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All brains reap benefits of exercise

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Most studies of exercise and cognition have focused on older people — the folks who are just starting to worry that their minds aren't what they used to be — but the effects of physical exertion on the brain aren't limited to that group at all.

In fact, in young children, they're even more potent.

Exercise probably has "a more long-lasting effect on brains that are still developing," says Phil Tomporowski, a professor of exercise science at the University of Georgia.

In kids, as in adults, the hippocampus reaps many benefits from exercise.

This won't surprise parents of kids with ADHD, many of whom already use physical activity as a substitute or supplement for drugs.

In children with the disorder, the hippocampus is enlarged and it may be wired to the rest of the brain in abnormal ways that affect its function.

But a good workout, or for that matter a boisterous session of kickball, can also have much more widespread effects on children's brains.

Until about 20, kids don't have fully developed frontal lobes, so they "recruit" other parts of the brain to perform necessary functions, including those involved in learning.

In University of Illinois professor Charles Hillman's study of third- and fifth-grade PE students, exercise sped up not just executive functioning, but a broad variety of skills ranging from math to logic to reading, all of which rope in many regions of the brain.

"In kids you have a tremendous amount of growing brain tissue, particularly in the frontal lobe," says Tomporowski. "So we can't just break it down to hippocampal function in them. Exactly what else is going on in there, I don't think anybody knows."

With that science in mind, many educators are now pushing for an overhaul of physical education in public schools.

Teachers can ensure their students' success in other subjects, they argue, by making PE longer and more focused on brain-strengthening cardiovascular exercise.

Inspired by Hillman's work, Kentucky state Sen. Katie Stine recently proposed a bill making a daily half hour of PE mandatory for kids up to eighth grade.

It passed the Senate last month.

At Naperville Central High School, students struggling with reading are taking a physical education class as one of their first classes of the day, followed shortly by communications, cultures and literacy classes. They also incorporate literacy drills into typical physical gym activities.

Paul Zientarski, chairman of the school's health and physical education department, created the program based on Harvard psychiatrist John Ratey's research which found that exercise releases chemicals Ratey said are like Miracle-Gro on the brain.

Parents and teachers have said they're seeing a difference in both test scores and attitude in students taking this sequence of classes. During the first semester of the program in fall 2005, reading scores for students in the program improved by the equivalent of 1.4 grade levels, while literacy students who didn't take early gym class improved by .09.

The hope of educators isn't just that Johnny and Susie will do better on the SAT. There's a long-term goal as well.

If kids develop a love of sport early in life, they're more likely to grow into active adults. And if they do, they may avoid a fate their grandparents are currently facing: a slow slide into mild cognitive impairment, followed by Alzheimer's.

UCLA neuroscientist Fernando Gomez-Pinilla says that Americans' lazy lifestyles may be contributing to their high rates of the disease. Humans have evolved, he notes, to thrive on physical activity; without it, "our brains aren't doing what they're supposed to," and they go awry.