

Study: Exercise benefits younger brains, too

By Greg Kline

Monday January 1, 2007

Older folks may not be the only ones whose brain power is increased by physical fitness, a study by University of Illinois researchers working with Dutch colleagues indicates.

Previous studies, several of them done at the UI, already have provided evidence that regular exercise improves both the brain structure and function of senior citizens, including an increase in the brain's gray and white matter and better performance on cognitive tests.

"Most of the work has focused on older adults," UI kinesiology and community health Professor Charles Hillman said recently.

Now, Hillman, using data from Eco J.C. de Geus at Vrije Universiteit in Amsterdam, is showing that at least some of the benefits may extend to younger adults as well.

De Gues, who studies behavioral genetics, collected an array of data on people age 15 to early 70s. That included information on the physical fitness and cognitive abilities of the participants.

He offered the data to Hillman for examination after the two met at a professional conference. The UI professor studies the relationship between fitness, the brain and cognition.

Hillman, UI doctoral student Matthew Pontifex and kinesiology and community health Professor Robert Motl used the data to look for links between the physical activity levels of the participants, 241 Amsterdam area residents, and the results they posted on a series of cognitive tests.

In line with previous studies, they found that older folks were faster and more accurate on the tests if they were getting regular exercise.

Meanwhile, younger folks, 15 to 39 with an average age of 25, also were faster. But they didn't show a significant improvement in accuracy.

However, Hillman said UI researchers saw improvements among younger adults in both cases in another study where the complication level of the tests was enhanced by forcing the participants to switch tasks in midstream.

"We see both speed and accuracy differences (between fit and non-fit younger participants) in that case," he said.

Hillman said the bottom line is that the studies indicate there may be a link between physical fitness and the health of the brain across the life span. Exercising throughout our lives may have a protective effect against the decline in our cognitive ability as we age, he said.

In particular, the tests were designed to challenge the "executive function" of the people taking them. That's what we use in scheduling, planning, filtering out environmental distractions and multitasking, among other things.

Driving on the highway, keeping track of the traffic around us, looking for an exit sign and sorting it out from the plethora of other signs is the kind of common challenge that taps executive function, Hillman and Pontifex said.

Hillman said the capability appears to be centered in the brain's frontal lobe, the last area to mature and the first to begin declining, which is why kids and senior citizens sometimes have problems with executive function-related tests and tasks.



Vanda Bidwell

University of Illinois Professor Charles Hillman, left, and doctoral student Matthew Pontifex stand by a helmet they use on test subjects to track brain activity.

But earlier studies showed that senior citizens "can return to performance at young adult levels" if they're physically active, Hillman said.

His study using the Dutch data, which appears in the current edition of journal Health Psychology, found both a general cognitive benefit and particular improvement in executive function, in addition to the effect it identified in the younger participants.

The data also included such information as gender and IQ, allowing the researchers to factor those out and isolate the impact of fitness on the cognition testing results.

Hillman wants to explore further how the impact of exercise on the brain differs in older and younger people and the mechanics behind that.

He's also interested in testing even younger participants, perhaps including a study here where kids are tested before and after they go through a directed exercise program.

"We don't know much below the age of 15," Hillman said. "We're working on that."

Find this article at:

http://www.news-gazette.com/news/2007/01/01/study_exercise_benefits_younger_brains

Comments

The News-Gazette.com

The East Central Illinois Online News and Advertising Source

Contents of this site are © Copyright 2007 The News-Gazette, Inc. All rights reserved.