

# Active Education

## Physical Education, Physical Activity and Academic Performance

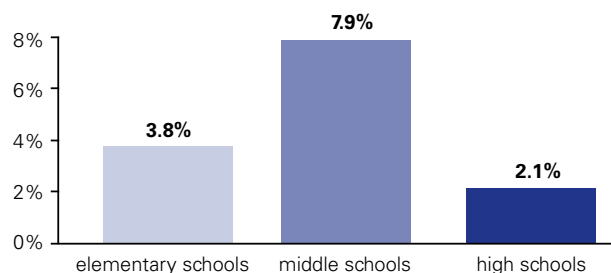
FALL 2007 RESEARCH BRIEF

In schools across the United States, physical education has been substantially reduced—and in some cases completely eliminated—in response to budget concerns and pressures to improve academic test scores. Yet the available evidence shows that children who are physically active and fit tend to perform better in the classroom, and that daily physical education does not adversely affect academic performance. Schools can provide outstanding learning environments while improving children's health through physical education.

### The Impact of Schools on Physical Activity

Today, obesity is one of the most pressing health concerns for our children. More than one-third of children and teens, approximately 25 million kids, are overweight or obese—and physical inactivity is a leading contributor to the epidemic. The Surgeon General recommends children should engage in 60 minutes of moderate activity most days of the week, yet estimates show that only 3.8 percent of elementary schools provide daily physical education (PE).<sup>1</sup>

#### Percentage of schools providing daily PE in 2006<sup>1</sup>



Schools serve as an excellent venue to provide students with the opportunity for daily physical activity, to teach the importance of regular physical activity for health, and to build skills that support active lifestyles. Unfortunately, most children get little to no regular physical activity while in school.

Budgetary constraints and increasing pressure to improve standardized test scores have caused school officials to question the value of PE and other physical activity programs. This has led to a substantial reduction in the time available for PE, and in some cases, school-based physical activity programs have been completely eliminated.<sup>2</sup> Yet advocates for school-based physical activity programs argue that allocating time for daily PE does not adversely impact academic performance and that regular exercise may improve students' concentration and cognitive functioning.<sup>3-6</sup>

**Only 36 percent of high school students meet the current recommended levels of physical activity.<sup>7</sup>**



## The Findings

This summary of peer-reviewed research on the relationship between physical activity and academic performance among children and adolescents yields the following insights:

### **Sacrificing physical education for classroom time does not improve academic performance.**

Many school systems have downsized or eliminated PE under the assumption that more classroom instructional time will improve academic performance and increase standardized test scores. The available evidence contradicts this view.<sup>8-14</sup>

To date, five controlled experimental studies—in the United States, Canada and Australia—have evaluated the effects on academic performance of allocating additional instructional time for PE. All five studies clearly demonstrate that physical activity does not need to be sacrificed for academic excellence.

A study conducted in 2006 with 214 sixth-grade students in Michigan found that students enrolled in PE had similar grades and standardized test scores as students who were not enrolled in PE, despite receiving 55 minutes less of daily classroom instruction time for academic subjects.<sup>14</sup>

In 1999, researchers analyzed data from 759 fourth- and fifth-graders in California and found that students' scores on standardized achievement tests were not adversely affected by an intensive PE program that doubled or tripled PE time. On several test scores, students with enhanced PE performed better than students in control groups.<sup>12</sup>

In 2007, 287 fourth- and fifth-grade students from British Columbia were evaluated to determine if introducing daily classroom physical activity sessions affected their academic

performance.<sup>13</sup> Students in the intervention group participated in daily 10-minute classroom activity sessions in addition to their regularly scheduled 80-minute PE class. Despite increasing in-school physical activity time by approximately 50 minutes per week, students receiving the extra physical activity time had similar standardized test scores for mathematics, reading and language arts as did students in the control group.

**Students whose time in PE or school-based physical activity was increased maintained or improved their grades and scores on standardized achievement tests, even though they received less classroom instructional time than students in control groups.**

### **Kids who are more physically active tend to perform better academically.**

Fourteen published studies analyzing data from approximately 58,000 students between 1967 and 2006 have investigated the link between overall participation in physical activity and academic performance. Eleven of those studies found that regular participation in physical activity is associated with improved academic performance.

Eight health surveys involving population-representative samples of children and adolescents from the United States,<sup>15-17</sup> United Kingdom,<sup>18-20</sup> Hong Kong<sup>21</sup> and Australia<sup>22</sup> observed statistically significant positive correlations between physical activity participation and academic performance. However, none of these studies assessed academic performance with standardized educational tests.

For example, a national study conducted in 2006 analyzed data collected from 11,957 adolescents across the U.S. to examine the relationship between physical activity and academic performance. Adolescents who reported either participating in school activities, such as PE and team sports, or playing sports with their parents, were 20 percent more likely than their sedentary peers to earn an "A" in math or English.<sup>17</sup>

Three other smaller studies conducted between 1970 and 2006 involving students from one or two schools also reported a positive correlation between physical activity and academic performance.<sup>14, 23, 24</sup> Two studies found no evidence of a relationship between physical activity and academic performance<sup>25, 26</sup> and one study conducted in Canada in the year 2000 reported a trivial negative association between physical activity and standardized test scores.<sup>27</sup>

**Kids who are physically active and fit are likely to have stronger academic performance.**

Evidence supporting the association between physical activity and enhanced academic performance is strengthened by related research that found higher levels of physical fitness to be linked with improved academic performance among children and teens. For example two large national studies in Australia<sup>22</sup> and Korea,<sup>28</sup> along with two smaller studies conducted in the U.S.,<sup>29, 30</sup> found physical fitness scores to be significantly and positively related to academic performance. These studies included students from elementary through high school.

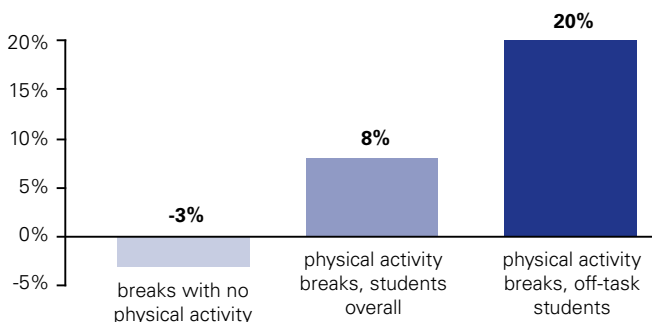
**Activity breaks can improve cognitive performance and classroom behavior.**

According to five studies involving elementary students, regular physical activity breaks during the school day may enhance academic performance. Introducing physical activity has been shown to improve cognitive performance and promote on-task classroom behavior.<sup>31-36</sup> It is important to note that the cognitive and behavioral responses to physical activity breaks during the school day have not been systematically investigated among middle or high school students.

Investigators in Georgia studied the effects of an activity break on classroom behavior in a sample of 43 fourth-grade students in 1998. Students exhibited significantly more on-task classroom behavior and significantly less fidgeting on days with a scheduled activity break than on non-activity days.<sup>35</sup>

A 12-week research project conducted in eastern North Carolina in 2006 evaluated the effects of providing elementary students with a daily 10-minute activity break. Among 243 students in kindergarten through fourth grade, a daily activity break

**Elementary students' on-task classroom behavior improves with physical activity breaks<sup>35</sup>**



increased on-task behavior significantly, by an average of 8 percent. Among the least on-task students, the activity breaks improved on-task behavior by 20 percent.<sup>36</sup>

In a study conducted in 1999 with 177 New Jersey elementary students, researchers compared concentration test scores after students completed either a classroom lesson or a 15-minute physical activity session. Fourth-grade students exhibited significantly better concentration scores after completing the physical activity. Among second- and third-grade students, the physical activity intervention was neither beneficial nor detrimental to test performance.<sup>33</sup>

**Short activity breaks during the school day can improve students' concentration skills and classroom behavior.**



**Conclusions**

- > Five studies consistently show that more time in physical education and other school-based physical activity programs does not adversely affect academic performance.
- > In some cases, more time in physical education leads to improved grades and standardized test scores.
- > Physically active and fit children tend to have better academic achievement.
- > There are several possible mechanisms by which physical education and regular physical activity could improve academic achievement, including enhanced concentration skills and classroom behavior.
- > Additional research is needed to determine the impact of physical activity on academic performance among those who are at highest risk for obesity in the United States, including African-American, Latino, Native American, Asian American and Pacific Islander children, as well as children living in lower-income communities.

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Active Living Research, a national program of the Robert Wood Johnson Foundation, stimulates and supports research to identify environmental factors and policies that influence physical activity for children and families to inform effective childhood obesity prevention strategies, particularly in low-income and racial/ethnic communities at highest risk. Active Living Research wants solid research to be part of the public debate about active living.

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