

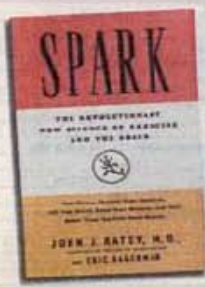
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Ramping it up: Harvard psychiatrist John Ratey, who works out daily, has culled the latest science and found that a regular workout can help build a better, faster brain and even help control addictions.

Regular workouts 'spark' the brain

A fast-paced workout can build muscle, but can it also improve the memory and condition the brain? John Ratey, author of a new book, *Spark: The Revolutionary New Science of Exercise and the Brain*, suggests regular physical activity makes the brain function better and might combat depression and anxiety. USA TODAY reporter **Kathleen Fackelmann** asks Ratey, a clinical associate professor of psychiatry at Harvard Medical School, about the link between physical activity and the brain.



Ready, set — move
To get the mental health benefits of exercise, here's what John Ratey recommends:

- ▶ If you're inactive, start out slowly. Take a walk around the block twice a day and then gradually increase your workout time.
- ▶ Work up to an activity, such as bicycling or swimming, that gets your heart pumping for 30 or 40 minutes a day.
- ▶ Find an activity you love, such as golf, tennis or salsa dancing. Sports that require strategy or attention might also help build a better, more agile brain.
- ▶ Find a partner or a friend and together make an exercise pact. You're more likely to stay with a regular workout routine if you have a friend to join and motivate you.
- ▶ Work up a sweat at least four or five days a week or more if you find yourself in a stressful situation or starting to feel the blues set in.

Q: How does exercise improve brain function?

A: A fast-paced workout boosts the production of a protein called brain-derived neurotrophic factor. I call it Miracle-Gro for the brain, and physical activity is one of the best ways to release this brain-nourishing protein. A workout at the gym or a brisk walk also seems to build better connections between brain cells. Studies show that regular physical activity may increase the production of cells in the hippocampus, the region of the brain involved in learning and memory. The end result is a brain that's better able to perform in school, at home or on the job.

Q: So does a regular workout also make you smarter?

A: Yes. Take the Naperville school district in Illinois, for example. In 1990, a physical education teacher there named Phil Lawler launched a fitness revolution: He had the kids run a mile every single week. He also handed out grades for PE based on effort and not skill. The kids at Naperville not only got stronger, but they also started to do really well on the Trends in International Mathematics and Science Study, a test designed to compare how well kids from different countries do in math and science. In recent years, kids in China, Japan and Singapore have outperformed American kids, but in 1999 the Naperville kids scored sixth in math and first in the world for science. That really grabbed me.

Q: What about exercise and stress?

A: A stressful situation or even worry can trigger the body's fight-or-flight response. The brain responds by cranking out powerful hormones that increase blood pressure and heart rate, and that makes people feel stressed out, anxious or agitated. But new research shows that you can literally pick up a jump rope or go for a run and short-circuit the stress response. After a fast-paced workout, the muscles relax and often the worry or agitation eases as well. People who work out on a regular basis find they're resistant to the stress response. They're more likely to remain calm even in situations that would have triggered a toxic stress response in the past.

Q: Can exercise be used to ward off anxiety or depression, disorders that are rampant in today's society?

A: In some cases, a regular exercise program works as well as medication typically used to relieve anxiety or mild to moderate depression. I first noticed the link between exercise and mood disorders because I had a number of patients who ran marathons. They told me they started to feel depressed after they stopped training. The more you move your body, the more you can jump-start the brain and, in some cases, end the cycle of worry, anxiety and the blues.

Q: Is a regular workout helpful in controlling addictions?

A: Smokers find that just five minutes of an intense workout can erase the craving for a cigarette. A workout helps redirect the brain away from the substance of abuse and fights off the impulse to reach for a smoke or a drink — often for hours. I had one patient who started drinking to deal with a stressful home renovation. She was living in a torn-up house, and to cope with the stress she started to have a glass of wine before noon. Soon she was afraid that she had developed an addiction. But she was able to kick the habit by developing a healthy way to deal with the stress: She'd pick up a jump rope every time she felt the urge to pour herself a glass of wine.

Q: Can exercise help people with attention deficit disorder to focus and concentrate?

A: Absolutely. I have had a number of patients with this disorder tell me that they time their workout period to help them concentrate later in the day. One patient would take a run in the early morning so that he was alert and focused by the time he got to work. Another said he couldn't sit still to read so he'd bring work material to the gym and read it on the treadmill.

Q: Does a vigorous workout help revitalize an aging brain?

A: We discovered in the 1990s that exercise was a way to prevent cognitive decline and delay the onset of Alzheimer's. We now have tons of studies that show regular physical activity can prevent the age-related brain foggiest that often develops by age 65. I recommend seniors work out five or six days a week. A heart-thumping game of tennis or a brisk walk around the golf course can keep the older brain in top shape.