



# Wellness News Network™

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## Kids, Exercise & Academic Performance

Presented by:

If you want your child to do better in school, you should make sure your son or daughter gets plenty of exercise. Research indicates physical activity can impact a child's brain as much as the body.

In a review of exercise studies published last month in the *Archives of Pediatrics & Adolescent Medicine*, researchers uncovered compelling evidence in 12 studies that children who participated in regular physical exercise achieved better academic performance.<sup>1</sup>

### Exercise and the Brain

Why does exercise have a positive effect on the brain? Researchers offer a number of reasons.

Physical activity increases the amount of oxygen and blood to the brain, which in turn boosts cognitive function. As well, exercise develops brain-derived neurotrophic factor (BDNF) - a protein that exerts significant influence over the creation of neurons. BDNF is primarily found in brain areas important for learning, memory and higher thinking. Laboratory experiments showed mice that were exercised increased their production of BDNF considerably compared to sedentary mice. Exercise also increases production of mood-lifting endorphins and this may give kids the confidence to tackle academic challenges.

Most experts agree additional human studies are needed on exercise and its impact on academic performance, but so far the research shows promise.

A study on middle school kids revealed those students engaged in vigorous exercise (20 minutes at least three days a week) achieved higher academic grades over two semesters than students who did not participate in intense exercise.<sup>3</sup>

Research published in the *Journal of Sport & Exercise Psychology* showed that elementary school children who had good aerobic fitness were more likely to excel in reading and mathematics. However, strength training was not associated with improved academic performance. In their conclusion, the study researchers remarked: "These findings suggest that fitness was positively associated with neuroelectric indices of attention and working memory, and response speed in children."<sup>2,4</sup>



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### QUESTION?

BDNF develops areas of the brain primarily involved with...

- A) Learning
- B) Memory
- C) Higher thinking
- D) All of the above

### ANSWER:

D) All of the above

### True or false?

Brain-derived neurotrophic factor (BDNF) is a blood vessel?

**ANSWER:** False.  
BDNF is a protein

### QUESTION?

What amount of physical activity is recommended for children?

- A) 20 minutes three times a week
- B) 30 minutes daily
- C) 60 minutes daily

### ANSWER:

C) 60 minutes daily

An analysis conducted on overweight children showed interesting results as it relates to executive function, which influences a child's ability to organize, plan, problem solve and concentrate. Researchers split the children into two groups – one group did more weekly physical activity than the other. Children who engaged in 40 minutes of activity each school day over 15 weeks scored better on executive function than kids who only did 20 minutes of exercise over the same period. When they reviewed brain scans for the most physically active group, the researchers found these kids had more neural activity in the brain's frontal lobe - a key area involved in executive function.<sup>5</sup>

Many schools are already convinced of the influence of exercise on their students' academic results. In an article that appeared in Education Week, a school district in Illinois developed a physical activity class for students struggling with reading and writing. The students participated in early morning exercises followed immediately by a literacy support class. After just one semester, the students' literacy development jumped 1.34 years in progress compared to 0.7 for students who only received literacy support. The school district expanded the program to include mathematics, and the participating students saw their algebra scores improve 20.4%.<sup>6</sup>



## Less Active Students – A Troubling Trend

Unfortunately, the focus for many schools is to reduce time spent on physical activities and concentrate more on academics. This seems counter-intuitive, especially when there has been such a rise in obesity among children and adolescents.

Research indicates having additional physical activity in schools does not necessarily lower student academic performance. A review of scientific studies on this topic was published in the *International Journal of Behavioral Nutrition and Physical Activity* and the researchers remarked: "Given competent providers, PA (physical activity) can be added to the school curriculum by taking time from other subjects without risk of hindering student academic achievement. On the other hand, adding time to 'academic' or 'curricular' subjects by taking time from physical education programmes does not enhance grades in these subjects and may be detrimental to health."<sup>7</sup>

Is your child getting enough exercise? According to the Centers for Disease Control and Prevention, children and teens should get a minimum of 60 minutes of physical activity daily, and most of it should be aerobic.<sup>8</sup>

Need advice on appropriate exercise for your child? Ask your chiropractor!

## Quote to Inspire

*"If you see yourself as prosperous, you will be. If you see yourself as continually hard up, that is exactly what you will be."*

*-Robert Collier*

## References and sources:

1. Physical Activity and Performance at School - *Arch Pediatr Adolesc Med.* 2012;166(1):49-55.
2. Running Enhances Neurogenesis, Learning, and Long-Term Potentiation in Mice - *Proc Natl Acad Sci USA*, 96, 13427-31.
3. Effect of Physical Education and Activity Levels on Academic Achievement in Children - *Medicine & Science in Sports & Exercise: August 2006 - Volume 38 - Issue 8 - pp 1515-1519.*
4. Aerobic Fitness and Neurocognitive Function in Healthy Preadolescent Children - *Medicine & Science in Sports & Exercise: November 2005 - Volume 37 - Issue 11 - pp 1967-1974.*
5. Effects of Aerobic Exercise on Overweight Children's Cognitive Functioning: A Randomized Controlled Trial - *Research Quarterly of Exercise and Sport.* 78(5): 510-9.
6. Exercise Seen as Priming Pump for Students' Academic Strides - *Education Week* <http://www.edweek.org> February 12, 2008.
7. Physical Education, School Physical Activity, School Sports and Academic Performance - *International Journal of Behavioral Nutrition and Physical Activity* 2008, 5:10.
8. How Much Physical Activity Do Children Need? - *Center for Disease Control and Prevention, website-* <http://www.cdc.gov/physicalactivity/everyone/guidelines/children.html>.

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