

Energy balance and obesity: Translating science to public health

Robin P. Shook, PhD

Research Assistant Professor, Department of Pediatrics, Children's Mercy Hospital
Director, Weighing In

 rpshook@cmh.edu

 @iamrobinshook



Outline

- My background
- My research
- Future directions

B.A. Health Promotion, University of Northern Iowa
M.S. Exercise & Sports Science, Iowa State University
Also spent some time in Columbia, MO & Kirksville, MO



**UT Southwestern- Institute for Exercise and Environmental Medicine,
Dallas, TX- Benjamin Levine, MD**



**Pennington Biomedical Research Center, Baton Rouge, LA-
Timothy Church, MD, PhD, MPH**



**University of South Carolina, Arnold School of Public Health-
Steven Blair, PED**



UNIVERSITY OF
SOUTH CAROLINA
Arnold School of Public Health

**Iowa State University, Department of Kinesiology-
Assistant Professor**

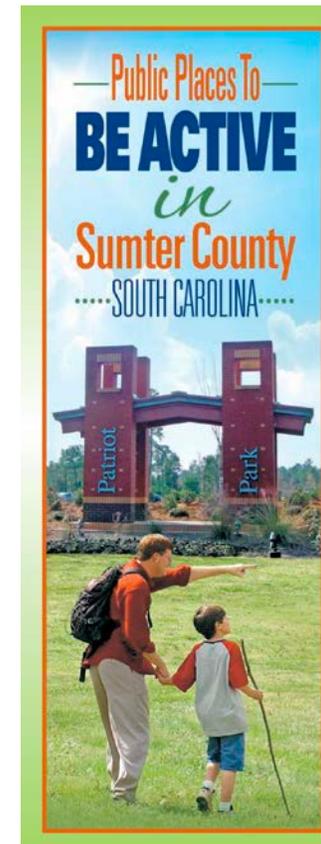
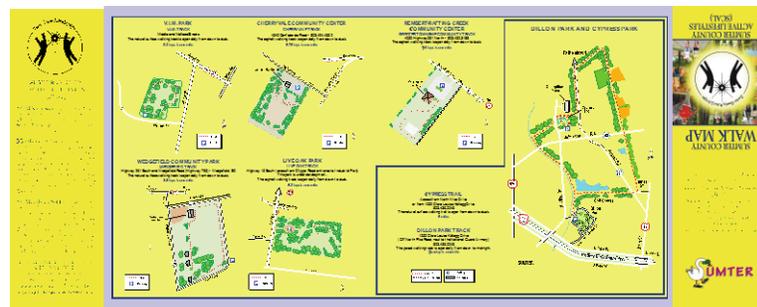
IOWA STATE UNIVERSITY
College of Human Sciences



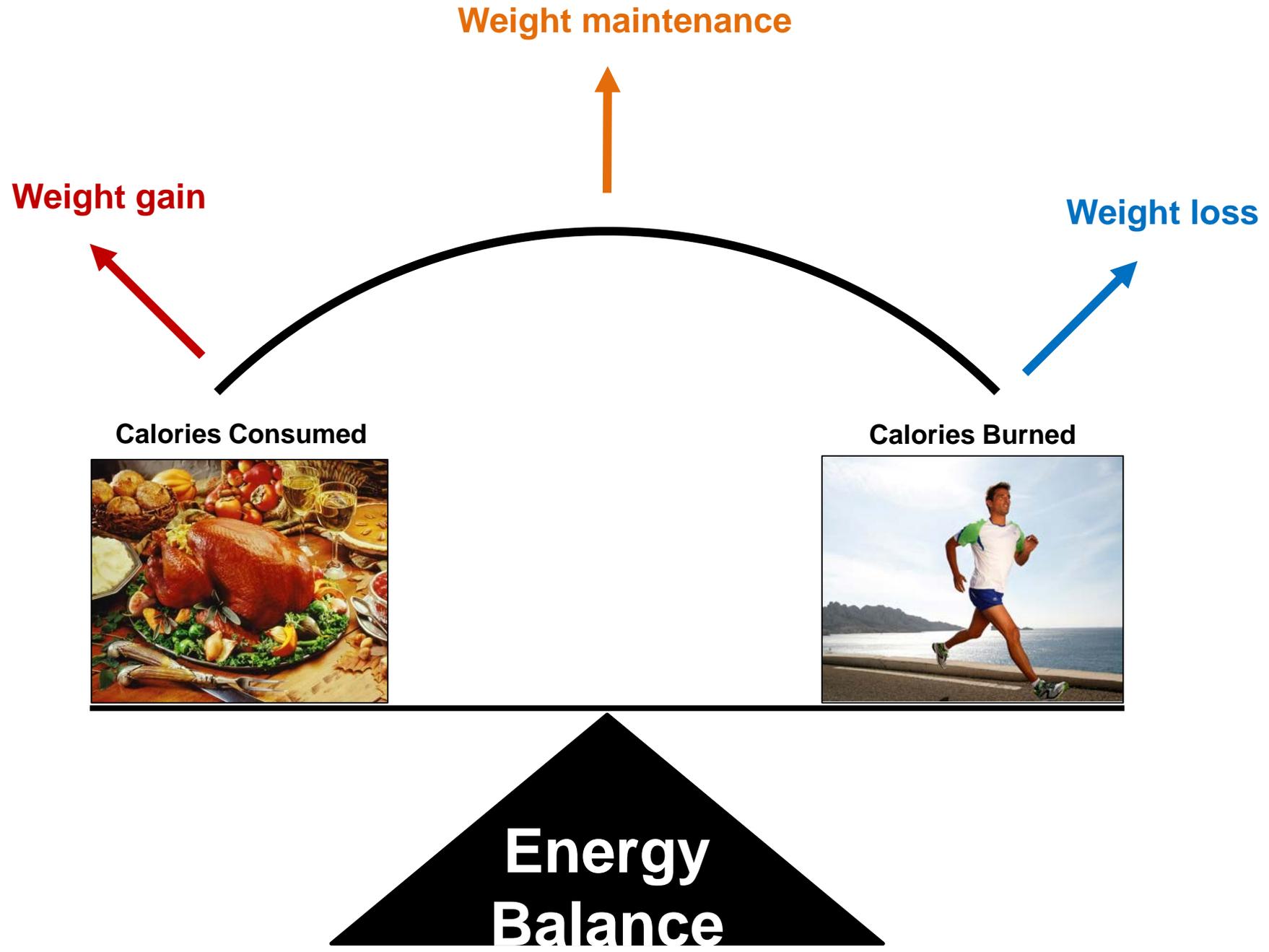
Prevention Research Center- Arnold School of Public Health

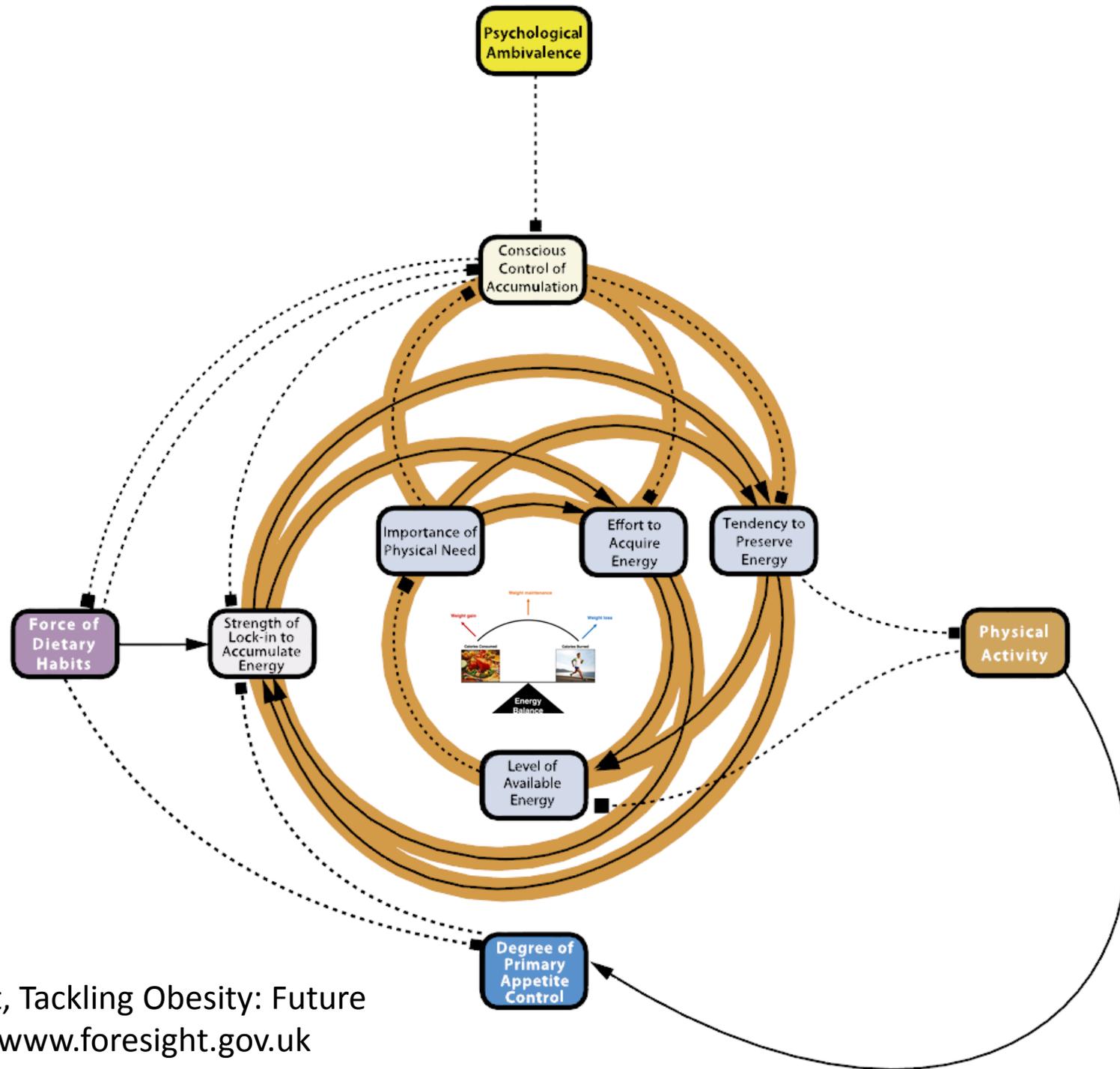


- USC PRC vision: '*Physically Active People in Active Community Environments*'
- Pre-doctoral fellow, with Steven Hooker, PhD, MPH
- Community-based participatory research project 'Sumter County on the Move!' with Sumter County Active Lifestyles
- Infrastructure improvements, walking interventions, health promotion campaigns, mini-grant funding mechanism, etc.



'Energy balance' is governed by the First Law of Thermodynamics





Research interests

- Energy balance
- Intersection between biology and behavior
- Public health-focused outcomes
- Tools that I use...



Translational Science

T0 T1 T2 T3 T4

Basic Science Translation to humans Translation to patients Translation to practice Translation to community

Preclinical/ animal studies	Phase 1 trials (Proof of concept)	Phase 2 and 3 trials	Phase 4 trials	Population- level research
--------------------------------	---	-------------------------	----------------	-------------------------------



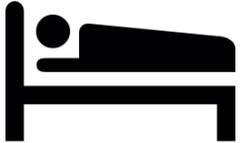
Defining mechanisms, targets, lead molecules

New methods of diagnosis, treatment, prevention

Controlled studies leading to effective care

Delivery of recommended and timely care to the right patient

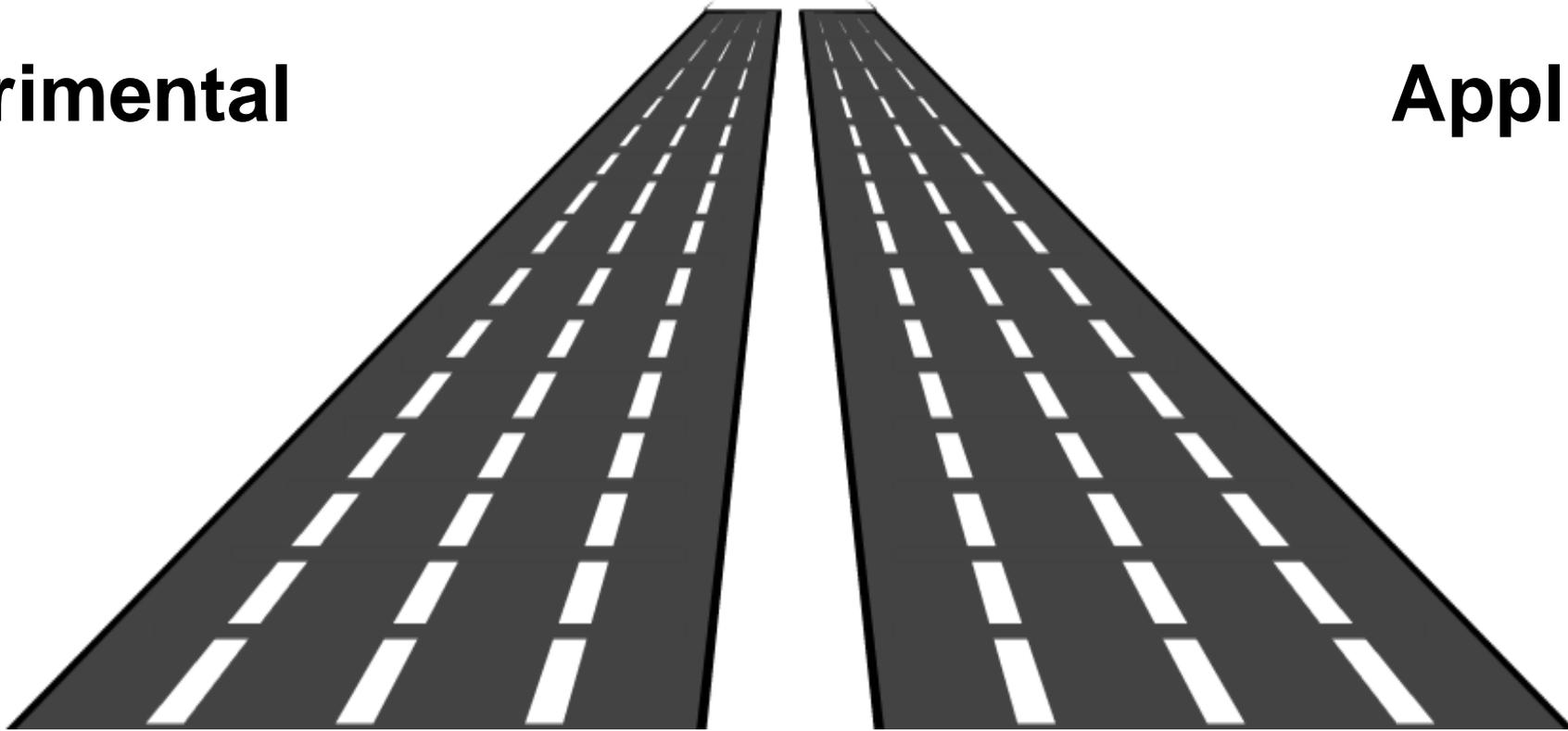
True benefit to society



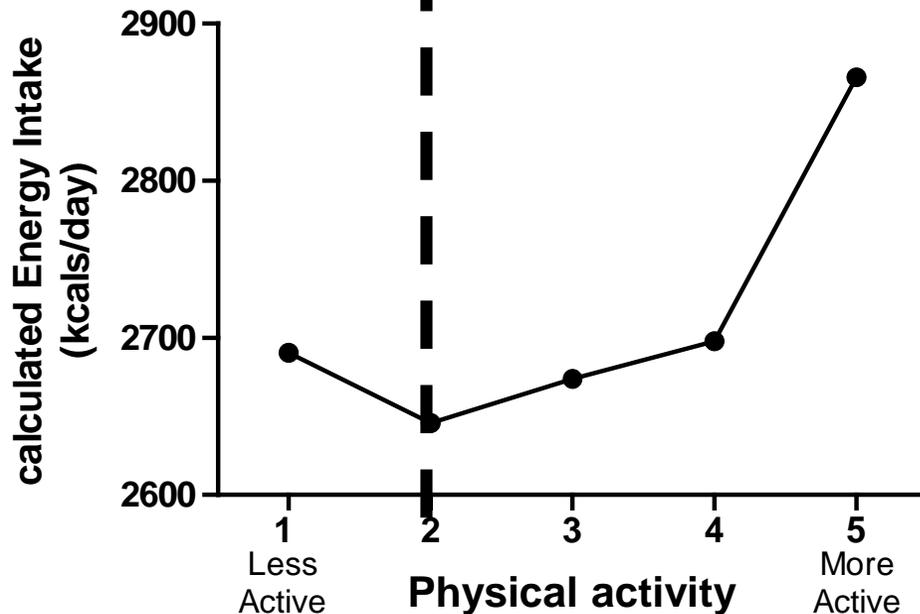
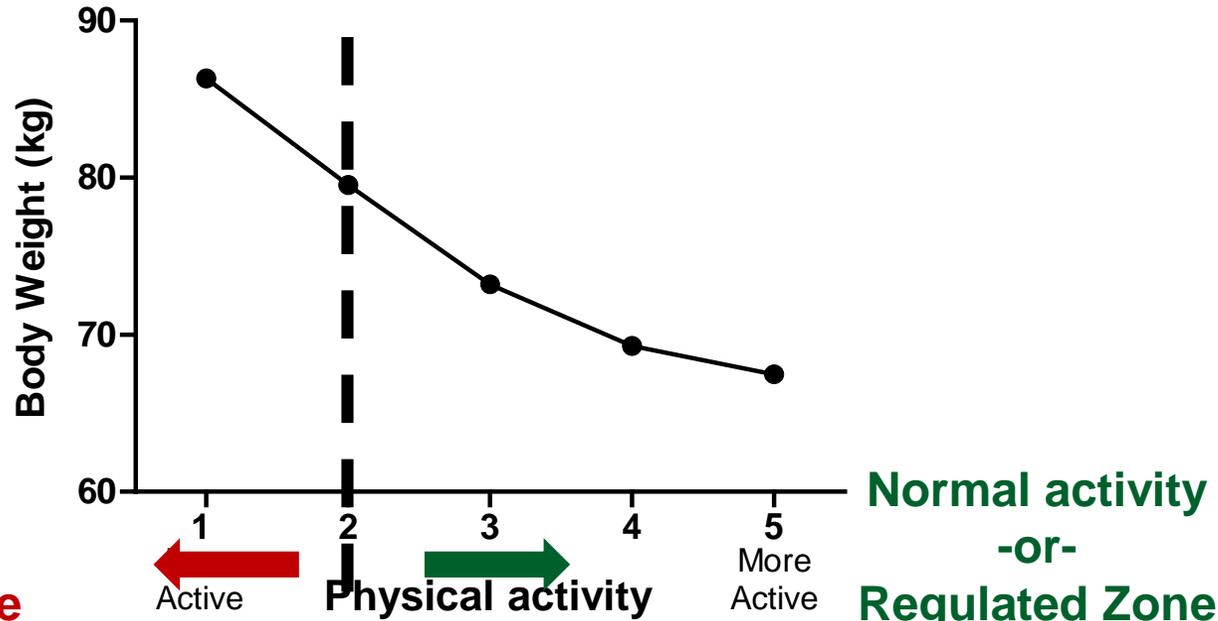
Energy balance → public health

Experimental

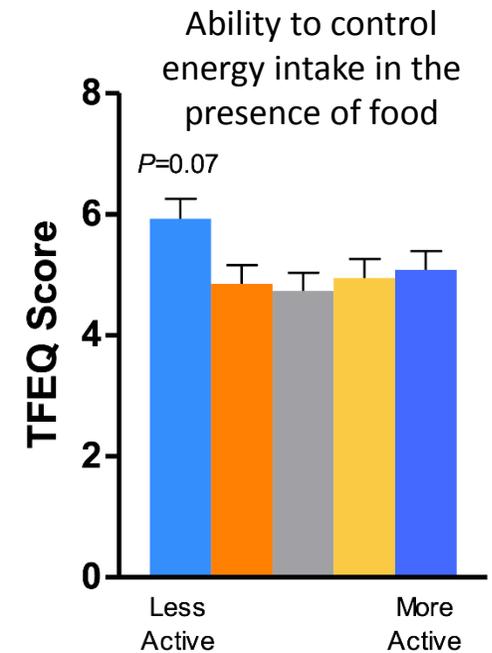
Applied



**Sedentary
-or-
Non-regulated Zone**

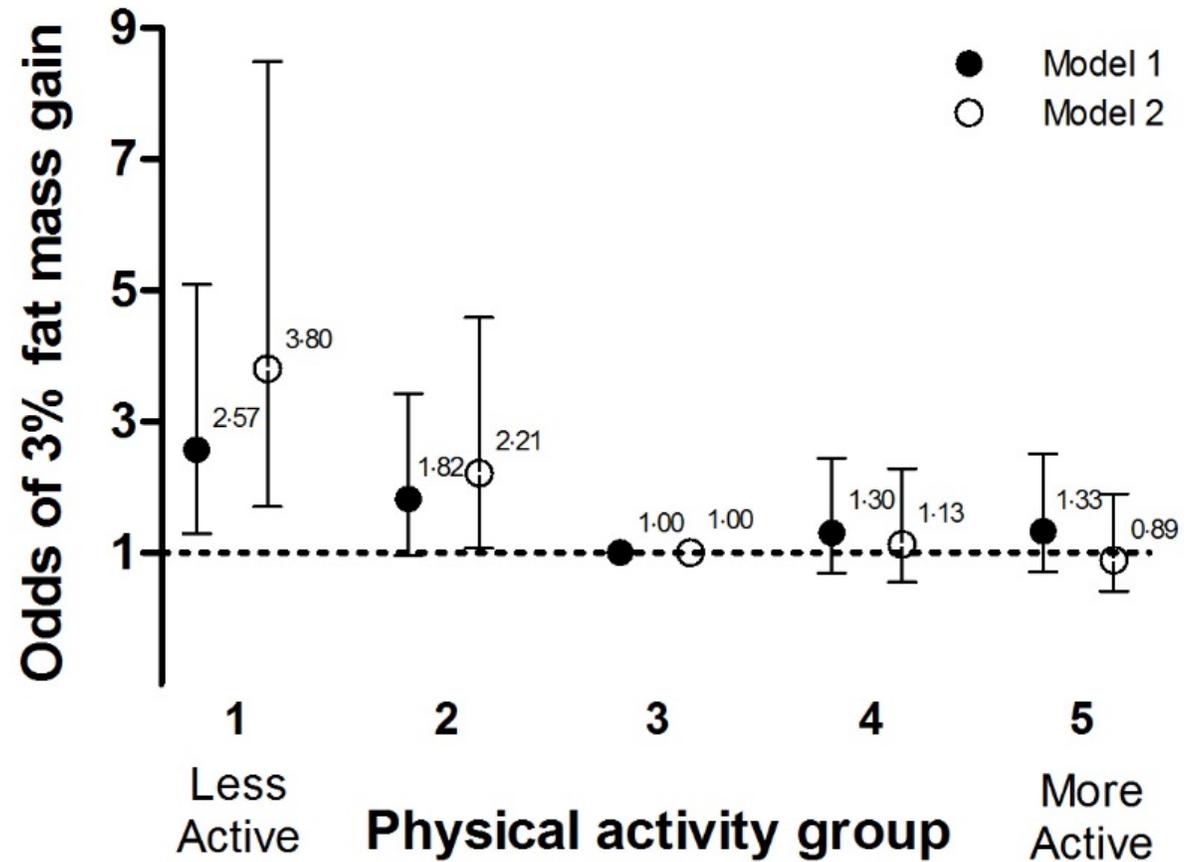
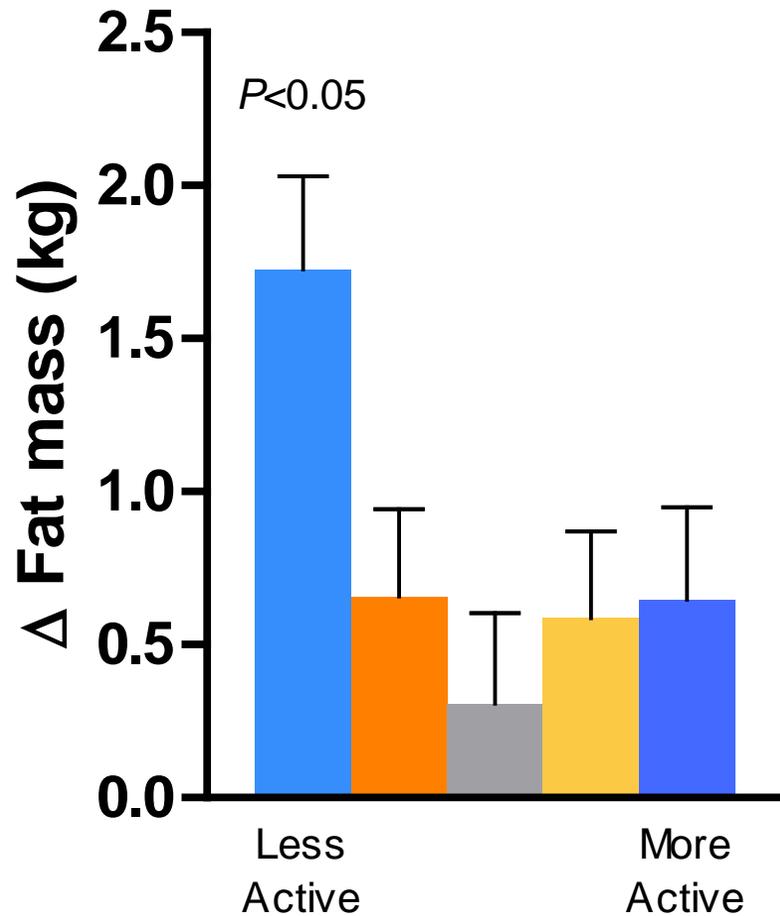


Key point:
→ Individuals with low levels of physical activity cannot maintain 'energy balance'
→ This is likely due to dysregulation of appetite



430 young adults
Activity assessed by activity monitors

Change in fat mass from baseline to 12 months by physical activity level, adjusted for change in physical activity and baseline fat mass.



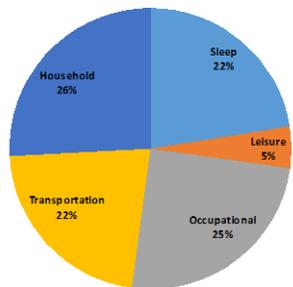
Lifestyle interventions via the local health care clinics

- Dual purpose pilot study beginning spring 2016
- Integration physical activity as a vital sign and objective assessment of physical activity
- Motivational interviewing using Iowa State University EIM health educators



Metria IH1-
Sensewear hardware, adhesive patch,
designed for clinical use

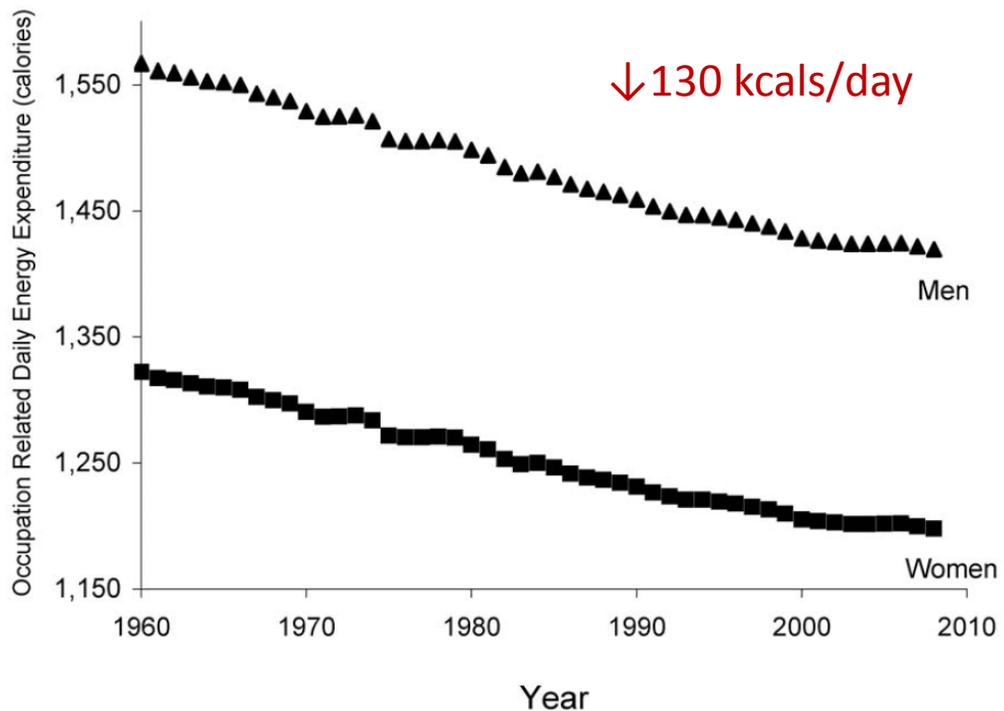




We have become less physically activity in all parts of our lives over the past 60 years

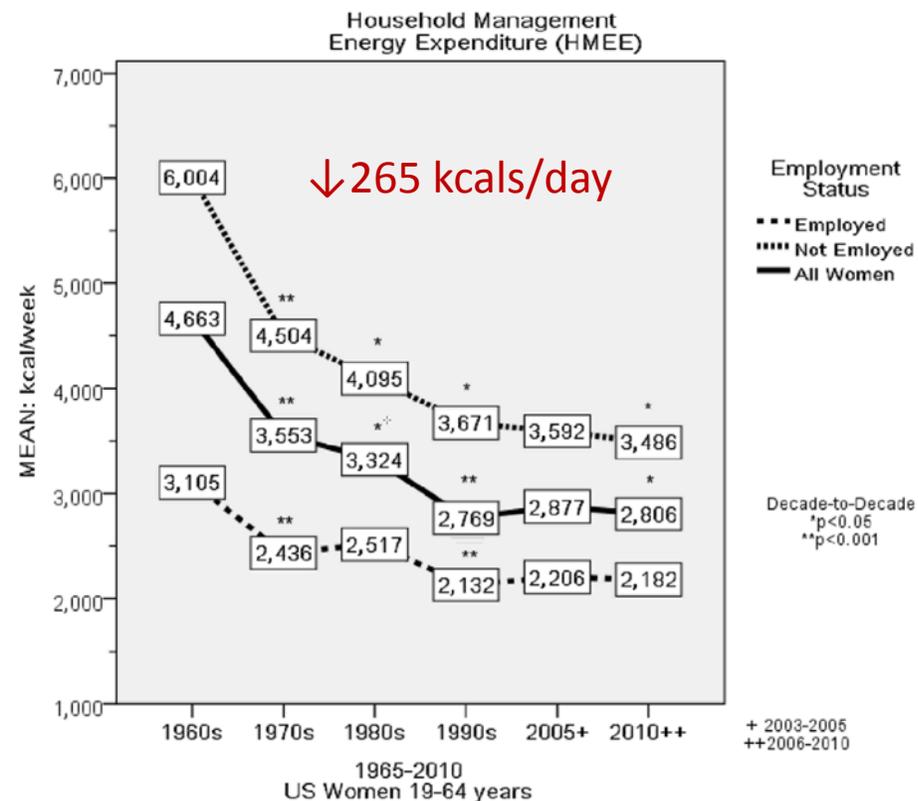
Trends over 5 Decades in U.S. Occupation-Related Physical Activity and Their Associations with Obesity

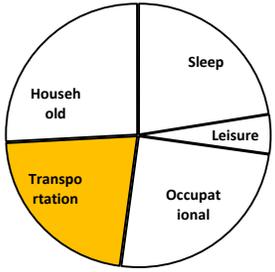
Timothy S. Church^{1*}, Diana M. Thomas², Catrine Tudor-Locke¹, Peter T. Katzmarzyk¹, Conrad P. Earnest¹, Ruben Q. Rodarte¹, Corby K. Martin¹, Steven N. Blair³, Claude Bouchard¹



45-Year Trends in Women's Use of Time and Household Management Energy Expenditure

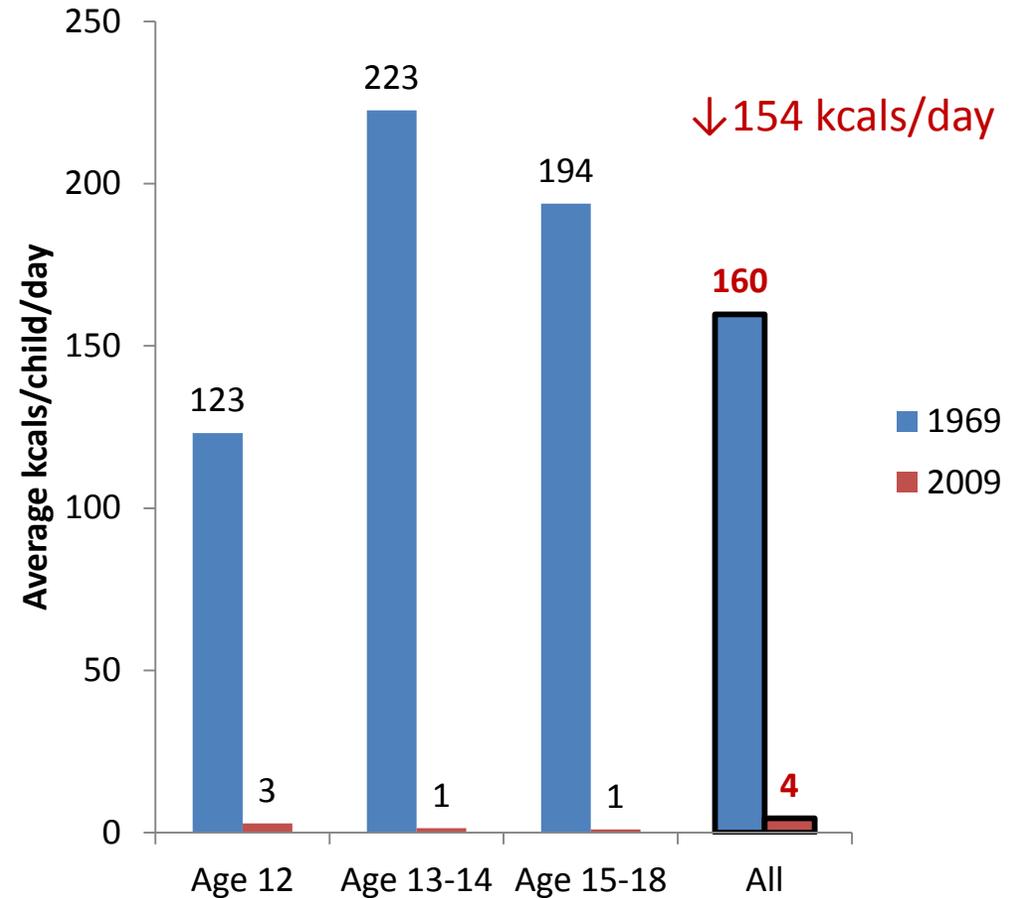
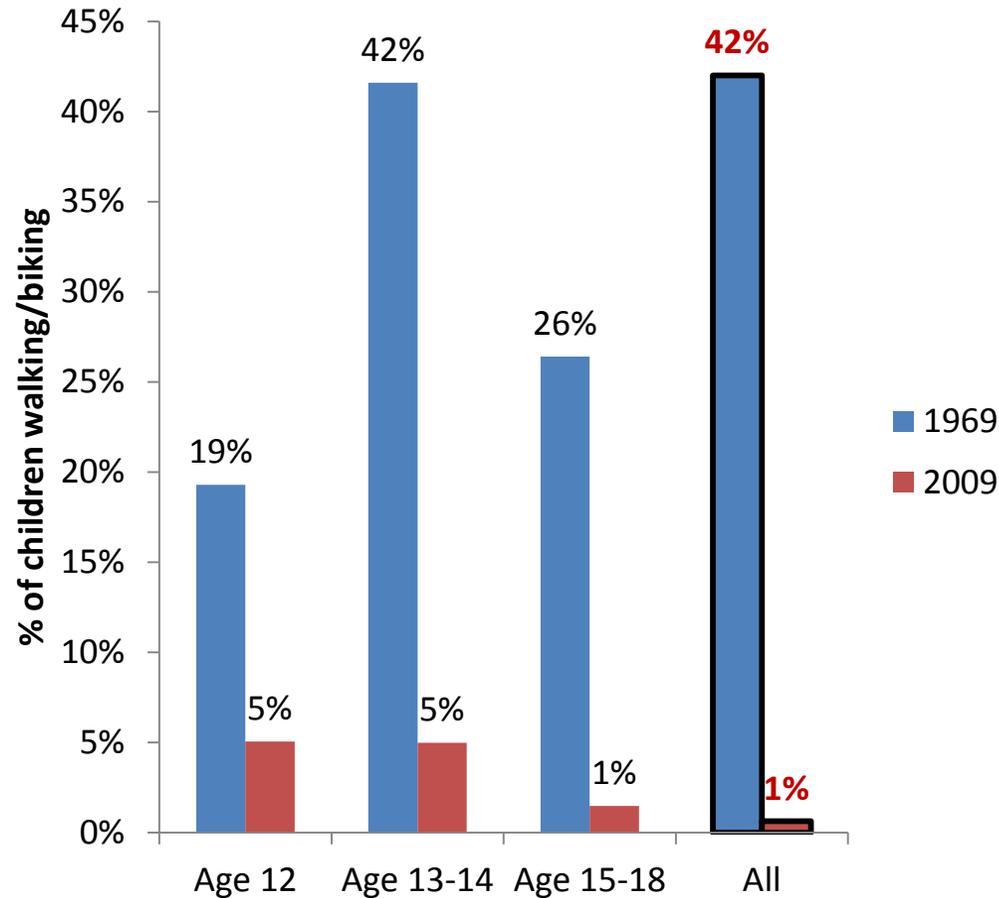
Edward Archer^{1*}, Robin P. Shook¹, Diana M. Thomas², Timothy S. Church³, Peter T. Katzmarzyk³, James R. Hébert^{4,5}, Kerry L. McIver¹, Gregory A. Hand¹, Carl J. Lavie⁶, Steven N. Blair^{1,4}





Trends in school transport

- National Household Travel Survey (Department of Transportation)



My contribution to Weighing In & the Healthy Lifestyles Initiative



- Support policy and environmental change efforts
- Provide expertise in outcomes assessment and process evaluation
- Share the WI and HLI story
- Expand funding opportunities

Ensure Shelly, The Emily's, and Weighing In partners have the resources to *collectively* address childhood obesity

Energy balance and obesity: Translating science to public health

Robin P. Shook, PhD

Research Assistant Professor, Department of Pediatrics, Children's Mercy Hospital
Director, Weighing In

 rpshook@cmh.edu

 @iamrobinshook

