

Exercise minimizes MS symptoms, preserves brainpower



Study shows exercise may improve learning and memory.

by Aviva Patz

Studies show that exercise is good for the brain, not to mention the body and even the soul. But if you have multiple sclerosis, there's an extra incentive to get moving: It also could help build your brain.

"For many years, we've known that on a symptom level, exercise helps with reducing fatigue, easing mobility and improving cognition," explains Alon Kalron, PhD, senior lecturer at the Sackler Faculty of Medicine at Tel-Aviv University. Kalron, the lead author of a new study, is also a researcher at the Sheba MS Center, Tel-Hashomer. "Today, we see that from a disease perspective, exercise preserves an important part of the neural system."

"In fact," Kalron adds, "there is more and more evidence pointing that it can slow the progression of the disease."

Your brain on exercise

To determine exactly how regular exercise boosts the brain, Kalron and his colleagues asked 153 people with MS to rate their level of leisure-time physical activity over the prior week, from "strenuous" (running or jogging) to "moderate" (fast walking), or "mild" (strolling). He then divided them into one of two groups according to their exercise level —"active" or "insufficiently active." The researchers then looked at brain MRI scans of these same people

and examined eight regions of the brain, searching for differences. They not only compared the scans of the active participants with those of the inactive participants, but they also measured both groups' brain scans against standard measures of those parts of the brain.

Active vs. inactive brains

The scans showed significant differences in both the right and left sides of one critical brain region — the hippocampus — between the active and inactive people with MS, even after taking disability and cognition challenges into account. The volumes of the right side of the hippocampus alone accounted for 20% of the differences between the groups. “Those who do regular physical activity have a larger hippocampus, an important area of the brain related to memory and learning,” Kalron says.



The hippocampus is a small, curved organ found deep in the brain's temporal lobe that plays a critical role in memory.

Photo: iStock

The hippocampus is a small, curved organ found deep in the brain's temporal lobe that plays a critical role in memory. It is involved in functions including

- Spatial memory, which allows you to do things like navigating mazes and parallel parking.
- Memory consolidation, which impacts the process of locking in memories during sleep.
- Memory transfer, which involves moving memories from a sort of holding area into long-term storage in the brain.

The hippocampus also helps encode emotions into memories. For example, when you hear a

song from your high school days, it may bring up warm, giddy feelings tied to the memory of your first kiss or sadness related to a lost game.

Advancing what we know

While a large body of research already shows that exercise boosts the brain, this is the first to pin down the brain's specific area responsible for those improvements. "The way we analyze the MRI data — we compared it to normative values [standard measurements in a healthy population] — it's a more statistical way to understand the benefits of regular exercise on people living with MS," Kalron says. "We strengthened the findings of some of the earlier studies and also made it more specific."

Exercise is vital

Regular exercise joins a healthy diet and good sleep hygiene as pillars of general health and well-being. Getting moving is especially critical for people with MS because it can help manage symptoms. Studies show that aerobic exercise programs can help improve cardiovascular fitness, strength, bone density and flexibility for people living with MS. Exercise may also improve MS symptoms involving bladder and bowel function, fatigue, cognitive function and mood.

It's important to note that the researchers saw a brain benefit with even lighter forms of physical activity. "You don't have to train for a marathon," Kalron says. "Even moderate-level walking is enough to maintain brain capabilities." He adds that the key is to do it regularly, ideally three times a week for a half-hour at a time.

Suggested forms of physical activity for people living with MS include swimming, gardening, household chores, cooking, walking the dog and taking the stairs instead of the elevator.

Slowing MS progression

More than just easing MS symptoms, regular exercise has the power to "actually slow progression of the disease." As Kalron says, "it gets the neurovascular system working more optimally in general." That means smoother, faster, more efficient communication between the nerves in the brain and the spinal cord. Improving this system is critical for people living with MS, as lesions that develop along these structures as the disease progresses can interfere with essential signaling, causing symptoms ranging from lack of bladder control to spasticity to brain fog.

"Regardless of disability or cognitive level, exercise helps you maintain a larger hippocampus at any stage of the disease," Kalron adds. Knowing that regular exercise can minimize symptoms and preserve brainpower should help more people living with MS take control of their disease.

New exercise guidelines

The message from the last decade is that physical activity is important in MS, according to Kalron, so much so that the National MS Society has issued new [physical activity](#)

[recommendations](#) for healthcare providers to share.

The recommendations — developed by a group of experts in the fields of MS, exercise, rehabilitation and physical activity published in the April 2020 issue of MS Journal — lay out examples of [activity suitable for all disability levels](#), from people with mild impairment and people whose walking is limited to people who use a wheelchair or are confined to a bed or chair.

Further research

Kalron and his team plan to continue investigating the impact of physical activity on brain structures. “We want to keep asking the important question: How much exercise do you need to change areas of the brain to reverse degeneration?” he says. “Now, we can focus on specific areas to help answer that question.”

Aviva Patz is a writer in Montclair, New Jersey.

Find some exercise ideas for different abilities at [30 minutes, 3 times a week](#).