

# You Can Be Smarter, Calmer, and Thinner in Just Three Hours per Week



The one thing all physiatrists can agree on is the importance of exercise. AAPM&R member Ralph Buschbacher gives a lecture on exercise in which he provides one definition of a physiatrist: "Physiatrists are doctors that have an almost fanatical belief in the role of exercise in curing just about anything." Whether you are treating low back pain or stroke or just about anything else in our field, some type of exercise is a ubiquitous component of the regimen of care. Pick up any of our journals and there will be articles about the use of exercise as a treatment in nearly every issue.

Most of us are already familiar with the many known benefits of exercise: It can increase coronary artery size and myocardial output. It can level our glucose homeostasis and even reverse some cases of non-insulin-dependent diabetes mellitus. It can reduce your stress level, increase your muscle strength and endurance and HDL level, and even help keep your weight down. It is the antidote for many types of back pain, including the increasingly common inactivity-induced decompensation of the spinal musculature.

I've always been proud of the fact that physiatrists know more about the psychology and therapeutic use of exercise than any other specialty of medicine. But there is a new development regarding exercise that you might not have heard about: Exercise can make you smarter! Recent research indicates that muscle exercise produces IGF-1 which crosses the blood-brain barrier to induce the production of a number of brain chemicals including brain-derived-neurotrophic-factor (BDNF). This causes the development of more branches and synapses, more brain capillaries, more neurotransmitters, more astrocytes, and even new brain cell development (yes, I said new brain cells). Recent studies have shown that this occurs especially in the dentate gyrus of the hippocampus (where Alzheimer's strikes first) and in the frontal lobes (remember those important "Executive Functions"). Exercising vigorously even a few times per week has been shown to lower the incidence of Alzheimer's and can even slow the rate of cognitive function loss in existing Alzheimer's.)

Recent studies have shown that exercise can improve math and logic and reading skills in children. One study showed that vigorous exercise right before reading class improved the reading skills of school children. This is one of the many reasons why there is a movement across the country to require at least 30 minutes of vigorous physical exercise per day in grades K-8. Exercise in children might be as important for brain building as it is for body building.

One of the reasons we are the most obese nation on Earth is that we are the first nation of people who no longer have to exercise to survive. Modern machines and conveniences have eliminated essentially all of our incremental exercise, which now makes it necessary for us to choose to exercise. Since I now recognize this as a choice in my own life, I recently cancelled my lawn service and bought a giant walk-behind mower to mow my one-acre lawn. But I even had to fight the attitude of the salesman at the lawn equipment store who told me, "Doc, for the amount of money you're spending on this walk-behind mower, I could put you on a nice riding mower." I tried to explain all about BDNF to him...but in the end I just had to insist on buying the mower that you can't ride.

Let's not be guilty of just prescribing exercise...let's get out and do it! Get your family involved too. Maybe we all need to make a resolution that we will exercise one hour for each hour we watch TV or play a video game? Exercise can make you and your family thinner, smarter, calmer, more fit, and less likely to develop diabetes. In the immortal words of 93-years-young exercise guru Jack Lalanne, "If you can't spend 15, 20, or 30 minutes four times a week taking care of your body, there's got to be something wrong with you."

As Dr. William Bortz said in the *Journal of the American Geriatric Society* in 1980. "If you don't use it, you lose it." Final word: More people rust out than wear out!

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