. Francis *University Park, PA*

Background: Previous research indicates a link between markers of systemic inflammation and obesity in children. Evidence also suggests that systemic inflammation can result from persistent exposure to psychosocial stressors. The purpose of this study was to examine differences in the association between measures of inflammation and body mass index (BMI) in children exposed to various levels of poverty and environmental stress. **Methods:** Data were drawn from children age 2-18 who participated in the National Health and Nutrition Examination Survey (NHANES) from 2005-2008. Serum-levels of C-Reactive Protein (CRP) were used to measure inflammation, and standing height and weight was used to estimate age- and sex-specific BMI. Data collected from interviews were used to examine food security status and household crowding. Crowding was measured as the ratio of the number of people living in the household to the number of rooms in the house. **Results:** In children age 2-18 who lived in houses with more people than rooms, there was a significant, positive relationship between CRP and BMI. There was no association between CRP and BMI in children who lived in houses with more rooms than people and no significant difference in BMI across these categories. Results for child food security status demonstrated a significant association between CRP and BMI for children living in food insecure households but not for children living in food secure households. **Conclusions:** Food insecurity and household crowding are proxy measures of an unpredictable home environment and chronic exposure to stress. The results suggest that chronic exposure to a stressful environment may manifest in both metabolic and inflammatory consequences. Future research should examine factors that may mitigate the harmful effects of a stressful environment on inflammation and obesity in children.

800-P
Comparing Prices For Healthier and Less Healthy Entrees on Restaurant Children's Menus

Rebecca A. Krukowski, Delia S. West *Little Rock, AR*

Background: Children are eating restaurant foods more frequently than ever before, and research indicates that price is one of the top considerations in food choice. While there is evidence demonstrating higher prices for healthier options in grocery stores, there is little known about potential price differences for healthier entrees on children's menus compared to less healthy entrees. **Methods:** The Children's Menu Assessment tool was used to categorize and enumerate healthier and less healthy entrees on children's menus gathered from 34 full service restaurants on the Restaurants & Institutions 2009 list of top grossing restaurant chains. The mean price for the healthier entrée(s) /entrée salad within each restaurant was compared to the mean price for the less healthy entrées. **Results:** All restaurants had less healthy entrees; 74% had at least one healthier entrée/entrée salad. Of the restaurants with at least one healthier and at least one less healthy entree, restaurants had, on average, 1.84±0.80 healthier entrees and 9.00±4.63 less healthy entrees. The price of healthier entrees (M=$5.74±2.75) was not significantly different from the price of less healthy entrees (M=$5.76±2.82). There was absolutely no difference in price between healthier and less healthy entrees for 32% of restaurants because all of the children's menu entrees were available for the same price. **Conclusions:** While healthier entrée options on children's menus are limited, there does not appear to be a financial disincentive for choosing healthier entrees.

For author conflict of interest information, see page S250

801-P[DT]

Family Food Environment and Child Overweight in Low-Income Families

Karen McCurdy, Kathleen S. Gorman, Tiffani Kisler *Kingston, RI*; Elizabeth Metallinos-Katsaras *Boston, MA*

Background: This cross-sectional study explores the connections between child weight and two aspects of the family food environment: parental behaviors used to monitor and participate in children's food consumption activities, and parental strategies used to acquire household food resources. We employ a family stress perspective to examine whether maternal depression is associated with the family food environment and child weight. **Methods:** 164 low-income, preschool children and their mothers (54.9% Hispanic) were recruited from 7 day care centers and a Supplemental Nutrition Assistance Program outreach project serving two urban areas. Standard anthropometric procedures were used to weigh and measure all children. Maternal depression was measured with the CES-D, and a series of surveys were used to measure family food behaviors. Hierarchical regression was used to examine the study aims. **Results:** One-third of children had BMI percentiles that classified them as overweight (17.1%) or obese (15.9%) and 24.4% of parents had high levels of depressive symptoms. Greater maternal presence at meals was the only food consumption behavior associated with healthier child weights. Maternal control, child choice, and organization of the eating environment did not explain child weight. Of the food acquisition behaviors, less difficulty managing food, pooling food resources with others, and more frequent shopping at supermarkets were associated with a lower likelihood of child overweight. Maternal depression, while related to several family food behaviors, had weak direct effects on child weight and did not moderate the associations between family food behaviors and child weight. **Conclusions:** The findings highlight the need to utilize a broad conception of the family food environment to identify the mechanisms contributing to child overweight in low-income families.

802-P

Development of the Childhood Food Rules Scale: Psychometric Properties and Associations With Body Mass Index, Psychopathology, and Family Environment

Christina A. Roberto *New Haven, CT*; Sarah Novak *Hempstead, NY*; Vanessa Milsom, Marlene Schwartz *New Haven, CT*

Background: Little is known about the relationship between childhood food rules, body mass index (BMI) and psychopathology in adolescence. The aims of this study were to develop a scale that assesses exposure to childhood food rules (CFRS) and examine the relationship between those rules and BMI, drive for thinness, depression, and self-esteem. **Methods:** 98 adolescents recruited during visiting days at a United States University completed an online survey that included the CFRS, Center for Epidemiologic Studies Depression Scale, the Drive for Thinness Subscale of the Eating Disorders Inventory, and the Rosenberg Self-Esteem Scale. **Results:** The 13-item CFRS had acceptable internal consistency (α=.770). A factor analysis yielded 3 subscales: control (i.e., no eating in front of the TV), reinforcement (i.e., food was used as a reward for good behavior) and completion rules (i.e., you had to clean your plate). Regression analyses revealed that adolescents reporting more controlling food rules had higher BMIs (β=.553±.273, p=.046) after adjusting for gender, self-esteem, depression, drive for thinness and self-reported exercise. Adolescents reporting more reinforcement rules had higher drive for thinness scores (β=.430± .139, p=.003) and those reporting more completion rules had higher depression scores (β=1.41±.593, p=.020). **Conclusions:** Certain childhood food rules may have a negative influence on weight and depressive and eating psychopathology among adolescents. Further research is needed to understand the potential impact of childhood food rules on food intake and psychological wellbeing in the context of widespread childhood obesity and increasingly unhealthy food environments.

803-P

Do Socioeconomic Inequalities in Body Composition Equalise During Adolescence in Urban South Africa?

Paula L. Griffiths *Loughborough, United Kingdom*; William Johnson *Minneapolis, MN*; Noel Cameron *Loughborough, United Kingdom*; John M. Pettifor, Shane A. Norris *Johannesburg, South Africa*

Background: Here, we aimed to examine the relationships of household/neighborhood SES to adolescent body composition in South Africa, thereby establishing whether inequalities in risk for poor health equalise during adolescence (West's hypothesis). **Methods:** In a sub-sample of the Birth to Twenty (Bt20) cohort (n=458), household SES was assessed during infancy, and household/neighbourhood SES and BMI and fat mass (FM) and fat free mass (FFM) from dual x-ray absorptiometry were assessed at age 16 years. Birth characteristics, pubertal status at age 16 years, and maternal characteristics were also available. Linear regression analyses of the predictors of BMI, FM, and FFM were undertaken using a stepped approach, which allowed for the independent effects of infancy and age 16 years SES variables to be estimated separately. **Results:** Consistently significant (p <0.05) predictors in fully adjusted models were gender (girls had higher year 16 BMI and FM, but lower FFM than boys) and being born post term and having a mother with a higher BMI (higher year 16 BMI, FM, and FFM). Poor infancy household water facilities were associated with higher BMI and FM. Maternal education was associated with higher BMI and FM, but only before adjusting for maternal BMI. **Conclusions:** Household/neighborhood SES was only weakly associated with BMI and body composition in these South African 16 year olds, which is in contrast to earlier findings in Bt20 at 9/10 years of age. The findings of the present study, therefore, support West's hypothesis of an equalising of health inequalities in adolescence.

804-P[DT]

Association of the Retail Food Environment With Dietary Energy Density

Stephen J. Onufrak, Sohyun Park, Sophia Greer, Greg Schwartz, Linda J. Schieb *Atlanta, GA*

Background: Higher dietary energy density (ED) diets have been associated with higher caloric energy intake and weight status. Little is known regarding the influence of the community retail food environment on the energy density of diets **Methods:** We assessed dietary ED among adults using the National Health and Nutrition Examination Survey (NHANES), 2005-2008. ED was calculated using two 24-hour dietary recalls with both foods and nutritive drinks used in the calculation and adjusted using usual intake methods. Census tract retail food environment was defined using commercial data as the modified retail food environment index (mRFEI), calculated as # healthy retailers / (# healthy retailers + # less healthy retailers). We assessed mRFEI according to individual and census tract variables using chi-square tests. We tested associations between ED with mRFEI and individual and census tract variables using linear regression. **Results:** mRFEI differed by age, race, education, tract metropolitan status, % non-white population, and % population below poverty. In the adjusted model, ED was greater among younger adults, males, Blacks and Hispanics, those in lower population density tracts (1.70 kcal/g for tracts≤ 416 people/square mile vs. 1.66 for tracts >6705 people/square mile; p=0.02) and those in tracts with higher poverty (1.73 kcal/g for poverty≥20% vs. 1.69 for poverty<20%; p=0.03). Neither crude nor adjusted ED differed according to census tract mRFEI (adjusted ED=1.69 kcal/g in lowest quantile mRFEI vs. 1.70 in highest quantile; p=0.5). **Conclusions:** The mRFEI and ED differed according to individual and census tract level characteristics, however the mRFEI was not associated with ED in the general population. Interventions currently targeted at ED reduction should consider individual and census tract level variations in ED.

805-P[DT]

Influence of Social-Environmental Supports on Physical Activity and Body Mass Index in Underserved African Americans in the PATH Trial: A Mediation Analysis

Sandra M. Coulon, Dawn K. Wilson, E. R. Siceloff *Columbia, SC*

Background: African Americans have the highest rates of obesity in the US. Engaging in recommended levels of physical activity (PA) reduces risk for obesity, and social-environmental supports for PA may increase PA. This study hypothesized that PA would mediate the effects of peer social support

for PA and neighborhood walkability on body mass index (BMI), based on social cognitive theory within a bioecological framework. **Methods:** Baseline data were collected in 434 African American adults in underserved communities who were enrolled in the Positive Action for Today's Health (PATH) trial. Peer social support for PA and neighborhood walkability were measured at baseline with validated surveys. Moderate-to-vigorous PA was based on 7-day accelerometry estimates (MVPA, min/day) with 4-week histories of exercise and walking also obtained. BMI was measured using standard protocols by trained staff. **Results:** The sample was predominantly female (63%) and overweight (Mean BMI=30.9, SD=8.4). Analyses demonstrated that peer social support for PA (β=1.94, p=.07) and neighborhood walkability (β=4.05, p=.02) predicted MVPA. MVPA predicted BMI (β=-.07, p=.00) and mediated the effect of neighborhood walkability, but not peer social support for PA, on BMI (β=-.28, p=.04). Neighborhood walkability also predicted self-reported walking (β=8.05, p=.04) but not self-reported exercise. Self-reported walking predicted BMI (β=-.02, p=.01) but did not mediate the relation of neighborhood walkability and BMI. **Conclusions:** These findings suggest that peer social support for PA and neighborhood walkability may positively influence BMI by increasing MVPA by 2-4 minutes daily in underserved African American communities. Neighborhood walkability also predicted self-reported walking and may be a particularly important environmental support for PA.

806-P[DT]
Food Availability as a Determinant of Weight Gain Among Renal Transplant Recipients

Robin Bloodworth, Kenneth D. Ward *Memphis, TN*; Ann K. Cashion *Bethesda, MD*; Donna Hathaway *Memphis, TN*

Background: Weight gain following renal transplantation is a common problem for recipients, presenting significant risks and increasing the incidence of post-transplant complications and comorbidities. Several potential genetic and behavioral risk factors have been evaluated, but environmental contributors have not been explored. The aim of this study was to evaluate whether food availability, in terms of access to food sources (fast food restaurants, convenience stores, and grocery stores), has an effect on the occurrence of post-transplant obesity. **Methods:** Geographic Information Systems (GIS) technology was used to spatially map recipient residences in proximity to food sources. The quantity and ratio of each food source to total food sources was calculated for 1, 2, and 3 mile buffers around recipient residences. Multiple linear regression analyses, adjusting for age, gender, race, and latitude and longitude coordinates of recipient residences, were conducted to determine the effect of each variable on change in Body Mass Index (BMI) the first year post-transplant. **Results:** Mean BMI increased from 28.2 (SD= 5.2) to 29.4 (SD= 9.7) the first year post-transplant (p<.001), n=484. Recipients with a greater ratio of fast food restaurants within a 3 mile buffer of residence had a greater increase in BMI (r = .22, p=.024). Quantity of convenience stores within a 1 mile buffer, fast food ratio within a 2 mile buffer, and convenience store ratio within a 2 mile buffer showed similar trends (r = .18, p=.061; r = .19, p= .084; r = .20, p= and .096, respectively). **Conclusions:** While multiple factors are likely at play, our data suggest that the previously un-examined factor of environmental food availability may play a pivotal role in contributing to post-transplant obesity.

807-P
Weighting the Factors Associated With Children Obesity: An International Perspective Toward a Unified Model

Dario Gregori, Ileana Baldi *Padova, Italy*

Background: Beside genetic predisposition, several factors have been proposed to promote overweight and eventually obesity in children, from the socio- and built- environment down to behavioural attitudes. How this model is shared by different cultural settings is unclear and less investigated. **Methods:** Using a unified protocol for data collection, a cross-sectional study has been performed on 960 children in India, Italy, Germany, France, UK, Argentina, Mexico and Brazil. Children CDC z-scores for Body Mass Index have been evaluated in association with several known factors influencing overweight and obesity (maternal and neonatal aspects, socio-economic familiar status, BMI of parents, physical activity, nutrition habits, screening activities). Based on a random-effect mixed effect model and the Kullback-Leibler Entropy Measure, the capability to explain variability in BMI of such factors has been computed. **Results:** Percentages of explained variation are given in the table. India Italy Germany France UK Argentina Brazil Mexico 41.4% 46.6% 65.6% 52.3% 70.1% 62.3% 59.7% 58.2% **Conclusions:** Capability of proposed factors to capture variability in BMI is significantly higher in UK (p=0.03) than in other countries, being significantly lower in an emerging country like India (p=0.042): more intense research should be specifically targeted to capture risk factors specific for the cultural setting in addition to the general ones.

808-P
Short Sleep Duration Is Associated With Greater Alcohol Consumption in Adults

Jean-Philippe Chaput, Jessica McNeil *Ottawa, Canada*; Jean-Pierre Després *Quebec City, Canada*; Claude Bouchard *Baton Rouge, LA*; Angelo Tremblay *Quebec City, Canada*

Background: Sparse data exist on sleep duration as a correlate of alcohol consumption. The present cross-sectional study examined the association between sleep duration and alcohol consumption in adults (301 men and 402 women aged 18 to 64 years) from the greater Quebec City area. **Methods:** Sleep duration (self-reported), alcohol consumption (3-day food record and questions on drinking habits), and disinhibition eating behavior trait (score ≥6 on the Three-Factor Eating Questionnaire) were assessed. Participants were categorized as short- (≤6 h), average- (7-8 h) or long- (≥9 h) duration sleepers. **Results:** Overall, short-duration sleepers consumed significantly more alcohol than the two other sleep-duration groups. After adjusting for relevant covariates, short sleep duration was associated with an increase in the odds of exceeding the recommendations for sensible weekly alcohol intake of 14 drinks for men and 7 drinks for women compared to those sleeping between 7 and 8 hours (OR 1.87, 95% CI 1.03-3.54, both sexes combined). In both men and women, daily alcohol intake was significantly higher in short-duration sleepers having a high disinhibition eating behavior trait. However, the prevalence of a binge drinking occasion (i.e. ≥5 drinks on one occasion) was more common in men than women. Men sleeping less than 6 hours per night with a disinhibited eating behavior were more likely to report binge drinking (41% of them). **Conclusions:** The combination of short sleep duration with disinhibited eating behavior is associated with greater alcohol intake in adults.

809-P
School Lunch Consumption Among Middle School Students in Boston: Implications For Research, Nutrient Consumption, and Food Waste Costs

Juliana F. Cohen, Scott Richardson, S. Bryn Austin, Christina D. Economos, Eric Rimm *Boston, MA*

Background: School food waste can have important nutritional and cost implications for researchers, policy makers, students, and their families. The purpose of this study was to quantify the effect of school meal waste on nutrient consumption and economic costs. **Methods:** The Chef Initiative was a two year experimental pilot study of middle school students attending two intervention schools (n=1609) and two control schools (n=1440) in Boston. The percent of foods consumed was assessed using plate waste collected and compared with a gold standard of 85% consumption. Costs associated with food waste were calculated based on 2010 fiscal data. **Results:** The percent of total entrée consumed did not differ from 85% in the Chef Initiative or control schools, while significantly less than 85% of the fruits, vegetables, and milk were consumed. Overall, students consumed less than the required/recommended levels of calories, fiber, and micronutrients. Based on the average waste, an estimated $432,349.05 of food (26.1% of the food budget) was discarded by 6th - 8th grade students annually at lunch in Boston public middle schools. **Conclusions:** There is substantial food waste among middle school students in Boston. Overall, foods served were not valid proxies for foods consumed and students consumed levels of calories, fiber, vitamins, and minerals below the National School Lunch Program standards. The costs associated with discarded foods are high; if similar practices are translated nationally, an estimated $1,124,138,400 annually is wasted on foods in school lunches. Students would benefit if additional focus was given to the quality and palatability of school meals.

For author conflict of interest information, see page S250

810-P
The Effect of the Home Environment on Obesity Associated Outcomes in Young Children: Results From KAN-DO

Marissa Stroo, Truls Ostbye, Bernard F. Fuemmeler *Durham, NC*; Rahul Malhotra *Singapore, Singapore*; Rebecca Brouwer *Durham, NC*; Cheryl A. Lovelady *Greensboro, NC*; Nancy L. Zucker *Durham, NC*

Background: Childhood obesity is a growing problem. This study examines the role of aspects of the home environment related to dietary intake and physical activity in children from a community-based sample (n=193, mean age=58 months, sd=13). **Methods:** Children wore accelerometers for 4 days. Mothers reported on their child's diet using a food frequency questionnaire (FFQ) as well on the home using the Home Environment Survey (HES). Items in the HES were reduced to 3 nutrition and 4 physical activity factors using PCA. Retained factors measured family policies, role modeled behaviors, and access/availability. Two food factors were derived from the FFQ (termed healthy and junk foods) and moderate-vigorous physical activity (MVPA) and sedentary (SED) time were calculated. **Results:** In multivariate models controlling for age, gender, child's BMI, maternal education level, study arm, and monitor wear time (physical activity models only) there were significant effects for limited junk food on healthy food (beta =.20, p = 0.01) and junk food (beta =-.42, p < .0001) consumption. Maternal role modeling significantly effected junk food (beta =-.29, p < .0001). There was a significant effect of parental policies on MVPA (beta=3.2 minutes, p<.05). Interaction models examining the effect of gender indicated significant effects of parental policies on MVPA for boys but not girls (p for interaction < .01). **Conclusions:** To promote healthy behavior in young children, strategies emphasizing parental behavior and the set-up of the home environment are warranted. Parental role modeling may be beneficial in reducing junk food consumption and sedentary time. Limiting junk food in the home may both increase the amount of healthy food and decrease the amount of junk food eaten. Parenting strategies may affect boys and girls differently.

811-P
Assessing Barriers and Facilitators to Healthy Eating and Physical Activity Behaviors in a Low-Income, Minority Community, Using Photovoice: Preliminary Findings

Jonathan W. Decker *Orlando, FL*

Background: Community based participatory research (CBPR) techniques, such as Photovoice, serve the purpose of involving members within a community as active participants in a research project. Photovoice, first reported in the literature in 1997, is a CBPR method using photographs taken by the participants to describe the issue of concern, such as barriers and facilitators, within a community. Photovoice has been used to great effect in many different populations, locations, settings, and health or lifestyle issues. The purpose is to present the preliminary findings from an ongoing study to describe the community barriers and facilitators that parents, in a low-socioeconomic minority community, perceive to engaging their young children (6-11 years) in physical activity and healthy dietary behaviors. **Methods:** A purposeful sample of 7 – 10 participants will be asked to take photographs answering several specific questions about their community. Once the photography assignment is completed, they will be asked to participate in individual and group meetings to discuss their photographs and develop a consensus among the community members. **Results:** Preliminary findings of salient themes that emerge will be shown. Additionally, any difficulties encountered in the research process or recommendations for future use will be presented. **Conclusions:** Photovoice provides a robust and powerful method for conducting a needs assessment within a community, from the perspective of community members. It also can be an effective tool for advocacy within a community. The findings presented illustrate the utility of the Photovoice method.

812-P
Parents' Perceptions of Residential Neighborhood, Children's Sedentary Behaviors, and Outdoor Play in School Children

Cristina Padez, Maria Miguel Ferrão *Coimbra, Portugal*; Augusta Gama *Lisboa, Portugal*; Isabel Mourão *Vila Real, Portugal*; Helena Nogueira *Coimbra, Portugal*; Vitor Marques *Lisboa, Portugal*

Background: Recent studies have pointed to associations between parental perceptions of neighborhood advantage or disadvantage and their children's health. This study investigates the links between parents' perceptions of their social and built residential environment and overweight/obesity among Portuguese school boys and girls. **Methods:** A cross-sectional study of children 3.0–10.0 years old was performed between March 2009 and July 2010. 952 girls and 933 boys living in Coimbra were observed; children's weight and height were measured and their parents filled out the "Environmental Module" standard questionnaire of the International Physical Activity Prevalence Study (IPS, 2002). Age and sex-specific BMI cut-off points, defined by IOTF, were used to define overweigh/obesity. Environmental characteristics were combined into two neighborhood dimensions, which were used as predictors in logistic regression models. **Results:** Girls had higher values for overweight and obesity than boys. Parental perceptions of both the social and built neighborhood dimensions were significantly associated with girls' obesity. The odds of being obese increase with negative perceptions of the physical environment (OR = 1.47; p<0.005) and perceptions of an unsafe, dangerous environment (OR = 1.339; p<0.005). These relations were not evident for boys. **Conclusions:** It is possible to revert and control the prevalence of childhood obesity via environmental interventions addressing the built environment – improving urban design and promoting mixed land uses – as well as the social environment, especially, safety. Furthermore, the increased environmental susceptibility found in girls makes those potential interventions even more relevant, given the patterns of higher prevalence of obesity in girls.

813-P
School Social Cohesion Is Associated With Lower Body Mass Index in Teens in the National Longitudinal Study of Adolescent Health

Tracy K. Richmond, Courtney E. Walls, Ichiro Kawachi *Boston, MA*

Background: Neighborhood social cohesion has been found to be protective against obesity. Little is known about the impact of school social cohesion on Body Mass Index (BMI). **Methods:** Analyzing data from a nationally representative sample of adolescents in grades 7-12 (n=13,818), we used principal components analysis to define three school social cohesion factors: 'closeness' (feel part of school, feel safe in school, feel close to people in school), 'treatment' (get along with teachers, get along with students, teachers treat students fairly), and 'involvement' (school administrator reported percent of families participating in Parent Teacher Organization (PTO), parent self-reported PTO participation, average daily school attendance). We examined the individual- and school-level social cohesion variables' association with individual student BMI as a continuous outcome using multi-level modeling techniques to account for student clustering. **Results:** In models adjusting for age and gender and examining each school-level social cohesion variable separately, we found inverse associations between each school-level social cohesion variable and BMI ('closeness' beta=-0.42, p=0.002; 'treatment' beta=-0.36, p=0.036; 'involvement' beta=-1.30, p<0.001). In our model controlling for all three individual- and school-level social cohesion variables as well as age, race/ethnicity, school-level household income, and school-level parental education, school-level 'involvement' had a moderate (beta=-0.86, p=0.01) and individual-level 'treatment' a modest (beta=-0.052, p=0.027) inverse association with BMI. The remaining individual- and school-level social cohesion variables were not significantly associated with BMI. **Conclusions:** Our findings suggest enhancing school social cohesion as a novel approach to addressing student obesity.

814-P
Associations Between Child's and Parental Obesity Status and Neighborhood Food Store Environment

Hsin-Jen Chen *Baltimore, MD*; James B. Kirby, Lan Liang *Rockville, MD*; Youfa Wang *Baltimore, MD*

Background: To examine associations between neighborhood food stores and children and parents' weight status in the US. **Methods:** Data came from the national cross-sectional Medical Expenditure Panel Survey (MEPS) from 2002 to 2008, including 29832 children aged 6-17 y and their parents (n=48398). Child's weight and height were reported by household head and converted into BMI-for-age percentile based on the 2000 CDC Growth Charts; obesity was defined as ≥95th percentile. Parent's obesity: BMI≥30, based on self-reported weight and height. Zip code Business Pattern (ZBP) provided local food environment data of the same years. We identified 4 types of food establishments: convenience stores, carryout restaurants, small-

size grocery stores, and supermarkets. Number of the stores in a Zip code area was categorized into 0-1, 2-5, ≥6, while supermarket was dichotomized into presence/absence. Data were linked via Zip code of home residence. **Results:** After adjusting for child's and parental demographic characteristics and family socioeconomic status, logistic regression models showed children living in neighborhoods of 2-5 and ≥6 convenience stores were more likely to be obese (odds ratios (OR)=1.15 (95% CI: 1.01-1.30) and 1.13 (0.94-1.37), respectively), compared to those living in areas of 0-1 convenience store. Similar pattern was found in the association between convenience stores and parental higher odds of being obese (ORs= 1.12 (1.04-1.21) and 1.10 (0.98-1.24), respectively.) Convenience store became insignificantly associated with child obesity after adjusting for parental weight status; while presence of supermarket remained preventive to childhood obesity, OR=0.83 (0.71-0.98). Child's obesity was associated with mothers' weight status more strongly than with fathers', OR=3.11 v. 1.99. **Conclusions:** Local community food environment affects child and adult obesity.

815-P
Correlation of Environmental Food Outlets and County Health Rankings in Mississippi

Sarah Beth Slinkard, Ronald D. Williams, Barry P. Hunt, Ali Fratesi, Chiquita A. Briley, Diane K. Tidwell *Mississippi State, MS*

Background: Mississippi consistently ranks as one of the unhealthiest states in the U.S. with high rates of obesity and diabetes. Research has indicated a relationship between dietary behaviors and environmental food access outlets. The purpose of this study was to examine the relationship between food access outlets and county health rankings in Mississippi. **Methods:** This study utilized secondary data from the U.S. Department of Agriculture (USDA) and the Population Health Institute's county health rankings. Indicators of food outlets were downloaded from the USDA's Food Environmental Atlas for all 82 Mississippi counties. Food outlet measures included frequencies of grocery stores, specialized food stores, convenience stores, gas stations, SNAP retailers, and restaurants. Bivariate correlations were used to examine relationships between these outlets and the Mississippi county health rankings. **Results:** County health rankings were significantly correlated to adult obesity (r=.536; p<.001) and diabetes (r=.601; p<.001) rates. Inverse relationships were observed between health ranking and number of fast food outlets (r=-.400; p<.001), full service restaurants (r=-.329; p=.003), gas stations (r=-.268; p=.016), and specialized food stores (r=-.255; p=.022). No significant relationship existed between the health ranking and number of grocery stores, SNAP retailers, or convenience stores without gas. **Conclusions:** Overall health rankings of Mississippi counties are inversely proportionate to the number of food outlets considered to provide unhealthy food options particularly gas stations, fast food, and full service restaurants. Environmental support for healthful food alternatives is essential to improve overall health outcomes of Mississippi residents.

816-P
Community Mapping and Assessment of Obesity Prevention Resources

Ali Fratesi, Ronald D. Williams, Barry P. Hunt, Sarah Beth Slinkard, Kathleen Ragsdale, Chiquita A. Briley, Diane K. Tidwell, Lynn Burney *Mississippi State, MS*

Background: Approximately 33% of the general population and 14% of children in the state of Mississippi are considered obese. Additionally, one third of children in Oktibbeha County live in poverty. Given the statistical associations among obesity, low income status, and access to healthy foods and other resources, it is imperative to accurately assess environmental barriers to healthy food choices and exercise behaviors. **Methods:** The purpose of this study was to map community resources associated with access to healthy foods and other environmental supports for healthy behaviors to inform obesity prevention strategies among children and other community members in Starkville, Mississippi. Researchers used access mapping to note how the physical locations of fresh produce merchants, fitness facilities, and recreational areas correlated to high-density population zones (HDPZ). **Results:** Of the 13 HDPZ, eight fall outside of a one-mile radius of a fresh produce merchant, while four HDPZ fall outside of a two-mile radius. Similarly, there existed no fitness facility within one mile of five HDPZ and no fitness facility within two miles of two HDPZ. Examination of recreational areas revealed four HDPZ were outside a one-mile radius, while two HDPZ were outside a two-mile radius. **Conclusions:** Populations with limited access to healthy food choices and/or safe recreational facilities are more likely to exhibit unhealthy eating behaviors and higher rates of sedentary lifestyles. Results suggest that development of adequate environmental supports should be a priority item in order to facilitate access to primary preventive resources to reduce incidence and prevalence of obesity.

Friday, September 21, 2012
Posters on Display: 6:00 PM – 7:30 PM
Location: Exhibit Hall C

Population Health and Policy — Other

817-P[DT]
Documentation and Diagnosis of Overweight and Obesity in Electronic Health Records of Adult Primary Care Patients

Heather J. Baer, Andrew S. Karson, Jane R. Soukup, David W. Bates *Boston, MA*

Background: Documentation of body mass index (BMI) has become part of pay-for-performance measures and rules for meaningful use of electronic health records (EHRs), but few studies have examined rates of BMI documentation and diagnosis of overweight and obesity in EHRs. **Methods:** We conducted a retrospective analysis of EHR data from adult patients who had at least two visits with the same clinician between 2004 and 2008 at one of 25 primary care practices within Partners HealthCare, a large academic care network in Boston, Massachusetts. **Results:** Among the 219,356 patients who were included, 144,522 (65.9%) had a recorded BMI in their record. Of patients with a recorded BMI, 68.3% had at least one BMI ≥ 25 kg/m2, and 34.4% had at least one BMI ≥ 30 kg/m2. Among patients with BMI ≥ 25 or BMI ≥ 30, 17.1% and 30.1%, respectively, had a diagnosis of overweight or obesity on their problem list. In multivariate regression models accounting for clustering by clinician and practice, patients who were female, had more visits, and had a greater number of comorbidities were more likely to have a recorded BMI, whereas older patients and those who did not have private insurance were less likely to have a recorded BMI ($p < 0.0001$). Among patients with BMI ≥ 25, patients who were female, had a greater number of comorbidities, and had higher BMI were more likely to have a diagnosis of overweight or obesity, and older patients were less likely to have a diagnosis ($p < 0.0001$). **Conclusions:** These findings indicate that a large proportion of primary care patients lack documentation of BMI or a diagnosis of overweight or obesity in the EHR, even among those who have had multiple visits with the same clinician. Further research should focus on interventions to improve documentation and diagnosis of overweight and obesity in the primary care setting.

818-P
Sensitivity and Specificity of Obesity Diagnosis in Pediatric Ambulatory Care in the United States

Carolyn Walsh, Carly Milliren, Henry Feldman, Elsie M. Taveras *Boston, MA*

Background: Diagnosis of pediatric obesity (BMI ≥ 95th percentile) is complicated by the reliance on age- and gender-specific percentiles. We examined the sensitivity and specificity of an obesity diagnosis in a nationally representative sample of pediatric ambulatory care visits in the United States. **Methods:** We used the National Ambulatory Medical Care and National Hospital Ambulatory Medical Care surveys (years 2005 to 2009) which provide visit-level data including demographics, diagnosis, reason for visit, and anthropometric data in outpatient clinic settings nationwide. We determined three methods of identifying a pediatric patient as obese: documented ICD-9 codes V85.54 "BMI, pediatric, ≥ 95th percentile for age," 278.00 "Obesity, unspecified," or 278.01 "Obesity, morbid;" by mapping documented height and weight to age- and gender-specific percentiles; and by a positive answer to the survey question, "Regardless of the diagnoses written… does the patient now have obesity?" Using BMI macro as the gold standard, we calculated the sensitivity and specificity of a diagnosis of obesity by ICD-9 code and/or a positive response to the survey question. **Results:** The prevalence of obesity in visits with children ages 6-18, diagnosed by at least one of the three methods, was 10.2% in the entire population and 20.3% among visits with documented BMI. The sensitivity of an obesity diagnosis in this population was 0.2, while the specificity was 0.99. **Conclusions:** The sensitivity of obesity diagnosis in children is low, meaning there are many obese children

who are not identified by their providers. Specificity is high, meaning few children are diagnosed without meeting BMI criteria. Possible interventions to increase identification of obese children include provider education and flagging systems in electronic health records.

819-P[DT]

Standardized Assessment of Overweight and Obesity in 1st – 6th Graders in Low-Income, Urban Schools

Tara Alexis McCoy, Maurice A. Denton, Meghan L. Duffy, Heather R. Wilson, Stephanie S. Vander Veur, Giridhar Mallya, Gary Foster
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Background: Height & weight measurements conducted in public schools utilize variable methods and equipment. The purpose of this study was to systematically collect height and weight measurements in low-income, urban schools. **Methods:** Study staff were trained using a standardized protocol to collect height and weight using the Perspective Enterprises PE-AIM-101 stadiometer and the SECA Alpha 882 and SECA Large Capacity 634 electronic scales. Participants were assessed wearing indoor clothes and without shoes. Measures were taken twice (weight to the nearest 0.2kg and height to the nearest 1 cm). Hair height was measured from the base of the scalp to the head of the stadiometer and the difference between measured height and hair height was calculated to account for variable hairstyles. Schools (n=56) enrolled in the evaluation had to be located within zip code regions with the highest percentage of households with income below 200% of the poverty level. **Results:** Participants (n=18,397) were 1st-6th graders (52.1% male) with a mean age 9.7±1.8 and a BMI-z score of 0.72±1.82. Most were African American (65.4%) followed by Hispanic/Latino (17.2%), White (6.6%), Asian (6.7%), Native American (0.1%), and Other (3.9%). More than one third of the sample was overweight (16.7%) or obese (23%). Nearly 60% (58.7%) were healthy weight, and < 2% (1.6%) were underweight. Of the 23% who were obese, 7% were above the 99th percentile. Almost half of the Latino children (46%) were either overweight or obese in comparison to 41% of African American children, 41% of White children, and 38% of Asian children. **Conclusions:** These well-standardized assessments suggest that children in low-income, urban schools have higher rates of obesity than the national average and that Latino children may be at highest risk.

820-P

The Risk of Obesity By Assessing Infant Growth Against the UK-WHO Charts

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Background: The new growth charts in the UK, the UK-WHO charts, comprise prescriptive data from the WHO standard between two weeks and four years of age. Here, we investigate infant growth trajectories and traits indicative of childhood obesity using the UK-WHO charts. **Methods:** Mixed effects models were applied to serial weight and length data from 2181 infants (1187 White; 994 Pakistani) to produce curves from 10 days to 15 months of age. Individual monthly estimates were converted to Z-scores. The relative risks (RR) of traits indicative of childhood obesity, including high BMI and rapid weight gain, using the UK-WHO charts compared to the previously used UK90 reference were calculated. **Results:** Both ethnic groups demonstrated patterns of growth similar to the UK-WHO charts in length but not in weight. The resulting pattern for BMI was remarkable, with an average gain of 1.0 Z-score between two and 12 months of age. The UK-WHO charts were significantly ($p < 0.05$) more likely to classify BMI above the 91st centile after age six months (RR 1.427-2.151) and weight and BMI gain between birth (one month for BMI) and 12 months of age greater than two centile bands (RR 1.214 and 1.470, respectively). **Conclusions:** The change to the UK-WHO charts means that normal UK infants risk being diagnosed as being on a trajectory toward childhood obesity. The new charts do not allow a focused prevention effort; research is therefore needed to develop a large scale programme which could ideally be integrated with infant growth monitoring practice.

821-P

The Impact of Primary Care Weight Advice

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Background: Direct recognition of patient weight may be an important step to motivate patients to lose weight. Few have examined the impact of physicians explicitly stating that patients are overweight on patient weight loss. The objective of this study is to examine the association of patient recall of doctors' recognition of patients' overweight status with patient-reported weight loss by comparing 2005-2008 data from the National Health and Nutrition Examination Survey (NHANES). **Methods:** We analyzed 5211 non-pregnant overweight and obese (BMI ≥ 25) participants aged 20 to 64 years who had responded to the question, "Has a doctor or other health professional ever told you that you were overweight?" The main outcome measure was the proportion of participants who lost at least 5% of their body weight in the past year. Bivariate relationships by BMI category were evaluated using chi square tests between participants who had and had not been told by a doctor that they were overweight, demographic characteristics and weight loss. A logistic regression was performed to determine the odds of losing at least 5% weight. **Results:** Overweight and obese participants that recalled that their doctor told them they were overweight were significantly more likely to report a 5% loss of weight in the past year (overweight: adjusted OR 2.08; 95% CI 1.62-2.66; obese: adjusted OR 1.81; 95% CI 1.34-2.44) and a 10% loss of body (overweight: adjusted OR 2.81; 95% CI 1.93-4.06; obese: adjusted OR 2.27; 95% CI 1.31-3.94). **Conclusions:** Patient recall of physicians' recognition of their weight status is associated with patient reported weight loss. Specifically, overweight and obese individuals have almost two times the odds of reporting a 5% loss of weight in the past year. This suggests that physician acknowledgement of weight status may have a measurable impact on weight.

822-P

The Epidemiology of Weight Counseling in the United States: A Case of Positive Deviance

Chris Sciamanna, Jennifer L. Kraschnewski *Hershey, PA*; Kathryn Pollak *Durham, NC*; Nancy E. Sherwood *Minneapolis, MN*

Background: Primary care providers (PCPs) rarely counsel about weight, despite NIH recommendations. Many have examined the rate of weight counseling using visit-based data from NAMCS. The objective of this study was to measure the frequency and identify characteristics of patients who are seen by "positive deviant" PCPs who engage in higher rates of weight counseling. Positive deviance (PD) is an approach to studying characteristics of people who achieve unusual success. **Methods:** Using data from 2007-2008 NAMCS, we performed a cross-sectional study of 21,220 U.S. adult outpatient visits with 954 PCPs. Rate of counseling per PCP was determined (# of visits with weight counseling/total # of visits per PCP). PD PCPs were those who performed higher levels of weight counseling and, as a group, provided half of all weight counseling by PCPs. Chi-square and analysis of variance were used to compare visits to PD and non-PD PCPs, and logistic regression was used to determine the association between visits and receipt of weight counseling, adjusting for covariates. **Results:** Most (58%) PCPs performed no weight counseling during patient visits. Eighty-five (8.9%) PCPs provided 52% of all weight counseling and were categorized as PD physicians. Patients seeing PD physicians were older, more likely to be male and to have hypertension, diabetes, and obesity. After adjusting for patient characteristics, strengthened status was strongly associated with receipt of weight counseling during visits [adjusted OR = 13.2 (95% CI; 11.5-15.7)]. **Conclusions:** A minority of PCPs, who are PDs, provide the majority of primary care weight counseling in the US. Studies of these PCPs may help to identify practical methods to increase weight counseling in primary care settings.

823-P

This abstract has been withdrawn.

824-P[DT]

Expectations For Weight Loss and Willingness to Accept Risk Among Patients Seeking Weight Loss Surgery

Christina C. Wee, Mary Beth Hamel, Caroline Apovian, George L. Blackburn, Dragana Bolcic-Jankovic, Mary Ellen Colten, Donald T. Hess, Karen W. Huskey, Edward R. Marcantonio, Benjamin Schneider, Daniel B. Jones *Boston, MA*

Background: Weight loss surgery (WLS) can produce long-term weight loss but is neither risk-free nor universally effective. Little is known about weight loss expectations and willingness to undergo peri-operative risk among patients(pts) seeking WLS. **Methods:** We interviewed 654 pts seeking WLS (75% response rate) about their perceptions, expectations, and willingness to accept mortality risk to undergo WLS. We conducted multivariable analyses to examine pt characteristics associated with having unrealistic weight loss expectations (disappointed with a sustained weight loss of 20%) and being willing to accept mortality risks of >10%. **Results:** On average, pts expected to lose up to 38% of their weight from WLS, and would be disappointed if they did not lose at least 26%. The majority (85%) were willing to take some risk of dying to undergo WLS but only 58% were willing to undergo a hypothetical treatment that produced a 20% weight loss. The mean acceptable mortality risk to undergo WLS was 6.7% but the median risk was 0.1%; 20% of pts were willing to accept >10% risk. Women were more likely than men to be disappointed with a sustained weight loss of 20% but less likely to accept >10% mortality risk. After initial adjustment, Caucasian compared to Black Americans and those with lower quality of life were significantly more likely to have unrealistic expectations and were more willing to accept high risk. Pts who perceive needing to lose more than 10% and 20% of weight to achieve "any" health benefits were also more likely to have unrealistic weight loss expectations. **Conclusions:** The majority of pts seeking WLS would be disappointed with a sustained weight loss of 20% after WLS and have misperceptions about how much weight they need to lose to derive any health benefits. Educational efforts may be necessary to align expectations with clinical reality.

825-P[DT]

Race and Weight Loss One Year After Weight Loss Surgery

Christina C. Wee, Daniel B. Jones, George L. Blackburn, Roger Davis, Donald T. Hess, Karen W. Huskey, Caroline Apovian *Boston, MA*

Background: While weight loss surgery (WLS) is one of few treatments that produce substantial and sustained weight loss, it is neither universally effective nor risk free. Limited evidence suggests that weight loss may vary by race with Black patients (pts) losing less weight than Caucasian pts. **Methods:** We studied 654 pts seeking WLS at 2 centers (75% response rate) as part of the Assessment of Bariatric Surgery (ABS) Study. We systematically collected detailed clinical and behavioral data via telephone before and after WLS. We conducted interim multivariable analyses to examine the association between demographic factors and weight loss at 1-year post-WLS on the first 371 pts (of 538 who proceeded with WLS) who completed our 1-year post-op interview (72% retention). **Results:** Of 371 pts, the mean age was 45 years, the mean BMI was 46, 75% were women, 70% were Caucasian, 17% were Black and 9% were Hispanic; 53% underwent Roux-en-Y Gastric Bypass (RYGB) and 46% underwent Laparoscopic Gastric Banding (LAGB). At 1 year post-WLS, patients lost a mean of 26% of baseline weight (33% for RYGB, 18% for LAGB). After adjustment for baseline BMI, education, recruitment site, and surgery type, both Black and Hispanic pts reported significantly less weight loss than Caucasians; the absolute differences were 5% (95% CI 2.4-7.4%) and 4% (95% CI 1.0-7.2%) of initial weight, respectively. Weight loss did not vary by sex but increased with age. **Conclusions:** Black and Hispanic patients appear to lose less weight than Caucasian pts 1 year after WLS even after accounting for baseline differences and potential confounders. Future studies should examine whether these differences persist over the long-term and identify factors underlying lower weight loss in racial and ethnic minorities.

826-P[DT]

Preferences For Weight Loss Surgery Among Primary Care Patients: The Influence of Race and Physician Recommendation

Christina C. Wee, Karen W. Huskey, Dragana Bolcic-Jankovic, Mary Ellen Colten, Roger Davis, Mary Beth Hamel *Boston, MA*

Background: Weight loss surgery (WLS) is one of few treatments that produce substantial and sustained weight loss. Nevertheless, only 1% of medically-eligible patients (pts) proceed with WLS and its use is disproportionately low among Black/African Americans (AAs) and the socioeconomically disadvantaged. **Methods:** We conducted a telephone survey (in English and Spanish) of 341 WLS-eligible patients recruited from 4 socio-demographically diverse primary care practices in Boston (58% response rate). We elicited pts' perceptions/preferences for WLS and characterized potential factors that might contribute to variation in preferences. **Results:** Our sample had a mean age of 49 years and mean BMI of 41; 68% were women, 50% were White, 35% were AA, and 10% were Hispanic. The vast majority (n=329) had heard of WLS and 1/3 of these patients reported having seriously considered WLS. Only 20% reported that their doctor ever recommended WLS; this rate was significantly lower for men (15%) than women (22%) and for AAs (17%) than Whites (23%). AAs were significantly less likely to consider WLS after adjustment for age, sex, BMI and health status, OR 0.5 (95%CI 0.3-0.8). Differences by race were attenuated after accounting for education and income, 0.8 (0.5-1.4) and completely dissipated after adjusting for differences in physician recommendation of WLS, 1.0 (0.6-1.80). Interestingly, half of all patients would consider undergoing WLS if their doctor recommended it. Perceived risk of WLS was a major deterrent for pts; financial concerns and insurance coverage were not. **Conclusions:** One third of WLS-eligible primary care pts reported having seriously considered WLS, and one half of all pts would consider WLS if recommended by their doctor. Decreased interest among AAs for WLS appears in part to reflect racial differences in physician recommendation for WLS.

827-P

Longitudinal Stability in Night Eating Syndrome Criteria Among Quality Cohort Adults

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Background: The Night Eating Syndrome (NES) is associated with obesity and psychological morbidity. To date, no published studies have examined stability in NES criteria over time. This study aims to examine stability in the NES criteria across time in a population-based cohort of adults. **Methods:** 243 men and 275 women participating in the QUALITY study completed the Night Eating Questionnaire (NEQ) at two time points: phase 1 (2005 – 2008) and phase 2 (2008 – 2011). Anthropometrics were measured using standard methods. Proposed diagnostic criteria (Allison et al., 2010) were measured in the NEQ. Descriptive statistics were used to examine stability in the diagnostic criteria between the two phases. **Results:** NEQ scores were statistically lower in both men and women in phase 2 compared to phase 1 ($p < 0.0001$). For both men and women, the most stable NES criteria was the evening hyperphagia/nocturnal ingestion criteria (> 80% met the criteria at phase 1 and 2). The highest proportion of overall instability in NES criteria was in the depressed mood criteria (> 45% total change). There was a trend for a relationship between baseline body mass index (BMI) and waist circumference (WC) and residual change in the NEQ score ($p < 0.10$) in men only, such that baseline BMI and WC were related to the NES insomnia criterion ($p < 0.05$). Baseline BMI and WC were related to changes in strong urges to eat in the evening/at night in women ($p < 0.05$). The one woman who met full NES criteria at phase 1 did not meet full NES criteria at phase 2, because she was no longer distressed by her symptoms. **Conclusions:** The evening hyperphagia/night eating criterion is stable across time; the depression criterion is not stable. Higher initial BMI and WC may predict gender-dependent NES symptoms such as insomnia in men and evening/night appetite in women.

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828-P
Wisconsin Farm to School Evaluation: Fruit and Vegetable Access Improved Over One Year of Farm to School Implementation

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Background: Farm to School (F2S), a national program, pairs healthy eating with agriculture and nutrition education to encourage healthy lifestyles, and decrease obesity risk. Objectives of this study include assessing student attitudes, behaviors, and health indicator outcomes in the context of program activities. **Methods:** Eight WI F2S schools participated in a photographic analysis of school lunch trays for four days at baseline and follow-up. Numbered trays enabled pre/post-meal pairing. Trays were assessed for the number of different fruit and vegetable (FV) items, cups of FV, and cups consumed. Analysis compared pre/post differences, by schools' length of F2S experience and program intensity (number of activities). **Results:** At baseline, 2,214 trays showed (mean ± SD) 1.4±0.9 different FV totaling 0.53±0.43 cups, and 0.37±0.36 cups FV consumed. At follow-up, 2,139 trays showed increases in FV items but not cups of FV on trays or consumed. Trays from schools with 1 or ≥2 prior years of F2S program exposure showed increased FV items (+0.31±0.76 and +0.10±0.98, respectively). At baseline, 34% of new-site trays contained no FV and 39% showed no FV consumption; trays from sites with ≥2 prior years of exposure 15% contained no FV items and 22% showed no consumption; all values decreased at follow-up. Program intensity showed similar trends: trays at high- (versus low-) intensity sites showed more FV items and consumption. In 144 obese students there were increases in FV cups on and consumed from trays. **Conclusions:** FV access increased among students participating in F2S programs. Increased access was positively related to F2S program years and intensity.

829-P
Reduced Lung Function Associated Wth Child Obesity in a Nationally Representative Sample

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Background: Previous research has shown a positive relationship between obesity and asthma in children. However, no previous research has examined the relationship between spirometry and obesity in children for a sample representative of the US, or of differences in lung function by obesity for children with and without asthma. **Methods:** We used National Health and Nutrition Examination Survey, 2007-2010, in which 3079 children aged 8-17 completed spirometry testing. We used age, sex, height, and race-specific predicted values from Hankinson to calculate percent of predicted values for forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV1), and FEV1/FVC ratio. We classified asthma history using parent report. We used Wald tests adjusted for the complex survey design to examine differences in mean values between each overweight category compared to healthy weight. Analyses were weighted to represent the US population. **Results:** Healthy weight children had lower percent predicted FVC (all $p<0.001$) and FEV1 (all $p<0.05$) than very obese, obese, or overweight children. However, the ratio of FEV1/FVC showed a dose-dependent effect by obesity status (all $p<0.001$, compared to healthy weight): 82.0 for very obese, 84.1 for obese, 85.4 for overweight, and 86.8 for healthy weight. The pattern of effect was similar regardless of whether children had ever had asthma or not. **Conclusions:** Even though all mean spirometry percent predicted values are "normal", more severe obesity is associated with lower FEV1/FVC ratio in a large, nationally representative sample of children. FVC was greater with greater obesity, as seen in previous research. Although differences are small, future research should consider mechanisms by which obesity may affect lung function, and whether this plays a role in overweight and obese children's differing physical activity patterns.

830-P
Longitudinal Relationships of Maternal Body Weight Up to 2 Years Postpartum With Psychosocial, Behavioral and Sociodemographic Factors

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Background: Some women experience sustained increases in BMI after pregnancy. However, few studies have examined maternal body weight longitudinally past the immediate postpartum period. This study examined the relative contribution of behavioral, psychosocial and sociodemographic factors to maternal body weight from early pregnancy to 2y postpartum. **Methods:** Mothers (n=413) were weighed and completed questionnaires during pregnancy and at 1y and 2y postpartum; additional data were abstracted from medical records. Longitudinal relationships of maternal body weight with behavioral (breastfeeding, smoking), psychosocial (body image, self-efficacy of weight control self-efficacy, healthy eating, and exercise) and sociodemographic (education, marital status, parity, income) factors were examined using multi-level mixed effects linear regression accounting for correlation between repeated measures. Analyses adjusted for time, early pregnancy body weight and maternal height. **Results:** Thirty-five (11%) women became overweight or obese between early pregnancy and 2y, and 226 (55%) returned to early pregnancy weight or below by 2y. Repeated assessments of psychosocial factors were highly correlated ($p<0.0015$). In the longitudinal regression, parity ($\beta=-3.9$,$p<0.001$), low-income ($\beta=2.5$,$p=0.02$), smoking ($\beta=-2.5$,$p=0.02$), increased weight control self-efficacy ($\beta=-1.8$,$p<0.001$) and more favorable body image ($\beta=-3.2$,$p<0.001$) were significantly related to maternal body weight. Body weight was not related to education, marital status, breastfeeding, or self-efficacy of healthy eating or exercise. **Conclusions:** Relationships of maternal body weight with parity, income and smoking were in the expected directions. These findings extend previous research by demonstrating significant relationships between weight-specific psychosocial factors and maternal body weight up to 2y postpartum.

831-P[DT]
Determinants of Neonatal Body Adiposity Assessed By Dual Energy X-ray Absorptiometry

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Background: Neonatal adiposity may be determined by in utero adverse exposures and can have long-term consequences for the development of childhood overweight. Therefore this analysis was conducted to identify maternal factors associated with neonatal adiposity. **Methods:** 270 newborns of nulliparous women from one site (Memphis, TN) of the Calcium for Preeclampsia Prevention trial (1993-1995) underwent a DEXA scan from which fat and lean mass were measured. 22 babies were excluded from analysis due to measurement taken beyond 7 days after birth or due to missing information. Gestational hyperglycemia was defined as having 1 or 2 high values at oral glucose tolerance test by ADA 1997 criteria. Preeclampsia (PE) was defined as pregnancy associated hypertension with proteinuria. Maternal weight and height were measured at baseline before 21 weeks (mean 15 weeks) and over multiple clinic visits in the 2nd and 3rd trimester. **Results:** 88% of the women were African American. Mean maternal age, BMI, and offspring birth weight, length and % body fat were 19.5 years, 26 kg/m2, 3040g, 48cm, and 15%, respectively. 35% had PE or isolated hypertension and 4% (n=9) had gestational hyperglycemia. Neonatal % body fat was significantly associated with maternal age (+0.12% per year), white race (+1.3%), female gender (+2.1%), gestational age (+0.11% per day), rate of mid to late gestational weight gain (+1.4% per lb increase) and gestational hyperglycemia (+2.0%) in multiple linear regression models mutually adjusting for each factor. Maternal smoking, early pregnancy BMI, PE, and gestational hypertension were not significantly associated with neonatal lean or fat mass. **Conclusions:** Neonatal % body fat was increased by exposure to hyperglycemia and independently from higher rate of gestational weight gain but did not differ by preeclampsia or gestational hypertension.

832-P[DT]
Does Obesity Associate With Mortality Rate Among Hispanic Adults? Results From Multiple Epidemiologic Datasets

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Background: Overweight and obesity are more prevalent among Hispanic than among non-Hispanic persons. However, knowledge of the association between body mass index (BMI) and mortality rate (MR) is based primarily on analyses of European-American and African-American samples. Hence, we evaluated the BMI and MR association among Hispanic adults. **Methods:** We analyzed 5 datasets (total N=16,798) with measured BMI by fitting separate Cox regression models to three attained age strata (18 to <60, 60 to <70, ≥70 years) within each dataset. Per age stratum, weighted estimates were computed by combining hazard ratios (HRs) across these datasets. We separately estimated HRs for attained age strata 18 to <60 and ≥60 years from the self-reported BMI of the 1997-2004 National Health Interview Surveys (NHIS) (N=38,810). All the analyses included sex and smoking status as covariates. **Results:** Weighted HRs from datasets with measured BMI indicate that overweight (BMI 25 to <30) was associated with reduced MR among attained age strata 18 to <60 and ≥70 years (HR's=0.73; 95% confidence interval [CI], 0.58-0.93 and 0.88; 95% CI, 0.81-0.92), respectively. Grade 2-3 obesity (BMI ≥ 35) was associated with reduced MR among attained age stratum ≥70 years (HR=0.73, 95% CI, 0.62-0.88). Estimates from NHIS indicate that among attained age stratum ≥60 years, overweight and grade 1 obesity (BMI 30 to <35) were associated with reduced MR (HR's = 0.79; 95% CI, 0.65-0.95 and 0.71; 95% CI, 0.56-0.91), respectively. **Conclusions:** Among Hispanic adults, there was no clear evidence that overweight and obesity associate with elevated MR.

833-P
"Eat Less and Exercise More!" Follow Up at Six Weeks Versus Six Months

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Background: Tremendous challenges exist for primary-care providers managing obese patients. The limitations of training and resources have unfortunately forced many providers to either ignore the issue or to oversimplify the problem, i.e., "eat less and exercise more." Uncertainty exists in regards to the optimal clinical follow-up interval for obese patients and if there is an incentive for more frequent follow-up. The purpose of this study was to determine if more frequent clinical follow-up would make a difference in patient's adherence to control their weight. **Methods:** We prospectively assessed 40 obese and or overweight patients (mean BMI 34.6 +/- 5.8 kg/m2). Subjects were asked to eat less and exercise more (ELEM) by their primary care provider. They were then asked to follow-up in 6 weeks for a weight-recheck. Weight status was compared to a similar group of patients (N=40) given the same instructions, but regular follow-up at 6 months. **Results:** On follow-up, 83% (33/40) of 6-week patients returned; 79% (26/33) of those patients lost weight with a mean loss of 2.4 kg (0.5-7.7 kg); P=.0006 versus controls. Mean weight change between groups was not significantly different. Seventy-three percent of patients who followed-up at 6 weeks regardless of outcome, felt that the intervention provided a positive incentive to managing their weight. **Conclusions:** Using a simple, low resource strategy with closer clinical follow-up resulted in significantly improved weight status (more individuals losing weight) and a subjective incentive for overweight and obese primary-care patients. Although taking the ELEM approach grossly oversimplifies the complex nature of managing obesity, more frequent clinical follow-up may be indicated.

834-P
Mortality Risk of Metabolically Healthy Obese Depends on Definition of Metabolic Health Used

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Background: This study examined mortality risk associated with weight and metabolic health categories by comparing several definitions of metabolic health. **Methods:** Survival Analysis was performed on NHANES III data and the linked mortality file. Non-pregnant female and male participants with BMI ≥18.5 who provided fasting blood samples in the morning after a ≥6 hour fast and had complete data for variables of interest (n=6357, mean±SD age 47.7±18.8, BMI 27±5.5, 51.7% female) were included. Metabolic Health was defined using three definitions: Homeostatic model assessment insulin resistance (HOMA-IR) <2.5; ≤2 ATP III Metabolic Syndrome Criteria; and a combined definition. **Results:** All definitions resulted in different samples, with little overlap; only 49 of 1651 obese individuals were identified as MHO by all definitions. Hazard ratios for ATP III and HOMA-IR models followed similar patterns, with increased risk associated with metabolically unhealthy lean (1.464 and 1.304, respectively, p<0.05) and obese participants (1.427 and 1.393, respectively, p<0.001), while unhealthy overweight and healthy overweight and obese groups were not significantly different from the reference group of lean healthy participants. The combined definition showed increased risk for the unhealthy and healthy obese and healthy overweight groups (1.458, 2.107, and 1.532, respectively, p<0.05) while the unhealthy lean and overweight were not significantly different from the healthy lean group. **Conclusions:** The combined definition appears to be less useful in predicting all-cause mortality as a function of metabolic health. The Metabolically Healthy Obese are not at increased risk of all-cause mortality when defined by a HOMA cut-off or ATP III criteria.

835-P
Using the Web to Deliver a Weight Control Intervention Among Urban, Low-Income Mothers: Will They Come?

Danielle R. Shapiro, Justin Yu, Alicia Klotz, Gary Foster, Sharon J. Herring *Philadelphia, PA*

Background: Web-based weight control interventions have grown in popularity because of their efficacy, low-cost, and convenience. However, a digital divide may exist for racial/ethnic minorities from socially disadvantaged backgrounds, limiting program reach. To determine feasibility of the Internet as a platform for intervention delivery among urban, low income mothers, we sought to identify patterns and predictors of web use. **Methods:** We surveyed 100 women seeking prenatal care at Temple University in the summer of 2009. Mothers were queried about sociodemographics, web access and frequency of use, comfort navigating within a website and sharing information online, along with use of social networking sites. We examined predictors of web use through t-tests and chi-square tests. **Results:** The majority of mothers were Black or Hispanic (87%), US born (95%), high school graduates (80%), and under 25 years of age (52%). More than two-thirds received Medicaid. Overall, 81% endorsed Internet use over the past three months, most of who logged on from home (84%) via a high-speed connection (77%). Frequent use was common; 70% used the web at least daily. The majority accessed health information online (75%), were comfortable navigating within a website (100%), and would share information with other mothers over the Internet (96%). Three-quarters used social networking sites (e.g., Facebook). Web use did not significantly vary by race, education, or nativity. However, mean age among web users was 24.7 years (SD 6.0) vs. 28.3 years (SD 7.9) among non-users (p=0.03). **Conclusions:** Among a sample of urban, low-income mothers, web use was high. Findings support the use of web-based weight control interventions in this population with greater outreach efforts for older mothers.

836-P
Association of Short Sleep With Obesity, Energy Intensive Activities, and Secondary Eating and Drinking Behavior

Gabriel Tajeu, Bisakha Sen *Birmingham, AL*

Background: An extensive scientific literature finds an association between short-sleep, <6 hours of sleep per night, and obesity risk. Causal pathways are still unknown, but there is a growing literature on the association of short-sleep and various obesogenic behaviors. In our study, we explore additional potential pathways for the relationship between sleep and obesity. Specifically, we consider the percentage of waking hours spent in all energy-intensive activities (instead of just 'exercise'), and also eating and drinking while multi-tasking – which may add excess calories to the daily diet. **Methods:** Using data from the American Time Use Survey (ATUS) Respondent file and the Eating and Health Module for the years 2006-2008 (n=37,832), we perform multivariate regressions to investigate associations between short-sleep and (i) engagement in high MET activities (MET>3), (ii) 'secondary' eating and drinking behavior (i.e. eating and drinking while doing other activities). We also verify associations between short-sleep and body-mass-index (BMI).

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Results: After adjusting for socio-demographic covariates and month of interview, we find statistically significant relationships between short-sleep duration and our outcomes of interest. Compared to individuals who reported normal sleep, short-sleep was associated with an increase in BMI score of 0.44 ($p<0.01$), an additional 6.5 minutes per day of secondary eating ($p<0.01$), an additional 27.5 minutes per day of secondary drinking ($p<0.01$), and a lower percentage of non-sleep hours spent in high MET activities ($p<0.01$). **Conclusions:** We find associations between short-sleep and additional behaviors that may contribute to obesity. Further research is required to establish whether these are causal pathways.

837-P[DT]
Relationships Between Regional Body Volume Ratios and Obesity Measures

Jane J. Lee, Ming Yao, Bugao Xu, Jeanne H. Freeland-Graves *Austin, TX*

Background: Obesity is a significant health problem associated with diseases such as diabetes, coronary heart disease, and metabolic syndrome. In obesity assessment, regional body volumes or proportions may be as important as determination of overall adiposity. **Methods:** Three-dimensional stereovision body imaging (SBI) assessed body composition in 121 Caucasian and Hispanic adults. SBI body measurements encompassed whole and regional body volumes (torso, hip, thigh) and central obesity depth (COD). Regional body volume ratios calculated included torso/total body (TV/TBV), hip/total body (HV/TBV), thigh/total body (TV/TBV), and thigh/hip (TV/HV). Abdominal adiposity and total body fat were determined by magnetic resonance imaging and air displacement plethysmography, respectively. **Results:** All correlation coefficients between COD and variables measured were statistically significant ($p<0.05$). Both TV/TBV (-0.446) and TV/HV (-0.656) were negatively linked to COD. Similarly, visceral adiposity was negatively related to TV/TBV (-0.467) and TV/HV (-0.558). TV/HV was negatively associated with total abdominal adiposity (-0.463), subcutaneous adiposity (-0.361), BMI (-0.533), and total body fat (-0.219). Correlations between TV/HV and visceral adiposity were higher in Hispanic women (-0.864) compared to Caucasian women (-0.698), Caucasian men (-0.601), or Hispanic men (-0.264). Correlations between TV/HV and total body fat were higher in Hispanic women (-0.645) compared to Caucasian women (-0.585) and Caucasian (-0.635) and Hispanic men (-0.620). **Conclusions:** These results imply that relative ratios between thigh and hip volume, as well as thigh and total body volume, are negatively associated with obesity measurements (i.e., COD). Moreover, differences exist based on gender and ethnicity in the context of body volume ratios and obesity parameters. NIH R21DK081206-01

838-P[DT]
Interventions For Preventing Obesity in Mexican Children: A Systematic Literature Review

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Background: Mexico is considered one of the countries with higher prevalence of obesity around the world. Results from the latest Mexican National and Health Survey (ENSANUT 2006) showed that approximately 26% of the population between 5 to 11 years of age, (4,158,800 school age children) had overweight or obesity. **Methods:** Data for the present study were taken from a previous systematic literature review used to develop recommendations for effective obesity prevention strategies . A complete description of the methodological strategies for " Guide to Obesity Prevention in Latin America and U.S." has been published elsewhere. The study evaluated at least one obesity-related outcome measure before and after the intervention (e.g. BMI, weight, body fat percentage), and an intervention group was compared to a non-intervention group. Studies that were eligible for inclusion were abstracted according to the CDC Community Guide. **Results:** Of 325 obesity-related interventions identified, 113 met the criteria for inclusion in the review and were abstracted. Five intervention studies focused on obesity prevention among children in Mexico. Of these interventions, two focused on physical activity (PA) strategies only, one focused on healthy eating strategies only, and two focused on the combination of physical activity and healthy eating strategies. Most interventions utilized school-based components (n=4). The average analytic sample size among all studies was 182 participants. Most of the study samples consisted of children only (n=4). The average age of the children was 9.5 years. Intervention duration ranged from three months to nine months, and the dose frequency ranged from once weekly to five times per week. **Conclusions:** Intervention that include supervised PA showed to have the best result in the prevention of obesity in mexican children.

839-P[DT]
Weight Status, % Body Fat and Lifestyle Behaviors in JROTC Students

Janice D. Key, Coleen T. Martin, Lydia B. King, Sabra Slaughter *Charleston, SC*

Background: A 2010 report "Too Fat To Fight" reported that 75% of young adults are unable to qualify for the military and that obesity is the most common medical reason that recruits are unable to enlist. This study describes the weight and lifestyle behaviors of Junior Reserve Officers Training Corp (JROTC) students. **Methods:** A cross sectional study of JROTC students. Measures included height, weight, % body fat (using a bioelectrical impedance device) and a survey of behaviors concerning daily fruits and vegetables, screen time, exercise and sugar sweetened drinks. **Results:** Subjects (n=771, 71% eligible) were 53% girls; 61% African American, 29% White, 6% Hispanic; 38% 9th grade, 28% 10th grade, 18% 11th grade, 16% 12th grade. Weight categorization was 61% healthy, 18% overweight and 21% obese. Overweight/obesity was higher in African-American (42%) and Hispanic (43%) students than White students (30%) ($p=0.03$); and in girls (44%) than in boys (32%) ($p=0.001$); but did not vary by grade. Students had a wide range of % body fat that overlapped between weight categories (girls: healthy 14-34 (mean 24), overweight 25-37 (mean 32), obese 22-50 (mean 38); boys: healthy 4-35 (15), overweight 12-38 (mean 25), obese 23-50 (mean 35)). Few students ate > 5 fruits/vegetables/day (7%) or avoided sugar sweetened drinks (4%) but a significant number watched < 2 hours of screen time/day (27%) and exercised > 1 hour/day (39%). Of these behaviors, lower BMI was only associated with exercise ($p=0.03$). **Conclusions:** Many JROTC students are overweight/obese and have unhealthy lifestyles and remain unhealthy through high school despite the fact that JROTC includes nutrition education and physical activity. However the wide variation in % body fat found in this study may indicate that BMI is not an accurate measurement of obesity in these physically active students.

840-P
Variability in Bariatric Surgery Criteria in 11 US Centers

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Background: Bariatric surgery (BS) is a commonly performed and effective weight loss method. Eligibility criteria for BS defined by BMI and weight-related comorbidities are nationally recommended. However, centers may have additional requirements that are not standardized. **Methods:** The Scalable PArtnering Network for CER: Across Lifespan, Conditions, and Settings (SPAN) is a network designed to facilitate multi-site comparative effectiveness research (CER). In order to understand similarities and variations between sites, a BS protocol and guidelines survey was sent to 11 BS centers in Health Maintenance Organizations within SPAN. There were 13 questions related to eligibility criteria for surgery, surgical procedures performed, surgical protocols, and protocol variation. **Results:** All 11 sites responded to the qualitative survey. All sites accepted BMI >40 kg/m2 for initial eligibility, although 1 site required ≥2 comorbid conditions for BMI >40. Nine sites accepted BMI >35 with 1 or more comorbid conditions (must be serious or life-threatening for 5 sites). Preoperative enrollment varied from 2 to 12 months, but was ≥6 months for 5 sites. Two sites required preoperative weight loss although 5 required a demonstration of failed or prior weight loss efforts. All sites required preoperative psychological assessment and 9 required administration of a patient education curriculum. Personnel involved in the required preoperative protocol included the surgeon (11 sites), mental or behavioral health specialist (10 sites), dietician (8 sites), specialist such as endocrinologist (4 sites), nurse (4 sites), and physical therapist (2 sites). **Conclusions:** There is wide variability in preoperative requirements to meet eligibility for BS and in staffing of BS centers across the US. It is unclear how these preoperative protocol variations affect patient-related outcomes.

841-P
Infant Growth and Adiposity Between 6 and 18 Months of Age: What Are the Maternal and Infant Determinants?

Lindsey Sjaarda, Christina Scifres, Lisa Bodnar, Hyagriv Simhan, Silva Arslanian *Pittsburgh, PA*

Background: Childhood obesity is linked to maternal obesity and gestational weight gain (GWG). Data evaluating the effects of pregnancy factors on adiposity early in life beyond the neonatal period are sparse. Therefore, we examined the effects of perinatal factors on anthropometric measures of abdominal, subcutaneous and total body fat in 6-18 month old infants. **Methods:** In a recently launched study, prepregnancy BMI (prepBMI: 29.8±2.3kg/m^2 [mean±SE]), GWG (14.4±1.9kg) and infant birthweight (3320±133g) were evaluated (n=15 to date). At follow up (12.2±1.3 months postpartum), infant weight, length, abdominal circumference (AC), sum-of-skinfolds (SF; bicep, tricep, subscapular, suprailiac) and maternal weight were measured. Postnatal weight velocity (weight-birthweight/age) and weight-for-length percentiles (WL%, WHO) were calculated. **Results:** Birthweight was not affected by maternal prepBMI (P=0.75) or GWG (appropriate vs. excess, IOM; P=0.46). At follow up, infant adiposity measures were not different by maternal prepBMI (p>0.10), but AC, SF and WL% were greater in infants born to mothers with excess vs. appropriate GWG (P<0.05). In multiple linear regression analyses, prepBMI, GWG, birthweight, infant age and weight velocity were determinants of AC (R^2=0.89, P<0.01); weight velocity and age were determinants of SF (R^2=0.50, P=0.02); and prepBMI, GWG, age and weight velocity were determinants of WL% (R^2=0.81, P=0.01). Maternal weight retention (current-prepregnant weight) correlated to infant AC, SF and W/L% (r≥0.49, P≤0.07). **Conclusions:** These preliminary data in our ongoing study demonstrate that infant adiposity, including AC, increases with greater maternal prepBMI, GWG, weight retention and greater postnatal rate of infant weight gain. Strategies to control maternal weight and potentially infant adiposity may help stop obesity in its developmental origins.

842-P^{DT}
Association Between Maternal BMI and Breastfeeding: Infant Feeding Practices Survey II

Jenny McManus, Wendy L. Bennett *Baltimore, MD*

Background: Breastfeeding is associated with postpartum weight loss. We assessed the association between maternal body mass index (BMI) and breastfeeding. **Methods:** We identified 1694 women in the Infant Feeding Practices Study II with a delivery, and breastfeeding history who initiated (n=1309) or did not initiate (n=385) breastfeeding. Maternal pre-pregnancy BMI was self-reported during late pregnancy. At ~3 weeks postpartum women reported whether she breastfed, and if not, the importance of multiple reasons for not breastfeeding. We conducted multivariate logistic regression to assess the association of breastfeeding initiation with BMI as a continuous variable, and to assess reasons for not initiating by BMI category (BMI > 25 vs. BMI ≥ 25), after adjustment for age, race, education, and income. **Results:** Compared with women with a BMI < 25, women with a BMI ≥ 25 were older (mean age 29.5 vs 28.3, p-value < 0.001), more likely to be African American (5.2% vs. 3.6%, p-value < 0.001) with no difference in frequency of breastfeeding initiation (21.0% vs. 24.3%, p-value=0.113). BMI was not associated with breastfeeding initiation even after adjustment for sociodemograpic variables. Women never breastfed most frequently reported the following as important in this decision: "formula is same or better" (67.5%), "mom was sick or on medication" (56.9%), "wanted someone else to feed baby" (51.2%). BMI ≥ 25 was not significantly associated with these reasons. **Conclusions:** BMI was not associated with breastfeeding initiation or reasons for deciding not to breastfeed. Further research is needed to assess reasons for early breastfeeding cessation among overweight and obese women.

843-P
Temptation and Alienation: Two Sides of 'The Biggest Loser', Australian Audience Experiences of Obesity-Related Reality Television

Catriona Bonfiglioli *Broadway, Australia*; Simon Chapman *Sydney, Australia*; Ben Smith *Melbourne, Australia*

Background: The mass media are recognised as key elements of the obesogenic environment and powerful influencers of public understandings and behaviors. There is growing recognition of the risk of media contributing to stigma, the influence of media narratives on assignations of responsibility and the need for more intensive research investigating obesity-related media. Big Brother-style participatory reality TV is a hugely popular media phenomenon and health-related reality shows urgently require investigation. This new qualitative study presents audience responses to 'The Biggest Loser' from people of underweight, healthy, overweight, obese and morbidly obese weight categories. **Methods:** We interviewed 46 members of the public from five weight categories, three age groups and three geographical regions. We asked them about their experiences of obesity-related news media, current affairs and reality television. Resulting interview transcripts are being analysed using content analysis, frame analysis and thematic nVivo coding. Ethics clearance was provided by the institutional HREC committee REF NO. 2010-033A. This study is supported by an Australian Research Council Discovery Project grant. **Results:** Results to date show that while 'The Biggest Loser' inspires and engages some viewers, others find the interventions extreme, the tasks humiliating, and the temptations undignified. Drawing comparisons with 'MasterChef", participants noted that 'The Biggest Loser' could offer viewers more educational elements (shopping lessons, cooking training, healthy nutrition advice, participant cookbooks), and a more realistic approach to weight loss. **Conclusions:** Reality television audiences have a sophisticated view of 'The Biggest Loser', which can inform media interventions, education entertainment and future reality television programming.

844-P^{DT}
Comparisons of Percent Body Fat Derived by Existing Bioelectrical Impedance Analysis Equations with DEXA in Chinese Adults

Aihua Song, Sunyue Ye, Xinyu Zhao, Sha Zhang, Shankuan Zhu *Hangzhou, China*

Background: To explore whether the existing bioelectrical impedance analysis (BIA) prediction equations for percent body fat (%BF) are suitable for Chinese adults. **Methods:** A total of 1014 subjects (men: 399, women: 615) aged 18-80 years were voluntarily recruited. Subjects were classified as underweight (BMI<18.5kg/m^2), normal weight (18.5≤BMI<24 kg/m^2), overweight (24≤BMI<28 kg/m^2), and obese (BMI≥28kg/m^2), Fat mass were measured by dual-energy X-ray absorptiometry (DEXA) and BIA, respectively. Student's t test was used to compare %BF estimated by Heitman (%BF-Heitman) and Sun SS (%BF-Sun) with DEXA (%BF-DEXA). **Results:** Compared with %BF-DEXA (20.67±7.46% in men and 31.62±5.92 % in women), %BF-Heitman significantly overestimated in both sexes (25.62±5.00% and 35.55±4.88%) and in all BMI stratified groups (all p<0.001). However, %BF-Sun significantly overestimated in men, but no significant difference was observed in women. In BMI stratified analysis, %BF-Sun significantly overestimated in under, normal and overweight groups in men, but underestimated in under and normal weight groups, and overestimated in overweight group compared to %BF-DEXA. When further divided subjects into two groups of 18-49 years old and 50 years or older in normal and overweight groups, the results remained similar. **Conclusions:** The present study suggests that %BF equations by Heitman and Sun may have limitations to estimate fat mass in Chinese adults. Specific equations for Chinese adults are required.

For author conflict of interest information, see page S250

845-P
Evidence of Differential Susceptibility in an Interaction Between Food Reinforcement and the Serotonin 2A Receptor

Katelyn A. Carr, Henry Lin, Kelly D. Fletcher, Lara Sucheston, Prashant Singh *Buffalo, NY*; Robbert Salis *Niagara Falls, NY*; Richard W. Erbe, Jennifer L. Scheid *Buffalo, NY*; Myles Faith *Chapel Hill, NC*; David B. Allison *Birmingham, AL*; Leonard H. Epstein *Buffalo, NY*

Background: Food reinforcement, or the motivation to eat, has been associated with increased energy intake, greater body weight and prospective weight gain. Much of the previous research on the reinforcing value of food and drugs has focused on the role of dopamine in mediating motivated behaviors, but it may be worthwhile to also examine genetic polymorphisms in the serotonin and opioid systems. **Methods:** In a sample of 245 obese and non-obese men and women, we examined the relationship between 44 candidate polymorphisms for the dopamine, serotonin and opioid systems and their interaction with food reinforcement to predict body mass index (BMI). **Results:** Polymorphisms in the Monoamine oxidase A (MAOA) and serotonin receptor 2A, RS6314, interacted with food reinforcement on BMI, accounting for 8-9% of the variance in BMI. Examination of the interactions revealed a potential role of RS6314, but not MAOA, as a differential susceptibility factor for obesity, as polymorphisms of RS6314 gene can be risk or protective in interacting with food reinforcement to predict BMI. **Conclusions:** These results provide new insight into genes theoretically involved in obesity and support the hypothesis that genetics moderate the influence of food reinforcement on BMI.

846-P
FTO Polymorphisms Moderate the Effect of Food Reinforcement on Energy Intake

Jennifer L. Scheid, Katelyn A. Carr, Henry Lin, Kelly D. Fletcher, Lara Sucheston, Prashant Singh, Richard W. Erbe, Leonard H. Epstein *Buffalo, NY*

Background: Food reinforcement refers to the motivation that an individual has to eat. While food reinforcement is related to increased energy intake, genetic variables may interact with food reinforcement to predict energy intake. The fat mass and obesity-associate (FTO) gene has consistently been demonstrated to be related to elevated body mass index and increased energy intake. The purpose of the current study was to determine if any FTO single nucleotide polymorphisms (SNPs) interact with motivation to eat, operationalized by the relative reinforcing value (RRV) of food, to predict energy intake. **Methods:** We measured the RRV of food, 68 FTO SNPs and energy intake in 237 obese, and non-obese, men and women. Energy intake was measured using ad libitum food consumption of snack foods presented as a taste test. Linear regression was used to assess the effects of the RRV of food, SNPs, and RRV food x SNPs on energy intake, while controlling for the RRV of reading and proportion of African ancestry. **Results:** RRV of food predicted 13.4% of the variance of ad libitum energy intake. However, 6 FTO SNPs (rs9936768, rs8049933, rs7199716, rs12921970, rs12446047, and rs11076022) interacted with the RRV of food to further predict ad libitum energy intake. The individual SNPs interacted with the RRV of food to predict 18.4 – 20.0% of the variance of energy intake. **Conclusions:** This study confirms previous findings that the RRV of food is related to increased energy intake. Additionally, for the first time we demonstrate that the effect of the RRV of food on energy intake is moderated by FTO SNPs. Future studies are needed to prospectively test if differences in FTO variants and food reinforcement can predict weight gain.

847-P
Changes in Life Expectancy After Gastric Bypass For Severely Obese Patients With Diabetes: Bigger is Not Better

Daniel Schauer *Cincinnati, OH*; David Arterburn *Seattle, WA*; Edward Livingston *Dallas, TX*; Karen J. Coleman *Pasadena, CA*; Steve Sidney *Oakland, CA*; Patrick O'Connor *Bloomington, MN*; David Fischer, Mark H. Eckman *Cincinnati, OH*

Background: The impact of gastric bypass on life expectancy for severely obese patients with diabetes is unknown. **Methods:** We developed a decision-analytic Markov model to evaluate two strategies for severely obese patients with diabetes: gastric bypass versus nonsurgical treatment. The efficacy of surgery was determined from a retrospective cohort of 165,000 severely obese diabetic patients (4500 had gastric bypass) from 4 HMO Research Network sites using fully adjusted Cox proportional hazards models. Logistic regression models calculated in-hospital mortality for surgery using data from the Nationwide Inpatient Sample (NIS). The decision model was calibrated using data from the National Health Interview Survey that is linked to the National Death Index. The model was constructed using Decision Maker®, which estimated changes in life expectancy. **Results:** Our base case, a 40 year-old female with a BMI of 45, no hypertension, no coronary artery disease and no congestive heart failure, gained an additional 7.1 years of life expectancy with gastric bypass (43.1 years with surgery vs. 36.0 without). Surgery was no longer favored in our base case when 30-day surgical mortality exceeded 16% (baseline risk was 0.2%). Sensitivity analyses revealed that the gain in life expectancy decreases with increasing BMI, until a BMI of 62 is reached; at this point, nonsurgical treatment is associated with greater life expectancy than gastric bypass. Similar results for both men and women in all age groups were seen. **Conclusions:** For most severely obese diabetic patients, gastric bypass surgery increases life expectancy; however, gastric bypass decreases life expectancy for those with a BMI over 62. Patients with high BMI may have other benefits from surgery, such as better quality of life and reduced burden of comorbid disease.

848-P
Gestational Weight Gain…Does Knowledge Really Matter?

Erica Rauff, Danielle S. Downs, Jennifer S. Savage *University Park, PA*

Background: Little is known about pregnant women's knowledge of national guidelines for gestational weight gain (GWG) and dietary/physical activity (PA) behaviors. The purpose of this study was to examine pregnant women's knowledge of the GWG/dietary/PA guidelines and the extent to which this knowledge influenced GWG and dietary/PA behaviors. **Methods:** Thirty pregnant women (M age = 28; M prepregnancy BMI = 24.9) completed surveys of their knowledge and behaviors. Knowledge of the GWG guidelines was sufficient if women correctly identified the correct weight gain recommended in 3/4 weight categories. Dietary knowledge was sufficient if women correctly identified the appropriate daily serving sizes for 4/6 food groups. Knowledge of the PA guidelines was determined with a dichotomous yes/no variable. Behaviors were assessed via self-reported GWG, daily consumption of food groups, and the Leisure-Time Exercise Questionnaire **Results:** Descriptive statistics were used to examine frequencies for women's knowledge and behavior: 57% had sufficient knowledge of the GWG guidelines and of these women, 63% exceeded the GWG guidelines; 42% had sufficient knowledge of the dietary guidelines, and of these women 13% were meeting the recommendations for 4/6 food groups; 40% had knowledge of the PA guidelines, and of these women, only 25% were meeting PA guidelines. **Conclusions:** Finally, this preliminary evidence indicates that having knowledge of the GWG, HE, and PA guidelines did not appear to prevent high GWG or translate into meeting dietary/PA guidelines. Intervention efforts are needed to address the gap between women's knowledge and behavior to promote dietary/PA behaviors and prevent GWG above recommendations.

Saturday, September 22, 2012
Posters on Display: 12:00 Noon – 1:30 PM
Location: Exhibit Hall C

849-P
Fit and Fat? Exploring Fitness Among Overweight and Non-Overweight Adolescents

Christy Greenleaf, Scott B. Martin, Trent Petrie, Jacob Tucker *Denton, TX*

Background: Overweight individuals are commonly stereotyped as unfit; however, research indicates that among adults, it is possible to be fit and fat. The purpose of this study was to extend previous research by exploring fitness among overweight and non-overweight adolescents. **Methods:** 2081 male and 2045 female middle school students completed a battery of FITNESSGRAM ® (Cooper, 2007) fitness tests: cardiorespiratory, muscular strength and endurance, and flexibility were measured. Based upon measured height and weight and using FITNESSGRAM ® age- and gender-adjusted criteria, participants were classified in the BMI Healthy Fitness Zone (BMI HFZ, 57.8%), Needs Improvement – Some Risk (BMI – NISR, 13.6%), or Needs Improvement – High Risk (BMI-NIHR, 28.6%). Fitness test scores were classified as Healthy Fitness Zone (HFZ) or Needs Improvement Zone (NIZ). **Results:** Chi-square analyses indicated that BMI HFZ participants

were more likely to be in the HFZ for cardiorespiratory, muscular strength and endurance, and flexibility (ps < .001). However, some participants in the BMI-NISR and NIHR performed sufficiently to be classified in the HFZ for cardiorespiratory, muscular strength and endurance, and flexibility. For example, 8.1% of participants in BMI-NISR and 10.6% in BMI-NIHR were in the HFZ for cardiorespiratory fitness. **Conclusions:** Results of this exploratory study support the idea that some adolescents may be fit and fat. Additional research is needed to extend this research to determine if, as is indicated in adults, fitness might buffer negative health effects of overweight and obesity among adolescents.

850-P
Clinical Utility of Whole Genome Prediction For Personalized Obesity Treatment

Emily J. Dhurandhar, Ana I. Vazquez, David B. Allison *Birmingham, AL*

Background: To date, single nucleotide polymorphisms (SNPs) identified via Genome Wide Associated Studies have not proven useful for personalized medicine. Alternatively, Whole Genome Prediction (WGP) jointly fits thousands of SNPs in a regression model to yield estimates for the contribution of markers to the overall variance of a particular trait, and for their associations with that trait. However, WGP has offered only modest prediction accuracy (R2s < .30). **Methods:** We determined if modest accuracy has clinical utility by performing a simulation using WGP to predict weight loss after bariatric surgery with different accuracies (R2 = 0.1, 0.2, 0.38, 0.53). Prevention of Type 2 Diabetes (T2DM) post surgery was the outcome, and a dose response of prevention of T2DM to weight loss was modeled. **Results:** Treating only patients above a certain threshold of predicted weight loss, in the realistic context of finite resources, may achieve greater total benefit across all patients. For instance, implementing a cutoff threshold corresponding to the top 10% of weight loss patients, even with prediction accuracy R2=0.1, 952 surgeries prevent 184 cases of T2DM, whereas the same resources are sufficient to perform 1000 surgeries but prevent only 150 cases of T2DM if the model is not used. At all R2 values examined, a threshold corresponding to the most successful 10-70% of weight loss patients resulted in more T2DM cases prevented. **Conclusions:** WGP is likely to be clinically useful for treatment allocation, and even with moderate accuracy, provides a clear path for turning personalized obesity treatment from theory to reality.

851-P
Effect of TV Exposure and Advertising on Food Intake in India: An Experimental Ad-Libitum Study During Snacking Time

Dario Gregori *Padova, Italy*; Achal Gulati *New Delhi, India*

Background: TV and advertising are suspected to promote children's overeating and overweight. Evidence from cross-sectional / behavioural experimental studies are available for USA, Europe and Australia, whereas no such data exists for emerging countries like India. **Methods:** Therefore 120 children (balanced according to gender and age groups 3-5, 6-8) have been randomized in a school facility in Delhi to be exposed to TV or not during an afternoon snacking time. They were asked to eat at libitum for 20 minutes. In the TV group, children were moreover randomized to 3 increasing levels of exposure to commercial advertising (1, 2 or 3 times). Advertising was related to the snacks offered; all children received the same lunch meal. **Results:** In the control group (no TV, no adv) children ate an average of 116.08 Kcal (108.59 - 223.99 95% C.I). See linear effects on Kcal eaten in the Table. Effect (Kcal) 95% C.I. Lower bound 95% C.I. Upper bound Control (no TV, no Advertising) Ref. TV, No Advertising 28.25 -58.38 52.34 TV+1 Advertising -21.24 -77.43 34.60 TV+2 Advertising 16.24 -43.05 75.53 TV+3 Advertising 27.94 -58.99 50.52 **Conclusions:** No significant differences have been found according to TV and increased exposures to advertising. In India, etiological pathways related to children obesity might be worth reconsidering the role of behavioural interactions of children with TV and advertising. Study supported by unrestricted Grants of Prochild ONLUS and the University of Padova.

852-P[DT]
Differences in Health-Related Behaviors and Weight Status in a Racially Diverse Sample of Young Adults

Debra A. Hoffmann *Bowling Green, OH*; Stephanie R. Polito, Angela M. Pinto *New York, NY*

Background: Research on health behaviors of college students has focused on rural populations consisting of homogeneous samples (primarily White or female) and thus is not generalizable. Therefore, we examined the relationship between weight status (normal weight (NW) vs. overweight or obese (OW/OB)) and health and lifestyle behaviors in a racially diverse sample of college students at an urban commuter college. **Methods:** Participants (N= 428, 52% female; 48% Asian, 31% White, 7% African American and 1% Native Hawaiian/Pacific Islander, 14% mixed/other: mean age=20.6±1.9 yrs; BMI=23.1±4.0 kg/m2) completed a self-report questionnaire on health and lifestyle behaviors, the Block Food Frequency Questionnaire, select subscales from the Multidimensional Body Self-Relations Questionnaire, and had height and weight measured. **Results:** In this sample, 66% were NW (BMI 18.5-24.9) and 26% were OW/OB (BMI >= 25). A greater percentage of men were OW (38%) compared to women (19%, p<.001), yet women perceived themselves to be more OW than men (p<.001) and were more preoccupied with their weight (p<.001). Compared to women, men placed greater importance on exercising (p=.003). There were no significant gender differences on fruit, vegetable and fat and sugar intake. No significant differences in weight status between Whites and non-Whites were found. Compared to non-Whites, White participants placed greater value on being fit (p=<.001), engaged in more physical activity (p=<.001), and were more health conscious (p=.020), while non-Whites reported being more preoccupied with weight (p=.042). **Conclusions:** This study highlights differences in health-related behaviors of a racially diverse, urban college sample. A better understanding of these behaviors might inform strategies for promoting healthy habits in a college community.

853-P
Social Influences on Health and Lifestyle Behaviors in Young Adults

Debra A. Hoffmann *Bowling Green, OH*; Stephanie R. Polito, Angela M. Pinto *New York, NY*

Background: The social environment influences food and activity preferences, which may contribute to the development of obesity. We examined family and social influences on health-related behaviors in young adults. **Methods:** Participants were 428 undergraduates at an urban commuter college (mean age= 20.6 ± 1.9 yrs; mean BMI= 23.1 ± 4.0 kg/m2; 52% female) who completed a health and lifestyle behaviors questionnaire, the Block Food Frequency Questionnaire, and had height and weight measured. **Results:** In this sample, 66% were normal weight (NW; BMI 18.5-24.9), 26% were overweight or obese (OW/OB; BMI>=25) and 8% were underweight. Among NW participants, 42% had at least one OW/OB immediate family member; among OW/OB participants, 65% had at least one OW/OB immediate family member. Number of OW/OB family members was positively correlated with number of OW/OB friends (p<.001). Among NW participants, those with at least one OW/OB family member had more household televisions (p=.012) and consumed more saturated fat grams (p=.026) and servings of fats and sugars (p=.004) compared to those with no OW/OB family members. OW/OB participants with no OW/OB family members had more friends that exercised (p=.050) compared to those with at least one OW/OB family member. For OW/OB participants, having more friends who exercised was related to higher levels of physical activity (p=.021), greater fruit intake (p=.003), and placing greater importance on a healthy diet (p=.043) and regular exercise (p=.017). Among NW participants, those with more OW/OB friends consumed more total kcals (p=.001), kcals from sugared beverages (p=.001) and daily servings of fats and sugars (p<.001). **Conclusions:** These results show that family and peers can influence lifestyle habits of young adults, which may impact weight status and other health outcomes.

854-P
Diet Quality of Adults With Intellectual and Developmental Disabilities as Measured By the Healthy Eating Index-2005

Lauren T. Ptomey, Jeannine R. Goetz, Joseph E. Donnelly, Debra K. Sullivan *Kansas City, KS*

Background: Little research has been conducted to examine diet quality of adults with intellectual and developmental disabilities (IDD) in the United States. Research suggests that adults with IDD tend to consume a diet high in fat and low in fruit and vegetables, but no quantitative measure of diet quality has been conducted. The Healthy Eating Index-2005 (HEI-2005) is a quantitative measure of diet quality that assesses conformance to federal dietary guidelines by looking at the intake of fruit, vegetables, whole grains, milk, meat and beans, oils, saturated fat, sodium, and calories from solid fats, alcoholic beverages, and added fats and sugar. The purpose of this study was to use the HEI-2005 to determine diet quality of adults with IDD. **Methods:** Baseline data were obtained from a convenience sample of community-dwelling overweight individuals with IDD enrolled in a weight loss program. 3-day food records were administered and then reviewed by a dietitian. All records were entered into NDSR and HEI-2005 was calculated using NDSR output. **Results:** 66 records were analyzed from 27 subjects (10 male, 17 female; mean age 27.0 ±11.02). The mean energy intake was 1867.02± 750.04 kcals. The median total HEI-2005 score was 45.6 ±11.2. Participants scored the lowest in total fruits, whole grains, and non-hydrogenated vegetable oils; meeting 25.2%, 23.0%, and 1.1% of the federal dietary guidelines, respectively. Subjects also scored low in sodium with 87.3% consuming more than the recommended intake of sodium (0.7 grams per 1,000 kcals). **Conclusions:** Adults with IDD appear to consume diets low in fruits, whole grains and healthy oils, and high in sodium. Furthermore, they may have an increased risk of poor diet quality with subjects scoring lower than the average American (45.6 vs. 58.2). Future studies should target ways to improve diet quality of adults with IDD.

855-P
Parental Awareness and Recognition of Obesity in Pre-Adolescents

Jennifer S. Laurent *Burlington, VT*

Background: Approximately 75% of parents are unaware of their child's overweight or obesity. This study examined how parents become aware of their pre-adolescent's overweight/obesity and describes factors involved in acquiring this knowledge. **Methods:** 17 parents of 9-14 year olds were interviewed. Data were generated and analyzed from the question, "How did you come to realize your child was overweight?". Additional open-ended supplementary questions were tailored to the response of the parent to support or explain evolving concepts, themes, and relationships, and to provide maximum density and variation in participant's responses. Strauss and Corbin's model of grounded theory guided data collection and analysis. **Results:** 5 central themes emerged. Predisposition: Most parents felt there was some type of pre-disposition for their pre-adolescent's obesity. Husky-build: Parents avoided using the words overweight, obese, or fat to describe their pre-adolescent. Compared to others: Parents described how they compare their overweight pre-adolescent to others in terms of shape, eating, and exercise. Healthcare Provider: The role of the healthcare provider played a pivotal role in the awareness process. Parental buy-in: Through the integration and culmination of the previous 4 themes a tipping point was reached where parents achieved recognition of their pre-adolescent as overweight/obese. **Conclusions:** This study highlights the complexity and multiple factors involved in the awareness process of parents with overweight/obese pre-adolescent and the pivotal role the healthcare provider can play in helping parents achieve this recongnition.

856-P
Influence of Parity on Bone Mineral Density in Pre- and Postmenopausal Chinese Women

Sha Zhang, Wei He, Sunyue Ye, Aihua Song, Shanchun Zhang, Shankuan Zhu *HangZhou, China*

Background: Menopause is closely related to bone mineral density (BMD). Studies on the effects of parity on BMD are inconsistent, especially among premenopausal women. The objective of this study is to investigate the associations between parity and BMD in pre- and postmenopausal Chinese women. **Methods:** Two hundred and fifty-four premenopausal and 297 postmenopausal women aged 24 to 79 years were included in the study. Total and body regional (head, spine, ribs, trunk, pelvis, arms and legs) BMD were measured using dual-energy X-ray absorptiometry. Women were grouped based on the number of fullterm pregnancies. Multiple regression was applied to examine the associations between BMD and parity. Covariates included in the regression models were age, BMI, smoking status, education level, menarche year and menopause year in postmenopausal women. **Results:** The significantly lower arms-BMD were found in higher parity group among premenopausal women in the unadjusted model ($p<0.01$).Similar negative association of parity with BMD of total, arms and legs were also found in postmenopausal women (all $p<0.05$). However, in multiple regression analysis, compared to women with no child, negative association between parity and BMD of spine, ribs, trunk, pelvis and arms in premenopausal women was found (all $p<0.05$). However, in postmenopausal women, positive associations were detected between parity and BMD of total, head, spine, ribs, trunk, pelvis and arms (all $p<0.05$). **Conclusions:** Different associations between parity and BMD were found in pre- and postmenopausal Chinese women. Further studies are needed using larger sample to confirm and explain the mechanisms of the results found in this study.

857-P
Are We Reporting Data of Prevalence in Childhood Obesity Adequately?

Raul Pesquera Cabezas, Ricardo Lanza Saiz, Jose Antonio Riancho Moral, Jesus Lino Alvarez Granda, Domingo Gonzalez Lamuño, María Jesus Cabero Perez, Trinidad Dierssen Sotos, Luis Gaite Pindado, Miguel García Fuentes *Santander, Spain*

Background: There is a discussion about the difficulty in comparing prevalence studies in childhood obesity because of the different diagnosis criteria. We know that the amount of body fat varies with age. We question if it is appropriate to present data in age groups because there is a lack of sample, which happens frequently in this kind of studies **Methods:** This is a population based research. We took height and weight data of the all the children aged from 2-14 in Cantabria, Spain. We present data of a cross sectional study with 59.470 children. Measurements were taken by training primary care nurses and doctors as part of a prospective regional surveillance programme carried out from 2002-2008. We use diagnosis criteria IOTF, CDC, and national criteria Orbegozo 2004 (obese >P97) **Results:** Obese prevalence by sex/age and diagnosis criteria (IOTF/CDC/Orbegozo 2004) in %: MALE: 2 years n=3.193(1,7/3,8/6,4), 3y. n=2.291(3,4/11,1/7,9), 4y n=3.129 (4,7/13,8/6,2), 5 y. n= 955 (7,4/17,7/6,3), 6 y. n= 5.840 (8,2/17,3/9,5), 7y. n= 884 (11,3/20,3/13,7), 8 y. n= 1.312 (11,7/20,1/12,2), 9 y. n= 874 (10,3/20,6/8,2), 10 y. n= 842 (8,3/18,6/7,6), 11 y. n= 2.931 (7,3/15,1/10,9), 12 y. n= 1.376 (7,9/15,3/11,8), 13 y. n= 1.487 (6,7/12,6/10,9), 14 y. n= 5.511 (6,3/10,9/10,4). FEMALE: 2 years n=3.109(2,2/4,5/4,8), 3y. n=2.224(4,5/10,7/9,3), 4y. n=3.043 (5,7/13,7/9,4), 5 y. n= 944 (11,5/17,3/12,6), 6 y. n= 5.464 (9,1/14,5/11,4), 7y. n= 787 (13/17,8/11,7), 8 y. n= 1.225 (10,9/15,8/11,3), 9 y. n= 896 (9,9/14,4/13,6), 10 y. n= 848 (7,2/11,7/10,1), 11 y. n= 2.794 (5,7/9,7/10), 12 y. n= 1.278 (5,3/9,8/16,6), 13 y. n= 1.275 (5,5/9,1/13,1), 14 y. n= 4.976 (4,4/6,8/13,7) **Conclusions:** The prevalence of Childhood obesity changes significantly with age, so report data in age groups of more than one year, might be considered a serious bias in prevalence studies.

858-P
Relative Impact of Body Mass Index and Physical Activity on Inflammatory Markers in the MIDUS Cohort

Kelley Strohacker, Rena R. Wing, Jeanne M. McCaffery *Providence, RI*

Background: While interrelated, obesity and physical activity (PA) can exert independent effects on cardiovascular disease (CVD) risk and outcomes. Inflammation is implicated in CVD; independent contributions of both obesity and PA to markers of inflammation are unclear. Our purpose was to assess relative impact of body mass index (BMI) and PA in MET-minutes/week (MMW) to circulating markers of inflammation (IL-6, CRP and sICAM-1). **Methods:** Archived data on 1255 participants (mean age 54y, mean BMI 29 kg/m2) from the National Survey of Midlife Development in the United States (MIDUS) were analyzed using univariate general linear models. For each outcome, MMW (no PA, <500, 500-1000, >1000) and BMI (<25, 25-29.9, ≥30 kg/m2) were entered as independent variables with an interaction

term. Analyses were adjusted for age, sex, smoking and medication use. **Results:** Significant interactions occurred for CRP and sICAM-1 (P's<0.05). CRP in overweight individuals was similar to obese when no regular PA was reported, but similar to normal weight when any level of regular PA was reported (P's<0.01). In obese individuals, sICAM-1 was lower in those who reported >1000 MMW compared to no PA (P<0.05), with a similar trend for CRP (P=0.053). BMI was positively associated with IL-6, CRP and sICAM-1 (P's<0.001). Independent of BMI, regular PA was associated with lower levels of IL-6 and CRP (P's<0.01) **Conclusions:** Higher BMI yielded higher levels of inflammatory markers. Regular PA appeared to buffer this effect on CRP in overweight individuals. PA levels greater than national recommendations may be necessary to reduce CRP or sICAM-1 in obese individuals.

859-P[DT]
Contribution of Physical Activity, Sedentary Time, Sleep and Cardio-Respiratory Fitness to the Metabolic Syndrome Score in Danish Children

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Background: Sparse data exist on the independent associations between physical activity, sedentary time, sleep and cardio-respiratory fitness with markers of metabolic syndrome. Therefore, these independent associations, possibly mediated by adiposity, were investigated in Danish children. **Methods:** Moderate-to-vigorous physical activity (MVPA;>2000 counts/min), sedentary time (<100 counts/min) and sleep duration (h/night) were objectively measured for 7 consecutive days using an accelerometer in a cross-sectional sample of 443 Danish school children aged 8-11 years from the OPUS School Meal Study. The Children's Sleep Habit Questionnaire (CSHQ), where a high value indicates sleep related problems, was also used. Cardio-respiratory fitness (CRF) (ml/kg/min) was assessed using an intermittent running test and percent body fat (%BF) was measured by DEXA. The metabolic syndrome score (MS-score) was calculated as the sum of z-scores of waist circumference, mean arterial blood pressure, plasma HDL cholesterol and triglyceride concentrations and HOMAIR. **Results:** CRF (β=-0.24;P=0.001) and CSHQ score (β=0.13;P=0.01) were associated with MS-score independent of age, sex, highest education level of the parents, time spent sedentary, MVPA and either CRF or CSHQ score (objective sleep duration is yet to be analysed). Time spent sedentary (β=0.11;P=0.03) and MVPA (β=-0.12;P=0.03) became significant only if the other was removed from the analysis. CSHQ score remained significant (β=0.09;P=0.03) after including %BF in the analysis, CRF did not (P=0.64), and sedentary time (β=0.09;P=0.04) remained significant when excluding MVPA from the analysis. **Conclusions:** The contribution of CRF to the MS-score in Danish children is largely explained by adiposity while sleep problems are independently associated to the MS-score.

860-P
Exploring Long-Term Eating Behaviors in Post-Gastric Bypass Patients: A Pilot Study

Sue Benson-Davies *Brookings, SD*; Michael L. Davies *Washington, DC*

Background: The popularity of weight loss surgery (WLS) has continued to surge in the United States during the past decade. Although obesity-related comorbidities show improvement with WLS, limited research is available on long-term eating behaviors and weight maintenance. **Methods:** In a cross-sectional pilot study, we examined eating behaviors in gastric bypass (GB) patients averaging approximately six years post-surgery. Twenty-four women completed the study consisting of anthropometric measures, personal interviews and seven days of food records. **Results:** Weight maintenance was stable at a mean body mass index of 33.7±8. Weight regained from the lowest reported weight averaged 16.2±12.7 kg. Of this sample, 18 of 24 (75%) have sustained a weight loss equal to or greater than 50% of their excess weight loss. A mean total caloric intake of 1,429±411 calories was reported with a caloric breakdown of 43% from carbohydrate, 17% from protein and 39% from fat. Fast food consumption of three or more times per week was reported in 11 of the 24 (46%) food logs. Sixty-seven percent (16 of 24) of the subjects recorded consuming 100 calories or more from beverages on a daily basis. Subjects reported "returning to old eating habits." The food records confirmed a diet high in liquid calories (soda, specialty coffee drinks, sports drinks, and alcohol), sweets (bite-size candy bars, chocolate, and cookies), convenience foods and fast food consumption. **Conclusions:** Food records from post-GB patients show calorically-dense food choices and a high percentage of total calories from fat.

861-P[DT]
Associations of Visceral and Intermuscular Adipose Tissue With CVD Risk Factors in Chinese Adults

Xinyu Zhao *Hangzhou, China*; ZiMian Wang *New York, NY*; Shankuan Zhu *Hangzhou, China*

Background: Visceral adipose tissue (VAT) is associated with cardiovascular disease (CVD) risk factors. Little is known the correlations of intermuscular adipose tissue (IMAT) with CVD risk factors, especially in Chinese adults. The objective was to compare the associations of VAT and IMAT with CVD risk factors in Chinese adults. **Methods:** A total of 66 Chinese healthy subjects (52 men, 14 women) aged 20-80 years were recruited. Whole-body MRI was performed to quantify VAT and IMAT. Fasting serum measures of glucose (Glu), total cholesterol (TC), high density lipoprotein (HDL), low density lipoprotein (LDL), apoA, apoB, triglycerides (TG), insulin and hypersensitive C-protein (hs-CRP) were acquired. Pearson correlation was applied to test the associations of IMAT and VAT with CVD risk factors. **Results:** The mean VAT and IMAT were 2.37±1.16 kg and 0.53±0.18 kg, respectively. Both VAT and IMAT significantly positively associated with Glu (r=0.30, p=0.01; r=0.24, p=0.05) and insulin (r=0.44, p<0.001; r=0.30, p=0.013), and negatively associated with HDL (r=-0.22, p=0.08; r=-0.21, p=0.10). In addition, VAT positively associated with TG (r=0.24, p<0.05) whereas IMAT showed association with apoB (r=0.33, p=0.07). No associations were observed for TC, apoA, hs-CRP and LDL with either VAT or IMAT. **Conclusions:** VAT and IMAT have the same association with CVD risk factors expect TG and apoB. Further study is needed using larger sample to explore the mechanism of correlation direction between VAT and IAMT with CVD risk factors.

862-P[DT]
Value of Provider Advice on GWG and Exercise During Pregnancy

Michael Stengel, Cynthia H. Chuang, Jennifer L. Kraschnewski *Hershey, PA*

Background: Excessive gestational weight gain (GWG) in overweight and obese women during pregnancy increases the risk for post-partum weight retention, among many other health concerns. Current guidelines recommend that GWG should be limited to 25 lbs. in overweight women and 20 lbs. in obese women, and that pregnant women should engage in exercise of moderate intensity for at least 30 minutes on most days of the week. This study explored what advice overweight and obese women received from their health care providers during pregnancy regarding GWG and exercise. **Methods:** During qualitative interviews of (n=26) overweight/obese women following birth of their first child, women described the advice they received from their providers on GWG and exercise during pregnancy. Using a modified grounded theory approach, the investigators independently analyzed the interview transcripts and agreed on major themes. **Results:** In almost every case, women valued the provider's opinion on GWG. Most women were given either no advice on GWG, or advised to gain too much weight. On exercise recommendations during pregnancy, most women were given no advice or advised to be cautious and limit their exercise. Women perceived that provider knowledge on appropriate exercise intensity and frequency in pregnancy was limited. **Conclusions:** Overweight/obese women are not receiving counseling from providers on GWG and exercise that is in agreement with current guidelines. Provider advice during pregnancy may be influential in shaping goals and expectations for overweight and obese women in regard to gestational weight gain and exercise behaviors.

863-P
Psychological Barriers to Cervical Cancer Screenings in Overweight and Obese Women

Megan Lavery *Cleveland, OH*; Kelly C. Allison, Sharon Lee Armstrong, Jacqueline Spitzer, Rebecca Dilks *Philadelphia, PA*

Background: Despite the relationship between obesity and cancer risk, studies indicate that obese women demonstrate significantly lower rates of cervical cancer screenings. A small body of literature suggests that obesity-related variables may influence delays in screening. The current study examined

whether obesity-related psychological factors (body image, depressive symptoms, and obesity-related quality of life) predicted whether overweight/obese women received cervical cancer screenings within the past 2 years. **Methods:** One-hundred and twenty participants were recruited at the University of Pennsylvania Center for Weight and Eating Disorders and Albert J. Stunkard Weight Management Program. Females 18 to 65 years old, with a BMI ≥ 25 kg/m^2 and able to read English were study eligible. **Results:** Approximately 88% of our sample (54.5 % Caucasian; Mean BMI = 45.0; Mean Age= 41.06) reported having an up-to-date screening.. Logistical regression analysis revealed that body image, depressive symptoms, and obesity-related quality of life did not significantly predict screening status. However, insurance status was significantly associated with screening behavior; $\chi^2(1, N = 122) = 6.042$, p = .014. **Conclusions:** Our screening rate was high and akin to nonobese populations rates. When considering our findings, it is important to take into account that our sample was seeking to engage in health-promoting behaviors (e.g., bariatric surgery). Preparing to engage in, or engaging in, other health-promoting behaviors may buffer the negative effects of psychological barriers on screening behaviors. Our findings underscore the need for continued research on obesity-related barriers and the role engaging in other health-promotion behaviors have on obese females obtaining screenings

864-P^{DT}
Relationship Between Depression and Weight Gain Six Months Post-Kidney Transplant

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Background: Kidney transplant recipients commonly gain a significant amount of weight (>15 pounds) in the first six months after surgery. This places them at significant risk for posttransplant complications, and may be due to a combination of immunosuppressant therapies, and environmental and genetic factors. In other populations, research shows that depression can contribute to weight gain. This study was undertaken to examine whether depression might be a contributing factor to weight gain in kidney transplant recipients. **Methods:** Fifty kidney transplant recipients were weighed immediately prior to transplant surgery and 6 months afterwards. The 20 item Center for Epidemiologic Studies Depression Scale (CES-D) was given at the same timepoints, with scores of ≥ 16 indicative of psychological distress. **Results:** Although 54% of our subjects met criteria for depression at six months, we found no difference between mean CES-D scores at baseline and six months (baseline=17.8; 6 months=16.7; p=0.24) and no correlation between the actual amount of weight change (mean amount of weight gained=11.8 lbs) and CES-D scores over 6 months (r=0.06). Additionally, we found that there was no difference between the occurrence of depression for "gainers" and "non-gainers" (p=0.81). **Conclusions:** We believe that this lack of correlation may reflect that kidney transplant recipients in general report improved quality of life following transplant surgery. This result also may reflect our mostly African American population, which has been shown in other studies to report lower rates of rates of depression. Posttransplant obesity is likely the result of a combination of factors, and the contribution psychological state may play continues to require examination.

865-P
Characteristics of Health Care Providers Who Counsel Adolescents on Sports and Energy Drink Consumption in the United States, 2011

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Background: Sugar-sweetened beverages, including sports and energy drinks (SED), contribute a significant amount of daily calories for adolescents in the United States. SED consumption may increase the risk for obesity, dental erosion, and alcohol misuse. The American Academy of Pediatrics recommends routine SED counseling but actual practices of health care providers are unknown. Our objective was to examine the characteristics of providers and the frequency with which they counsel adolescents on SED consumption. **Methods:** We used data from the 2011 DocStyles, a Web-based panel survey. Of the health care providers who regularly see patients ≤17 years old (n=1046), we assessed the proportion that counsel adolescents on SED, how often they recommend limiting consumption, and their personal characteristics. We used Chi-square analysis to examine differences in prevalence and logistic regression to identify characteristics independently associated with SED counseling. **Results:** Overall, 51% of health care providers counseled on both SED, and 72% counseled on at least one drink type. Recommendations to reduce consumption were "always" or "often" provided by 69% of providers regarding sports drinks and 79% regarding energy drinks. Prevalence of counseling for at least one drink type differed by provider specialty (p <0.0001), ranging from 57% of internists to 81% of pediatricians. Eating fruits and vegetables ≥4 days/week (aOR=1.4, CI=1.1-1.9) was associated with SED counseling; provider type, work setting, size of practice, and number of pediatric patients/week were also significantly related. **Conclusions:** The prevalence of SED counseling is low overall but varies by provider type. Our findings indicate a potential need to educate providers on the significance of SED consumption and to teach them effective techniques for counseling adolescent patients.

866-P
Effects of Phenotype on Child Obesity Prevention Program Outcomes: The Pathways Trial

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Background: Effects of child obesity prevention programs are typically small. Little is known about whether specific phenotypes that may be related to obesity risk act as program effect modifiers. Anhedonia, the lack of ability to experience pleasure, has been recently correlated with child junk food intake and sedentary activity, but not evaluated as a program effect modifier. **Methods:** Pathways is a randomized trial that evaluates a school-based prevention program for prevention of obesity and substance use in 4th-6th grade children that focuses on executive cognitive function and emotional regulation (program vs. control, with school as the unit of assignment ;N=24 elementary schools). Standardized survey and anthropometric data (BMI, waist circumference) were collected on a panel of 1,002 4th grade children at baseline; 709 (71%) had complete data over 4 waves and 3 years of measurement. Regression analyses were conducted on junk food intake, sedentary activity, and waist circumference as primary obesity outcomes and lifetime cigarette and alcohol use as substance use outcomes, controlling for ethnicity, gender, free lunch, and baseline values, and anhedonia (4 item score re-scaled to a high vs. low score, with 10% of children scoring high), program group, and anhedonia x group as predictors. **Results:** Showed main program effects on decreasing sedentary activity (p<.05), waist circumference (p<.005), cigarette (p<.01) and alcohol use (p<.07),and anhedonia x program interaction effects on both cigarette (p<.002) and alcohol use (p<.02) such that the program had more effect on anhedonic children **Conclusions:** Phenotypes such as anhedonia may differentially effect outcomes of health risk behavior prevention programs for children.

867-P
Role of Hyperandrogenemia in Heritability of Body Mass Index in Polycystic Ovary Syndrome

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Background: Polycystic ovary syndrome (PCOS) is among the most common endocrine disorders of premenopausal women, affecting ~7% of the population. Women with PCOS have hyperandrogenemia (HA) and an increased prevalence of obesity. These phenotypes also aggregate in the families of affected women suggesting a genetic component to their etiology. We tested the hypothesis that hyperandrogenemia is associated with obesity in PCOS families consistent with a causal relationship. **Methods:** A total of 1051 individuals were analyzed: 285 PCOS probands and 142 sisters with hyperandrogenemia (HA), 178 sisters with normal androgen levels and menses (unaffected, UA), and 203 fathers and 243 mothers of these siblings were studied. Heritability (h2) of obesity was calculated using SOLAR. We further stratified these individuals into obese (BMI>30 kg/m2) and non-obese (BMI<30 kg/m2) categories. The association between obesity and HA in proband-HA compared to proband-UA sisters pairs was assessed by chi-square test. **Results:** When all groups (n=1051) were included, h2of BMI was 0.36 (p = 5.67 x 10-12). After partitioning by androgen status, h2 was similar for those with HA (n=873) and for those without HA (n=423). There was no significant association between BMI and HA in the sister pairs. **Conclusions:** Consistent with previous studies in other groups, body weight was heritable in PCOS families. There was no additional effect of HA on BMI.

868-P

This abstract has been withdrawn.

869-P[DT]

Why Greater Prevalence of Obesity For Boys Than Girls in China

Le Shan Zhou, Guo ping He, Si Yuan Tang *Changsha, China*

Background: In China, the prevalence of obesity is greater for women than men, which is consistent with other countries. However, the prevalence of obesity/overweight is greater for boys than girls, which is opposite in western countries. Although this gender disparity is well documented, little is known about the underlying factors and could not be explained by differences in hormones or genes. **Methods:** A cross-sectional survey design and a logistic regression analysis were used. Data were obtained from 1,405 school children in Changsha City, Hunan, China. The sample students included two groups: obese/overweight and normal weight. Data collected in the parent's questionnaire included the factors which may associate with obesity and the parents' perceptions of their children's weight status (e.g., whether the parents thought the child was obese, overweight, underweight or normal weight). Parents' perceptions of children's weight status were compared with the actual weight status. Underestimation meant that actual obese, overweight and normal children were perceived as overweight, normal and underweight, respectively. **Results:** Underestimation of weight status by parents was significantly associated with childhood obesity/overweight (p=0.000). There were differences in the likelihood of underestimation of children's weight status between boys and girls by their parents (OR 1.33, 95% CI 1.08-1.64). **Conclusions:** Misconceptions about children's weight are prevalent among Chinese parents, and these individuals are more likely to underestimate boys' weight status than girls'. The disparity of underestimating by gender may contribute to the difference in the prevalence of obesity/overweight between boys and girls among Chinese school children.

870-P[DT]

Factors Associated With Overweight Fourth-Grade Japanese Children

Yumi Yaegashi, Toshiyuki Onoda, Kiyomi Sakata *Shiwa-gun, Japan*

Background: To take measures against childhood overweight, it is important to understand factors associated with overweight. This study aimed to investigate the prevalence and factors associated with overweight. **Methods:** Forty-seven elementary schools out of 50 (94%) in rural areas and 28 out of 44 (64%) in urban areas in Iwate, northern Japan participated in the study. We analyzed a total of 2076 fourth-grade children (915 in rural and 1161 in urban areas). Data on lifestyle, eating habits, and knowledge and recognition of health were collected using a self-administered questionnaire (35 items). Data for height and weight were based on 2011 school health checkup. Subjects 20% over standard weight were defined as overweight/obese. Logistic regression was employed to examine associations between overweight and lifestyle, eating habits, and knowledge and recognition of health, respectively. **Results:** Prevalence of overweight was 9.0% for boys and 9.4% for girls (11.2% and 12.1% in rural areas, 7.4% and 7.1% in urban areas). Factors significantly associated with overweight were commuting to school, playing outside of school, breakfast, school lunch, eating speed, eating snacks, eating at restaurants and fast food outlets, self-assessment of health, and self-assessment of body shape. However, after adjustment for area, gender, and all factors, overweight was significantly associated with finishing school lunch, eating fast, not eating snacks, dislike of eating at restaurants and fast food outlets, thinking oneself fat, and concern about one's body and health. **Conclusions:** These results show that children's eating habits and their recognition of body and health are associated with overweight.

871-P

Association of Preterm Birth With Weight Status and Waist Circumference in Mexico City Youth

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Background: Preterm birth has been associated with adverse health profiles including impaired insulin sensitivity and increased truncal fat patterning in adolescence. In developing countries such as Mexico, changing environments coupled with preterm birth may deleteriously impact the development of health risks. This study examines the association of preterm birth with adolescent obesity and markers of weight status and fat distribution among Mexico City adolescents. **Methods:** Among 750 youth aged 7-15, we estimated differences in adolescent BMI and waist circumference by gestational age categories (<37 weeks (N= 61; 8.1%), ≥37 weeks) using linear regression. In addition, we estimated odds ratios and 95% confidence intervals for obesity during adolescence according to gestational age categories using logistic regression models adjusted for adolescent age, sex, and mother's age, obesity, and education and marital status as proxies for socioeconomic status. **Results:** Premature birth was not associated with obesity in unadjusted or adjusted models (OR=1.05; 95%CI: 0.43-2.55) and was associated with BMI and waist circumference in unadjusted (p=0.03; p=0.01) but not adjusted models (p=0.67; p=0.93). Odds of obesity were greater among boys (OR=1.91; 95% CI: 1.24-2.96) compared with girls and with mother's obesity (OR=3.84; 95% CI: 2.29-6.44). Odds were decreased with mothers who were married (OR=0.56; 95% CI: 0.36-0.89) compared with single mothers. **Conclusions:** Preterm birth was not associated with adolescent BMI, waist circumference, or obesity in Mexico City youth. The direction of association suggests a need for further research in a larger sample size. Efforts to reduce obesity in this context should consider the child's sex and weight status of the mother.

872-P

Evaluation of Body Composition and Exercise Capacity in Women After Bariatric Surgery

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Background: Obese patients have some limitations, including a reduction in exercise capacity. Bariatric surgery is an effective alternative for weight loss, which appears to reverse or attenuate these negative effects of obesity. The objective was to evaluate the body composition and the exercise capacity in women after bariatric surgery. **Methods:** It was evaluated 25 women (age 43.05 ± 9.62 years) who underwent bariatric surgery at least 6 months and not more than two years to compose the surgery group (SG). Body composition was assessed by bioelectrical impedance and exercise capacity was assessed by the 6-minute walk (6MWT). It was also assessed 10 women (age 39.10 ± 9.80 years) non-obese (BMI 18.5 to 24.9 kg/m2) and sedentary to compose the control group (CG). **Results:** Even after surgery, 17 patients in the SG were still obese. Then, to analyze the results SG was divided into two groups: obese SG (OSG) and non-obese SG (NOSG). The OSG have a higher percentage of body fat (40.79% ± 4.79; 30.93% ± 6.72; 30.10% ± 4.30) and less muscle mass (56.21% ± 4.55; 66.04% ± 5.94; 65.89% ± 4.80) and a shorter distance in 6MWT (434.00 ± 69.02 m; 513.37 ± 72.96 m; 565.50 ± 112.10 m) compared to NOSG and CG, respectively. In addition, the NOSG presented results of body composition and 6MWD similar to CG. **Conclusions:** The results indicate that women who underwent bariatric surgery, but still remain obese have a higher percentage of body fat and less muscle mass, and a shorter distance in 6MWT compared to non-obese surgery patients and non-obese sedentary women. In addition, women who underwent bariatric surgery that return to normal BMI, presented results of body composition and 6MWD similar to non-obese sedentary women.

873-P

The Joint Association of the Home Environment and Neighborhood Built Environment on Youth Dietary Intake and Weight

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Background: Some studies have shown associations between the built environment (e.g., many fast-food restaurants, convenience stores) and adolescent overweight/obesity. Given that built environments are not easily modifiable, this study examined whether a supportive home environment (i.e., frequent family meals, high family functioning and parent encouraging/modeling of healthy eating) can buffer the effects of an unhealthful neighborhood on youth dietary intake and Body Mass Index (BMI). **Methods:** Data were from EAT 2010 (Eating and Activity among Teens), a multi-level population-based study with diverse adolescents (n = 2,682; 53% female; mean age=14.5). Anthropometric measures and surveys were collected in schools. Neighborhood

variables were measured using Geographic Information Systems data. Multiple regressions of BMI z-score and fruit and vegetable intake were fit including home and neighborhood environmental variables as predictors and also including their interactions to test for effect modification. **Results:** Overall, significant independent associations were found between supportive home environments and higher fruit and vegetable intake and lower BMI, whereas associations between the built environment and fruit and vegetable intake and BMI were minimal or mixed. Interaction results indicated that the relationship between a supportive home environment and healthy dietary intake and BMI was enhanced when the neighborhood was healthier. For example, higher family functioning in boys and more frequent family meals in girls had a stronger association with more fruit and vegetable intake when there was a low density of fast food restaurants. **Conclusions:** Results indicated that supportive home environments have even stronger associations with adolescent healthier dietary intake and lower BMI when coupled with healthy neighborhood environments.

874-P
Parental Encouragement of Weight Loss Promotes Daughters' Dieting

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Background: Dieting to lose weight is common among female adolescents. This research investigated the association between parental encouragement of weight loss among their 9-15 y old daughters and their daughters' history of self-reported dieting by 15y. **Methods:** Participants in this study were 187 non-Hispanic white girls and both their parents, assessed at daughter age 9, 11, 13, and 15 years old. The Parent Encouragement of Child Weight Loss Scale was assessed when daughters were 9, 11, 13, and 15 to create an aggregate score of encouragement of child weight loss during this study. Logistic linear regression was used to examine the relationship between parental encouragement of weight loss and daughter's reports of "ever dieting" between 9 and 15 years, adjusting for daughters' weight status at baseline. **Results:** The percentage of girls reporting "ever dieting" increased from 14% at age 9 to 77% at age 15. Parental encouragement of weight loss was greater in girls who were overweight at age 9 ($p < 0.0001$). Paternal, but not maternal, encouragement independently predicts daughters' dieting behavior; girls whose fathers encouraged weight loss were 3.3 times more likely ($p < 0.05$) to diet than girls whose fathers didn't encourage weight loss. However, compared to girls whose parents didn't encourage weight loss, girls with one parent or two parents who encouraged weight loss were 3.6 and 7.7 times, respectively, more likely to report "ever dieting" at 15 ($p < 0.05$). **Conclusions:** Findings suggest that parental encouragement, particularly from fathers, influences daughters' dieting behavior. In our current obesigenic environment, health care providers may need to help parents who are concerned about their child's weight focus on encouraging healthy eating and physical activity habits to promote their child's health and general weight control.

875-P
Adverse Childhood Experiences and BMI in Young Adult Women: Is the Association Explained By Depression and Binge Eating?

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Background: Several studies have demonstrated associations between adverse childhood experiences (ACEs) and BMI. ACEs are risk factors for depression and binge eating, both of which are associated with BMI; however it is unknown whether binge eating and/or depression explain the relationship between ACEs and BMI. **Methods:** To examine the relationship between ACEs (maternal alcohol problems, paternal alcohol problems, parental separation and childhood neglect, physical abuse [CPA] and sexual abuse [CSA]) and BMI category, we analyzed cross-sectional data from 3385 participants in the Missouri Adolescent Female Twin Study (median age 22 years) using chi-square tests and multinomial logistic regression. **Results:** The prevalence of ACEs ranged from 2.35% (neglect) to 40.90% (parental separation), and all ACEs were individually associated with BMI category ($p<0.01$ for all). Obese and normal weight women had the highest and lowest prevalence, respectively, of every type of ACE. When all the ACEs were included together in a multinomial logistic regression (referent category: normal weight) adjusting for race, age, and maternal education level, only CSA remained significantly associated with obesity (RRR=2.61; 95% CI: 1.91- 3.58). The magnitude of association was only slightly attenuated after further adjustment for a lifetime history of major depression and binge eating (RRR 2.40; 95% CI: 1.74-3.31). **Conclusions:** CSA is strongly associated with obesity even after taking into account other ACEs. This relationship is not explained by the associations of both CSA and obesity with depression and binge eating. Longitudinal research collecting family- and individual-level data on ACEs and psychopathology, in addition to traditional obesity risk factors, will be necessary to elucidate the mechanisms by which ACEs and psychopathology are associated with BMI.

876-P
A Survey of Food Provision Practices in Texas Child Care Centers

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Background: One in four preschoolers is overweight making the child care setting an important environment for intervention. Approximately 1 million children in Texas attend child care centers, and a growing number of centers are requiring parents to provide the children's food. The aim of this study was to compare the characteristics of child care centers that require parents to provide food to centers that do not. **Methods:** A brief phone survey was conducted with staff at 263 randomly selected, licensed child care centers serving 3-5 year olds in San Antonio and Houston, TX, excluding Head Start centers. Staff reported center food policies and center characteristics (e.g., tuition, assistance, estimate of race of children enrolled). **Results:** Of the 263 centers surveyed, 25% required parents to provide food (i.e., provide at least one meal or snack). Centers that require parents to send food were significantly less likely to offer tuition assistance (49% vs 86%, $p<0.001$); to participate in CACFP (1% vs 62%, $p<0.001$); to have ethnic minority children (46% vs 76%, $p<0.001$); and to have Spanish only speaking families (25% vs 39%, $p<0.05$). Centers with parent-provided food were also more likely to have fewer children enrolled (90 vs 121, $p<0.01$); to have higher tuition ($641 vs $532, $p<0.001$); and to be non-profit (71% vs 35%, $p<0.001$). Accreditation status did not vary between centers where parents sent food and centers without parent-provided food (33% vs 26%, $p>0.25$). **Conclusions:** The multiple differences between child care centers that require parents to provide food and those that do not suggests that information about the center's food provision policies is an important consideration in the development of effective obesity prevention strategies for the child care setting.

877-P
Is There a Correlation Between Degree of Obesity and Severity of Obstructive Sleep Apnea in Children?

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Background: Obesity is associated with sleep disordered breathing in adult and pediatric population. The correlation between degree of obesity and severity of obstructive sleep apnea (OSA) is well established in adults, but data are inconsistent in children. The aim of this study was to examine the relationship between degree of obesity and severity of OSA among children. **Methods:** Retrospective medical record review of otherwise healthy pediatric population aged 2-18 years with BMI> 85th percentile for age and gender who underwent polysomnography at the Center for Sleep Medicine for evaluation of Sleep Disordered Breathing between January 1st, 2000 and December 31st, 2010. Subjects with OSA defined as Apnea Hypopnea (AH) Index of ≥ 1 per hour on overnight polysomnography were included. **Results:** Ninety five children (66 % male) met our inclusion criteria. Mean age (± SD) was 12.5 (± 4.0) years. Mean BMI was 33.8 ± 10.3. Mean BMI z score was 2.3 ± 0.5. AH index was categorized as mild (1-4 per hour), moderate (5-10 per hour) and severe (> 10 per hour). Correlation of AH index with BMI z score was assessed using Spearman rank correlation coefficient. There was significant association between severity of sleep apnea and the degree of obesity (0.41; $P<0.001$), with mean BMI z score for mild, moderate and sever AH index groups being 2.1, 2.2 and 2.6 respectively ($P < 0.001$). **Conclusions:** We found a positive correlation between the severity of OSA and the degree of obesity in children. We conclude that with increase in prevalence of severe obesity in children, the prevalence of severe obstructive sleep apnea is likely to increase as well. Therefore, a high index of suspicion for severe OSA is warranted in severely obese children.

878-P

Buckle Up For Patient Safety: Seat Belt Usage in Extremely Obese Patients

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Background: Motor vehicle accidents (MVAs) are a leading cause of preventable death and injury in the United States. Seatbelt use can reduce crash-related morbidity and mortality by more than 50%. Previous studies have demonstrated lower seatbelt usage in obese individuals. Obesity may also increase the risk of death associated with MVAs. Therefore, improving seatbelt compliance should be an important public health initiative especially for patients with extreme obesity. **Methods:** We surveyed 50 subjects in our clinic to evaluate for seat belt usage. Baseline characteristics included: mean body mass index (BMI) 56.3 +/- 13.5 kg/m2; mean age 46.8 (+/- 8.9 years); 76% females; 52% African American. Greater than 90% of patients had existing multiple co-morbidities including diabetes, hypertension, obstructive sleep apnea and dyslipidemia. **Results:** Eighty-four percent (42/50) of patients reported regular seat belt usage. Risk factors associated with nonuse included: higher mean BMI: 72.9 +/- 13.8 kg/m2, younger mean age (39.9 +/- 12.7 years) and African American descent (62.5%). Passenger discomfort and inadequate seat belt size were the most common reasons for non-usage. When compared with historical controls (U.S. Department of Transportation, 2010), the odds ratio for seatbelt use was 0.93 (p=0.80, 95% CI). Seat belt usage in our sample was greater than the latest published data (Schlundt, et al. 2007) for extremely obese patients (84% vs. 69.8%; OR 0.93 vs. 0.45).
Conclusions: Patients in our cohort had seat-belt usage similar to those reported in the general population. Compared to previous reported data for patients with extreme obesity, our sample demonstrated improvements in seatbelt compliance. Physician communication and means to further improve seatbelt usage in obese patients is an important healthcare and public safety initiative.

For author conflict of interest information, see page S250

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Hoelscher, Deanna M.	*Grants/Financial Support, MIchael & Susan Dell Foundation; Grants/Financial Support, Flaghouse, Inc.; Advisor, Dannon Institute; Advisor, MEND International Research Group* | 876-P
Hoffman, John M.	*Consultancy, GE Healthcare; Consultancy, ContraDyn; Stockholder, ContraDyn; Grants/Financial Support, GE Healthcare* | 269-P
Hoover, Adam	*Employee, Bite Technologies* | 368-P, 369-P
Huang, Christine	*Employee, Bristol-Myers Squibb* | 94-OR
Hudson, Katharine C.	*Employee, St Vincent Carmel Bariatric Center* | 504-P, 505-P, 507-P
Huelsing, Jean	*Stockholder, Camp Jump Start* | 339-P

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NAME	RELATIONSHIP & COMPANY | ABSTRACT NUMBERS
Huestis, Marilyn A.	*Grants/Financial Support, Sanofi Aventis, Inc.- thru NIH CRADA mechanism* | 291-P
Hughes, Thomas E.	*Board Member, Zafgen, Incorporated; Employee, Zafgen, Incorporated; Stockholder, Zafgen, Incorporated* | 456-P
Huh, Chul-Sung	*Employee, Korea Yakult Company Limited* | 228-P
Hulver, Matthew W.	*Grants/Financial Support, VSL Pharmaceutcals, Inc.* | 250-P
Hurley, Robert W.	*Grants/Financial Support, Boston SCientific; Grants/Financial Support, St. Jude Medical* | 397-P, 560-P, 564-P
Ionut, Viorica	*Grants/Financial Support, Amylin Pharmaceuticals* | 194-P
Jacques, Jacqueline	*Employee, Bariatric Advantage/Metagenics* | 386-P
Jakicic, John M.	*Advisor, Alere Wellbeing; Grants/Financial Support, BodyMedia, Inc.; Honorarium, Nestle Nutrition Institute* | 21-OR, 74-OR, 302-P, 324-P, 371-P, 394-P, 610-P
James, Brittany L.	*Grants/Financial Support, United State Department of Agriculture* | 333-P
James, Philip W.	*Consultancy, Abbott Laboratories* | 24-OR
Jelsing, Jacob	*Board Member, gubra* | 191-P
Jen, Kai-Lin, Catherine	*Board Member, ArtJen Complexus USA, LLC* | 349-P, 439-P, 751-P
Jensen, Christine B.	*Employee, Novo Nordisk A/S; Stockholder, Novo Nordisk A/S* | 259-P, 473-P
Jiang, Qingwu	*Employee, Fudan University; Grants/Financial Support, School of Public Health, Fudan University* | 735-P
Johansson, Kari	*Grants/Financial Support, Itrim International* | 77-OR, 364-P
Johansson, Maja	*Employee, Umecrine Cognition AB* | 283-P
Johnson, William D.	*Consultancy, Jenny Craig* | 174-P, 488-P, 543-P
Joubert, Elizabeth	*Grants/Financial Support, National Research Foundation of South Africa* | 226-P
Kaplan, Lee M.	*Grants/Financial Support, Ethicon Endo-Surgery; Advisor, Sanofi-Aventis; Advisor, Gelesis; Advisor, Rhythm; Advisor, Zafgen; Advisor, GI Dynamics; Advisor, Merck Research Laboratories* | 36-OR, 68-OR, 476-P, 484-P, 761-P
Kaplan, Michael	*Consultancy, novonordisc* | 521-P
Karmally, Wahida	*Advisor, American Pistachio Growers* | 32-OR
Kashyap, Sangeeta	*Grants/Financial Support, Ethicon* | 95-OR
Kaufman, Neal D.	*Stockholder, DPS Health* | 383-P
Keenan, Michael J.	*Grants/Financial Support, National Starch, LLC; Grants/Financial Support, Merck* | 217-P
Kehayias, Joseph J.	*Consultancy, Abbott Nutrition; Consultancy, Seca gmbh; Grants/Financial Support, Unilever* | 265-P
Kelly, Aaron S.	*Grants/Financial Support, Amylin Pharmaceuticals; Consultancy, Novo Nordisk Pharmaceuticals* | 458-P, 537-P
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Kelsey, Megan	*Grants/Financial Support, Bristol Myers Squibb; Grants/Financial Support, Merck; Grants/Financial Support, Daiichi-Sankyo* | 529-P
Kessler, Robert	*Advisor, PharmoRx Inc* | 284-P
Kim, Dennis D.	*Employee, Zafgen; Advisor, Alkermes; Consultancy, Lumena; Advisor, GI Dynamics; Consultancy, Gilead; Stockholder, Amylin; Stockholder, Vivus; Stockholder, Orexigen* | 456-P
Kirschenbaum, Dan	*Employee, Wellspring* | 358-P, 455-P
Kirwan, John P.	*Grants/Financial Support, Nestle; Grants/Financial Support, NIH; Grants/Financial Support, ScottCare* | 95-OR
Kittelsrud, Julie	*Employee, Avera Research Institute* | 474-P
Kolotkin, Ronette	*Consultancy, Obesity & QOL Consulting* | 341-P
Kolotourou, Maria	*Employee, MEND Central Ltd* | 43-OR, 405-P, 406-P, 448-P
Kong, Kai Ling	*Employee, Iowa State University* | 398-P
Kornberg, Jacob J.	*Employee, Metagenics, Inc.* | 386-P
Korner, Judith	*Advisor, Nutrisystem; Consultancy, Unigene; Consultancy, Ethicon; Grants/Financial Support, Covidien* | 32-OR
Kovacs, Betty	*Consultancy, GSK* | 518-P

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Kranz, Sibylle	*Grants/Financial Support, The Kellogg Company* | 409-P
Krukowski, Rebecca A.	*Consultancy, Jenny Craig; Honorarium, Griffith University; Consultancy, Stanford University* | 321-P, 800-P
Kuan, Ling-Yu	*Employee, Fred Hutchinson Cancer Research Center* | 153-P
Kumar, Rajiv	*Board Member, ShapeUp, Inc.; Board Member, Shape Up Rhode Island* | 73-OR
Lafond, David	*Employee, Kellogg Company* | 440-P
Laine, Laura	*Employee, Baylor College of Medicine* | 736-P
Lamb, Joseph J.	*Employee, Metagenics, Inc.* | 386-P
Lambert, Joshua D.	*Consultancy, Kao Company* | 185-P
Lathan, Debra L.	*Employee, City of Houston* | 770-P
Lau, Francis C.	*Employee, InterHealth N.I.* | 431-P, 436-P
Lawless, Andrea L.	*Employee, Biofortis Provident Clinical Research* | 440-P
Lawton, Jessica M.	*Employee, The Miriam Hospital* | 316-P
Lee, Hoyong	*Employee, Korea Yakult Company Limited* | 228-P
Lee, Jaehoon	*Employee, University of Kansas* | 374-P, 606-P
Lee, Myoungsook	*Grants/Financial Support, Technology Commercialization Support Program, Ministry for Food, Agriculture, Forestry and Fisheries; Grants/Financial Support, Agriculture Science&Technology Development* | 231-P
Leibson, Cynthia L.	*Grants/Financial Support, Abbott Laboratories* | 727-P
Lerman, Robert H.	*Employee, Metagenics, Inc.* | 386-P
Lewis, Cora E.	*Grants/Financial Support, NIH; Grants/Financial Support, Novo Nordisk* | 661-P, 791-P
Lima, Fábio B.	*Employee, University of Sao Paulo* | 184-P
Linden, Ellen	*Employee, University of South Florida* | 179-P
Lindsley, Karen A.	*Employee, Emory University, Pediatric Endocrinology; Employee, Childrens Healthcare of Atlanta* | 350-P, 666-P
Liu, Nianjun	*Employee, University of Alabama at Birmingham; Grants/Financial Support, National Institutes of Health* | 180-P
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Lopez-Jimenez, Francisco	*Grants/Financial Support, Select Research; Grants/Financial Support, European Union. Human Development Program* | 508-P
Lowe, Michael R.	*Advisor, Weight Watchers* | 295-P, 303-P
Lukeis, Sarah	*Employee, MEND Australia* | 448-P
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Lv, Nan	*Grants/Financial Support, Corn Refiners Association; Consultancy, Corn Refiners Assocation* | 381-P
Lynch, Jane L.	*Grants/Financial Support, Eli Lilly; Grants/Financial Support, Medtronic; Grants/Financial Support, Daiichi Sankyo* | 106-OR, 699-P, 709-P
Lysenko, Anna	*Employee, Monell Chemical Senses* | 132-P
Mackey, Eleanor R.	*Grants/Financial Support, Allergan* | 343-P, 356-P, 556-P
Madan, Alok	*Grants/Financial Support, Covedian* | 492-P
Maggioni, Aldo P.	*Board Member, Abbott; Board Member, Sanofi Aventis* | 24-OR
Mahony, David	*Grants/Financial Support, Ethicon Endo-Surgery* | 494-P
Maki, Kevin C.	*Grants/Financial Support, Kellogg Company; Grants/Financial Support, National Starch; Grants/Financial Support, General Mills* | 440-P
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Marsh, Donald	*Employee, Merck & Co., Inc.; Stockholder, Merck & Co., Inc.* | 36-OR
Martin, Coleen T.	*Grants/Financial Support, Department of Defense* | 839-P
Martin, Corby K.	*Grants/Financial Support, Elcelyx* | 19-OR, 94-OR, 389-P, 639-P
Masse, Louise C.	*Employee, University of British Columbia* | 789-P
Mattheus, Michaela	*Employee, Boehringer Ingelheim Pharma GmbH&Co.KG* | 463-P
Matthie, James R.	*Stockholder, Spectral Z llc* | 446-P
Mayorga, Maria E.	*Grants/Financial Support, National Institutes of Health* | 744-P

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NAME	RELATIONSHIP & COMPANY | ABSTRACT NUMBERS
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McClendon, Katie S.	*Grants/Financial Support, Allergan, Inc* | 767-P, 768-P
McGuire, Darren K.	*Consultancy, Orexigen* | 779-P
McMahon, Robert P.	*Consultancy, Amgen* | 291-P
Medrano, Juan F.	*Employee, Univ of California, Davis* | 213-P
Mehta, Tapan	*Grants/Financial Support, The trainee's projects are supported by the UAB Doctoral Training Grant in Obesity and Nutrition Research funded by the Kraft Foods Corporation.* | 832-P
Meneses, Karen	*Board Member, National Cancer Advisory Board; Grants/Financial Support, Komen for the Cure North Central Alabama; Grants/Financial Support, National Institute of Nursing Research; Grants/Financial Support, National Cancer Institute; Board Member, MD Anderson Cancer Center Orlando; Consultancy, Letters & Sciences* | 599-P
Metallinos-Katsaras, Elizabeth	*Grants/Financial Support, United States Department of Agriculture; Consultancy, Massachusetts Department of Public Health* | 801-P
Minich, Deanna M.	*Employee, Metagenics, Inc.* | 386-P
Moon, Jon	*Employee, MEI Research, Ltd* | 89-OR, 382-P
Moore, Louis A.	*Employee, Houston Parks and Recreation Department* | 770-P
Moran, Timothy	*Consultancy, Amylin* | 277-P
Morris, John C.	*Consultancy, Eisai; Consultancy, Pfizer/Wyeth; Consultancy, Otsuka Pharmaceuticals; Consultancy, Novartis; Consultancy, Glaxo-Smith-Kline; Consultancy, Janssen Alzheimer Immunotherapy Program/Elan; Consultancy, Esteve* | 15-OR
Murphy, Brian J.	*Employee, Bristol-Myers Squibb* | 94-OR
Murphy, Raleen M.	*Employee, Eastern Health* | 500-P, 777-P
Muth, Eric R.	*Employee, Bite Technologies; Grants/Financial Support, National Instiutes of Health/NIDDK; Grants/Financial Support, Office of Naval Research* | 368-P, 369-P
Nakamura, Hidehiro	*Employee, Ajinomoto Co., Inc* | 239-P
Nascimento, Andre F.	*Grants/Financial Support, São Paulo Research Foundation* | 238-P, 249-P
Neovius, Martin	*Advisor, Itrim* | 77-OR, 364-P
Newnes, Lindsey	*Employee, Children's Hospital Colorado; Employee, University of Colorado* | 529-P
Ng-Mak, Daisy S.	*Employee, Allergan, Inc.* | 483-P
Ngo Sock, Emilienne T.	*Grants/Financial Support, IRSC* | 164-P
Nickols-Richardson, Sharon M.	*Grants/Financial Support, General Mills Inc; Consultancy, Journal of the Academy of Nutrition and Dietetics; Grants/Financial Support, Dairy Management Inc; Grants/Financial Support, The Hershey Company* | 834-P
Nissen, Steven E.	*Grants/Financial Support, Orexigen; Grants/Financial Support, Vivus* | 95-OR
Nkansah, Margaret	*Employee, ABC Family* | 503-P
Nogusa, Yoshihito	*Employee, Ajinomoto CO., INC* | 260-P
O'Neil, Patrick M.	*Grants/Financial Support, Novo Nordisk; Board Member, Orexigen; Grants/Financial Support, Weight Watchers* | 305-P
Ocharan, Esther	*Employee, Escuela Superior de Medicina/ Instituto Politecnico Nacional; Advisor, Hospital General de Mexico* | 781-P
Okerson, Ted	*Employee, Allergan, Inc; Stockholder, Allergan, Inc* | 483-P, 513-P
Olson, Christine M.	*Employee, Cornell University; Grants/Financial Support, Urban Institute; Grants/Financial Support, RWJF; Grants/Financial Support, USDA; Grants/Financial Support, NHLBI* | 830-P
Oral, Elif A.	*Grants/Financial Support, Amylin Pharmaceuticals Inc.; Grants/Financial Support, BMS* | 378-P, 379-P, 380-P
Ostbye, Truls	*Grants/Financial Support, NIH; Employee, Duke University* | 390-P, 810-P
Owen, Stanford	*Stockholder, NATO, LLC* | 527-P
Owens, Judith	*Advisor, Purdue; Advisor, Jazz; Advisor, Takeda; Advisor, Transcept; Grants/Financial Support, UCB* | 534-P
Padwal, Raj S.	*Honorarium, Vivus; Grants/Financial Support, CVRx; Grants/Financial Support, Novo Nordisk* | 460-P, 461-P, 510-P, 765-P, 777-P
Park, Do-Young	*Employee, Korea Yakult Company Limited* | 228-P

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Parkes, David G.	*Employee, Amylin; Stockholder, Amylin* | 211-P
Pecora, Kristina M.	*Employee, Wellspring* | 358-P
Pedersen, Sue D.	*Speaker, Novo Nordisk* | 485-P
Pedley, Alison	*Employee, Merck; Stockholder, Merck* | 175-P
Peier, Andrea	*Employee, Merck Research Labs* | 36-OR
Pelleymounter, Mary Ann	*Employee, Bristol Myers Squibb* | 94-OR
Pells, Jennifer	*Employee, Wellspring at Structure House* | 384-P
Pender, John R.	*Grants/Financial Support, GSK* | 486-P
Pi-Sunyer, Xavier	*Advisor, Novo; Advisor, Eisai; Advisor, Weight Watchers; Advisor, McNeil; Grants/Financial Support, Lilly; Grants/Financial Support, Novo* | 127-P, 158-P, 518-P
Piaggi, Paolo	*Grants/Financial Support, University of Pisa* | 87-OR, 242-P
Pomp, Alfons	*Speaker, covidien; Speaker, W.L Gore & Assocaites* | 33-OR, 486-P, 514-P
Porter, Warren P.	*Board Member, Isomark; Stockholder, Isomark* | 88-OR
Pretlow, Robert	*Employee, eHealth International* | 352-P
Qiao, Zhuanhong	*Employee, University of Chicago* | 140-P
Quigley, Chandra A.	*Employee, CRC Health Group* | 384-P
Radcliffe, Jessica E.	*Employee, LaTrobe University* | 232-P
Radley, Duncan	*Employee, MEND Central Ltd* | 43-OR, 405-P, 406-P, 448-P, 736-P
Ragsdale, Kathleen	*Employee, Mississippi State University* | 816-P
Ravenna, Máximo G.	*Board Member, Therapeutic Center Dr Máximo Ravenna* | 328-P
Ravussin, Eric	*Advisor, Lilly; Advisor, Merck; Advisor, Roche; Grants/Financial Support, Pfizer; Grants/Financial Support, Amylin; Advisor, GSK* | 59-OR, 65-OR, 174-P, 186-P, 198-P, 209-P, 243-P, 246-P, 268-P, 429-P, 521-P
Reilly, Timothy P.	*Employee, Bristol-Myers Squibb Co.; Stockholder, Bristol-Myers Squibb Co.* | 94-OR
Reimers, Kristin	*Employee, ConAgra Foods* | 325-P
Ribeiro, Sonia M.	*Grants/Financial Support, Coordenação de Aperfeiçoamento de Pessoal Nível Superior - CAPES/Brazil* | 229-P
Rising, Camella	*Board Member, American Overseas Dietetic Association* | 604-P
Roerig, James	*Grants/Financial Support, Lilly Pharmaceuticals* | 502-P
Rosborough, Jennifer M.	*Employee, MEND* | 406-P
Rose, Chelsea M.	*Grants/Financial Support, USDA Childhood Obesity Prevention Training Grant* | 47-OR
Roth, Jonathan D.	*Employee, Amylin Pharmaceuticals, Inc.; Stockholder, Amylin Pharmaceuticals, Inc.* | 211-P
Ruault du Plessis, Hugues	*Employee, Proteines* | 99-OR
Ruilope, Luis M.	*Speaker, Boehringer-Ingelheim* | 463-P
Rundle, Andrew G.	*Advisor, EHE International, Inc* | 104-OR
Ruohonen, Kari	*Employee, EWOS Innovation* | 244-P
Saad, Farid	*Employee, Bayer Pharma AG, Berlin, Germany* | 465-P, 466-P, 467-P
Sacher, Paul M.	*Employee, MEND; Employee, University College London* | 43-OR, 405-P, 406-P, 448-P, 736-P
Sakai, Ryosei	*Employee, Ajinomoto Co., Inc.* | 239-P
Sanchez, Matilde	*Employee, Arena Pharmaceuticals* | 471-P
Sarangarajan, Rangaprasad	*Board Member, Berg Pharma* | 143-P
Saris, Wim H.	*Grants/Financial Support, Novo Nordisk; Employee, Maastricht University; Employee, DSM; Employee, Top Institute Food and Nutrition Wageningen Neth; Advisor, Nutrition et Sante* | 259-P, 473-P
Sarr, Michael G.	*Consultancy, Enteromedics inc* | 508-P
Sarwer, David	*Consultancy, Allergan; Consultancy, Galderma; Consultancy, Ethicon Endo-Surgery; Consultancy, Enteromedics; Consultancy, Baronova* | 353-P, 428-P
Sazonov, Edward	*Stockholder, Physical Activity Innovations Inc* | 332-P
Schauer, Philip R.	*Grants/Financial Support, Ethicon; Board Member, SurgiQuest; Board Member, RemedyMD; Board Member, Barosense; Stockholder, Intuitive; Grants/Financial Support, Bard/Davol; Consultancy, Gore; Grants/Financial Support, Invacare; Consultancy, Stryker; Consultancy, Quadrant Health Care* | 95-OR
Schiltz, Barbara	*Employee, Metagenics, Inc.* | 386-P

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Schwartz, Ann V.	*Grants/Financial Support, Merck; Grants/Financial Support, GlaxoSmithKline* | 531-P
Schwartz, Gary J.	*Consultancy, Merck* | 9-OR
Sengupta, Krishanu	*Employee, Laila Impex R&D Centre* | 436-P
Shanahan, William R.	*Employee, Arena Pharmaceuticals* | 471-P
Sharma, Arya M.	*Honorarium, Abbott; Consultancy, Novo-Nordisk; Consultancy, Orexigen; Consultancy, Vivus* | 24-OR, 460-P, 461-P, 510-P, 777-P
Sieling, Jared	*Employee, MEI Research, Ltd* | 382-P
Silva, Jaime R.	*Honorarium, OTSUKA* | 254-P
Sloth, Birgitte	*Employee, Novo Nordisk; Stockholder, Novo Nordisk* | 259-P, 473-P
Smith, Lindsey R.	*Employee, MEND Central* | 405-P, 406-P
Smith, Steven R.	*Consultancy, Amylin Pharmaceuticals; Consultancy, Wyeth; Consultancy, Takeda; Consultancy, Piramal Life Sciences; Consultancy, Orexigen; Consultancy, Novo Nordisk; Consultancy, Five Prime; Consultancy, Astra Zeneca; Consultancy, Arena* | 94-OR
Somers, Virend K.	*Consultancy, ResMed; Grants/Financial Support, Phillips Respironics Foundation; Consultancy, Medtronic; Consultancy, Deshum; Consultancy, Johnson and Johnson; Consultancy, Apnex Medical; Consultancy, Respicardia; Consultancy, Neu Pro* | 508-P
Srinivas, Sindhu K.	*Grants/Financial Support, Bayer Healthcare; Grants/Financial Support, Wyeth* | 428-P
Steffen, Kristine	*Grants/Financial Support, National Institutes of Health* | 502-P
Stevens, June	*Honorarium, The NIH Foundation; Grants/Financial Support, Wyeth; Honorarium, American Institute of Cancer Research* | 569-P, 579-P, 594-P, 628-P, 715-P
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Sundström, Johan	*Advisor, AstraZeneca* | 364-P
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Tchernof, Andre	*Grants/Financial Support, Ethicon Endo-Surgery* | 12-OR, 118-P, 119-P, 162-P
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Teran-Garcia, Margarita	*Advisor, TOS; Advisor, American Society for Nutrition* | 289-P, 713-P, 784-P, 785-P
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Torp-Pedersen, Christian	*Honorarium, Abbott* | 24-OR
Torres-Leal, Francisco L.	*Grants/Financial Support, Fundação de Amparo a Pesquisa do Estado de Sao Paulo* | 115-P
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Tripp, Matthew L.	*Employee, Metagenics, Inc.* | 386-P
Trost, Stewart G.	*Board Member, ActiGraph* | 612-P, 798-P
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Valdovinos-Chavez, Salvador B.	*Grants/Financial Support, Boheringer Ingelheim* | 714-P
van Can, Judith	*Grants/Financial Support, Novo Nordisk* | 259-P, 473-P
Vander Wal, Jillon S.	*Board Member, Living Well Foundation* | 339-P
Vargas, Emelyn	*Employee, Arena Pharmaceuticals* | 471-P
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Vishnudas, Vivek K.	*Employee, Berg Biosystems* | 143-P
Voelker, Birgit	*Employee, Boehringer Ingelheim GmbH & Co. KG* | 463-P
Waldman, Scott A.	*Grants/Financial Support, Targeted Diagnostics & Therapeutics, Inc.; Grants/Financial Support, Merck; Advisor, Targeted Diagnostics & THerapeutics, Inc.* | 271-P
Walter, Lea	*Employee, Proteines* | 99-OR
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Weinberg, Brad	*Stockholder, ShapeUp* | 73-OR
Weiss, Karl	*Employee, HealthCare Research* | 670-P, 766-P
West, Delia S.	*Advisor, Jenny Craig, Inc* | 321-P, 363-P, 800-P
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Wilfley, Denise E.	*Board Member, Minnesota Obesity Center; Consultancy, United Health Group; Grants/Financial Support, Shire; Board Member, University of Alabama-Birmingham's Nutrition Obesity Research Center* | 45-OR, 334-P
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Woriax, Hannah E.	*Employee, BSOM* | 348-P
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Yanovski, Jack A.	*Grants/Financial Support, Roche; Grants/Financial Support, Obecure* | 90-OR, 633-P, 640-P
Yi, Yanqing	*Employee, Memorial University of Newfoundland* | 176-P, 195-P, 202-P
Zeitler, Philip	*Consultancy, Daichii-Sankyo; Consultancy, BMS; Consultancy, Merck* | 529-P
Zhang, Jingying	*Employee, PBRC* | 61-OR
Zheng, Jolene	*Grants/Financial Support, Oncometa Pharmaceuticals* | 217-P
Zhou, Ying	*Employee, School of Public Health, Fudan University (FUSPH), China; Grants/Financial Support, School of Public Health, Fudan University (FUSPH), China* | 735-P

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Golisano Children's Hospital at the URMC

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Director, the Johns Hopkins Weight Management Center

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Gerald V. Denis, PhD

Associate Professor, Boston University School of Medicine

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Postdoctoral Fellow, The University of Texas Health Science Center at Houston

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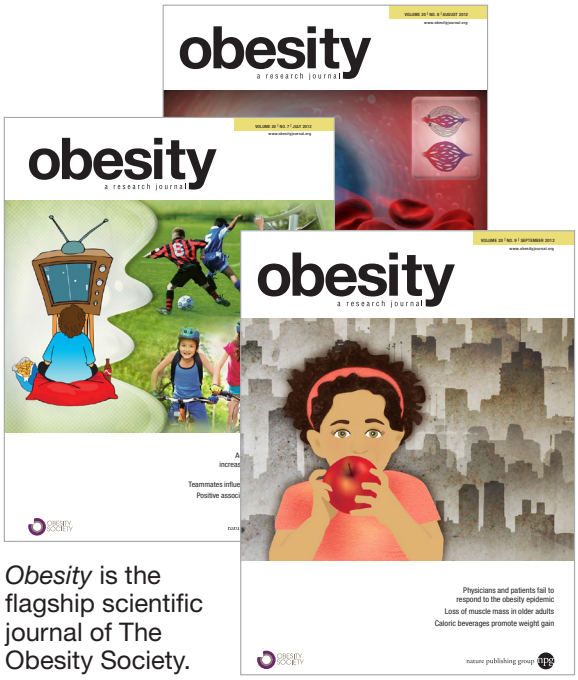

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Richard N. Bergman, PhD

Marilyn Ader, PhD

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Join a Section!
Connect With a Colleague

Special-interest sections are a vibrant part of The Obesity Society. Each section is self-governed and meets at the annual scientific meeting. Sections elect their own leadership and represent the interests of the section within the Society. During the Section Business Meeting at the annual meeting members have an opportunity to develop a work plan for the upcoming year, for Council approval. TOS members sign up for section membership when they join the Society, but may change affiliation and participate in more than one section. Currently there are sections in the following areas:

- **Bariatric Surgery**
- **Basic Science**
- **Clinical Management**
- **Diversity**
- **eHealth/mHealth**
- **Epidemiology**
- **Health Services Research**
- **Latin American Affairs**
- **Obesity & Cancer**
- **Pediatric Obesity**

Late-Breaking Abstracts

With the rapidly increasing pace of obesity research, this year's program features Late-Breaking Abstracts that present new and high-impact research for which results were not available at the March abstract deadline. All submissions were reviewed by the Program Committee, and only those that were judged to be very high-impact were chosen for presentation. Late-Breaking Abstracts were selected for both oral and poster presentation during Obesity 2012.

Late-Breaking Abstracts can be found in a separate document than the Abstract Book. These abstracts will be numbered with the prefixes "LB-OR" and "LB-P", for Late-Breaking Oral and Late-Breaking Poster respectively, in the document and in the poster hall.

Social Networking

During Obesity 2012, we'll be using social media to share information and highlights throughout the meeting.

TWITTER

Follow The Obesity Society on Twitter at: https://twitter.com/ObesitySociety

Search for Obesity Society 2012 meeting updates and tweet about the meeting using #theobesitysociety.

FACEBOOK

To visit our Facebook page, go to: www.facebook.com/theobesitysociety

LINKEDIN

To join our LinkedIn group, go to www.obesity.org and click on the LinkedIn icon at the bottom of the page.

obesityweek

Where Science and Treatment Meet

Introducing Obesity Week

An annual collaborative event addressing this chronic and multifaceted metabolic disease.

Bringing together the resources of the American Society for Metabolic & Bariatric Surgery (ASMBS) and The Obesity Society (TOS) to co-locate our respective annual meetings under one roof. We have developed the preeminent annual scientific and educational conference covering the full scope of the obesity issue, from cutting-edge basic science and clinical research to intervention and public policy discussions that can impact the quality of life for millions who suffer from obesity.

2013 **Atlanta, Georgia | Nov. 12–16**
Georgia World Congress Center

2014 **Boston, Massachusetts | Nov. 2–7**
Westin Boston Waterfront Hotel

2015 **Los Angeles | Nov. 1–7**
JW Marriott Hotel

www.obesityweek.com

OBESITY SOCIETY