Physical Activity Levels in Children of an Old Order Amish Community


Univ. of Tennessee, Univ. of Saskatchewan, Univ. of Lethbridge, Univ. of Michigan
Prevalence of Overweight Among Children and Adolescents in U.S.

Ogden CL et al
JAMA 2002
Rising Trends in Overweight Children

Prevalence (%)


Source: IOTF (definitions may vary between countries)
Why are children becoming fatter?

- The IOTF asserts that the causes of obesity are two-fold:
  - Abundance of energy-dense foods & drinks
  - An environment that limits opportunities for physical activity

Stubbs CO and Lee AJ, MJA 2004
TV Watching and Obesity in 764 girls and boys aged 10-15 yr

Modified from Gortmaker et al. (1996)
The Amish

- Protestant group that originated in Switzerland
- Came to North America starting in 1727
- Communities exist in the United States and Canada
- Values include humility, nonviolence, traditional values
The Amish (cont.)

- Refrain from many types of modern technology
- No phones in the home, no car ownership, no highline electricity, no computers, no television
- Face-to-face contact, horse and buggy, manual or animal power, letter writing, conversation

Kraybill, The Riddle of Amish Culture 2001
Purpose

- To study levels of physical activity and body mass index (BMI) of Old Order Amish children and adolescents living in a labor-intensive farming community
Methods

- 139 Amish youth (6-18 years of age) volunteered for the study
- Testing was conducted in April, 2005 in five Amish schools
Data collection

- Height and body mass were measured
- Schoolchildren wore a sealed Yamax SW-200 step counter for 7 days (each day counters were opened and step data were recorded)
- Older children (15-18 yrs) recorded their own steps on a log sheet
Results
Pedometer scores in Amish youth (7-d mean)

Steps Per Day

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-8 yr</td>
<td>17,173</td>
<td>13,620</td>
</tr>
<tr>
<td>9-12 yr</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-15 yr</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-18 yr</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Previous study of Amish adults

- The average number of steps/day was 18,425 for Amish men and 14,196 for Amish women
- No age-related decline in PA
- 8% of Amish women were obese, no males

Bassett et al. 2004
Steps/day in children (ages 6-12); average of 4 weekdays
Self-reported Physical Activities

- Carrying firewood, feeding animals, collecting eggs, milking
- Boys more likely to help with outdoor farm chores
- Girls more likely to help with gardening, cooking, childcare, laundry, quilting
School-related Activities

- Walk to school
- No formal P.E.
- 15 min recess in AM, 60 min lunch break, 10 min recess in afternoon
- Softball, volleyball, bombardment, King’s base, frozen tag
### Physical Characteristics of Participants

<table>
<thead>
<tr>
<th>Age Group (yr)</th>
<th>Height (cm)</th>
<th>Body Mass (kg)</th>
<th>BMI (kg·m⁻²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-8</td>
<td>124 ± 6</td>
<td>24.0 ± 3.7</td>
<td>15.6 ± 1.2</td>
</tr>
<tr>
<td>9-12</td>
<td>144 ± 9</td>
<td>36.7 ± 9.4</td>
<td>17.4 ± 2.7</td>
</tr>
<tr>
<td>13-15</td>
<td>160 ± 8</td>
<td>52.5 ± 10.5</td>
<td>20.3 ± 3.1</td>
</tr>
<tr>
<td>16-18</td>
<td>172 ± 7</td>
<td>63.1 ± 5.6</td>
<td>21.4 ± 2.1</td>
</tr>
</tbody>
</table>
International definitions of obesity and overweight in youth (males)

Obesity and Overweight

- 1.4% of Amish youth were obese (N=2), compared to about 8% of American and Canadian youth, ages 6-18 yr
- 7.2% of Amish youth were overweight, compared to about 25% of American and Canadian youth, ages 6-18 yr

Flegal, 2001; Shields, 2005
Conclusions

- These Amish youth have higher levels of physical activity, compared to children living in industrialized societies.
- This probably contributes to the low rate of child obesity in this labor-intensive farming community.
Conclusions (cont.)

- Assuming that the physical activity levels of these Amish youth resemble those of rural NA children 150 yr ago, one can roughly estimate the impact of modernization.

- The results suggest that youth physical activity levels have declined over the past 150 yr, though not as markedly as in adults.