Physical Activity, Fitness and Academic Performance
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Virginia Rall Chomitz, PhD
Tufts School of Medicine
Department of Public Health and Community Medicine
Today

• Definitions & benchmarks
• Policy Context
• Framework & Evidence
• Opportunities for increasing PA during the school day
Setting the stage: Physical Activity:

- Any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level.

- Usually measured in minutes engaged in activities of different MET (Metabolic Equivalents) or compared to recommendations.

http://www.cdc.gov/physicalactivity/everyone/glossary/index.html
Setting the stage: Physical Fitness

• The ability to carry out daily tasks with vigor and alertness, to enjoy leisure-time pursuits and respond to emergencies. Includes:
  • Cardio-respiratory endurance (aerobic power),
  • muscle strength,
  • flexibility,
  • balance,
  • speed of movement,
  • reaction time,
  • and body composition.

• Usually measured in achievement compared with normed age and gender adjusted benchmarks
Setting the stage: 
Academic Achievement & School Success

- **Academic measures**
  - Subjective – grades
  - Objective – standardized tests scores
    - National
    - State – MCAS

- **Other measures**
  - Graduation / drop out rates
  - Attitudes, Academic Behaviors
  - Cognitive Skills (aptitude, attention, memory)
  - Attendance / absenteeism
  - Disciplinary measures
  - Achievement gaps / disparities
No Child Left Behind
Effect of accountability & priorities

“Non-academic” subjects

Academic subjects

Physical Education

Art, Theater, Home Economics, Music, etc.

Reading

Writing

Arithmetic
What is the evidence of the relationship of physical activity / fitness and academic performance?
Potential mechanisms for impact of fitness and/or weight status on academic achievement.
CDC study 2010: Association between School-Based Physical Activity and Academic Performance

50 studies examined:

School-Based Physical Activity
- Physical Education
- Recess
- Classroom physical activity
- Extracurricular physical activity

Academic Performance
- Cognitive skills & attitudes
- Academic behaviors
- Academic achievement

Positive association: 50.5%
No effect (not significant): 48%
Negative association: 1.5%
Examples of Studies
Fit Children are more likely to Pass MCAS Tests
Cambridge MA Public Schools Grades 4 to 8

Odds of passing English increased by 24% per fitness test
Odds of passing Math increased by 38% per fitness test

Controlling for gender, ethnicity and income

Academic Test Scores Increase with Physical Fitness Scores Among New York Students in Grades K to 8

Intervention Studies

**Increased time in PE / physical activity**

- Positive results:
  - Quebec, CA – extra hour PE per day resulted in improved grades & standardized math test (Shepard)

- Mixed results:
  - Australia - Daily extra endurance program resulted in no decline of math or English scores (Dwyer et al)
  - California – Enhanced PE - Increasing PE from 32 to 98 or 109 min/week resulted in no decline in test (Sallis et al)

**Obesity prevention studies**

- Intervention children had significantly higher Math scores and stabilized obesity (Hollar et al)
Policy Implications: What we KNOW

Substantial evidence that physical activity can:

- Help improve academic achievement
  - including grades and standardized test scores
- Have an impact on cognitive skills and attitudes and academic behavior
  - Enhanced concentration and attention
  - Improved classroom behavior

Increasing or maintaining time on PE may help, or at least not adversely impact academic performance

CDC. The association between school based physical activity, including PE, and academic performance. Atlanta, GA; USDHHS; 2010
Policy Implications: What we DON’T know

• What are the implications on Achievement gap / disparity issues?
• Do educators / policy makers know this evidence?
• How to translate evidence to policy and practice?
  • What are barriers to implementing more physical activity, best practices?
Opportunities for Physical Activity in the No Child Left Behind World

Before School
- Walking/biking to school
- Walking clubs
- Open gym / playground activities

During School
- Physical Education
- Recess
- During class (activity bursts or movement for learning)

After School
- Play and unstructured games & activities
- Clubs, afterschool enrichment activities
- Sports and intramurals
Thank you!
Questions? Comments?