Overview

- Physical activity (PA)
- PA in Schools/Evidence-Based strategies for improvement
  - PE
  - Recess
  - Before, During and After Schools
  - Active Transport to School
- Summary
Evidence on Physical Activity

- **Coronary heart disease**
  - over 50 studies
  - approximate 1.9 RR
- **Diabetes**
  - 30 + cohort studies show a 40% risk
- **Colon cancer**
  - 30 studies - inverse association between PA and colon cancer
- **Population burden of PA**
  - 200-300K preventable deaths each year in the United States

Physical Activity (PA)

- PA Guidelines for Children: 60 min of moderate to vigorous PA (MVPA) every day
  - 2013 YRBSS: only 27.1% reported meeting PA guidelines
- Why don’t most children meet PA guidelines?
Social, Environmental, and Technological Changes...

- We and our children are defaulted into sedentarism

- Overcoming sedentary living requires a multi-pronged approach
  
  - Prioritize and target environments where people spend the largest proportion of time

- Make PA an easy choice - deliberately engineer PA back into daily living
  
  Our health and quality of life depend on it!

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Children are in Schools for a Large Portion of Their Waking Day...

*Schools play a critical role in children’s current and future health*

Numerous U.S. health agencies and organizations recognize the potential of schools to promote and provide PA
A study of elementary school students in North Carolina found students’ observed on-task classroom behavior improved with daily 10-minute physical activity breaks.

A study of more than 2.4 million Texas students in grades 3 to 12 found student fitness* and BMI levels correlate with academic test performance, attendance and disciplinary incidents.

*Measured by FITNESSGRAM® tests based on walking or running and adjusted for age and gender

Welk G. Cardiovascular fitness and body mass index are associated with academic achievement in schools. Dallas, Texas: Cooper Institute, March 2009. http://www.cooperinstitute.org/ourkidshealth/index.cfm
Whole of School Approach

YRBS Trend Data for Kids Grades 9–12

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<tbody>
<tr>
<td>Attended physical education classes on 1 or more days in an average week (when they were in school)</td>
<td>48.3</td>
<td>52.7</td>
<td>59.6</td>
<td>48.0</td>
<td>56.1</td>
<td>51.7</td>
<td>55.7</td>
<td>54.2</td>
<td>53.6</td>
<td>36.4</td>
<td>51.8</td>
<td>No change, 1991–2011</td>
<td>No change</td>
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<td>Attended physical education daily in an average week (when they were in school)</td>
<td>41.0</td>
<td>34.3</td>
<td>23.4</td>
<td>27.4</td>
<td>29.1</td>
<td>32.2</td>
<td>28.4</td>
<td>33.0</td>
<td>33.3</td>
<td>33.9</td>
<td>Decreased, 1991–1995</td>
<td>No change, 1995–2011</td>
<td>No change</td>
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<td>Played on at least one sports team (run by their school or community groups during the 12 months before the survey)</td>
<td>NA²</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>55.1</td>
<td>55.3</td>
<td>57.6</td>
<td>56.0</td>
<td>56.3</td>
<td>58.3</td>
<td>58.4</td>
<td>Increased, 1999–2011</td>
<td>No change</td>
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<td>Used computers 3 or more hours per day (played video or computer games or used a computer for something that was not school work on an average school day)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>22.1</td>
<td>21.1</td>
<td>24.9</td>
<td>24.9</td>
<td>31.1</td>
<td>No change, 2003–2005</td>
<td>Increased, 2002–2001</td>
<td>Increased</td>
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<tr>
<td>Watched television 3 or more hours per day (on an average school day)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>42.0</td>
<td>30.3</td>
<td>36.2</td>
<td>37.2</td>
<td>33.4</td>
<td>32.0</td>
<td>32.4</td>
<td>Decreased, 1999–2011</td>
<td>No change</td>
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² Based on trend analysis using a logistic regression model controlling for sex, race/ethnicity, and grade
Physical Education

- Institutionalized part of the school curriculum
- The only place where some children engage in high intensity physical activity
- PE provides health-related physical activity
- Helps develop physical skills and physical fitness
- Evidence-based curricula is available

Delivery

- PE specialists - conduct longer lessons, cancel them less, higher intensity physical activity → increased physical fitness and skills; essential for leading the promotion of physical activity in other school programs
- Classroom teachers – less PA; frequently do not provide lessons; no accountability

Mixed Models - staff development for classroom teachers or part-time teachers who implement an evidence-based PE program under the direction of a PE specialist.

Support for PE
Codified PE Laws - C.L.A.S.S.

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<th>Strong</th>
<th>Weak</th>
<th>None</th>
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<tr>
<td>PE Time Requirement</td>
<td>27.5 (14)</td>
<td>64.7 (33)</td>
<td>7.8 (4)</td>
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<tr>
<td>PE Staffing Requirement</td>
<td>29.4 (15)</td>
<td>64.7 (33)</td>
<td>5.9 (3)</td>
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<td>PE Curriculum Standards</td>
<td>39.2 (20)</td>
<td>39.2 (20)</td>
<td>21.6 (11)</td>
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<tr>
<td>Health-Related Fitness</td>
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<tr>
<td>Assessment Requirement</td>
<td>5.9 (3)</td>
<td>31.4 (16)</td>
<td>62.8 (32)</td>
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<tr>
<td>MVPA Time Requirement</td>
<td>7.8 (4)</td>
<td>9.8 (5)</td>
<td>82.4 (42)</td>
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Monnat, Lounsbery & Smith (in revision). Preventive Medicine

Contribution of PE to Physical Activity During School

Percent of Lessons Cancelled 1999-2006

![Graph showing percent of lessons cancelled from 1999 to 2006.](image)

*Oftentimes scheduled for observation; T. L. McKenzie

*(N=467; reports 467 schools)*
Gender Disparities Physical Activity

High School PE Boys and Girls MVPA

N = 7 schools, 164 lessons

MVPA Minutes

Boys-only: 18.6
Co-ed: 16.2
Girls-only: 11.6

Physical Education Waivers

Percentage of class time

Sedentary
JROTC: 40%
PE: 24%

MVPA
JROTC: 76%
PE: 60%

Lounsbery, Holt, Monnat, McKenzie & Funk (in press; ROES)
School Physical Education: The Pill Not Taken

School PA Policy Studies - Physical Education and Recess
Lounsbury et al. (2013, ABM)

- Few associations between PE policy and PE or recess time, but more for recess time
  - Policy predictors of PE time
    - school policy for annual program evaluation; fitness; and MVPA – having an outcome expectation of PE matters
  - PE policy predictors of recess time
    - Policy requiring specific number of PE minutes/days per week
    - school policy requiring specific PE standards or guidelines
  - PE and recess compete for time and resource allocations (e.g., space, staff)
  - More logistical barriers to providing PE than recess

PE policies may shape a generalized school value for physical activity
Recess

- In addition to lunch time recess, 20 minutes of recess is recommended daily
- Besides providing PA, recess can increase academic attentiveness and on-task classroom behavior
- Frequently withheld for disciplinary or academic reasons
- Provide staff development for classroom teachers, supervisors, and recess volunteers; Poorly trained staff may suppress physical activity
- Few policies in place but are needed to ensure students have access
- PA during recess ranges widely
- Providing loose equipment and modifying play spaces (e.g., painting colorful lines and patterns) can increase physical activity

PE and Recess

- District PE Policies are important for physical activity beyond PE
  - Increased odds of
    - More recess minutes
    - Recess scheduled daily
    - Recess supervisors receiving training
    - Recess supervisors plan organized activities

Recess comprised 70% of children’s school PA opportunity - far fewer recess policies
School PE policy requiring specific number of PE minutes per week or day

- school policy specifying the number of recess minutes per day (OR = 6.30, 95% CI = 1.94 – 20.38)

**District PE Policy to Test Fitness**

- supervisors regularly plan organized activities (OR = 6.09, 95% CI = 1.07 – 34.71)
- supervisors required to have formalized training (OR = 3.25, 95% CI = 1.03 – 10.51)

**District PE Policy to Evaluation PE Program**

- supervisors regularly plan organized activities (OR = 11.46, 95% CI = 1.92 – 66.6)

**Key Policy - District PE Policy Requiring Specific Number of PE Minutes per Week or Day**

- district policy specifying the number of recess minutes (OR = 4.8, 95% CI = 1.32 – 17.44)
- district policy requiring recess supervisors to receive training (OR = 5.17, 95% CI = 1.04 – 25.85)
- scheduled recess each day (OR = 10.67, 95% CI = 1.1 – 103.27)
A 2005 playground intervention study of preschoolers (N=64) in Salt Lake City found that the amount of time engaged in light, moderate, and vigorous intensity physical activity* increased significantly with the introduction of play equipment.

*Measured with accelerometers


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### Before, During and After School Programs

- Classroom activity breaks help increase physical activity, attentiveness, and academic performance

- Provide additional opportunities for children to be active on campus and may contribute as much as one-third of their daily physical activity recommendation.

- Volunteers can be trained to implement before- and after-school programs under the supervision of licensed professionals
Active Transport to School

- Walking or biking to school can provide children with about 16 minutes of MVPA/day
- Schools can increase walking or biking to school by implementing programs such as *Safe Routes to School* and *Walking School Bus*
- Supporting the building and maintenance of sidewalks and crosswalks and implementing traffic-control strategies around schools facilitates active transport

Recent evaluations of Safe Routes to Schools projects in California suggest that improvements in sidewalks and street crossings, as well as traffic calming, increase the number of students who walk to school.
Summary

- Prolonged sitting is associated with increased risk for metabolic diseases
- After bouts of physical activity children are able to better focus on academic tasks
- Daily PE and recess and whole of school approaches are recommended
- PA programs are often compromised or not in place in schools
- School PA Policies and their implementation have important implication for increasing PA and school PA practices

School PA Policies

- Have indirect affects (PE and Recess)
- Policy language matters
- Policies should consider these aspects of implementation
  - Dissemination
    - Frequency, nature, and target
  - Monitoring
  - Accountability
Happy, Healthy Kids!

Questions?

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