

New research suggests high-intensity exercise boosts memory

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Jennifer Heisz of McMaster University oversees students working out in her lab.
Credit: JD Howell, McMaster University

The health advantages of high-intensity exercise are widely known but new research from McMaster University points to another major benefit:

better memory.

The findings could have implications for an aging population which is grappling with the growing problem of catastrophic diseases such as dementia and Alzheimer's.

Scientists have found that six weeks of intense [exercise](#)—short bouts of interval [training](#) over the course of 20 minutes—showed significant improvements in what is known as high-interference memory, which, for example, allows us to distinguish our car from another of the same make and model.

The study is published in the *Journal of Cognitive Neuroscience*.

The findings are important because memory performance of the study participants, who were all healthy young adults, increased over a relatively short period of time, say researchers.

They also found that participants who experienced greater fitness gains also experienced greater increases in brain-derived [neurotrophic factor](#) (BDNF), a protein that supports the growth, function and survival of brain cells.

"Improvements in this type of memory from exercise might help to explain the previously established link between aerobic exercise and better academic performance," says Jennifer Heisz, an assistant professor in the Department of Kinesiology at McMaster and lead author of the study.



Jennifer Heisz, Department of Kinesiology, McMaster University. Credit: JD Howell, McMaster University

"At the other end of our lifespan, as we reach our senior years, we might expect to see even greater benefits in individuals with memory impairment brought on by conditions such as dementia," she says.

For the study, 95 participants completed six weeks of exercise training, combined exercise and cognitive training or no training (the control group which did neither and remained sedentary). Both the exercise and combined training groups improved performance on a high-interference memory task, while the [control group](#) did not.

Researchers measured changes in aerobic fitness, memory and

neurotrophic factor, before and after the study protocol.

The results reveal a potential mechanism for how exercise and cognitive training may be changing the brain to support cognition, suggesting that the two work together through complementary pathways of the brain to improve high-interference memory.

Researchers have begun to examine older adults to determine if they will experience the same positive results with the combination of exercise and [cognitive training](#).

"One hypothesis is that we will see greater benefits for older adults given that this type of [memory](#) declines with age," says Heisz. "However, the availability of neurotrophic factors also declines with age and this may mean that we do not get the synergistic effects."

Provided by McMaster University

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