

# 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



# 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:

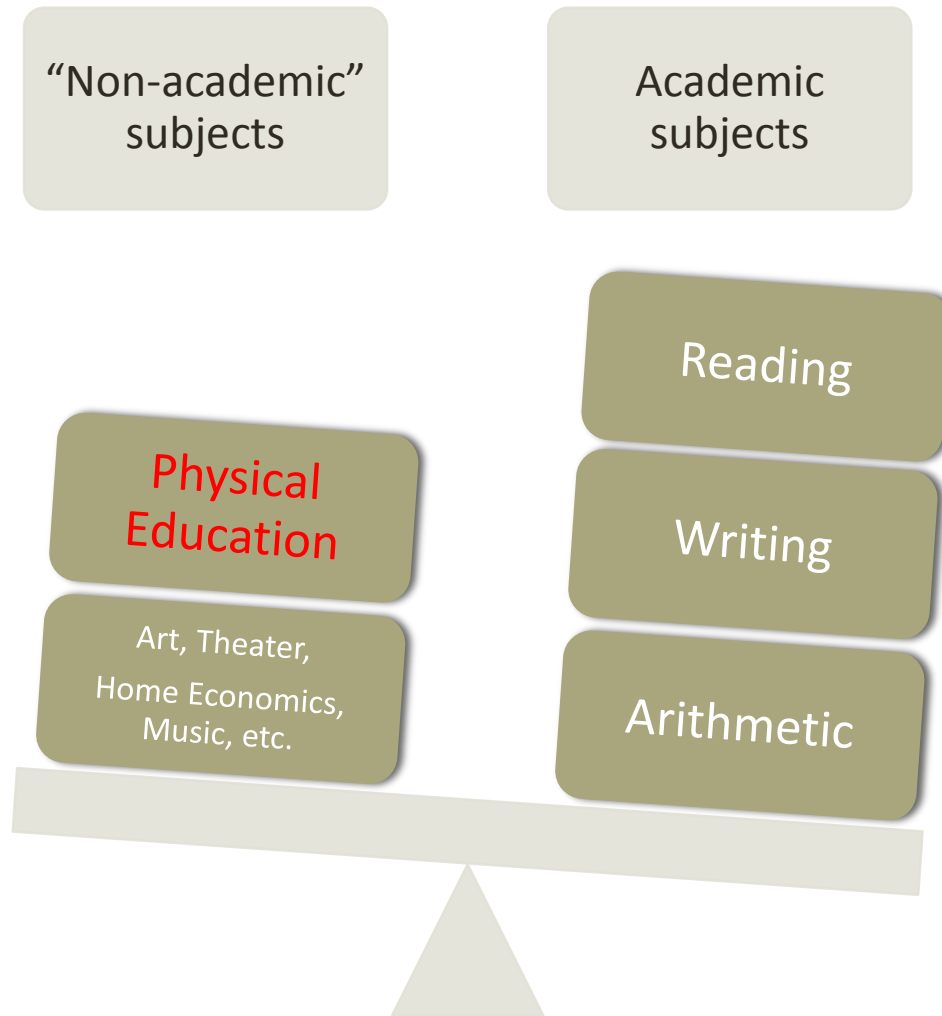
## Academic Achievement & School Success

- 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

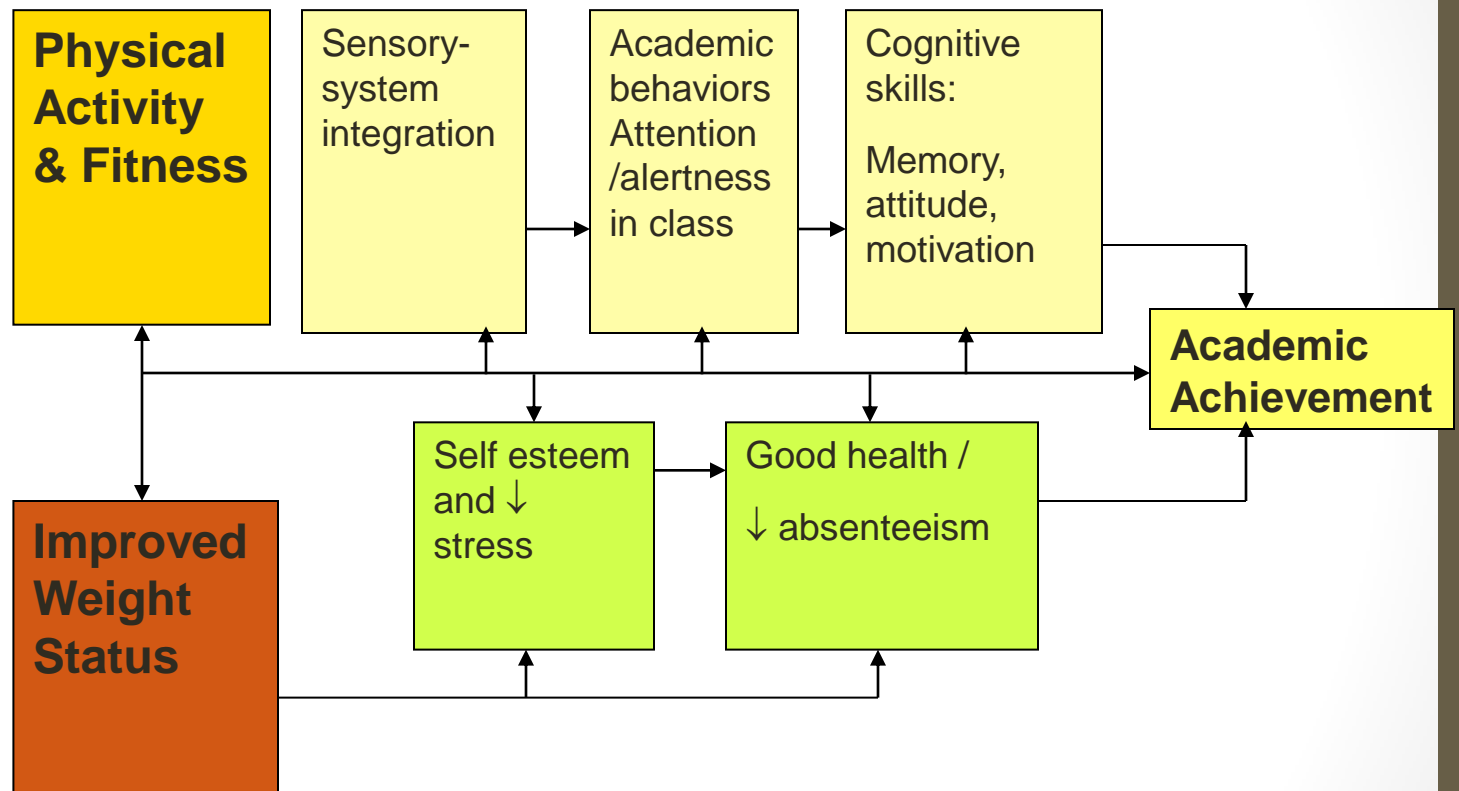
## Effect of accountability & priorities



What is the evidence of the relationship of physical activity / fitness and academic performance?



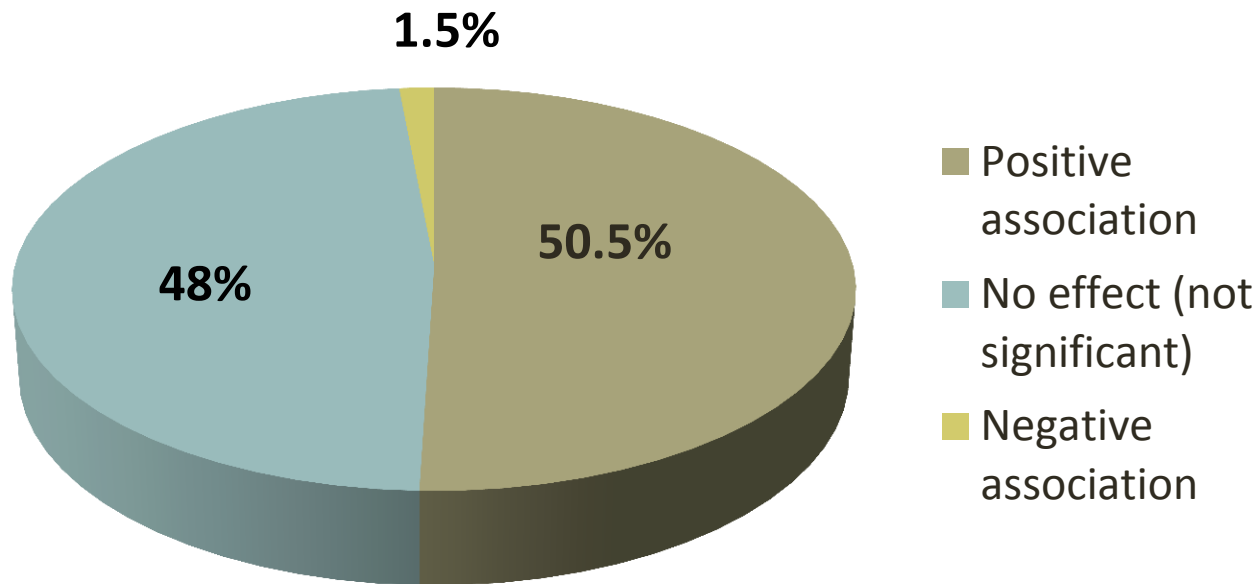
# Potential mechanisms for impact of fitness and / or weight status on academic achievement.





# 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

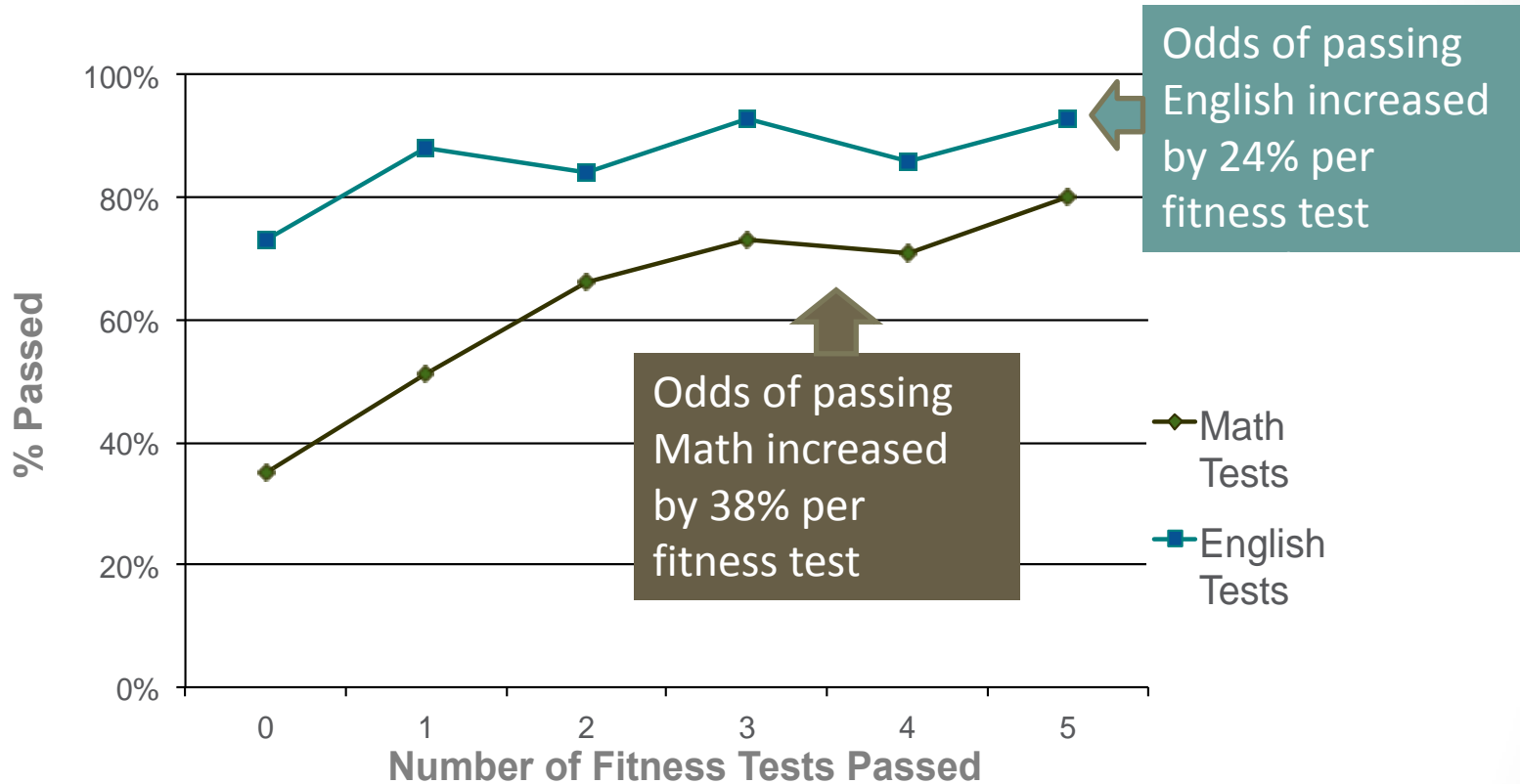
- Cognitive skills & attitudes
- Academic behaviors
- Academic achievement

# Examples of Studies



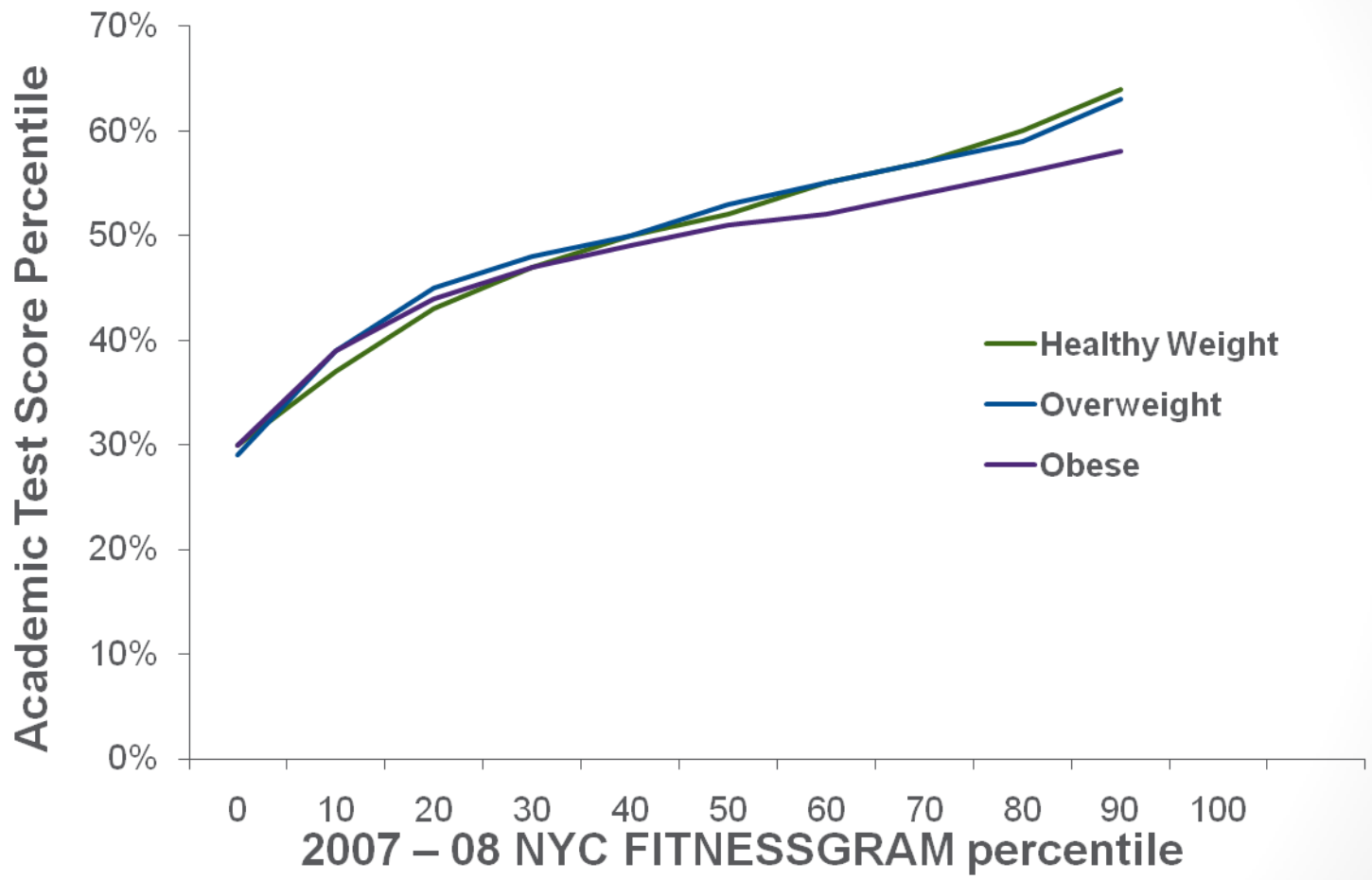
# Fit Children are more likely to Pass MCAS Tests

Cambridge MA Public Schools Grades 4 to 8



Controlling for gender, ethnicity and income

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



Egger J, Bartley K, Benson L, et al. "Childhood Obesity is a Serious Concern in New York City: Higher Levels of Fitness Associated with Better Academic Performance." *NYC Vital Signs*, 8(1): 1-4, June 2009.

# 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?

