

Exercise activates memory neural networks in older adults

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How quickly do we experience the benefits of exercise? A new University of Maryland study of healthy older adults shows that just one session of exercise increased activation in the brain circuits associated with memory—including the hippocampus—which shrinks with age and is the brain region attacked first in Alzheimer's disease.

"While it has been shown that regular exercise can increase the volume of the hippocampus, our study provides new information that acute exercise has the ability to impact this important brain region," said Dr. J. Carson Smith, an associate professor of kinesiology in the University of Maryland School of Public Health and the study's lead author.

The study is published in the *Journal of the International Neuropsychological Society*.

Dr. Smith's research team measured the [brain activity](#) (using fMRI) of healthy participants ages 55-85 who were asked to perform a memory task that involves identifying famous names and non famous ones. The action of remembering famous names activates a [neural network](#) related to semantic memory, which is known to deteriorate over time with memory loss.

This test was conducted 30 minutes after a session of moderately intense exercise (70% of max effort) on an exercise bike and on a separate day after a period of rest. Participants' brain activation while correctly remembering names was significantly greater in four brain cortical

regions (including the middle frontal gyrus, inferior temporal gyrus, middle temporal gyrus, and fusiform gyrus) after exercise compared to after rest. The increased activation of the hippocampus was also seen on both sides of the brain.

"Just like a muscle adapts to repeated use, single sessions of exercise may flex cognitive neural networks in ways that promote adaptations over time and lend to increased network integrity and function and allow more efficient access to memories," Dr. Smith explained.

Provided by University of Maryland

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