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Physical Activity Guidelines for Youth

Children and adolescents should engage in 60 minutes or more of physical activity daily.
Youth Meeting Daily Physical Activity Guidelines

Daily School-time Physical Activity Guidelines

• **30 minutes** of physical activity within schools

• IOM called for a “whole school” approach

• Engage the “school environment”
  – Teachers
  – Administrators
  – Health Educators

IOM (Institute of Medicine). 2013
Educating the student body: Taking physical activity and physical education to school.
Likelihood of Passing Academic Tests For Each Fitness Test Passed by Massachusetts Students in Grades 4 to 8

Odds of passing increased by 24% per test passed

Odds of passing increased by 38% per test passed

Kids’ Brains on Exercise

Hillman et al., 2014
Why Lawrence?

- 90% Hispanic
- 85% Low-income households
- 45% Overweight/obese
- Among 6th graders, 61% and 58% fall into “failing” or “needs improvement” on MCAS Math and English, respectively
- Under receivership and open to looking at new models for improvement
Research Goals

Aim 1: To evaluate the amount of physical activity children engage in daily and during school hours.

Aim 2: To evaluate whether schools with more supportive PA environments (programming/policies) are associated with:
- greater school-time and total daily physical activity
- better academic outcomes in schoolchildren
Population

- 3rd-6th graders (n= 451)
- 8 Elementary/Middle Schools in Lawrence, MA
- Data Collection (Spring 2014)
  1. Height and Weight
  2. Physical Activity
  3. Parent Report on:
     - Eligibility for free/reduced price lunch
     - Maternal education
     - Report of difficulty with “learning, understanding, or paying attention” or currently on an IEP

- MA Department of Elementary and Secondary Education
  - 2013 & 2014 MCAS Scores (Math & English Language Arts)
  - 2013 & 2014 Attendance
Physical Activity Assessment
Physical Activity Measurement

Activity Monitors/Accelerometers

• Assess the acceleration of the body in one or more planes of movement

• Children assessed over 7 days
  – Collected data on moderate-to-vigorous physical activity
    • School-time
    • Total Daily
  – 3 Valid wear days for ≥ 10 hrs
The State of Activity
% Meeting Recommendations for Physical Activity

- 16% of students met 60 min/day daily recommendation
- 10% meet the 30 min/day in-school recommendation

**Significant gender & weight status disparities**
Disparities by Gender in Meeting School- and Daily Physical Activity Recommendations

- Meet 60 min/day
- Meet 30 min/school day

Boys:
- Meet 60 min/day: 31%
- Meet 30 min/school day: 18%

Girls:
- Meet 60 min/day: 10%
- Meet 30 min/school day: 6%
Disparities by Weight Status in Meeting School- and Daily Physical Activity Recommendations

- **Meet 60 min/day**
  - **Normal Weight**: 22%
  - **Overweight**: 25%
  - **Obese**: 7%

- **Meet 30 min/school day**
  - **Normal Weight**: 13%
  - **Overweight**: 13%
  - **Obese**: 4%
Gender Disparities in Total Daily and In-School Physical Activity

Minutes

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th>Girls</th>
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<td>School</td>
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<td>14</td>
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<tr>
<td>Out-of-school</td>
<td>31</td>
<td>21</td>
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<tr>
<td>Total Daily</td>
<td>50</td>
<td>34</td>
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Who is Moving More?
And Why?
School-time Minutes of Physical Activity at Spark Academy

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<tbody>
<tr>
<td>Boys</td>
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<td>20</td>
</tr>
<tr>
<td></td>
<td>42</td>
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<tr>
<td>Girls</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>14</td>
</tr>
</tbody>
</table>

- 5th
- 6th
- 5th Spark
- 6th Spark
Physical Activity by Parent-Reported Child Behavior

- None: 15 minutes
- A little: 17 minutes
- Some: 23 minutes
- A lot: 24 minutes

Legend:
- School
- Total

Minutes range from 0 to 60.
Physical Activity Environment

*PA Promoting Policies and Programming*
Physical Activity
Environmental Scan

1. Physical Education
2. Recess
3. Classroom PA
4. Before and After school PA programs
5. Other PA programming
Adoption of PA Promoting Policies

PE

• Schools that require at least 150 min PE/week
  – 21.6 min vs. 15.3 min

Recess

• Schools provide 100 min recess/week
  – 18.5 min vs. 13.2 min

• Supervisor-assisted & organized physical activity
  – 17.2 min vs. 12.9 min

Other

• Few consistently offered in classroom PA breaks and before & after school programming
How Environments Can Shape Minds
Physical Activity Environment and % Students with MCAS Scores Proficient/Advanced

Children in schools with highly supportive PAE were 2.4 times more likely to achieve “advanced or proficient” on 2014 MCAS
Predicted Distribution of Math MCAS and Physical Activity Environment

- **High PAE**: 68% Proficient/Advanced, 32% Needs Improvement/Warning
- **Med PAE**: 63% Proficient/Advanced, 37% Needs Improvement/Warning
- **Low PAE**: 57% Proficient/Advanced, 43% Needs Improvement/Warning
Study Implications

1. More physical activity is needed *for all children*
2. Significant gender disparities
3. Need for “whole school” approach to increasing physical activity
   - No one magic bullet
4. Physical activity-promoting environments linked to academic achievement
5. Snapshot in time
   - Longitudinal data needed
   - Impact of different PA environmental changes on physical activity and academic success
Thank You for Your Support of Children’s Health and Movement!

Co-Investigators

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