

# How Exercise Makes You Smarter!

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According to the American Council on Exercise Fitness Matters magazine, there is a growing body of scientific research that shows how working out not only improves your muscular fitness, but also your mental fitness as well. Brain imaging studies in humans have shown that physical exertion stimulates brain cells to support neural connections and to create new ones. This heightened network can process and store information more effectively.

One study showed that after six months of aerobic exercise there was a two percent growth in the prefrontal lobe where higher level functions take place, like goal-planning and multitasking. This increase was due to a release of chemicals in the brain triggered by exercise. The most important of these brain chemicals is called brain-derived neurotrophic factor or BDNF. BDNF also helps build new veins, capillaries and arteries in the brain which allows neurons to function more effectively, making them larger and stronger.

Exercise has also been shown to have a positive effect on some brain disorders like attention deficit hyperactivity disorder, ADHD, a neurological/behavioral condition resulting in hyperactivity and the inability to focus on tasks. Exercise boosts serotonin and dopamine which are "mood" chemicals that provide vitality, alertness and stave off depression.

For older adults exercise is particularly important as we start to lose brain tissue as early as our third decade. However, those that exercise will lose tissue more slowly. Individuals who do not exercise and lack high levels of BDNF might have a higher risk of Alzheimer's and Parkinson's disease.

How much exercise is necessary to reap the brain benefits? Not much according to a variety of resources. Most of the sources state anywhere from as little as 10 minutes per day up to 60 minutes most days of the week will be helpful to boost BDNF. The intensity should be where people are breathing hard to get the most for their mental fitness gains. And if possible a combination of aerobic and strength training is best. So keep up your fitness program to boost your mental health!