



the compassion to care, the leadership to conquer

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**NEW RESEARCH SHOWS THAT PEOPLE WITH BETTER PHYSICAL FITNESS HAVE LESS BRAIN ATROPHY IN ALZHEIMER'S**

***- Other Studies Show Physical Activity Improves Physical Function and Quality of Life in People with Alzheimer's and Their Caregivers -***

**CHICAGO, July 27, 2008** – People with early Alzheimer's disease who had better fitness ratings had less atrophy in key brain areas associated with memory, according to research reported today at the 2008 Alzheimer's Association International Conference on Alzheimer's Disease (ICAD 2008) in Chicago.

This is the first time that MRI brain imaging has been used to demonstrate the connection between cardiorespiratory fitness and Alzheimer's-related brain changes in the hippocampus, an area of the brain important for memory and spatial navigation. In Alzheimer's, the hippocampus is one of the first regions of the brain to suffer damage.

Another report from ICAD 2008 showed that a home-based exercise program could reduce falls, improve balance, and maintain independence and quality of life in people with dementia.

"These studies reinforce the need for increased awareness and education about the importance of living a brain-healthy lifestyle, including staying physically active," said William Thies, PhD, vice president of Medical and Scientific Relations for the Alzheimer's Association. "Growing evidence shows that physical exercise does not have to be strenuous or require a major time commitment. It is most effective when done regularly, and in combination with a brain-healthy diet, mental activity and social interaction."

**Physical Fitness Preserves Brain Volume in Alzheimer's**

Exercise and physical fitness have been shown to moderate age-related regional brain volume changes in healthy older adults. However, little is known about the relationship of fitness to Alzheimer's disease-related brain changes, particularly in areas that are predominantly affected early in the course of the disease, such as the hippocampus.

Robyn A. Honea, PhD, and colleagues from the University of Kansas Medical Center, Kansas City, Kansas investigated the relationship between cardiorespiratory fitness and regional brain volume in healthy older adults and those with early Alzheimer's using MRI and a new neuroimaging analysis technique called voxel-based morphometry.

Nondemented (n=56) and early-stage Alzheimer's subjects (n=63) aged 60 and over had MRI scans and fitness assessments based on peak oxygen consumption during a treadmill test. The researchers found that people with early Alzheimer's in the study, and not healthy elderly, had a significant relationship between

the size of key brain areas associated with memory (hippocampal and parahippocampal volume) and cardiorespiratory fitness, such that those with better fitness ratings had less atrophy and those with worse fitness ratings had more atrophy.

“We found that, in early-stage Alzheimer’s, cardiorespiratory fitness is correlated with regional brain volumes in key areas affected by the disease,” said Honea. “This suggests that maintaining cardiorespiratory fitness may positively modify Alzheimer’s-related brain atrophy.”

“A previous study by our group looked at whole brain volumes and fitness, giving us a clue that there was some relationship. This is the first study to get an inside look into specifically where these changes occur in the brain – we’re able to locate the changes associated with fitness to the actual memory region, the hippocampus, which is a key area for Alzheimer’s-related atrophy,” Honea added.

### **Caregiver-Directed Home Exercise Program Reduces Falls and Improves Quality of Life for People with Dementia**

According to researchers Megan J. Wraith, PhD, and colleague R. Arthur Criddle, MD, FRACP, from Western Medicine, Nedlands, Western Australia, one-third of older people living in the community fall each year; people with dementia fall up to three times more than those who have no cognitive impairment. The aim of their study was to examine whether a home-based exercise program combined with good geriatric management could reduce falls, improve balance and maintain independence and quality of life in people with dementia over a 12-month period.

The researchers involved caregivers in the delivery of the program so they could prompt their loved ones into completing the exercises. The level of participants’ dementia ranged from mild to severe. People were chosen for inclusion in the study if they had a live-in caregiver or someone who visited most days.

Patient/caregiver dyads were enrolled into either a group receiving usual care (control group, n=12) or an exercise group (n=21). All patients were seen for a full geriatric assessment at baseline including measures of balance, daily activities, independence and quality of life. An occupational therapist made recommendations that would reduce the risk of falling at home.

Caregivers in the exercise group were taught a tailored set of exercises and were shown how to prompt their loved ones to do them. The exercise program focused primarily on promoting good balance as this has been previously shown to have the greatest impact on reducing falls. Particular emphasis was put on embedding the exercises into everyday routines to increase the likelihood that the exercises would be carried out. All participants received eight home visits in the first six months of the study. The usual care group was engaged in conversation and completed some tasks that measured their communication abilities.

### **Fall Reduction**

The researchers found that people in the exercise group fell significantly less often than people in the control group in the first six months. In the second six months there was no difference between the groups. The investigators concluded that the home visits in the first six months were important in keeping people motivated to do the exercises and this may have had an impact on how often they fell. The study also showed that people in the exercise group improved their balance over 12 months while the usual care group showed some deterioration in their balance over this time.

“The results of this study were encouraging,” said Wraith. “Falls have a negative impact on a person’s quality of life, often resulting in nursing home placement, increased mortality and significant costs to the community. Targeting this high risk group may be a relatively cost effective way of having a significant impact on the overall rate of falling in the elderly.”

### **Improved Quality of Life**

A significant problem with increasing frailty and problems with balance is that the person with Alzheimer's becomes less independent due to the fear of falling. People in the exercise group showed no significant increase in fear of falling over 12 months, while the usual care group became more fearful. As anticipated by the researchers, this led to a decrease in the usual care group's independence and in the range of activities in which they were involved. In contrast, the people in the exercise group maintained their level of independence and continued to be involved in daily activities to the same degree as they were at the beginning of the study, despite the progression of their dementia.

In addition, the study showed that the quality of life was maintained for both the caregiver and the person with dementia in the exercise group, but that it deteriorated for participants in the usual care group.

“As people become increasingly affected by the changes in their memory and thinking, and as the risk of falls becomes greater, quality of life can deteriorate,” said Wraith. “This study is small and is just a beginning, but maintaining quality of life at the same level in the context of deteriorating cognitive abilities is an achievement. The results are sufficiently encouraging to pursue this approach and develop a caregiver focused home-based exercise program on a larger scale.”

### **About ICAD 2008**

The 2008 Alzheimer's Association International Conference on Alzheimer's Disease (ICAD 2008) is the largest gathering of international leaders in Alzheimer research and care ever convened. At ICAD 2008, more than 5,000 researchers from 60 countries will share groundbreaking information and resources on the cause, diagnosis, treatment and prevention of Alzheimer's and related disorders. As a part of the Association's research program, ICAD serves as a catalyst for generating new knowledge about dementia and fostering a vital, collegial research community. ICAD 2008 will be held in Chicago at McCormick Place, Lake Side Center from July 26–31.

### **About the Alzheimer's Association**

The Alzheimer's Association is the leading voluntary health organization in Alzheimer care, support and research. Our mission is to eliminate Alzheimer's disease through the advancement of research; to provide and enhance care and support for all affected; and to reduce the risk of dementia through the promotion of brain health. Our vision is a world without Alzheimer's. For more information, visit [www.alz.org](http://www.alz.org).

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- Robyn A. Honea – “Physical fitness preserves brain volume in Alzheimer's disease.” (Funders: National Institute on Aging, National Institute on Neurological Disorders and Stroke)
- Megan J. Wraith – “Reduction in falls found for people with dementia from carer-directed home exercise program” and “Carer-directed home exercise programs maintain quality of life for people with dementia over 12 months.” (Funders: Sir Charles Gairdner Research Foundation, Hollywood Private Hospital Research Foundation)

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