School Support for Physical Activity & Healthy Weight: Preliminary Results from ISCOLE U.S.

Stephanie T. Broyles, Ph.D.

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CDC: School health guidelines to promote healthy eating & physical activity*

- Use a coordinated approach to develop, implement, and evaluate healthy eating and physical activity policies and practices

- Establish school environments that support healthy eating and physical activity
  - Provide access to healthy foods and physical activity opportunities and to safe spaces, facilities, and equipment for healthy eating and physical activity
  - Create a climate that encourages healthy eating and PA

- Implement a comprehensive physical activity program with quality physical education as the cornerstone
  - Daily PE
  - Opportunities for students to engage in physical activity outside of PE

*Available at [http://www.cdc.gov/healthyyouth/npao/strategies.htm](http://www.cdc.gov/healthyyouth/npao/strategies.htm)
International Study of Childhood Obesity, Lifestyle, and the Environment (ISCOLE)

- Determine the relationships between lifestyle behaviors & obesity in a multi-national study of children
- Investigate the influence of behavioral settings & the physical, social, and policy environments within and between countries
- Target: children ~10 years old (4th grade in U.S.)
International Study of Childhood Obesity, Lifestyle, and the Environment (ISCOLE)
International Study of Childhood Obesity, Lifestyle, and the Environment (ISCOLE)

- **ISCOLE U.S. (Baton Rouge):** 651 children from 21 schools

  - **Children**
    - Study staff measured body mass index (BMI), waist circumference, body fat
    - Wore accelerometers for a week to measure physical activity, sedentary behavior, and sleep time
    - Completed a lifestyle questionnaire

  - **Parents**
    - Demographics & Family Health questionnaire
    - Home & Neighborhood Environment questionnaire
Schools

School administrators completed a survey about school facilities, healthy eating and physical activity policies, extracurricular activities, frequency of PE and recess, and availability of healthy & unhealthy food.

Study stuff visited each school and ‘audited’ the school grounds/buildings to record features & amenities that support physical activity and healthy eating.
Characteristics: ISCOLE U.S. kids (n=651)

- Girls
- Boys

- Afr. Amer.
- White
- Other

- Underweight
- Normal
- Overweight
- Obese

34% overweight or obese
Students per grade:
- Average = 84 students per grade
- Range = 28 to 134

Student-Teacher Ratio
- Average = 14 students per teacher
- Range = 8 to 24
Physical activity

- Children were encouraged to wear the accelerometer 24 hours a day.
- Time-stamped accelerometry data were compared to school start/stop times to determine in-school PA.
- Summarized* as:
  - Sedentary (lowest activity level; e.g., sitting at desk)
  - Light (e.g., slow walking)
  - Moderate-to-Vigorous (e.g., fast walking, riding bike, climbing stairs, running)

Physical Activity Guidelines for Children

- 60 minutes or more of daily physical activity
- Mostly moderate- or vigorous-intensity aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week
- Should also include muscle- and bone-strengthening physical activity at least 3 days of the week.
How are U.S. ISCOLE kids doing?

Before School: 4 mins MVPA

In School: 17 mins MVPA

After School: 26 mins MVPA

Spend 46% of waking time in school

47 minutes = 79% of the Guidelines
How Much MVPA Should Kids Be Getting in School?

- Study of 93 8-11 year old schoolchildren*
  - 34 mins of in-school MVPA is a good predictor of getting 60 mins of daily MVPA
- In our U.S. ISCOLE children:

<table>
<thead>
<tr>
<th>If a child gets this much MVPA in school...</th>
<th>What is the chance that he/she meets the PA guidelines for the day?</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥20 minutes MVPA</td>
<td>48%</td>
</tr>
<tr>
<td>≥25 minutes MVPA</td>
<td>68%</td>
</tr>
<tr>
<td>≥30 minutes MVPA</td>
<td>86%</td>
</tr>
<tr>
<td>≥35 minutes MVPA</td>
<td>93%</td>
</tr>
</tbody>
</table>

How much MVPA are kids getting in school?
How much MVPA are kids getting in school?

- 10% of students achieve 10% of MVPA
- 23% of students achieve 23% of MVPA
How much MVPA are kids getting in school?

- 4%
- 16%

Minutes of MVPA during the school day
How much MVPA are kids getting in school?

<table>
<thead>
<tr>
<th></th>
<th>Not Active (&lt;30 mins MVPA)</th>
<th>Somewhat Active (30-59 mins MVPA)</th>
<th>Meets guidelines ≥60 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOYS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ Normal weight</td>
<td>42%</td>
<td>72%</td>
<td>72%</td>
</tr>
<tr>
<td>Overweight</td>
<td>26%</td>
<td>14%</td>
<td>12%</td>
</tr>
<tr>
<td>Obese</td>
<td>32%</td>
<td>14%</td>
<td>16%</td>
</tr>
<tr>
<td>SCHOOL MVPA mins</td>
<td>11.3</td>
<td>16.8</td>
<td>24.4</td>
</tr>
<tr>
<td>WEEKDAY MVPA mins</td>
<td>26.3</td>
<td>45.6</td>
<td>70.0</td>
</tr>
<tr>
<td>GIRLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ Normal weight</td>
<td>45%</td>
<td>70%</td>
<td>77%</td>
</tr>
<tr>
<td>Overweight</td>
<td>28%</td>
<td>15%</td>
<td>18%</td>
</tr>
<tr>
<td>Obese</td>
<td>27%</td>
<td>25%</td>
<td>5%</td>
</tr>
<tr>
<td>SCHOOL MVPA mins</td>
<td>8.5</td>
<td>16.1</td>
<td>23.8</td>
</tr>
<tr>
<td>WEEKDAY MVPA mins</td>
<td>23.0</td>
<td>44.1</td>
<td>68.7</td>
</tr>
</tbody>
</table>
So is the child or is it the school?
So is the child or is it the school?

- School factors: 49%
- Individual child differences: 51%
ISCOLE U.S.: School differences in MVPA

**School Average Minutes of MVPA**

- Public - 1
- Public - 2
- Public - 3
- Public - 4
- Private

![Bar chart showing school average minutes of MVPA for different types of schools.](chart.png)
In 43% of the schools, none of the children got 25 mins of MVPA.
### Estimated MVPA for School Policies & Environmental Features

<table>
<thead>
<tr>
<th>School Policy/Environmental Features</th>
<th>Estimated Minutes MVPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory PE</td>
<td>23 minutes</td>
</tr>
<tr>
<td>Classroom activity breaks</td>
<td>19 minutes</td>
</tr>
<tr>
<td>Active commuting to school</td>
<td>16 minutes</td>
</tr>
<tr>
<td>Afterschool activity programs</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Standardized PE curriculum</td>
<td>+6 minutes compared to traditional PE</td>
</tr>
<tr>
<td>Modified playgrounds</td>
<td>6 minutes</td>
</tr>
<tr>
<td><strong>Modified recess</strong> (recess with supports, like playground equipment, colored markings on play surfaces, play equipment)</td>
<td>12 minutes</td>
</tr>
<tr>
<td>Traditional recess</td>
<td>7 minutes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy/Practice</th>
<th>% of schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses PA as a reward</td>
<td>48%</td>
</tr>
<tr>
<td>Promote PA during or as part of special events</td>
<td>10%</td>
</tr>
<tr>
<td>Integrate PA into other curriculum areas</td>
<td>14%</td>
</tr>
<tr>
<td>Doesn’t use PA as a punishment for bad behavior (e.g., withholding recess)</td>
<td>43%</td>
</tr>
</tbody>
</table>
ISCOLE U.S.: MVPA minutes in schools with practices that support PA

<table>
<thead>
<tr>
<th>Practice</th>
<th>Yes</th>
<th>No</th>
<th>p = 0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA as reward*</td>
<td>15</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Promote PA in events*</td>
<td>16</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Integrate PA*</td>
<td>17</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>No PA as punishment*</td>
<td>14</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Has a supportive practice*</td>
<td>14</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>
Children must achieve certain levels of physical activity at school in order to meet health guidelines.

The school environment plays a large role in how active children are able to be.

Research has identified promising policy and environmental supports for school-day PA, but we still have questions to answer.

The fact that some schools – even low SES public schools – are promoting high levels of PA shows us it’s possible!
So how can we put more MVPA in schools?

- Create more time for PA
  - More recess
  - Don’t skimp on PE
- Take what kids are doing and make it more active
  - More active PE
  - Classroom PA
  - Supports to promote more active recess
Acknowledgements

ISCOLE U.S.

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*Also part of the Coordinating Center
Questions for me?

My Questions for you...
What are the important questions we researchers still need to answer about school-time PA?
How can communities and parents help schools to promote PA?

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