

# PHYSICAL ACTIVITY

# Today

“Communicating the Relevance of Research”

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**The Question:** This issue of *Physical Activity Today* focuses on three recently published studies related to the link between physical activity/physical fitness and academic performance.

## The Study

Researchers examined the effect of increasing physical activity (PA) during school time on academic performance in Canadian children. Classes of children (ages 9-11, total  $N = 287$ ) were randomly assigned to two groups. Teachers in the intervention classrooms (INT) were instructed to provide 15 minutes of classroom-based PA activities (e.g., skipping, dancing, and resistance exercises, etc.) during each school day for approximately one school year (9 months). The control classrooms (UP) were not instructed to provide additional classroom PA. All classes also participated in 80 minutes of weekly physical education (40 min 2X/week). Academic performance was assessed by the Canadian Achievement Test (CAT-3). Baseline and follow-up testing was implemented at the beginning and end of one school year (9 months).

## The Results

Children in the INT classrooms participated in approximately 47 additional minutes of PA/week as compared to the UP classes. At baseline, children attending UP classes had significantly higher academic performance scores than children in INT classes. However, there was no difference in academic performance scores between

groups at follow-up testing. The researchers concluded extra PA, initiated by the classroom teachers during the school year, did not compromise academic performance.

## Relevance

Taking time away from academic pursuits during school time may be perceived by school administrators as negatively impacting academic performance. However, results of this study and many other studies indicate additional organized PA during school does not negatively influence students' academic performance. In fact, the researchers cited other studies that have shown increased PA during school time may enhance academic performance. Results of this study suggest that adding additional PA during school time may be an effective way to promote higher PA levels in children while not undermining academic performance.

## Reference

Ahamed, Y., MacDonald, H., Reed, K., Naylor, P., Liu-Ambrose, T., & McKay, H. (2007). School-based physical activity does not compromise children's academic performance. *Medicine & Science in Sports Exercise*, 39, 371-376.

## The Study

Researchers assessed the effect of an acute bout of moderate treadmill walking (20 min @ 60% maximum heart rate) on brain activity (event-related brain potential – ERP) and applied aspects of cognition (response accuracy and academic achievement) in 20 normal functioning preadolescent children. The same children also were assessed after a 20-minute sedentary period.

## The Results

As demonstrated from previous literature, this study indicated that, after a 20-minute bout of physical activity, children scored higher on multiple assessments of cognition and academic performance as compared to a 20-minute period of rest. Specifically, children performed significantly better in reading comprehension, with participating children scoring approximately a full grade level higher in reading comprehension after physical activity

than after a period of rest. In addition, physical activity increased response accuracy and ERP levels.

## Relevance

Collectively, these results indicate bouts of physical activity may improve academic performance and cognitive control of attention. The researchers suggest increasing physical activity within the classroom setting may be a valuable strategy to increase academic performance and increase attention in students of all ages.

## Reference

Hillman, C. H., Pontifex, M. B., Raine, L. B., Castelli, D. M., Hall, E. E., & Kramer, A. F. (2009). The effect of acute treadmill walking on cognitive control and academic achievement in pre-adolescent children. *Neuroscience*, 159, 1044-1054.

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*PAT cont'd. from pg. 29*

## The Study

*Healthy People 2010* and *No Child Left Behind* conflict with one another in the sense that the former calls for more physical activity opportunities for youth, yet the latter involves increased pressures to meet academic achievement testing scores, which may result in less school time dedicated to physical activity. The purpose of this study was to determine the relationship between students' physical fitness and standardized achievement. Participants included 1,841 4th, 6th, 7th, and 8th grade students (65% non-white, 45% low income) from a Massachusetts school district. The Massachusetts Comprehensive Assessment System (MCAS) was used to measure academic achievement. Fitness achievement was measured by the FITNESSGRAM.

## The Results

A strong, nearly linear relationship was found between Math MCAS scores and passing fitness tests. There was a significant relationship between English MCAS scores and passing fitness tests as well. The odds of passing the Math MCAS increased by 38% for each 1-unit increase in the number of fitness tests passed, while, for the English MCAS, the odds increased by 24% for each 1-unit increase in the number of fitness tests passed.

## Relevance

These findings add to the growing body of literature on the positive relationship between physical fitness and academic achievement. As students passed more fitness tests, their Math and English MCAS scores improved. Possible reasons for these relationships include student motivation, fitness as a measure of overall health, and the contribution of fitness and physical activity to students' concentration and behavior in school. It is important to note that a variety of factors affect students' academic achievement and that the relationships reported in this study are not causal. It is unknown whether higher fitness levels lead to better academics

or vice versa. Perhaps other factors such as socioeconomic status are better predictors. Regardless, research has shown that time devoted to physical activity during school time does not deter from academic performance. Therefore, this study supports the notion of increased time dedicated to physical activity during the school day, which may lead to improved fitness scores, which may ultimately result in improved academic achievement.

## Reference

Chomitz, V. R., Slining, 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*, 30-37.

## Contributor

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## LEARN MORE

Stay tuned to this topic as it continues to be investigated by researchers and reported in the mainstream media. In addition to researchers, many school districts and states are focusing on this issue. In fact, New York City recently released a report on physical fitness and academic performance in their public school students. The full report is available at: [www.nyc.gov/html/doh/downloads/pdf/survey/survey-2009fitnessgram.pdf](http://www.nyc.gov/html/doh/downloads/pdf/survey/survey-2009fitnessgram.pdf).

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