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UI professor's research finds exercise helps kids focus

By Jodi Heckel

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URBANA – One child spends 20 minutes walking, then takes a test.

Another spends the same amount of time resting, then takes the same test.

Guess who performs better?

Charles Hillman, a University of Illinois professor of kinesiology and community health, conducted research that suggests exercise increases children's ability to focus on a task.

With an increased emphasis on performance on achievement tests as a measure of a school's success under the No Child Left Behind Act, classes that aren't core academic subjects – including physical education – are being minimized, Hillman said.

But exercise, it seems, is good for the brain.

Hillman's research involved looking at how a single bout of moderate exercise affected children's performance on a test that required them to focus their attention. Twenty children participated in the study. Half were asked to exercise at moderate intensity for 20 minutes, by walking on a treadmill. The other half sat and rested.

Each group of children was tested after exercise or resting.

The test involved looking at groups of arrows and identifying when one arrow was pointing in a different direction than the others. It required the children to focus on a particular thing and block out extraneous information that would make the task more difficult.

That skill involves an aspect of brain function called "executive control function," Hillman said. It is the most complex form of cognitive function, he said, and also includes working memory and multitasking. It is highly related to academic performance, and necessary for reading and math.

Heather Coit

Savannah Burkhalter, 9, uses a treadmill to exercise for a neurocognitive kinesiology lab test as graduate student Kevin O'Leary looks on earlier this month at Freer Hall in Urbana. Savannah's mother, Toni Burkhalter, watches at right.

Hillman and his team found a significant increase, of about 8 percent, in accuracy in selecting the correct response by the kids who had exercised before the test.

The researchers also measured the students' performance on a standardized achievement test with reading, spelling and math questions.

The students who exercised before the test did better.

Hillman found a large effect on the reading performance of the exercise group, equivalent to one full grade level. There was a lesser effect on the spelling and math portions of the test, but students were taking those later – an hour or more after exercising, compared with 45 minutes after exercise with the reading portion of the test.

Hillman's findings don't surprise Champaign teacher Deb Foertsch, who teaches fifth grade at Carrie Busey Elementary School. Foertsch is a big believer in exercise for her students.

"I think there's a lot to having them switch gears," she said. "I think that can absolutely be very effective. I do that."

Earlier this week, her students had been doing a lot of writing and were tired. She took them outside to run around the playground for five minutes. They were re-energized when they came back inside to do some reading, she said.

"If I give them a five-minute break and then get right back to it, I see improvement," she said.

Sometimes, if a student is having difficulty, she'll ask him or her to get up and get something from across the room.

"If they're frustrated, it gets them focused on something totally different," she said. "They're moving their bodies, then they're back with you for help."

Now that he's established a relationship between exercise and brain function in children, Hillman has many more questions to answer. For example, does exercise produce the same effect on the other executive control functions of the brain – memory and multitasking – that it does on attention? How long does the effect of exercise last? What about a bout of exercise that is slightly more or less intense?

Hillman is working on a study now that will use a form of exercise that children would more naturally be doing.

"Kids don't walk on treadmills for 20 minutes," he said.

Hillman hopes the message will reach parents as well, that physical activity is important for brain function as well as for overall health.

He's not yet ready to say, take a walk before a big test.

"But I would say these data suggest taking a walk prior wouldn't hurt," he said.

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