



# Active Bodies, Active Minds

## Physical Activity and Academic Achievement

Fact Sheet | February 2010

With shrinking budgets and increased pressure to improve academic achievement, school governance leaders are facing challenging decisions on behalf of the students in their district/county office of education (COE). A number of studies show that students who spend time in Physical Education or other school-based physical activity increase or maintain their grades and scores on standardized tests even when they receive less classroom time for academic subjects.<sup>1</sup> Schools that offer quality physical activity programs also see increased student concentration and reduced disruptive behavior.<sup>2</sup> Therefore, cost-effective strategies to maximize opportunities for physical activity for all students should be included in decisions aimed to improve student learning and academic achievement.

### Studies show a positive correlation between physical activity and academic performance

- In a review of 14 published studies investigating the link between participation in physical activity and academic performance, 11 studies found that regular participation in physical activity is associated with improved academic performance.<sup>3</sup>

### Student test scores improve after engaging in physical activity

- A study from the University of Illinois found that students performed better on reading comprehension, math and spelling when they had a 20-minute period of physical activity immediately preceding the test.<sup>4</sup>

### Students who are physically active and fit are more likely to perform well in school than their sedentary peers

- A national study found that adolescents who reported engaging in regular physical activity were 20 percent more likely than those who did not engage in regular physical activity to receive an “A” in English or math.<sup>5</sup>

- In a California study, higher achievement was associated with higher levels of fitness for students in grades 5, 7 and 9, and achievement was greater in mathematics than in reading, particularly at higher fitness levels.<sup>6</sup>
- Higher levels of physical fitness are linked with better school attendance and fewer disciplinary problems.<sup>7</sup>

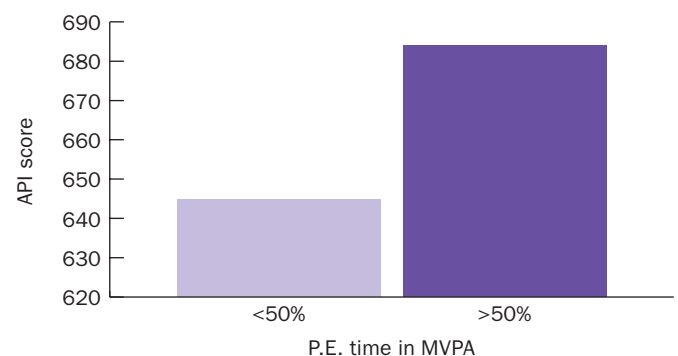
### Studies show an increase in academic achievement when additional time is provided for physical activity, even when time is removed from academic instruction

- In one study, a reduction of 240 minutes per week in class time for academics to enable increased physical activity led to higher mathematics scores.<sup>8</sup>
- Research indicates that decreasing the time allotted for P.E. in favor of traditional academic subjects does not lead to improved academic performance and may harm health.<sup>9</sup>

### The type of activity matters—students who engage in moderate to vigorous physical activity (MVPA) experience the greatest academic achievement gains

- One review of multiple studies found that MVPA, defined as activity that increases the heart rate, has the greatest positive effect on student performance and academic achievement.<sup>10</sup>

### School Academic Performance Index (API) scores by minutes of MVPA in P.E.



Source: *Failing Fitness: Physical Activity and Physical Education in Schools*



- MVPA increases the flow of blood to the brain,<sup>11</sup> which can make students more likely to pay attention in class during the school day than students who do not get any physical activity.<sup>12</sup>

### Activity breaks help students' on-task behavior

- According to seven studies involving elementary school students, regular physical activity breaks during the school day may enhance academic performance, focus and behavior in the classroom.<sup>13</sup>
- A study in North Carolina showed that providing elementary school students with a daily 10-minute physical activity break increased on-task behavior significantly, while a break without physical activity decreased on-task behavior.<sup>14</sup>
- Multiple studies have found that students are more attentive after recess than before.<sup>15</sup>

### Active transportation enhances academic performance

- Students who walk, bicycle or use other forms of active transportation to school have higher daily levels of physical activity and better cardiovascular fitness than students who do not actively commute to school.<sup>16</sup> Since physical activity primes the brain for learning, students who actively commute to school can arrive more ready to learn.

For more research, see:  
*Active Education: Physical Education, Physical Activity and Academic Performance* (Active Living Research, 2009) [http://activelivingresearch.org/files/Active\\_Ed\\_Summer2009.pdf](http://activelivingresearch.org/files/Active_Ed_Summer2009.pdf)

## THE SCHOOL BOARD'S ROLE

1. **Set direction:** Develop an understanding among the board, district/COE staff and the community of the importance of physical activity and its link to student learning.
2. **Establish structure:** Adopt and align policies and curriculum goals to increase school-based physical activity. (For more information, visit [www.csba.org/PhysicalActivity.aspx](http://www.csba.org/PhysicalActivity.aspx) and see CSBA's sample policy BP/AR 6142.7—Physical Education and Activity.)
3. **Provide support:** Ensure the district/COE explores funding opportunities and cost-effective strategies for increasing physical activity.
4. **Ensure accountability:** Monitor implementation of related policies and schedule regular reports to the board, program partners and the public from the superintendent or designee.
5. **Engage the community:** Cultivate strong partnerships among the district/COE and the community to maximize resources and develop cost-effective solutions for increasing physical activity.

### Policy resources for increasing school-based physical activity ([www.csba.org/pab.aspx](http://www.csba.org/pab.aspx))

- *Moderate to Vigorous Physical Activity in Physical Education to Increase Health and Academic Outcomes*
- *Maximizing Opportunities for Physical Activity during the School Day*
- *Safe Routes to School: Program and Policy Strategies*
- *Joint Use of Facilities for Physical Activity*
- *Building Healthy Communities: A School Leader's Guide to Collaboration and Community Engagement*

## FOR FURTHER INFORMATION

### California School Boards Association

[www.csba.org](http://www.csba.org)

### California Project LEAN (Leaders Encouraging Activity and Nutrition)

[www.CaliforniaProjectLEAN.org](http://www.CaliforniaProjectLEAN.org)

## REFERENCES

- <sup>1</sup> Trost, S.G. *Active Education: Physical Education, Physical Activity and Academic Performance: Research Brief*. San Diego, CA: Active Living Research, Robert Wood Johnson Foundation, Summer, 2009.
- <sup>2</sup> Symons, C.W., Cinelli, B., James, T.C., & Groff, P. "Bridging student health risks and academic achievement through comprehensive school health programs," *Journal of School Health*, 1997, 67(6):220-227.  
  
Kolbe, L.J., Green, L., Foreyt, J. et al. "Appropriate functions of health education in schools: Improving health and cognitive performance," Krairwee, N., Arasteli, J., & Cataldo, M., eds. *Child Health Behavior: A Behavioral Pediatrics Perspective*, John Wiley, New York, NY, 1986.
- <sup>3</sup> Trost, S.G., 2009.
- <sup>4</sup> Hillman, C.H., Pontifex, M B, Raine, L.B., Castelli, D.M., Hall, E.E., & Kramer, A.F. "The effect of acute treadmill walking on cognitive control and academic achievement in preadolescent children," *Neuroscience*, 2009,159(3):1044-54.
- <sup>5</sup> Nelson, M., & Gordon-Larson, P. "Physical activity and sedentary behavior patterns are associated with selected adolescent health risk behaviors," *Pediatrics*, 2006, 117(4): 1281-1290.
- <sup>6</sup> California Department of Education. "The Relationship Between Physical Fitness and Academic Achievement," 2001 PFT/SAT-9 Study, Sacramento, CA, 2002.
- <sup>7</sup> Trost, S.G. 2009.
- <sup>8</sup> Sallis, J.F. et al., "Effects of health-related physical education on academic achievement: Project SPARK," *Research Quarterly for Exercise and Sport*, 1999, 70(2), 127-134.
- <sup>9</sup> Trost, S.G., & Van der Mars, H. "Why we should not cut P.E.," *Educational Leadership, Health and Learning*, 2009, 67(4): 60-65..
- <sup>10</sup> Keays, J.J., & Allison, K.R. "The effects of regular moderate to vigorous physical activity on student outcomes: a review," *Canadian Journal of Public Health*, 1995, 86:62-66.
- <sup>11</sup> Shephard, R.J. "Response of brain, liver, kidney, and other organs and tissues to regular physical activity." Chap. 8, In *Physical Activity and Health*, edited by C. Bouchard, S. N. Blair and W. L. Haskell, 127-140. Champaign, IL: Human Kinetics, Inc., 2007.
- <sup>12</sup> Shephard, R.J. "Habitual physical activity and academic performance," *Nutrition Reviews*, 1996, 54(4): S32-6.
- <sup>13</sup> Trost, S.G. 2009.
- <sup>14</sup> Mahar, M., Murphy, S., Rowe, D., et al. "Effects of a classroom-based program on physical activity and on-task behavior," *Medicine and Science in Sports and Exercise*, 2006, 38(12): 2086-2094.
- <sup>15</sup> Pellegrini, A.D., & Bjorklund, D.F. "The role of recess in children's cognitive performance," *Educational Psychologist*, 1997, 32(1), 35-40 in [http://gardnercenter.stanford.edu/docs/Lit-Review\\_PlayWorks\\_091027.pdf](http://gardnercenter.stanford.edu/docs/Lit-Review_PlayWorks_091027.pdf)
- <sup>16</sup> Davison, K.K., Werder, J.L., & Lawson, C.T. "Children's active commuting to school: Current knowledge and future directions," *Preventing Chronic Disease*, 2008, 5(3). [http://www.cdc.gov/pccd/issues/2008/jul/07\\_0075.htm](http://www.cdc.gov/pccd/issues/2008/jul/07_0075.htm)