Physical Fitness in Childhood Linked to Higher Reading and Math Scores

By Dr. Mercola

If your child is struggling in school, you may want to evaluate his level of physical activity and fitness.

Researchers have repeatedly found connections between fitness and brain health, which naturally impacts all areas of brain function, such as cognitive thinking skills and memory.

According to a study from the University of North Texas, which was recently presented at the American Psychological Association’s annual convention, having a healthy heart and lungs may actually be one of the most important factors for middle school students to make good grades in math and reading.1

According to co-author Trent A. Petrie, PhD:

"Cardiorespiratory fitness was the only factor that we consistently found to have an impact on both boys’ and girls’ grades on reading and math tests... This provides more evidence that schools need to re-examine any policies that have limited students’ involvement in physical education classes."

Indeed, there's plenty of evidence attesting to the fact that if you value your brainpower, and that of your children, you'll want to make certain that exercise is a regular part of your and your family’s life. Previous research has also discovered links between physical fitness and mental acuity in seniors, so it’s equally important for all age groups.

Physical Activity Could Equate to Higher Grades

A test program not too far from our Chicago-area office at Naperville Central High School in Illinois illustrated the power of exercise to boost school performance in a powerful way two years ago. Students participated in a dynamic morning exercise program at the beginning of the day, and had access to exercise bikes and balls throughout the day in their classrooms. The results were astounding. Those who participated nearly doubled their reading scores!2 Research has also shown that after 30 minutes on the treadmill, students solve problems up to 10 percent more effectively.

Another more recent review of 14 studies,2 ranging in size from as few as 50 participants to as many as 12,000, also demonstrated that the more physically active schoolchildren are, the better they do academically. According to the authors:

"Physical activity and sports are generally promoted for their positive effect on children's physical health; regular participation in physical activity in childhood is associated with a decreased cardiovascular risk in youth and adulthood. There is also a growing body of literature suggesting that physical activity has beneficial effects on several mental health outcomes, including health-related quality of life and better mood states.

In addition... there is a strong belief that regular participation in physical activity is linked to enhancement of brain function and cognition, thereby positively influencing academic performance."

Clearly, the importance of encouraging your child to stay active after school and on weekends in order to reap the wonderful brain-boosting benefits that exercise has to offer cannot be overstated. Even better, be a positive role model and stay active together as a family.

Ideally, you'll want to incorporate a variety of activities, as each type of exercise may offer unique benefits for your brain health and may even help your brain to grow as you get older, rather than shrink, which is the norm. A review of more than 100 studies, published in the Journal of Applied Physiology, revealed that both aerobic and resistance training are equally important for maintaining brain and cognitive health.

For instance, aerobic exercise has been found to improve your ability to coordinate multiple tasks — a skill needed for most people in today's fast-paced world. It can also improve your ability to stay on task for extended periods. Resistance training, on the other hand, appears to improve your ability to focus amid distractions. Overall, exercise tends to improve the ability of different parts of your brain to work together. Effects such as these are thought to be due to changes in the prefrontal and temporal lobes, caused by exercise.

Your Brain "on Exercise"

Exercise encourages your brain to work at optimum capacity by causing nerve cells to multiply, strengthening their interconnections and protecting them from damage. Animal tests have illustrated that during exercise, their nerve cells release proteins known as neurotrophic factors. One in particular, called brain-derived neurotrophic factor (BDNF), triggers numerous other chemicals that promote neural health, and has a direct benefit on brain functions, including learning. Further, exercise provides protective effects to your brain through:

- Greater blood and oxygen flow to your brain
- The production of nerve-protecting compounds and growth factors that help create new nerve cells and support synaptic plasticity
- Improved development and survival of neurons

Increased levels of norepinephrine and endorphins resulting in a reduction of stress and an improvement of mood

A 2010 study on primates published in the journal Neuroscience also revealed that regular exercise not only improved blood flow to the brain, but also helped the monkeys learn new tasks twice as quickly as non-exercising monkeys – a benefit the researchers believe would hold true for people as well.

Kids Benefit From Exercise in Many Ways

There’s absolutely no doubt that kids need exercise, and that most aren’t getting enough. Less than one-third of children aged 6 to 17 get at least 20 minutes of daily exercise in one form or another. This is tragic, considering the multitude of short- and long-term health benefits your child can gain from a regular exercise regimen, including:

| Reduced risk of diabetes and pre-diabetes | Improved sleep | Stronger bones | Reduced restlessness or hyperactivity; helps decrease symptoms of ADHD |
| Improved immune system function | Improved mood | Weight loss | Increased energy levels |

How to Get Your Kids Moving

First, it’s imperative to limit the amount of time your child spends watching TV, or playing computer and video games, and to replace some of these sedentary activities with exercise. There are plenty of physical activities to choose from, from sports and dance classes to gymnastics, bike riding and playing tag with friends. Allow your child to choose activities that appeal to them, and which are age appropriate.

Remember that the trick to getting kids interested in exercise at a young age is to keep it fun. Also keep in mind that short, spontaneous bouts of exercise throughout the day is actually the ideal way of doing it.

This is the way your body was designed to operate, and it’s what you’re mimicking when doing high-intensity interval training – i.e. short bursts of activity with periods of rest in between. Kids will typically fall into this behavior quite spontaneously, as long as they’re outdoors, and not cooped up in front of a TV or computer screen. Like adults, kids also need variety in their exercise routines to reap the greatest rewards, so be sure your child is getting:

- Interval training
- Strength training
- Stretching
- Core-building activities

This may sound daunting, but if your child participates in a gymnastics class, sprints around the backyard after the dog often and rides his bike after school, he’s covered. Also remember that acting as a role model by staying active yourself is one of the best ways to motivate and inspire your kids. If your child sees you embracing exercise as a positive and important part of your lifestyle, they will naturally follow suit. Plus, it’s easy to plan active activities that involve the whole family and double up as fun ways to spend time together. Hiking, bike riding, canoeing, swimming and sports are all great options.

Peak Fitness for Kids

As I mentioned earlier, intermittent bouts of exercise is actually the ideal form of exercise and is a key component of my comprehensive Peak Fitness program. While it may appear to be extreme to some, this type of short burst-type exercise is perhaps the most natural of all exercises for children.

Humans were simply not designed to run at a steady pace for extended periods of time, and you almost never see that type of behavior in the wild either. The research is so clear about the superior benefits of this type of exercise – which mimics natural
benefit — that the American Heart Association and the American College of Sports Medicine have now changed their exercise guidelines from slow but steady aerobic cardio to high-intensity interval training.

Benefits of high-intensity interval training include:

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<th>Significantly improving your insulin sensitivity, especially if you’re on a low-processed food, low-sugar or low-grain diet</th>
<th>Optimizing your cholesterol ratios, when combined with a proper diet</th>
<th>Boosting fat metabolism and optimizing your body fat percentage (as a result of improved conservation of sugar and glycogen in your muscles)</th>
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<tr>
<td>Virtually eliminating type 2 diabetes and high blood pressure</td>
<td>Naturally boosting your levels of human growth hormone (HGH)</td>
<td>Increasing your aerobic capacity</td>
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Peak Fitness Instructions

A key component is to raise your heart rate up to your anaerobic threshold (220 minus your age) for 20 to 30 seconds, followed by a 90-second recovery period. Depending on your child’s current level of fitness, he may need to work his way up to eight cycles. I recommend starting with two to four cycles, and gradually increasing to eight. There are no rules for the specific manner in which this is achieved — your child could do this running in the backyard, or using a treadmill, elliptical machine, or recumbent bike (provided your child is old enough to use such machines safely, of course), or they could do it bicycling outdoors.

For a demonstration of the core principles, and important safety tips, please see the following video. It also includes a demonstration of proper warm-up. While this video is primarily directed to adults, as opposed to children engaged in spontaneous high-intensity play, it can still give you some helpful pointers to keep in mind when you’re coaching your kids.

Here are the core principles:

- Warm up for three minutes
- Then, go all out, as hard as you can for 30 seconds
- Recover at a moderate pace for 90 seconds
- Repeat 7 more times, for a total of 8 repetitions
- Cool down for a few minutes afterwards by cutting down your intensity by 50-60 percent

For even more in-depth information, please review this previous article.

Know that high-intensity interval training has a number of health benefits that you simply cannot achieve with any other type of exercise. For adults over 30, the most important of these is the natural production of human growth hormone (HGH), which is essential for strength, overall fitness, and longevity. Naturally, children and teens don’t need to worry too much about producing HGH, but high-intensity interval training can still provide magnificent benefits for this age group, as it can dramatically improve fat loss and helps build muscle. It also dramatically improves athletic speed and performance, which can greatly benefit aspiring youth athletes.

Overall, this type of exercise will allow your child (and you!) to achieve her fitness goals much faster.

[+] Sources and References