

Active Bodies, Healthy Brains: Exercise Develops More than your Muscles



As fitness enthusiasts, we know that exercise is a great way to lose weight, strengthen your heart, build muscle and increase energy levels. However, what most people don't realize is that exercise also has many beneficial effects on your brain.

Since the early 1970s, scientists have known that exercise improves reaction times, especially in older adults. More recently, with the development of new research tools, they've begun to realize that the impact of exercise is much more profound than simply speeding up your ability to press a button when you see a green light. Exercise can improve learning, memory and mood – three things that most of us wish we could improve on!

Exercise Improves Learning and Memory

Up until recently, scientists believed that the human brain was unable to make new neurons – that we were born with all of our brain cells and if we damaged them, we couldn't replace them. It turns out that we actually can make these specialized brain cells, but only in very specific areas of the brain. What's even more exciting is that exercise seems to be the most reliable way to speed up the creation of these neurons. No drug on the market can even come close!

Using mice with access to running wheels, scientists have begun to determine where these new neurons are made in the brain and what they might be doing. It appears that these neurons occur mostly in an area of the brain known as the hippocampus, which is a very important area for learning and memory. And if more neurons are being made in an area of the brain involved in learning and memory, we would then predict that these mice would be smarter than their sedentary (non-running) counterparts. This is exactly what we see. Mice with access to a running wheel are better able to remember the location of a hidden platform in a small pool of water, which is a way of measuring memory in rodents.

Although we can't actually look at the number of neurons in a human brain, studies in humans support the findings in mice. Adults who lead a physically active lifestyle seem to perform better on tests of cognitive function than sedentary adults. This effect is most pronounced in executive control, which is an important cognitive ability that allows us to schedule, plan, multi-task, monitor our own behavior and remember things in short-term memory (e.g., remembering a list of items you need from the grocery store). In addition, active adults tend to preserve their cognitive function as they age and may have a reduced risk for devastating neurodegenerative diseases such as Alzheimer's disease.

Exercise Improves Mood

In addition to better memory, adults who exercise are also less likely to suffer from depressive symptoms. Exercise – either aerobic (cardio) or resistance (weights) – seems to prevent the onset of depression and can prevent a relapse into depression. The benefits can be similar to those seen with anti-depressants, although using exercise as an alternative to anti-depressants is something that must be discussed with your health-care provider.

Scientists are currently trying to understand exactly how exercise can have such a positive effect on your mood. Some scientists believe that exercise helps replenish your brain levels of serotonin – a “feel-good” chemical that is often low in the brains of depressed individuals. Other scientists think that exercise helps regulate the brain’s stress response centers, preventing them from over-reacting and causing a feeling of hopelessness. Still others suggest that the creation of new neurons could be what’s driving the effect on mood. Regardless of how it’s working, the benefits are clearly there and we should all be taking advantage while scientists continue to figure out who’s right!

To put things in perspective, think of your brain as a big city and exercise as a group of really good civil engineers. The civil engineers are responsible for building and maintaining roads, canals and bridges. And let’s be honest – unless you ARE a civil engineer, you don’t fully understand HOW this is accomplished. Regardless, you get to experience the positive results: a city with well-maintained roadways, which offer multiple routes to get from point A to point B, creating a relaxing, traffic-free drive to work.

As the civil engineers build more roadways, you can reach more stores. This is sort of how exercise improves your ability to learn and remember information – by making more neurons. Also, because of the multiple routes available, when one road breaks down you can seamlessly switch to a different route to the store. Again, this is similar to how exercise may prevent Alzheimer’s disease. Because you have more neurons and more connections between your neurons, it takes longer for you to notice memory loss because you have more pathways to get to a particular memory.

Finally, if civil engineers do a good job of building and maintaining the roads, your drive to work becomes much more pleasant and stress-free. You aren’t stuck sitting in traffic fuming about your husband forgetting to pick up milk. Surprise meetings and spilt coffee suddenly become minor irritants instead of something to add to your list of things that went wrong today. Similarly, if we exercise, our mood becomes much more relaxed and positive. We are able to shake off feelings of sadness and hopelessness and focus on the positive things in our life.

So if you needed another excuse to start a new exercise regime, now you have three: better learning, better memory and better mood!



About Christa Studzinski

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