

Exercise could build brain cells in elderly, study suggests

By Kathleen Fackelmann
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Older mice that exercised on a running wheel developed new brain cells and learned a new task more effectively than older mice that took it easy all day, a study reports today.

The study showed that regular physical activity helped spur the production of neurons in the memory region of the mouse brain. If the findings hold true for humans, they suggest that regular workouts might give older humans a boost in brainpower and might even help forestall the forgetfulness and confusion that can plague people as they get older, says researcher Fred Gage of the Salk Institute for Biological Studies in La Jolla, Calif.

The findings, reported in today's *Journal of Neuroscience*, also suggest that it's never too late to get moving: The mice in the study were about 70 in human years, and they developed an edge in brainpower after exercising for just a month.

"The findings are pretty exciting," says David Snowdon, researcher on aging at the University of Kentucky, who was not involved in the study.

Previous research has shown that exercise could spur the formation of brain cells in young mice, or mice that in human terms were equivalent to a 20-year-old. This study is the first to show that exercise helps older mice.

Gage and his colleagues allowed a group of old mice and a group of young mice to exercise on a running wheel as much as they wanted. The mice ran about 2 miles every day. The researchers also kept a third group of older mice that didn't exercise. After a month of the regular exercise, the team subjected the mice to a memory test.

The researchers taught the mice to find a platform submerged in a pool of water. After the mice had learned the location of the platform, they had to find it even when it was hidden in cloudy water.

The Salk team found that the old mice that had worked out on the wheel performed as well as the young mice: The elderly mice remembered the location of the platform and swam quickly to the spot without much trouble.

In contrast, the older mice that didn't get the daily workouts flunked: These mice, much like older people who are starting to show declines in memory, had trouble remembering the location of the platform. In most cases, the mice swam aimlessly in the pool and never found the platform or found it by chance, Gage says.

When the team examined the animals' brain tissue, they found that older mice that had been exercising had added significant amounts of cells in the hippocampus, the part of the brain that helps with memory and the ability to learn new tasks.

The old mice that didn't exercise seemed to produce very few new brain cells, a problem that might explain their confusion, Gage says.

This study suggests — but doesn't prove — that people with brain-destroying diseases such as Alzheimer's might be able to build replacement brain cells as a result of daily workouts, says William Thies of the Chicago-based Alzheimer's Association.

The new findings also indicate that healthy older people might be able to reverse some of the normal age-related loss of brain cells with a daily walk, Gage says.

People shouldn't wait for researchers to confirm these findings, experts say. Plenty of other research shows regular workouts offer lots of benefits to both the brain and the body, Snowdon says. The new study now adds another compelling reason to get moving.

"You don't have to run on a treadmill," Snowdon says. "Find something you enjoy and just do it."

Get a move on

Public health experts recommend that adults get 30 minutes of physical activity on most days of the week. Building fitness into every life helps prevent heart disease, diabetes and might even offer a mental edge in old age.

A few tips:

- Walk or cycle to work.
- Take the stairs instead of the elevator.
- Take a walk instead of a coffee break.
- Garden or do chores.
- Dance around the house.

Source: Centers for Disease Control and Prevention