

Health

How Your Inner Athlete Makes You Smarter

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Athletes and people who exercise not only have better bods — they have better brains too, a host of studies have now firmly established.

A [review of studies](#) published earlier this month, in fact, found that a balanced diet and regular exercise can protect the brain and ward off mental disorders.

Other research has focused just on the effects of exercise. The bottom line: Exercisers learn faster, remember more, think clearer and bounce back more easily from brain injuries such as a stroke. They are also less prone to depression and age-related cognitive decline.

But why should a mindless half-hour on a treadmill affect your brain?

Exercise, like hunger, is a stress on your body. "And sometimes," said Fernando Gomez-Pinilla of UCLA, "stress can be good."

Protecting the brain

Because it burns calories so quickly, aerobic exercise is a threat to the body's energy reserves. Heeding this danger, the body acts to protect one of its most precious, and energy-demanding, organs: the brain.

Unlike cells in less critical organs, neurons are extremely vulnerable to disruptions in energy supply. "If deprived of energy for more than one minute," said Gomez-Pinilla, "the neuron dies." For that reason, he continued, "all the physiology of the body is designed to protect the brain."

By acting as a mild stressor, exercise is an alternative way to spur many of the protective benefits associated with [calorie restriction](#) and the release of brain-building growth factors, said Carl Cotman, director of the Institute for Brain Aging and Dementia at the University of California in Irvine.

And exercise not only protects the brain; it actually improves brain function. This may be one more way, theorizes Cotman, that nature helped ensure the survival of those who were particularly good at prehistoric Jazzercise — which in those days meant hunting and defending grub.

Why it works

How does the [treadmill](#) get inside your head?

Even when we are sitting or lying down, our bodies send our brains regular updates about how our limbs are positioned. When we, say, stand and begin walking, these electric messages need to be sent more often. (Knee is bent, straight, bent, straight ...) Move fast enough and the electrical activity doesn't have time to dissipate between each message. It begins building up in the brain and eventually triggers a release of chemicals called growth factors.

Growth factors are like manna for neurons. "They make neurons stronger, healthier and improve their ability to learn," Cotman said. In the presence of growth factors, new neurons are born and old ones sprout, grow and form better connections with each other. Blood vessels blossom along side the neurons, giving them quick access to glucose and other nutrients. All this, in turn, improves our ability to think, learn and remember. As Cotman said, exercise "builds the pipes" for improved cognition.

You might also be wondering how much exercise you need to keep your smarty-pants fitting, so to speak.

While we do need to get off the couch regularly to reap the brain-benefits of exercise, we don't have to be Jane Fonda. Exercising every other day is just as good as daily exercise, as long as we sustain it for at least a half-hour, Cotman said.

And we don't have to pump iron to remain an intellectual powerhouse; anaerobic exercise such as weight-lifting and resistance work, says Gomez-Pinilla, "is not that relevant to the brain."