# Running, cardio activities in young adulthood may preserve thinking skills in middle age

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Young adults who run or participate in other cardio fitness activities may preserve their memory and thinking skills in middle age, according to a new study published in the April 2, 2014, online issue of *Neurology*, the medical journal of the American Academy of Neurology. Middle age was defined as ages 43 to 55.

"Many studies show the benefits to the brain of good heart health," said study author David R. Jacobs, Jr, PhD, with the University of Minnesota in Minneapolis. "This is one more important study that should remind young adults of the brain health benefits of cardio fitness activities such as running, swimming, biking or cardio fitness classes."

Cardiorespiratory fitness is a measure of how well your body transports oxygen to your muscles, and how well your muscles are able to absorb the oxygen during exercise.

For the study, 2,747 healthy people with an average age of 25 underwent treadmill tests the first year of the study and then again 20 years later. Cognitive tests taken 25 years after the start of the study measured verbal memory, psychomotor speed (the relationship between thinking skills and physical movement) and executive function.

For the treadmill test, which was similar to a cardiovascular stress test, participants walked or ran as the speed and incline increased until they could not continue or had symptoms such as shortness of breath. At the first test, participants lasted an average of 10 minutes on the treadmill.

Twenty years later, that number decreased by an average of 2.9 minutes. For every additional minute people completed on the treadmill at the first test, they recalled 0.12 more words correctly on the memory test of 15 words and correctly replaced 0.92 more numbers with meaningless symbols in the test of psychomotor speed 25 years later, even after adjusting for other factors such as smoking, diabetes and high cholesterol.

People who had smaller decreases in their time completed on the treadmill test 20 years later were more likely to perform better on the executive function test than those who had bigger decreases. Specifically, they were better able to correctly state ink color (for example, for the word "yellow" written in green ink, the correct answer was "green").

"These changes were significant, and while they may be modest, they were larger than the effect from one year of aging," Jacobs said. "Other studies in older individuals have shown that these tests are among the strongest predictors of developing dementia in the future. One study showed that every additional word remembered on the memory test was associated with an 18-percent decrease in the risk of developing dementia after 10 years."

"These findings are likely to help us earlier identify and consequently prevent or treat those at high risk of developing dementia," Jacobs said.

Provided by American Academy of Neurology