

# Strong Minded

Why you're smart to run and smarter because you do

**R**UNNING HELPS MORE than your heart and lungs. Promising brain research shows a strong link between running and a “younger,” more nimble brain. Vigorous cardiovascular activity pumps more oxygen- and glucose-rich blood to your noggin. And when you make running a frequent habit, the rewards are long-term. All forms of exercise generate more energy for the brain, but research indicates the more aerobically challenging the exercise, the greater the mental payoff. Here's a look at your brain on running. —Denise Schipani

## NEW THINKING

→ Running sparks the growth of fresh nerve cells, called neurogenesis, and new blood vessels, called angiogenesis, says J. Carson Smith, Ph.D., an assistant professor at the University of Maryland in College Park who studies the role exercise plays in brain function. “We know that neurogenesis and angiogenesis increase brain-tissue volume, which otherwise shrinks as we age,” he says. In a 2011 study reported in the *Proceedings of the National Academy of Sciences (PNAS)*, for example, older adults who exercised regularly increased the volume of their hippocampus—the region linked to learning and memory—by two percent, compared to inactive peers. That may not sound like much until you realize that this part of the brain isn't known for increasing at any point in adulthood. What's more, running appears to “rescue” many brain cells that would otherwise die.

## SWEATING THE DETAILS

→ Running helps you get better at learning and storing new information and memories, and can potentially stave off age-related dementia. The hippocampus, a sea horse-shaped structure tucked under the medial temporal lobe, is most affected by neurodegenerative diseases such as Alzheimer's. In a 2010 study, also in *PNAS*, adult mice “runners” grew new neurons that made them better at making fine distinctions between shapes and colors than sedentary rodents. Earlier studies on humans came to similar conclusions. These types of cognitive skills, including improved focus, help forestall dementia.


## POWER PLANNING

→ Lacing up regularly may make the executive functions that happen in the frontal cortex—decision-making, planning, organizing, juggling mental tasks—easier. In a 2010 Japanese study, people who'd just completed bouts of physical activity scored higher on mental tests than those who did not. So it may be that if you run regularly, you can plan your kid's birthday *and* your company retreat without mixing up the details.

## QUICK RECALL

→ Being aerobically active is key not just to *making* memories, but *finding* them when you want to. In a study of patients diagnosed with the early stages of Alzheimer's disease, those who exercised were better able to recall names of famous people. Brain scans reveal activity in the caudate nucleus, which sits in the midbrain just below the corpus colosum. This area is involved in motor function, but also supports memory circuits; running appears to improve the quality of the signals being transmitted through those circuits, which means you have better access to the zillions of details you've got stored there.

## POSITIVE OUTLOOK

→ Running may be just as effective—and in some instances *better*—than SSRI drugs in treating depression. These antidepressant meds work by keeping neurotransmitters such as serotonin and norepinephrine in the synapses longer, improving mood and outlook. Turns out, aerobic exercise does the same thing. In studies, patients who were successfully treated with SSRIs relapsed sooner than those who stayed physically active. 



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