



Work Out, Feel the Joy

REASON NO. 781 TO
EXERCISE: IT BATHES YOUR
BRAIN IN MOOD-BOOSTING
CHEMICALS.

By Leslie Goldman

IN 2002, WENDY SUZUKI, PHD, was a New York University neuroscientist with a focus on human memory. Long hours spent sitting in a lab weren't doing her fitness level or social life any favors, so she signed up for a river-rafting trip in Peru. Once there, she discovered she was the weakest person in the group, and she returned home determined to get in shape, joining a gym and hiring a personal trainer.

After fumbling through her first hip-hop dance session ("I was so bad!" she says), Suzuki noticed something: "I felt energized and satisfied that I had made it through that difficult class." Motivated by the mood and energy lift, she kept at it. More benefits racked up: enhanced memory, sharper focus. A year and a half later, she shifted the focus of her research to exercise's ability to strengthen and rewire the brain. Suzuki published research highlighting the ability of a single workout to elevate mood for up to 24 hours and even started teaching aerobics classes. Her TED Talk, "The Brain Changing Benefits of Exercise," has been viewed nearly 10 million times.

We've all heard about (or, depending on our activity level, personally enjoyed) the coveted runner's high. But you don't need to wear holes in your gym shoes to experience the stress-busting, mood-bumping effects of exercise. Suzuki, now a professor of neural science and psychology at New York University, says the benefits of regular workouts are available to anyone regardless of fitness level or access to a gym; can be as effective as antidepressants in some people; and, over the long term, act like "401(k) deposits to maximize mood."

Here's how a little heart-pumping action can be your smartest investment in your mental health.

Exercise delivers a lasting mood boost

Whether you're briskly walking through your neighborhood, riding a stationary bike, playing tennis, or taking a yoga class, you're unwittingly kicking off a neurochemical cascade that steeps your brain in feel-great neurotransmitters like dopamine, noradrenaline, and serotonin (the same chemical messenger targeted by many antidepressants). The cascade is thought to be triggered by your rising heart rate, and the effects are powerful and swift. Cedric X. Bryant, PhD, the president and chief science officer of the American Council on Exercise, says you can expect to feel a hit of happy after just five minutes of moderate-intensity exercise. (Moderate-intensity means your heart is pumping and you may be a bit out of breath but can still comfortably have a conversation.)

As dopamine increases, so do

growth factors that stimulate the birth of new cells in the hippocampus, a seahorse-shaped region of the brain charged with forming new memories as well regulating mood. Imagine bathing your brain in those spirit-sustaining chemicals week after week, month after month. "Now you're not just getting a little blip of improved mood after a workout," Suzuki says, "but you're changing your baseline mood from lower to higher." A 2019 *JAMA Psychiatry* study led by Karmel Choi, PhD, a clinical and research fellow at the Harvard T.H. Chan School of Public Health and Massachusetts General Hospital, found that the impact can be strong enough to lower the risk of depression. Researchers reviewed genetic data from more than 600,000 adults and discovered that those who completed the daily equivalent of 15 minutes of vigorous activity (like running) or an hour of moderately paced activity (like fast walking) were 26 percent less likely to develop depression.

When studying the link between exercise and mood, scientists often bring up the chicken-or-egg nature of the relationship: Does exercise truly protect against mood, or do happier people tend to be more active? Choi says that by employing high-level analytic techniques using genetic information, she and her colleagues found evidence of a causal relationship in only one direction, suggesting that exercise does reduce the odds of depression, not the other way around.

Another happy side effect of exercise is that it tucksers you out, and good, quality sleep boasts a

rock-solid tie with improved mood. "We know that sleep deprivation, like that caused by stress, staying up late in front of screens, or drinking caffeine in the afternoon, causes irritability, anger, and depression," says Sara C. Mednick, PhD, the director of the Sleep and Cognition Lab at the University of California, Irvine. "But consistently getting around eight hours of sleep can help reverse those effects, bathing your brain in serotonin and leading to a more positive long-term outlook." People who engage in regular aerobic activity fall asleep faster, spend more time in deep sleep, and wake fewer times in the middle of the night.

Movement is an antidote to stress

Consistent exercise can also act as a soothing stress balm. This might be the result of pain-relieving endorphins produced during a workout, which foster a sense of well-being and an "I got this" attitude, or it could simply be that getting your sweat on distracts you from the stressors of daily life. "When you're running, you focus on your breathing or your stride frequency and length, and that helps provide that distraction," Bryant says. Recreational sports like tennis and golf "can be even more powerful because you get caught up in the game" instead of thinking about career pressure, financial woes, or whatever else may be causing you anxiety.

Moving your body through a



workout may also alleviate stress by teaching your brain that if you can get through this tricky yoga pose or final mile of jogging, you can get through other challenges in life. “Exercise may be a form of controlled, predictable stress that, when you willingly put yourself through it, you learn that you can handle tough challenges,” says Choi, who is also a clinical psychologist.

Finally, cutting-edge research suggests that physical activity can invigorate our mental outlook by balancing the two branches of the nervous system, the sympathetic (fight-or-flight) and parasympathetic (rest-and-digest). In most of us, chronic stress causes the sympathetic nervous system to dominate. But during exercise, Mednick says, “you can have an extreme rise in heart rate as your body mobilizes its resources to get blood pumped out to your extremities.” (That’s the sympathetic system in action.) When the workout ends, your body works hard to bring your cardiovascular and muscular systems back to their normal resting state. In the process, it decreases levels of a stress hormone called cortisol and releases those lovely neuroprotective hormones. The result: better nervous system balance, less stress, upgraded mood.

The bottom line: As you build and sculpt your muscles, you’re simultaneously building and sculpting the mood-regulating portion of your brain.

And the amount of exercise you need is...

Now for the question that Suzuki says everyone loves to ask: What is the minimum amount of exercise needed to reap all of these rewards?

Different studies have yielded different findings. Australian and German sports sociology experts found that recreational athletes who met the World Health Organization’s exercise guidelines (150 minutes of moderate physical activity per week) tended to experience better mental health than those who didn’t. Bryant echoes these guidelines, endorsing 30 minutes of moderate-intensity activity on most days of the week. But in a recent *American Journal of Psychiatry* study in which nearly 34,000 adults were followed for 11 years, researchers estimated that 12 percent of cases of depression could have been prevented if everyone had dedicated just one hour a week to physical activity of any intensity.

“If you are just starting your exercise journey, even a 15-minute power walk is enough to start to reap the benefits,” Suzuki says. Remember, the goal is to get your heart rate up, so depending on your starting fitness level, that could be anything from a power walk to a boot-camp video.

And while it might seem counterintuitive, harder is not

necessarily better. “Try to stay at the point where you can talk,” Bryant says. Evidence exists that as you pass that threshold, you delay the immediate mood-boosting effect of the workout.

Choi’s findings support the “less is more” philosophy in another way: Her study found that in addition to formal exercise, daily physical movement—think taking the stairs, putting away your laundry, or using a standing desk—“can add up to keep depression at bay. You might need to do more of it to get to the level that results in a 26 percent decrease in depression risk, but it still helps.” ●

A NEUROSCIENTIST’S FAVORITE WORKOUT

When neuroscientist Wendy Suzuki started her exercise journey, she took a class called intenSATI. It pairs high-intensity dance cardio with yoga, martial arts, and affirmations. (“I am strong now!” “Yes I can!”) You don’t need to become a certified intenSATI instructor like Suzuki did to feel all those feels. Just repeat a mantra as you run. *Yes, you can!*



I Found Surprising Peace Through Running

A reluctant athlete started jogging to get in shape—and found the calmness and clarity she craved.

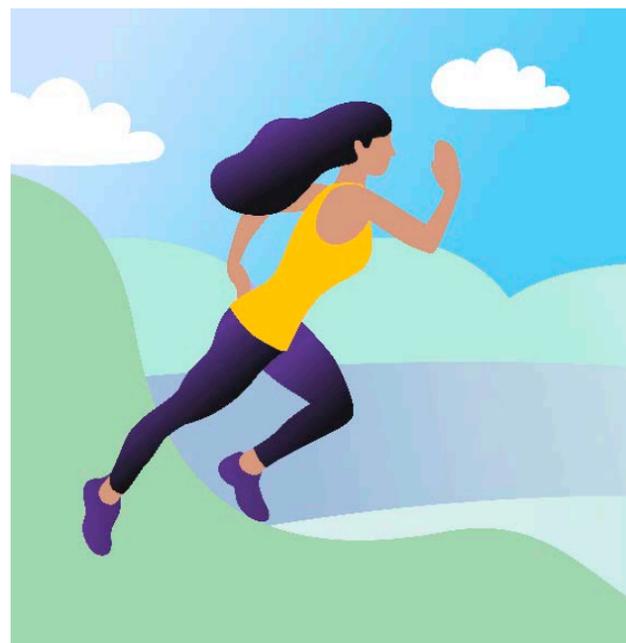
By Holly Robinson

“You’re not running today, are you?” My husband nodded toward the bruised rain clouds.

“Don’t worry,” I said. “I’ll be fine.” I laced up my sneakers and set off.

We were in England, staying near the Kennet and Avon Canal. The last time we’d been there, many years before, we’d explored the canal. Back then, watching a woman jog by, ponytail bouncing, I thought, “It must be nice to be able to run like that.” Now here I was, running that same path. My ponytail days are over, but I wore a bright headband and tights. I almost couldn’t believe it was me.

Ever since I’d started juggling motherhood and a job, I had little time for workouts. I wheezed like a bulldog when I climbed stairs. Shortly before my 60th birthday, I saw an ad for a Couch to 5K program. I assumed it was too expensive but emailed the coach anyway.



“It’s free!” she wrote back.

“I’m 59. Isn’t that too old?” I responded.

“I’m 70,” she replied.

Good Lord. So I dug out a pair of sweats and drove to practice. To my relief, most of the other participants couldn’t run a lap around the track either. Despite my legs and lungs begging me to quit, I stuck it out.

And after eight weeks, I ran a 5K. Two years later, I ran my first 10K. This was an achievement—but it wasn’t as important as the discovery that running pauses the world around me. I began running trails instead of roads. Occasionally I startle wild turkeys and deer. Once I spotted an owl watching me from a branch. One route leads me into salt marshes, where egrets and herons feed.

Running has also been the best salve for emotional turmoil. It got me through my grief after my father-in-law died, and my sorrow after my youngest child left for college. In Virginia Woolf’s *Moments of Being*, she describes nonbeing as “a kind of nondescript cotton wool.” We’re on autopilot. Being happens during those rare times when we’re fully conscious of our surroundings and feel connected to them. We’re all guilty of too many hours of nonbeing. Various tasks fracture our time, tech fills our heads with noise, and we stop paying attention to anything beyond ourselves. When I run, I have to pay attention. Running lets me be completely in the world, noticing small details, experiencing the joy of moving through snowflakes so big, it’s like floating through lace.

Along the English towpath that recent morning, I flushed pheasants out of bushes and passed brightly painted boats. After five miles, it started to rain as I ran by a man in a tweed cap and rubber boots. He smiled and waved.

I waved back, and I thought about how we were sharing this moment. To him, I was a woman in a bright headband, admiring the dizzying patterns of early morning rain on the river. ●