

# A fit body = A fit brain

Exercise boosts kids' brain power. *by Karen Giles-Smith*

It's been called Miracle-Gro® for the brain by Harvard medical school professor and clinical psychologist John Ratey. It's **BDNF**, or *brain-derived neurotrophic factor*, a chemical that fuels almost all brain activities that lead to higher thought. Research shows that high levels of BDNF cause brain cells to branch out, link together, and communicate in new ways—the process that leads to learning.

### Want some BDNF for yourself?

*How about for your children?* They'll benefit even more because their brains are rapidly developing. Well, BDNF is not for sale. *Fact is:* it's free. The body makes its own. Walking will do the trick—jogging is even better.

For years, scientists have suspected that an active body is necessary for an active mind. Research continues to support this link. “Studies show that there's a direct correlation with physical fitness and academic performance,” says Jean Blaydes Madigan, a classroom and physical education teacher with a Master of Education in kinesiology, the science of human movement. “People think we exercise to benefit our bodies, but it benefits the brain first.”

The most compelling research in the last few years, says Blaydes Madigan, is the Texas Youth Fitness Study and the research by Hillman and colleagues published in the journal *Neuroscience* last year. The Texas Youth Fitness Study out of The Cooper Institute in Dallas found that students who are physically fit are more likely to do well on the state's standardized tests, have good school attendance and fewer disciplinary referrals. In the *Neuroscience* study, students who walked for 20 minutes before a cognitive test performed better than those who rested before the test. The results suggest that the brains of physically active kids are better prepared for learning.

Armed with the research, many educators are promoting more physical activity opportunities for students during the school day. Blaydes Madigan consults with school districts across the country and internationally. To enhance students' ability to learn, her top three recommendations to school administrators are to offer both physical education and recess every day and to integrate

movement into classroom lessons—something she calls action-based learning.

Learning doesn't happen in a vacuum when information is presented to the brain. For optimal learning, the brain must be primed to process the information. “The brain is totally reliant on the body to get fuel—the brain doesn't produce it or store it,” says Blaydes Madigan. “And we can't sit still and get the heart to pump faster—we have to move.” She believes there are four elements of an optimal learning environment: physical activity, nutrition, water and sleep.

**Physical activity.** Exercise helps the heart pump more blood to the brain and the rest of the body. More blood to the brain means more oxygen to nourish brain cells. Children need 60 minutes of physical activity each day, but it doesn't need to be consecutive. Madigan encourages parents to be active with their children. “Play catch or go for a walk. Fit in fitness during TV commercials by doing jumping jacks, count how many steps it takes to walk around each room in the house, jump with an imaginary jump rope, or lift weights using household items.”

**Nutrition.** The brain needs a wide variety of nutrient-rich foods including fruits, vegetables and whole grains (*good sources of antioxidants*) as well as tuna, salmon, almonds and walnuts (*good sources of Omega-3 fatty acids*). Blaydes Madigan encourages families to eat dinner together: There are many benefits of family meals including better academic performance.

**Water.** Plenty of water is important for all body processes, including brain function. Water is the beverage of choice between meals and to quench thirst at any time.

**Sleep.** School-age children need 8-12 hours of sleep, depending on age. Adequate sleep helps the brain consolidate and sort information. Just like the body, the brain needs nourishment for optimal health and to operate at peak performance. Since the brain can't provide for itself, it relies on the body to meet its needs. “The brain is only as healthy as the body that carries it,” says Blaydes Madigan.



### How exercise boosts brain power and leads to learning:

- Activates several systems in the brain that foster learning: attention, impulse control, memory and learning, and executive function (*processing speed, response speed and working memory*). As a result, students are more motivated, more attentive, better able to focus, less impulsive, less fidgety, and better able to sort through information and remember it.
- Releases growth factors and neurotransmitters so brain cells are better able to do their job which is to adapt and grow. As a result, information is cemented in memory.
- Promotes neurogenesis, or the growth of new brain cells. According to Dr. Ratey, nothing promotes neurogenesis better than aerobic exercise.

*Karen Giles-Smith, MS, RD, is a registered dietitian and freelance writer based in Mason, Michigan. Visit her Web site and blog at : [www.TheWellness-Writer.com](http://www.TheWellness-Writer.com)*