



# *The Research is in...#1* Exercise is the **1** Thing You Can Do For Brain Health

If you need any more proof that exercise is the right thing to do, the research is in. While it's no secret that exercise is good for the body, it can also be great for your mind, particularly when it comes to maintaining and even improving your brain health. Over the past several decades, dozens of studies have demonstrated a clear link between exercise and brain health.

According to AARP's "Staying Sharp," a program aimed at helping people take positive steps to maintain and improve their brain health, there are five pillars of brain health which include:

- **Relax** – getting the sleep you need, relaxing and eliminating stress

- **Discover** – incorporating brain-based learning tools into your regular routine
- **Connect** – developing new bonds and cultivating current relationships
- **Nourish** – eating a nutritious diet, rich in brain-health promoting foods
- **Move** – exercising regularly

In this article, we'll evaluate the critical impact of exercise on brain health. By the time you're done, we hope you'll be ready to run off the couch and head for the gym.

## »» What Happens to Our Brains with Age?

Sadly, like every other part of our bodies, our brains age over time... but what *really* happens in there? Well, much research has been done and let's just say it's not good news. Our brains actually shrink over time, the brain loses cognitive abilities, and even the vessels around the brain deteriorate with age – all of which cause some serious effects on our brain function. Research indicates the brain loses volume and/or weight at a rate of approximately 5% per decade after the age 40, primarily due to cell death.

It's not all doom and gloom, though – there are definite things we can do to preserve and even improve our brain function as we age. The most significant of these is **exercise**. That's because exercise releases a brain protein called brain-derived neurotrophic growth factor (BDNF), which has been dubbed by researchers as "Miracle-Gro for the brain."

If you pay attention to the news, you'll see numerous studies are being published each year to prove that exercise is critical to preserving our brain function. What researchers are learning, though, is that it's not just any exercise that will make the impact. It's got to be aerobic, which means you've really got to sweat it out to get your grey matter growing again. Just in case you aren't ready to jump on the treadmill yet, here's a look at some of the data.

## »» You Can't Argue with Science

Okay, well maybe you can, but in this case it's pretty clear that exercise is the key to keeping your brain young and enhancing your memory and cognitive skills. What's even more, exercise can reduce your risk for serious conditions such as dementia and Alzheimer's. The following are just a few of the many studies demonstrating the importance of strenuous exercise, particularly as we age. While there are other things you can do to try and keep your brain in good shape, it appears that exercise truly is the most effective.

### ***The Image is Clear***

Researchers at the Wake Forest School of Medicine used advanced MRI brain imaging techniques to compare scans of study participants (who already had mild cognitive impairment) who participated in aerobic exercise such as elliptical training, stationary bike or treadmill with those who only did stretching exercises such as yoga. The study

lasted just six months and the evidence was clear – the detailed MRI analysis showed the group of intense exercisers had better brain preservation, increased local gray matter volume, and better improvements in cognitive ability. The stretching group also experienced brain volume increases in grey matter, but the results were consistently less impressive than those of the aerobic exercisers. Participants in each group exercised four times a week for the duration of the study. According to the research, there is no medication currently on the market that can compare to these results. This study was presented at the 102nd annual meeting of the Radiological Society of North America in 2016.

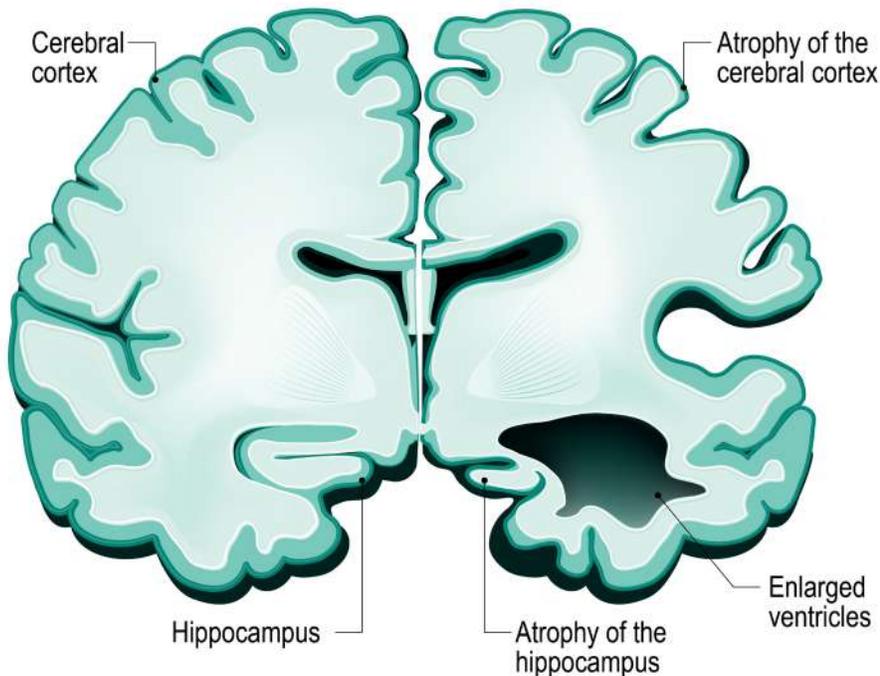
### ***Maintain Your Brain***

In November 2017, a study was published in *NeuroImage* that demonstrated exercise significantly increased the size of the left region of the hippocampus, the area of the brain that supports memory and other brain functions. The study was an international collaboration



## Healthy

## Alzheimer's disease



between researchers in Australia and the UK, whereby they reviewed data from 14 clinical trials that included brain scans of 737 people before and after exercise programs (as well as those in control conditions). The study included a blend of adults with an average age of 66 – some of whom had mild cognitive problems to those with Alzheimer's, depression, and schizophrenia. Researchers concluded that the study proved exercise as an excellent maintenance program for the brain.

### **Avoiding Alzheimer's**

In 2014, a study presented at the Alzheimer's Association International Conference revealed that people who made significant lifestyle changes – including exercise and a healthy diet for just two years – showed improvements in their mental

function, memory, cognitive skills, and executive function. This study included more than 1,200 participants who were at high risk for Alzheimer's. Half were provided a serious lifestyle intervention, including personal and group nutrition advice, physical training, and support from a nurse to ensure compliance with medications. The other half were provided with health care services, but no lifestyle interventions. Those who made the lifestyle changes demonstrated much better improvement after a two-year period.

### **Improving Schizophrenia Symptoms**

Research published in the *Schizophrenia Bulletin* in 2016 revealed that a combination of aerobic exercise, computerized neurocognitive training, and antipsychotic medications led

to dramatic improvement for young adults with schizophrenia. The study was performed by neuroscientists at the University of California, Los Angeles (UCLA) and the data was clear after just 10 weeks. Participants who had other interventions without the aerobic exercise did not experience the same level of improvement that those who exercised did.

### **Down Goes the Risk for Dementia**

Research published in the August 2016 issue of the *Journals of Gerontology Series A: Biological Sciences and Medical Sciences* demonstrated a serious correlation between a lack of physical activity and the risk for developing dementia. The study was done by UCLA researchers who evaluated data from the famous Framingham Heart Study to evaluate how physical activity might affect brain size and an individual's risk for dementia. Those who reported low levels of physical activity had a higher risk for dementia, while those who exercised regularly were at higher risk for developing dementia.

### **Dancing Does the Trick, Too**

*Frontiers in Human Neuroscience* covered the findings of a research study demonstrating that dancing is one of the most effective forms of aerobic exercise for older adults looking to reap the benefits of exercise for brain health. The study compared two different exercise routines – one focused on dancing and the other on endurance and flexibility training. Over an

18-month period, both groups experienced an increase in hippocampus regions of the brain, but the dancers were the only group that showed a difference in behavior. Experts believe the extra challenge associated with learning a dancing routine contributed to the behavior changes, which included improved balance.

### **Running Can Create New Neurons**

A ground-breaking study was published in the June 2016 issue of *Cell Metabolism* which revealed running causes the release of a protein that triggers the birth of new neurons in the brain. This process, known as neurogenesis, has been studied for years and is linked to improvements in brain health. The study, which was performed on mice, was led by Henriette van Praag, a neuroscientist at the National Institute on Aging. The protein is called cathepsin B and the mice who produced it were better able to perform memory-related tasks such as repeatedly finding their way through a water maze.

### **How Much Exercise Is Needed for Brain Health?**

While the research varies, a report issued in April of 2016 by the Global Council on Brain Health offers advice on how much you need to work out to get your brain in its best possible shape. The Global Council on Brain Health is a group of scientists, researchers, scholars, health and policy experts from all over the world.

- Each week, be sure to get 150 minutes or more of moderate-intensity, aerobic exercise plus two or more days of moderate-intensity activities aimed at strengthening your muscles.
- Incorporate physical activity throughout your day, every day. A few ideas include taking the steps when you can, parking far from your destination, lifting weights while you're on the phone, etc. Even just a few minutes here and there are good for your body, mind and brain – and will make it easier to achieve the 150-minute mark each week.
- Find enjoyable ways to increase and maintain this level of physical activity. Maintaining an exercise program can definitely be a challenge, particularly with age. To accomplish this, try new things until you find what you like. If you're uncoordinated, a dance class probably isn't your best bet (although dancing at home may be perfect for you!). Try something that appeals to you and do a little trial-and-error until you find something that you look forward to. Worst case scenario is you find an activity you don't dread every day, but finding something you enjoy is ideal.

Now, you, too are an expert on the advantages of exercise for brain health. Your next step should be to develop an exercise plan, find some activities you enjoy, and stick with it. Your grey matter will be growing back before you know it.

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