



Glucose metabolism is shown in a sedentary person (left) and in someone after a 26-week program of moderate exercise (right). Images: Brain Plasticity journal

Just Look at These Two Brains

One is running on exercise, the other not so much

Robert Roy Britt
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We've all heard exercise is good for us. But to see it in the brain is another thing. A new study found that people at risk for Alzheimer's disease but whose brains were still healthy improved their thinking skills by exercising. Their brains also got better at metabolizing glucose, the sugar that powers the mind.

Researchers studied 23 adults who had a family history of Alzheimer's or a genetic risk for the disease, but whose brains were still functioning normally. All were sedentary. Half of them then participated in an exercise program involving moderate physical activity on a treadmill three days a week. The other half, a control group, were given information about how to be healthy.

Compared to the control group after 26 weeks, those on the exercise program did better on tests of executive functioning— things like planning, focusing attention and juggling multiple tasks — which are known to decline with the progression of Alzheimer's. They also improved their cardiorespiratory fitness, as you'd expect, and they had an associated increased brain glucose metabolism in the posterior cingulate cortex, an area of the brain linked to Alzheimer's, the researchers explained. Glucose is the brain's main energy source, and its efficient metabolism is a sign of healthy neurons.

The findings are detailed this month in the journal *Brain Plasticity*.

Exercise has been shown beyond doubt to improve physical health and extend life. Several studies have also found that physical activity, even just moderate activity like walking, boosts brain power. Dementia, of which Alzheimer's is the most common type, alters the brain over many years, and while there are no effective treatments, scientists are getting better at identifying risk factors, which could lead to potential treatments. A study last year found that poor cardiovascular health at age 50 is linked to a higher risk of dementia later.

The new research does not prove that exercise can stall the onset or progression of dementia, but it's another bit of evidence indicating just how good a workout can be for the brain.

“This research shows that a lifestyle behavior — regular aerobic exercise — can potentially enhance brain and cognitive functions that are particularly sensitive to the disease,” said study leader Ozioma Okonkwo, PhD at the Wisconsin Alzheimer's Disease Research Center at the University of Wisconsin. “The findings are especially relevant to individuals who are at a higher risk due to family history or genetic predisposition.”

Written by Robert Roy Britt: Explainer of things, former editor-in-chief of Live Science and Space .com, author of the science thriller “5 Days to Landfall.”

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