PA, Exercise and Youth Obesity: Refocusing efforts from weight-loss to health gains

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Outline

• Building the conceptual case
• Experimental data supporting exercise
• Translating research to practice
• Future directions
Conceptual Case

• Long-term successful weight loss is challenging
  – ~20% are “successful” Wing and Hill 2001

• Most youth who are obese remain obese
  – Pediatric obesity is highly heritable Bouchard 2009

• PA is protective against morbidity and mortality
  – Independent of obesity Ekelund 2015

What is the role of exercise in health promotion/disease prevention among youth who are obese?
Review Article

Effects of Exercise in the Treatment of Overweight and Obese Children and Adolescents: A Systematic Review of Meta-Analyses

George A. Kelley¹ and Kristi S. Kelley²

...significant reductions in percent body fat were observed but no other measures of adiposity (BMI-related measures, body weight, and central obesity) were statistically significant....
Exercise and Cardiometabolic Disease Prevention

Effects of exercise on resting blood pressure in obese children: a meta-analysis of randomized controlled trials

*obesity* reviews (2013) 14, 919–928

A. García-Hermoso, J. M. Saavedra and Y. Escalante

Review

Improvement of the lipid profile with exercise in obese children: A systematic review

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Exercise and Insulin Resistance in Youth: A Meta-Analysis

*PEDIATRICS* Volume 133, Number 1, January 2014

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Exercise protects the cardiovascular system: effects beyond traditional risk factors

Michael J. Joyner¹ and Daniel J. Green²,³

- **Risk Factor Gap** - exercise appears to be far more protective than it should be based on changes in traditional risk factors alone.

- The long subclinical period between elevated risk and eventual disease outcome in youth suggests that the risk factor gap may be even wider in pediatric populations.
Purpose: To examine the effects of high-intensity interval training (2 x’s / week for 13 weeks) on cardiac function (echocardiography) in 10 obese adolescents.
• Purpose: To examine the effects of circuit training (3x’s / week for 8 weeks) on vascular function in 19 adolescents who are obese

• Endothelial function by brachial Artery FMD
Purpose: To examine the effects of resistance training (2x’s / week for 16 weeks) on insulin sensitivity in Latino adolescents who are obese

- Insulin action: FSIVGTT
- Body Composition: DXA
Changes in Insulin Sensitivity

Pre

Post

45.1 ± 7.3%

p < 0.05

Shaibi et al. 2006
Individual Changes in Insulin Sensitivity

Insulin Sensitivity (x 10^-4 min^-1 / uU/ml)

Insulin sensitivity pre vs. Insulin sensitivity post

10 / 11 increase in insulin sensitivity

Shaibi Medicine Science Sports Exercise 2006
Effects of a Culturally Grounded Community-Based Diabetes Prevention Program for Obese Latino Adolescents

Shaibi et al Diabetes Educator Vol 38, Num 4, July/August 2012
Responders (Green) exhibited increases in insulin sensitivity in response to the lifestyle intervention and non-responders (Red) did not.
Research to Practice to Policy

• Exercise “prescriptions” in clinical practice
  – Assessments beyond weight (BMI)
  – Incorporation of behavioral change strategies
    • Goal setting, role modeling, social support
  – Integration with community programs

• Policy
  – Reimbursement
  – Incentives
  – Education / Training
Pediatric Exercise is Medicine™

• Targeted populations
  – BMI is not good enough

• Meaningful outcome measures
  – Proximal to disease process
  – Psychosocial / emotional health

• Optimizing exercise parameters
  – Dose response studies

• Appropriate designs
  – RCT vs. CET
Thank You!

MUST. LOSE. BABY. WEIGHT.