Brain Training Can Have Lasting Benefits

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Just as physical exercise is good for the body, mental training can keep older minds functioning better, with results lasting for years.

Older adults who received just 10 sessions of mental training showed long-lasting improvements in memory, reasoning and speed of processing five years after the intervention, say researchers who conducted the Advanced Cognitive Training for Independent and Vital Elderly study, or ACTIVE. The findings appear in the Dec. 20 issue of the Journal of the American Medical Association.

The mental exercises were designed to improve older adults' thinking and reasoning skills and determine whether the improvements could also affect seniors' capacity to follow medication instructions correctly or react to traffic signals quickly.

"Our findings clearly suggest that people who engage in an active program of mental training in late life can experience long-lasting gains from that training," said study researcher Michael Marsiske, an associate professor of clinical and health psychology at the University of Florida College of Public Health and Health Professions. "The positive results of ACTIVE thus far strongly suggest that many adults can learn and improve well into their later years."

The researchers also discovered some evidence of the training's "transfer" to everyday functions. Compared with those who did not receive mental training, participants in the three training groups — memory, speed of processing and reasoning — reported less difficulty

performing tasks such as cooking, using medication and managing finances, although the effect of training on performance of such daily tasks only reached statistical significance for the reasoning-trained group.

“We had about 25 years of knowledge prior to the ACTIVE study suggesting that older adults’ thinking and memory skills could be trained, but we didn’t know whether these mental gains affected real-life skills,” said Marsiske, also a member of UF’s Institute on Aging. “In this study we see some evidence that training in basic mental function can also improve seniors’ ability to perform everyday tasks.”

The ACTIVE study is the first large-scale, randomized controlled study of cognitive training in healthy older adults. Funded by the National Institute on Aging and the National Institute of Nursing Research, the study involved 2,802 seniors aged 65 to 96 who were divided into groups to receive training in memory, reasoning or speed of processing in 10 90-minute sessions over a five- to six-week period. A fourth group received no training.

Those in the memory training group were taught strategies for remembering word lists and sequences of items, text material and the main ideas and details of stories. Participants in the reasoning group received instruction on how to solve problems that follow patterns, an ability that is useful in such tasks as reading a bus schedule or completing an order form. Speed of processing training was a computer-based program that focused on the ability to identify and locate visual information quickly, skills that are used when looking up phone numbers or reacting to traffic signs.

When tested immediately after the training period, 87 percent of participants in speed training, 74 percent of participants in reasoning training and 26 percent of participants in memory training showed

reliable improvement in their respective mental abilities. In earlier reports, researchers found the improvements had been maintained two years after training, particularly for seniors who were randomized to receive “booster” training one and three years after the original training.

The improvements in memory, problem solving and concentration after training roughly counteracted the degree of cognitive decline that older people without dementia may experience over a seven- to 14-year period, said the paper’s lead author, Sherry L. Willis, of Pennsylvania State University.

But researchers have now discovered that cognitive improvements in the participants were still detectable five years after training.

“The durability of training effects that we saw in ACTIVE exceeds what has been reported in most of the published literature,” Marsiske said. “Five years after training, seniors are still outperforming untrained participants in the mental abilities on which they received instruction.”

Researchers are now discussing with the National Institute on Aging and the National Institute of Nursing Research how best to follow up these findings.

“By actually manipulating the type of experience with cognitive activities that seniors have in an experiment, the ACTIVE trial has been incredibly important in providing evidence that there is a causal relationship between ‘using it’ and not ‘losing it,’” said Elizabeth A.L. Stine-Morrow, a professor of educational psychology at the Beckman Institute at the University of Illinois at Urbana-Champaign. “Showing that training gains are maintained over five years is a stunning result because it suggests that a fairly modest intervention in practicing cognitive skills can have relatively long-term effects.”

Source: UF

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