

# The Relationship Between Physical Fitness and Academic Achievement

## What Was the Question?

Among public school children in the Northeastern United States, is there a relationship between physical fitness and academic achievement? What factors play a role in the correlation between physical fitness and standardized mathematics and English test scores?

## What Was Done?

Chomitz et al. (2009) examined 1,841 fourth-, sixth-, seventh-, and eighth-grade students in the Cambridge Public School Department, a racially and economically diverse urban public school district. Data collected from each participant included: (1) Massachusetts Comprehensive Assessment System (MCAS) English and mathematics scores, (2) fitness scores as assessed by adaptations of the American Athletic Union and Fitnessgram guidelines in five areas (cardiovascular endurance, abdominal strength, flexibility, upper body strength, and agility), (3) body mass index (BMI) scores, and (4) sociodemographic measures (i.e., gender, race/eth-

nicity, socioeconomic status). In the present study, fitness achievement was based on the number of fitness tests passed (0-5), and academic achievement was based on whether the MCAS math and English tests were passed (pass/fail). Both achievement measures were analyzed through a series of bivariate and multivariate regression analyses.

## What Was Found?

The students passed an average of 3.6 fitness tests, 72 percent of them passed the math MCAS, and 89 percent passed the English MCAS. The student characteristics significantly associated with passing both academic tests included ethnicity, higher socioeconomic status, and higher fitness achievement. Being female was also associated with passing the English MCAS test.

The students' fitness was more strongly associated with math achievement than with English achievement. This is documented by the finding that students' odds of passing the math MCAS increased by 38 percent for each one-unit increase in the number of fitness tests passed, while students' odds of passing the English MCAS increased by 24 percent for each one-unit increase in the number of fitness tests passed. Both of these findings were based on holding gender, ethnicity, weight status (BMI score), grade, and socioeconomic status constant.

## What Does the Study Mean?

The authors proffered five possible mechanisms that may influence why the more fit students in this study outperformed their less fit peers on standardized math and English tests: (1) motivated students may demonstrate an overall achievement orientation

influencing both the cognitive and psychomotor domains, (2) fitness may reflect overall health which could contribute to academic achievement, (3) physical activity or fitness could positively influence academic achievement by improving concentration and classroom behavior, (4) physical activity may improve mental health and self-esteem, and (5) exercise and fitness may impact brain function and therefore improve cognitive function.

The authors concluded by reiterating the positive effects of physical activity and fitness on academics and healthy weight in their sample. In addition, they encouraged stakeholders to consider the burgeoning body of literature supporting the connection between physical activity/physical education and cognitive performance when making curricular decisions and allocating resources.

## Reference

Chomitz, V. R., Slinning, M. M., McGowan, R. J., Mitchell, S. E., Dawson, G. F., & Hacker, K. A. (2009). Is there a relationship between physical fitness and academic achievement? Positive results from public school children in the Northeastern United States. *Journal of School Health*, 79(1), 30-37.

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