Physical Activity, Fitness and Academic Performance
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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

[Website Link: 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.

Physical Activity & Fitness

Sensory-system integration

Academic behaviors
Attention/alertness in class

Cognitive skills:
Memory, attitude, motivation

Improved Weight Status

Self esteem and ↓ stress

Good health / ↓ absenteeism

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?