

Writing Tips ...

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Run to Write: How Exercise Will Make You a Better Writer

By Ben Opipari

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You hear it from all corners that daily exercise staves off all those horrible things that happen to you with the passing of time. But what if I told you that your lunchtime workout benefits you immediately? Even better, it can make you a more productive writer within minutes! This is no snake oil solution. Instead, it's science.

Try this: the next time you go out for your midday workout, forget the shower afterwards. Instead, run right to your desk. Your colleagues will want nothing to do with you, but what they won't know is that you have a tremendous advantage. You are now at your creative peak.

We know about the long-term benefits of exercise: decreased stress, increased muscle tone, reduced rates of dementia, and safeguarding against certain types of cancer. But let's face it: We are a society that craves immediate gratification. And now researchers are discovering that exercise can have more immediate benefits. Your lunchtime workout can make you a better thinker at 1 p.m. And that can mean a more productive writing session.

Of course, writers have known for years that outdoor exercise is the key to inspiration and overcoming writer's block. Many were at their most creative when they were moving. Take William Wordsworth, the Romantic

poet. It has been estimated that Wordsworth walked over 186,000 miles in his life. He thought nothing of a 30-mile daily jaunt.

Wordsworth usually composed while walking. Not impressed? Well, he often composed and revised *entire poems* while walking, and he wouldn't write them down until he had completed them in his head. Still not impressed? Then read "Tintern Abbey," a Wordsworth poem firmly entrenched in the literary canon. Try to compose something like this—at 159 lines—in your head while walking. And don't even think about coming inside and committing it to paper until it's ready to be published. According to Adam Sisman, author of the book *The Friendship* about Wordsworth and Samuel Taylor Coleridge, "The whole poem was carried in his mind; not a word of it was written down before they reached Bristol, and not a line altered afterwards."¹

But for Wordsworth's creative juices to really flow, not just any walk would do. He needed even ground. According to Sisman, "Coleridge liked to compose in walking over uneven ground, or breaking through the straggling branches of a copse-wood; whereas Wordsworth always wrote (if he could) walking up and down a straight gravel walk, or in some spot where the continuity of his verse met with no collateral interruption."² Wordsworth would actually keep step to the rhythm of his verse, his head down while he composed aloud. He often walked back and forth along the same route as he mulled over a poem.

Alas, none of us is a Wordsworth or a Coleridge. But intuitively, physically active people know that exercise can make them sharper as they slough through a long day. When we're stressed,

¹ Adam Sisman, *The Friendship: Wordsworth and Coleridge* 250 (2007).

² Sisman, *supra* note 1, at 244.

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for example, and our brains seem stuck in park, exercise can invigorate us and clear our mind. Mary Goldschmidt, Director of the Writing Program at the College of New Jersey, told me about a recent case of writer's block. "Before I went out on my ride this evening, I intentionally re-read my scattered notes on what I've been trying to write," she explained. "I spent the better part of my 27 miles asking myself, 'What's the ultimate point you're trying to convey?' I came home, ate dinner, and was able to start writing very productively almost immediately." And Joyce Carol Oates wrote once, "The structural problems I set for myself in writing, in a long, snarled, frustrating and sometimes despairing morning of work, for instance, I can usually unsnarl by running in the afternoon."

Even walking can be a boon to creativity. Susan Henderson, author of the 2010 novel *Up From the Blue*, told me that she composes while walking—using the voice memo feature on her iPhone. "For my first draft, I go to the woods and hike for two or three hours," she says. "I'll go with a specific question, scene, or dilemma, and I'll just talk it into the voice memo. I pretend like I am talking on the phone, so when I pass people I pretend to have a conversation on the phone, like 'Hey honey, I'll be home at five.' Then when they pass, I continue composing. But I realize I have to be walking." And acclaimed short story writer Anthony Doerr told me that exercise plays a part in his creative process. "Exercise tends to rinse my brain of lots of detritus. Walking, in particular, helps me sort through problems in my work," he says.

Running has long been a regular part of my writing process. Specifically, it's more a part of my invention stage. Since I'm not an attorney, I don't write briefs. But as a freelance writer, I contribute to the music sections of both the *Washington Post* and *Baltimore Sun*, often in the form of album reviews. A good album review carries a thematic element, some message about the album as a whole. Bad album reviews are little more than a laundry list of what each song is about or what it sounds like. So before I sit down to write the review, I go for a run. And on that run I craft the theme.

If you're reading this, you're probably an attorney. Which means that you might be skeptical of all this anecdotal evidence. Prove it, you say. Turns out there is an abundance of medical science to back up the claim that exercise boosts creativity and higher-order thinking. But first, a brief lesson in neuroscience.

Our brain is a flurry of activity when we exercise. It's awash with the chemicals dopamine, serotonin, and norepinephrine, which all work on the attention system as part of the brew that helps bind the neurons in our brain. It's also filled with brain food, or what Dr. John Ratey, clinical associate professor at Harvard Medical School and author of the book *Spark: The Revolutionary New Science of Exercise and the Brain*, calls "Miracle-Gro for the Brain." To scientists, it's called brain-derived neurotrophic factor, or BDNF. A protein, BDNF acts on neurons in the brain. It facilitates the growth and differentiation of new neurons and supports the survival of existing neurons. Scientists have discovered that BDNF has a direct quantifiable effect on learning and can make you a better thinker.

BDNF, which sits at the synapses in your brain neurons, is released as your blood pumps furiously during exercise. This increased blood flow to the brain also delivers oxygen to remove waste and glucose to deliver energy. This blood flow also creates new blood vessels in your brain. Scientists have discovered that when the oxygen level in the brain increases, so does mental acuity. So, the more you exercise, the better off your brain will be. And if your brain is working efficiently, you'll think better.

Studies have now shown that all of this blood flooding your brain will immediately improve your brainpower. It's so immediate, in fact, that you can even improve cognition while you exercise. So if you want to improve your writing, lace up those running shoes. But first, some rules.

Rule #1: Head for the hills. Or at least the trees. Just get away from the concrete jungle. Nature stokes creativity and strengthens your cognitive powers, according to a 2008 article in

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Psychological Science entitled “The Cognitive Benefits of Interacting with Nature.”³

Natural environments are better than urban environments at restoring and improving cognitive functioning, according to the authors. Our attention is divided into two components, involuntary and voluntary attention. With involuntary attention, we focus on interesting stimuli like beautiful sunsets. It doesn’t take any extra cognitive ability to pay attention to these things. But voluntary, or directed, attention—also called executive attention—is controlled by active cognitive processes. We use executive attention to “resolve conflict or to suppress distracting stimulation.”⁴ Like to avoid getting hit by a car.

The authors found that a natural environment, with its beautiful stimuli, gives the directed-attention part of your brain some vacation time, allowing it to replenish. They note that “simple and brief interactions with nature can produce marked increase in cognitive control.”⁵ This is why, when faced with that midafternoon funk, you should go for a walk or do anything that does not require directed attention, because you don’t have to worry about the potentially life-ending distractions of an urban environment.

And resistance training in the hills may not work. Since blood flow seems to affect executive function, weight training won’t give you the same effect as aerobic exercise. One 2009 study compared a group who had just completed 30 minutes on the treadmill with a group who had just completed 30 minutes of resistance training. The treadmill group had a shorter response time during a working memory task.⁶

Rule #2: When you get to the hills, run moderately fast for about 30 minutes. To a certain extent,

³ Marc G. Berman et al., *The Cognitive Benefits of Interacting With Nature*, 19, *Psychological Science*, 1207 (2008).

⁴ Berman, *supra* note 3, at 1208.

⁵ *Id.*

⁶ Matthew B. Pontifex et al., *The Effect of Acute Aerobic and Resistance Exercise on Working Memory*, 41, *Medicine & Science in Sports & Exercise*, 927 (2009).

the more pain, the better the gain. There is a correlation between intensity and creativity. So the harder the workout, the better the benefits—depending on when you want the benefit.

One 2007 study demonstrated that the higher the heart rate, the stronger the brain. Intense exercise, the researchers found, has immediate beneficial effects on cognition.⁷ They assessed learning performance directly after high-impact anaerobic sprints, low-impact aerobic running, and a period of rest in three separate test groups. Vocabulary learning was 20 percent faster after the high-impact sprints, compared to the other two conditions. The BDNF increase was highest in this group as well.

But you don’t have to wait until after your exercise routine to reap the benefits. Ratey says that you can actually learn while you exercise. And this is where moderation is key: you can’t learn while you are sucking wind. So take it easy. It’s hard to learn difficult material while exercising at high intensity, since blood is diverted from the prefrontal cortex to the muscles where it’s sorely needed. This means that if you’re pedaling furiously on the stationary bike, put down your book or turn off your podcast, because this lack of blood flow to the brain hampers executive function. But you *should* grab *War and Peace* right after you hop off the bike: blood shifts back to the brain almost immediately after your workout, which is why the postexercise period is the best time to undertake tasks that involve higher-order thinking.

Similar results have been achieved with college undergraduates who were tested on an executive control task after a 30-minute treadmill session. The researchers found that cognitive processing sped up with the group that exercised. That means that if you’re studying for an exam or trying to retain information, the best time might be after exercise, since exercise-induced arousal may facilitate the consolidation of information into long-term memory.⁸

⁷ Bernward Winter et al., *High impact running improves learning*, 87, *Neurobiology of Learning and Memory*, 597 (2009).

⁸ Kathryn Coles & Philip D. Tomporowski, *Effects of acute exercise on executive processing, short-term and long-term memory*, 26, *Journal of Sports Sciences*, 333 (2008).

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You don't need to put in a lot of miles to gain the cognitive benefit. Most scientists agree that BDNF is not dose-responsive; that is, better fitness levels do not necessarily lead to larger cognitive gains. So exercising until you collapse doesn't mean that you'll be able to solve global warming while running a marathon. And you don't even have to be in shape to reap the benefits: a single 35-minute treadmill session at 60 percent of maximum heart rate (considered moderately intense) increases cognitive function. After just one workout, runners increase their processing speed and cognitive flexibility; that is, they think creatively and problem solve instead of just regurgitating items from memory. According to Dr. Charles Hillman at the University of Illinois, one of the leading researchers in this area, fitness level does not really make a difference, so even someone with no aerobic base who laces up the running shoes for the first time will show an immediate cognitive benefit from a single workout.⁹

Even your kids can reap cognitive benefits from aerobic exercise. In another recent study, kids who worked out on a treadmill for 20 minutes at 60 percent of maximum heart rate showed improved cognitive control and response accuracy. The study's authors say that these results "further support the use of moderate acute exercise as a contributing factor for increasing attention."¹⁰ Do we need a better reason for placing importance on physical education in schools?

I'm sure that some of you hate to run. Not a problem. Studies have been performed with a variety of aerobic activities—running, biking, even walking—so pick anything that elevates your heart rate. Hillman says that even a "moderately intense bout of walking" will help.

Rule #3: You can wait until you catch your breath before being creative. So just how soon after exercising should you begin that task involving higher-order thinking? Most researchers who

studied the link between exercise and cognition tested subjects whose heart rates had returned to within 10 percent of pre-exercise levels. But one 2005 study showed that for as long as two hours after you complete a moderate-intensity workout (defined as double your resting heart rate), you can enjoy the residual effects of exercise on cognition. The workout "significantly impacted the creative processes of the participants," said the researchers.¹¹

Rule #4: Take the path less traveled. Stimulate your executive attention center by partaking in novel routines as you exercise. Staring at the wall while on the treadmill or running endless laps might not do as much to improve brainpower as will a routine that stimulates the brain. Even running the same route outdoors offers little stimulation. So pick a new route each day—as long as you avoid traffic (see rule #1). Something I do is run for time instead of distance, since it frees me from the shackles of a prescribed route.

Ratey says that the ideal activity "simultaneously taxes the cardiovascular system and the brain" by involving complex motor skills. He even recommends racquet sports like squash, racquetball, or anything that involves skill, fine motor movement, and complex movements, like basketball. The more complex the movements, the better. Ratey is also a fan of yoga, ballet, and gymnastics.¹² The combination of aerobic exercise and complex motor skills is a potent one: while aerobic exercise elevates neurotransmitters, creates new blood vessels, and spawns new cells, complex activities put it all together by strengthening and expanding the neural networks. If you're a runner, try trail running, an activity that combines aerobic exercise, executive attention, and complex motor skills as runners must navigate obstacles and uneven terrain.

Several studies back this assertion. In one, scientists evaluated cognitive function in two

“Studies have been performed with a variety of aerobic activities—running, biking, even walking—so pick anything that elevates your heart rate.”

⁹ Telephone interview (March 17, 2010)

¹⁰ C.H. Hillman et al., *The Effect of Acute Treadmill Walking on Cognitive Control and Academic Achievement in Preadolescent Children*, 159, *Neuroscience*, 1044 (2009).

¹¹ David M. Blanchette et al., *Aerobic Exercise and Cognitive Creativity: Immediate and Residual Effects*, 17, *Creativity Research Journal*, 257 (2005).

¹² Telephone interview (March 10, 2010)

“The same-day effects of exercise on higher-order thinking mean that as far as the workplace goes, we are way overdressed.”

groups, one with elevated heart rates only through aerobic exercise and another with elevated heart rate combined with complex motor challenges. While both groups raised their scores, the group that performed the complex motor challenges scored higher.¹³

Another study found that gym-based aerobics and aerobic dance both enhanced creativity. The latter group scored higher on the creativity measure, a result that caused the authors to question whether “free rather than prescribed exercise is more likely to release the stream of consciousness,” since the subjects had greater freedom of movement. The authors said that “it is also possible that running, which has most strikingly led to enhanced moods, would have been a more suitable form of exercise” for the study. This supports the idea that creative and spontaneous aerobic exercise is better than any monotonous or repetitive routine, and it could also explain why those in the aforementioned aerobic dance group scored slightly higher on the creativity test than those in the gym-based aerobics group: they had greater freedom of movement.¹⁴

Rule #5: You may not need to leave your office.

At Grand Valley State University, one professor found that a class full of exercise balls instead of conventional desk chairs improved learning and participation among his students. John Kilbourne and his students said that sitting on these balls sharpened their attention and thinking skills. These balls enhance blood flow and alertness because, among many reasons, you have to keep moving to stay on the ball. His students say that sitting on the balls improves their ability to pay attention, engage in productive discussion, and take notes. “Office ‘furniture’ like this turns on the fun part of the brain,” says

Ratey. It’s important to note, though, that these findings are purely anecdotal and self-reported, and have not been subject to scientific scrutiny.

Rule #6: Crankiness is no excuse. The above researchers who studied gym-based aerobics and aerobic dance also found that creativity and mood are independent of each other. Besides boosting creativity, a 25-minute workout was enough to increase mood. What the authors found, though, surprised them: while physical exercise enhances creative thinking, the effect seems to be independent of mood changes as well as workout type. In other words, “mood changes did not predict creative performance.” So even if you are in a bad mood, you can still be creative. Anecdotally, this would appear to support the idea that depression can also lead to periods of intense creativity, as witnessed by hundreds of years of canonical literature penned by perpetually miserable people.

John Medina, author of *Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School*, says that when reviewing data, writing a paper, and responding to emails, he gets on his treadmill—with his laptop rigged to the top—and walks at 1.8 mph. “No real workout here, but I sometimes end up walking miles,” he says. The same-day effects of exercise on higher-order thinking mean that as far as the workplace goes, we are way overdressed. “If I had my way, the standard work force ‘uniform’ would not be a suit and tie, or business skirt and blouse. It would be gym clothes and tennis shoes,” says Medina.¹⁵

Oh, and I thought of this topic while on a run. Really.

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¹³ Henning Budde et al., *Acute coordinative exercise improves attentional performance in adolescents*, 441, *Neuroscience Letters*, 219 (2008).

¹⁴ Hannan Steinberg et al., *Exercise enhances creativity independently of mood*, 31, *British Journal of Sports Medicine*, 240 (1997).

¹⁵ Interview (March 5, 2010)