Cranking up your brain: Exercising academic excellence
D. Glisczinski, University of Minnesota Duluth

Abstract

Exercise boosts brainpower, according to neuroscience research. Researchers have found that aerobic exercise generates a protein called brain derived neurotrophic factor (BDNF)—which travels from the brain stem to the frontal cortex where critical thinking takes place. As modeling and scaffolding brain function is our collective career, are we ready to take note of the education neuroscience that charts the course toward our best work? Might we do for ourselves and each other what we expect our students to do: to read the studies, evaluate the claims, and then make data-driven decisions about how to effectively exercise academic excellence?

I have a confession to make: For a handful of years, I’ve observed certain members of the higher education community in the act of concocting performance enhancing substances for their brains. And to this day, on this campus a well as on campuses like it, the practice continues—but like other null curriculum, we don’t talk much about it.

Still, I think it may be healthy—and perhaps instructive—for all of us involved in higher education if we opened up the conversation on this otherwise surreptitious behavior engaged in by comparatively few, generally practiced on the margins of traditional academia. The consequences promise to be invigorating to our collegial cognition and classroom instruction.

It’s said that this practice of producing performance-enhancing substances for the brain was popularized some years back by Midwestern teenagers jonesing for competitive advantage on their math and science exams. And it was none other than one of their scheming faculty who agreed to abet their early experimentation with producing these substances. As the story goes, a smallish number of these students would meet their teacher out behind the athletic field fence before the school day commenced. There, they’d experiment with creating this performance-enhancing substance in three and a half pound containers brought by each student. As it’s reported, the process was found to be accomplished in as little as a half hour each morning, and its brain-boosting results have been reported to last the better part of the day.

I have a second confession: these days, I’m on the lookout for it, and I’m pleased when I see it going down. I’m watching for it because I admit I first tried it myself one afternoon a few semesters ago when a perspicacious colleague stopped by my office mid-day when I wasn’t thinking clearly. Minutes later, I found myself following him as he disappeared from campus and moved quickly on foot to the
secluded canyons of a nearby creek. In less time than it would have taken to lunch together at the campus grille, my adept colleague had taught me how to generate my own supply of the home-made brain fertilizer. Returning back on campus that afternoon was a singularity for me. I felt unusually good. After an apple and a shower, I returned to my work with fresh perspective—feeling more engaged and effective than usual for my afternoon teaching, meetings, and writing.

Soon, what had for me been a singularity developed into habit. And now my pattern is to carve out time to indulge this habit, which now I observe most days. Sometimes I get my fix as soon as my kids leave for school. Other times it happens mid-day with a colleague or two off campus. And I’ve even taken to doing it on my way to and from work. I’ve become hooked. My three and a half pound brain feels empty when I miss more than a day.

So what’s the name of the substance that’s known for cranking up cognition? Harvard Medical School Professor John Ratey likens it to “miracle grow” for the brain (2008). And he explains that generating it is among the most effective ways to enhance cognitive function. The delightful part is that the miracle grow substance—otherwise known as Brain Derived Neurotropic Factor—or BDNF—is healthy, organic, and stimulated by exercise. That’s it.

That’s what the Midwestern teens were producing behind the athletic fields those mornings before school. They were generating their daily supply of miracle grow for their brains by running laps around the high school track. And their Naperville, Illinois physical education teacher was teaching them to generate BDNF, which fertilizes existing and emerging neurons in the brain’s frontal integrative cortex, where academic analysis takes place. As it turns out, the payback from the exercise was profuse, as these Naperville students who participated in regular exercise went on to significantly outperform their peers in site-based measures of literacy development. These before-school exercisers demonstrated almost double the literacy growth of their classroom peers who enrolled in standard physical education. In light of these findings, the entire school district of Naperville adopted the BDNF-generating zero-hour physical education program. Thereafter, Naperville’s 19,000 students put their three and a half pound brains to work at producing math and science test scores that soared to first in the world in science and sixth in the world in math—as measured by the Trends in International Mathematics and Science Study (TIMSS) exam (Ratey, 2008).

But Dr. Ratey is not alone in noting this positive correlation between exercising and academic excellence. Begley (2008), Doidge (2007), Dragansky (2004), Fisher & Heikkinen (2010), Medina (2008), Restak (2007), Siegel (2010), and Sousa (2011) conclude that not only does exercise prompt dramatic increases in neurochemicals and growth factors but it also delivers key supplies of blood and oxygen, which enrich existing neurons, construct new synaptic pathways, and create brand new neurons that Zull (2011) described as the physical embodiment of thought.

So, colleagues, the research findings are both abundant and clear about how exercise supports improved brain function. As modeling and scaffolding brain function is our collective career, are we ready to take note of the education neuroscience that charts the course toward our best work? Might we treat our students, our colleagues, and our selves to more robust teaching, learning, and research through modest investments in regular exercise? Might we do for ourselves and each other what we expect our students to do: to read the studies, evaluate the claims, and then make data-driven decisions about how to effectively exercise optimal mental acuity?
I think it may be healthy and instructive for all of us involved in higher education if we opened up the conversation. And please, take me with you when you’re cranking up your brain and exercising your right to academic excellence. Science confirms we’ll be changed by the experience. That’s a promising start for reinvigorating our classroom instruction and our energizing our students’ readiness for robust academic exchange.

Sincerely,

Daniel J. Glisczinski
University of Minnesota Duluth

Brief Author Bio

Daniel J. Glisczinski works as assistant professor of education at the University of Minnesota Duluth where he and his students explore ways in which education neuroscience can improve the quality of teaching, learning, and living. Dan is grateful for a life rich in family, community, and outdoor adventures.

References