Specific brain training reduces dementia risk across 10 years

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While many companies have long promised that their brain-training products can sharpen aging minds, only one type of computerized brain training so far has been shown to improve people's mental quickness and

significantly reduce the risk of dementia, according to research presented at the American Psychological Association's Annual Convention.

"The mistake some people make is thinking that all brain training is the same," said presenter Jerri Edwards, PhD, of the University of South Florida. "Lumping all brain training together is like trying to determine the effectiveness of antibiotics by looking at the universe of all pills, and including sugar pills and dietary supplements in that analysis. You'll find that some work and some do not. To then conclude that brain training does not work—or is not yet proven—is based on flawed analysis."

Because of this lack of targeted analysis, Edwards looked at studies focused on the effectiveness of a specific brain training exercise called speed of processing training—also known as useful field of view training. Edwards and her team completed a systematic review and meta-analysis of more than 50 peer-reviewed research papers examining speed of processing training.

In addition to this meta-analysis, Edwards and her team released findings from their ACTIVE study, which stands for Advanced Cognitive Training for Independent and Vital Elderly. This study, which was presented last week, found that older adults' risk for dementia was reduced by 48 percent over 10 years when they completed 11 or mores sessions of this brain-training technique. Specifically, the risk of dementia was reduced by 8 percent for each session of speed of processing training completed, Edwards said.

"This highly specific exercise is designed to improve the speed and accuracy of visual attention or someone's mental quickness," Edwards said. For example, during one task, a person must identify an object (e.g., a car or truck) at the center of a screen while locating a target, such as another car, in his or her peripheral vision. As people practice the

task, the time it takes them to locate the peripheral object gets shorter and shorter even as the objects become harder to distinguish. In more difficult tasks, the peripheral target is surrounded by distracting objects, forcing the person to work harder to stay focused, she said.

Participants who completed the speed of processing training experienced improved performance across standard cognitive (attention), behavioral (depressive symptoms, feelings of control), functional (health-related quality of life, functional performance) and real world measures (driving, predicted health care costs).

Edwards pointed to the speed of processing research around driving as a concrete example of how this training generalizes to everyday activities. Studies have shown that speed of processing training resulted in improvement in reaction time, yielding another 22 feet of stopping distance at 55 mph and a 36 percent decrease in dangerous maneuvers. In addition, 40 percent fewer people stopped driving altogether and there was a 48 percent reduction in at-fault crashes, she said.

"Some brain training does work, but not all of it," Edwards concluded. "People should seek out training backed by multiple peer-reviewed studies. The meta-analysis of this particular speed of processing training shows it can improve how people function in their everyday lives."

The ACTIVE study consisted of 2,832 participants, ages 65 to 94. The sample was 74 percent white and 26 percent African-American and 76 percent women. While Edwards acknowledged the sample is not representative of the entire U.S. population, this study is the first large-scale, randomized trial to test the long-term outcomes of brain training effects on prevention of cognitive impairment in daily lives, she said.

The UFOV exercise was developed by Karlene Ball, PhD, and Daniel Roenker, PhD, at the University of Alabama Birmingham and Western

Kentucky University and is exclusively licensed to Posit Science Inc. It is marketed under the name "Double Decision" at BrainHQ.com. While Edwards worked as a consultant to Posit Science Inc. in 2008, she no longer has any financial interest in the speed of processing training or UFOV.

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