

# CHILDHOOD OBESITY – WHAT IS IT ALL ABOUT?

W2005 MULTI-STATE RESEARCH PROJECT

PARENTING, ENERGY DYNAMICS, AND LIFESTYLE DETERMINANTS OF CHILDHOOD  
OBESITY: NEW DIRECTIONS IN PREVENTION

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- Can we do anything about it?



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- Childhood – call it at-risk of being overweight, overweight, obese?

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- Adult waist circumferences – above 40" males and 35" females.

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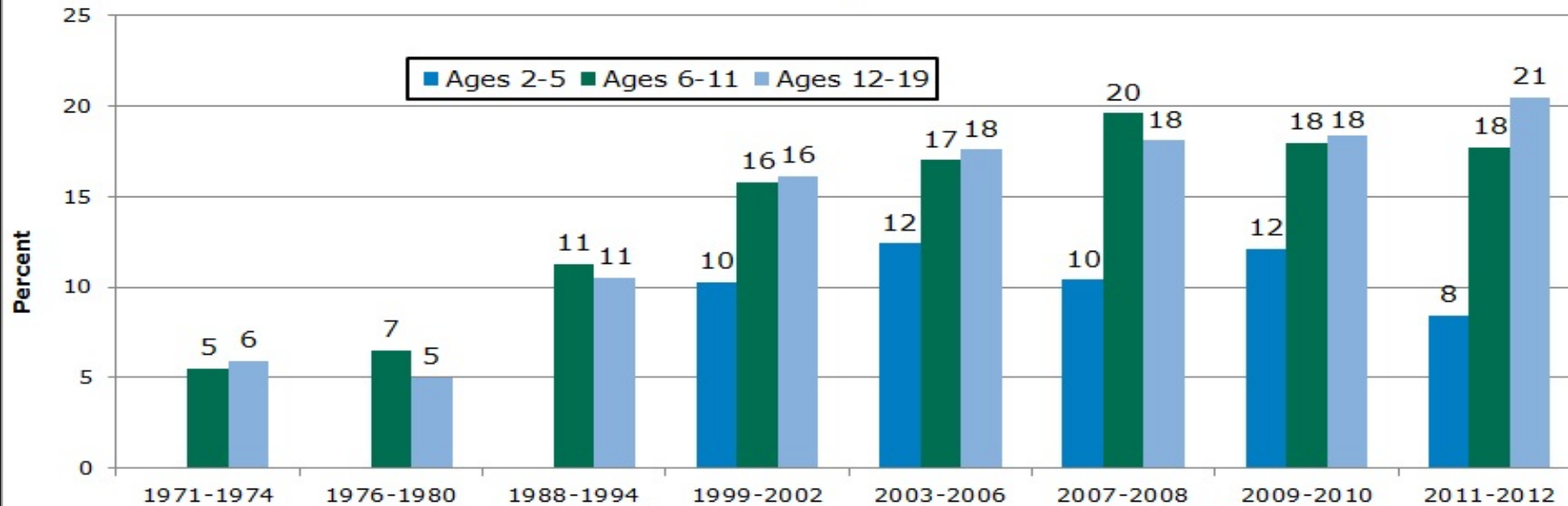
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- Stature per age and weight per age percentiles.
- BMI per age percentiles.
- BMI z scores children – standard deviations of weight and height compared to children of same age.

# CHILD OBESITY TRENDS BY AGE

Figure 1

**Percentage of Children Ages 2 to 19 Who Are Obese, by Age:  
Selected Years, 1971-2012**



Sources: Data for 1971-1974: Troiano, R. P., Flegal, K. M., Kuczmarski, R. J., Campbell, S. M., Johnson, C. L. (1995) Overweight prevalence and trends for children and adolescents: The national health and nutrition examination surveys, 1963-1991. *Archives of Pediatrics and Adolescent Medicine*, 149(10), 1085-1091. Available at: <http://archpedi.jamanetwork.com/article.aspx?articleid=517675>. Data for 1976-1994: National Center for Health Statistics. (2003). *Health United States, 2003 with Chartbook on Trends in the Health of Americans*. National Center for Health Statistics. Table 69. Available at: <http://www.cdc.gov/nchs/data/hsr/tables/2003/03hus069.pdf>. Data for 1999-2002 from Hedley, A., Ogden, C., Johnson, C., Carroll, M., Curtin, L. and Flegal, K. Prevalence of overweight and obesity among us children, adolescents, and adults, 1999-2002. *JAMA*, 291(23): 2847-2850. Data for 2003-2006: Ogden, C., Carroll, M., and Flegal, K. High Body Mass Index for age among us children and adolescents, 2003-2006. *JAMA*, 299(20): 2401-2405. Data for 2007-2008: Ogden C. L., Carroll, M. D., Curtin, L. R., Lamb, M. M., and Flegal, K. M. (2010). Prevalence of High Body Mass Index in US children and adolescents, 2007-2008. *JAMA*, 303(3), 242-249. Available at: <http://jama.jamanetwork.com/article.aspx?articleid=185233>. Data for 2009-2010: Ogden C. L., Carroll, M. D., Kit, B. K., and Flegal, K.M (2012). Prevalence of obesity and trends in Body Mass Index among US children and adolescents, 1999-2010. *JAMA*, 307(5), 483-490. Available at: <http://jama.jamanetwork.com/article.aspx?volume=307&issue=5&page=483>. Data for 2011-2012: Ogden, C.L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2014). Prevalence of childhood and adult obesity in the United States, 2011-2012. *JAMA* 311(8), 806-814. Available at: <http://jama.jamanetwork.com/article.aspx?articleID=1832542>



**WITH ALL RESOURCES IN PLACE, CAN  
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# WHAT CAUSES OBESITY?



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- Over 30 years, that is 300 excess pounds gained.

# HOW MUCH EXERCISE IS ENOUGH FOR CHILDREN?

- 60 minutes of moderate to vigorous exercise 5 days per week.
- Vigorous activity at least 3 days per week.
- Bone strengthening exercises at least 3 days per week.
- Muscle strengthening exercises at least 3 days per week.

# WHY ARE CHILDREN LESS ACTIVE?

WEBMD/YMCA 2011 survey results



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- 53% say they spend leisure time with their kids playing video games, or otherwise on a computer.
- 58% say their children ages 5 to 10 spend fewer than four days a week playing outdoors.

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- About 90% of parents say they provide a healthy home environment for their children, but 41% get 60 minutes of exercise less than one day a week.
- About 50% of children 5-10 are watching at least two hours of TV a day more than five days a week, and spending an hour in front of a computer three days a week.

# WHAT ELSE WE KNOW

- Older children participate in less physical activity than younger children.
- Recess is only for elementary school children.
- Physical education classes are required less in the higher grade levels.
- Few colleges/universities require physical education.
- Obese children have a more difficult time being physically active.



# PHYSICAL ACTIVITY

- PA is not just about burning Calories.
- PA can change body composition.
- Increased muscle mass increases resting metabolic rate (RMR).
- Being active will increase RMR.
- PA can alter appetite.
- PA improves muscle mass and quality, and bone mass; all making it easier to maintain a healthy lifestyle.

# WHAT WE EAT HAS CHANGED

- We eat more than Calories.
- What we eat impacts the energy needed for digestion, metabolism, used, or stored as fat or glycogen.
- Energy restriction for weight loss with no PA will lead to 25% muscle mass loss, less lean mass is lost when combined with PA.
- Less muscle/lean mass causes a reduction in RMR.

# HOW WHAT WE EAT HAS CHANGED

- Food supply increased 19% between 1983 and 2000.
- 2700 Calories are available per person per day after spoilage, waste etc.
- 530 Calorie increase per person 1970-2000 which is 53,365 extra Calories per year. Traditionally equated to 15.25 pounds in one year. If this were not a gradual increase over the 30 years, this would be 457 pounds increase of weight per person.

## OVERALL, AMERICANS ARE EATING:

- 57 pounds more of meat in 2000 than 1950s, and a third fewer eggs;
- Less dairy than in 1950s, 35 vs. 22 gal milk whole milk but low fat has increased 4 fold, 8 vs. 30 pounds cheese;
- Added fats have increased by 2/3;
- Fruit & vegetables have increased by 1/5;
- Grains have increased by 45%;
- Caloric sweeteners have increased by 39%, corn sweeteners have increased 8 fold.

# WHAT WE KNOW

- There are hundreds if not thousands weight management/prevention interventions for children being conducted through out the US.
- Few have been conducted using a randomized control trial – the ‘gold standard’.
- There is much data on increasing fruits and vegetable consumption for childhood obesity prevention. Less information on other aspects of diet quality.
- Food availability has increased, serving sizes have increased, and types of foods have changed.
- Parenting styles and parent feeding styles have been linked to childhood obesity.

## WHAT WE KNOW, CONT.

- A systematic review of intervention studies including responsive parenting and/or feeding styles shows that increased parental responsiveness and/or decreased restrictiveness are effective in reducing child weight and BMI outcomes.
- This general picture was confirmed specifically for infants and toddlers in one August 2016 report (Savage et al. 2016) of a randomized controlled trial (RCT).
  - RCT resulted in less rapid weight gain in the first 6 months after birth and in less overweight when infants were 12 months old.
- Energy dynamics is far more complicated than Calories in/Calories out.

Hubbs-Tait, L., Kimble, A. B., Hingle, M., Novotny, R., & Fiese, B. (2016, April). *Systematic review of obesity prevention and treatment trials addressing parenting*. Annual meeting of the Federated Associated Societies of Experimental Biology, San Diego, CA. **Published abstract:** *The FASEB Journal*, 30 (1 Supplement), 1155.6

Savage JS, Birch LL, Marini M, Anzman-Frasca S, Paul IM. (2016). Effect of the INSIGHT responsive parenting intervention on rapid infant weight gain and overweight status at age 1 year: a randomized clinical trial. *JAMA Pediatr*;170:742-749.

QUESTIONS?

