

## Keep Your Brain Fit

Colcombe, S. J., Erickson, K. I., Raz, N., Webb, A. G., Cohen, N. J., McAuley, E., & Kramer, A. F. (2003). Aerobic Fitness Reduces Brain Tissue Loss in Aging Humans *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences* 58: M176-M180.

This study, led by Arthur F. Kramer of the University of Illinois at Urbana-Champaign, is the first to confirm the link between exercise and brain shrinkage in older adults. The authors say that the findings “provide the first empirical confirmation of the relationship between cardiovascular fitness and neural degeneration as predicted” from aging studies on cognition in both animals and humans. (In 1999, Kramer and colleagues reported on previously sedentary people over age 60 who walked rapidly for 45 minutes three days a week and significantly improved mental-processing abilities. Numerous studies by other researchers have also reported on the benefits of exercise for the brain as well as the heart.)

This research involved well-educated men and women aged 55 to 79. Their fitness ranged from sedentary to very fit, competitive-ready athletes. Fitness was measured by results of one-mile-walking and treadmill stress tests. Three-dimensional scans of the participants' brains were done using high-resolution magnetic resonance imaging (MRI) equipment at Carle Foundation Hospital in Urbana. Applying voxel-based morphometry, researchers estimated tissue atrophy in a point-by-point fashion in the targeted regions of the brain.

According to the researchers, they “found differences in three areas of the brain, the frontal, temporal and parietal cortexes.” “There were very distinct differences particularly in two types of tissue, the gray matter and white matter. Nobody has reported this before.” Gray matter is made up of thin layers of tissue of cell bodies such as neurons that support cells and are critically involved in learning and memory. White matter is the myelin sheath which contains the nerve fibers that transmit signals throughout the brain.

Some conclusions that can be drawn from this and other research of Kramer and his group are:

- Exercise programs involving both aerobic exercise and strength training produced better results on cognitive abilities than either one alone.
- Older adults benefit more than younger adults do, possibly, Kramer said, because older adults have more to gain as age-related declines become more prevalent.
- More than 30 minutes of exercise per session produces the greatest benefit, a finding consistent with many existing guidelines for adults.

**IMPLICATIONS FOR PRACTICE:** If you, your staff and your residents aren't exercising together, now might be a good time to start. Remember your staff will benefit greatly by becoming more fit with exercise. Staff and residents who are fit have fewer injuries due to accidents.

Begin with a wellness session explaining the advantages for the heart and brain. Of course you want to confer with your medical director and each individual's physician before starting any exercise program.

If your nursing home is separated into neighborhoods or households it may be easier to plan a routine exercise program each morning at the start or end of a daily learning circle where the day's activities are planned or a late morning walk that brings the entire group of residents and staff together. Because people (both staff and residents) will be at different endurance levels

it might be helpful to start with the full group for some simple warm-up exercises and then divide into smaller groups based on fitness level for the rest of the exercise time.

If you do not have neighborhoods/households, exercise should become the core of a wellness activity program. Emphasizing wellness throughout the organization (staff as well as residents) will stimulate better participation. Get going and slow brain density decline!