The Ongoing Benefits of Physical Exercise

Many people with Alzheimer’s or a related disorder wonder what they can do to help maintain their physical and emotional health as well as their thinking abilities. There is a growing body of research into ways to maintain well-being in the face of Alzheimer’s. In this article, we explore what is known about the benefits of physical exercise for people with Alzheimer’s and review some hopeful possibilities for improved well-being.

Exercise May Help Maintain Your Brain

Your brain requires adequate oxygen in order to function. The brain makes up about 2 percent of your entire body weight, but consumes roughly 20 percent of the oxygen that you breathe. High blood pressure, cardiovascular disease, or elevated blood sugars (such as those attributed to diabetes) can all reduce blood flow and oxygen to the brain. These other health problems can worsen some of the difficulties with memory and other areas of thinking associated with Alzheimer’s.

Regular physical exercise helps to maintain a healthy heart and cardiovascular system, controls weight, and reduces risk for diabetes. Exercise can also improve blood flow to the brain, and may help build connections between brain cells.

Research published in 2008 from Jeffrey Burns, MD, and colleagues at the University of Kansas School of Medicine suggests that exercise may help to reduce some of the shrinkage of the brain associated with Alzheimer’s. Gradual shrinkage of brain volume is a part of the aging process, but the shrinkage is much more significant in persons with Alzheimer’s and contributes to the decline in thinking and functional abilities associated with the disease. Dr. Burns looked at 121 people over age 60, around half of them in the early stages of Alzheimer’s. When compared to adults without Alzheimer’s, persons with Alzheimer’s who were less physically fit (based on measures of heart and respiratory fitness) had four times more brain shrinkage than those with Alzheimer’s who were more physically fit. Dr. Burns states, "People with early Alzheimer’s disease may be able to preserve their brain function for a longer period of time by exercising regularly and potentially reducing the amount of brain volume lost. Evidence shows decreasing brain volume is tied to poorer cognitive performance, so preserving more brain volume may translate into better cognitive performance."

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Amy Jak, PhD of the University of California, San Diego has also reported on encouraging findings from her research in exercise and cognition (thinking). Her preliminary work in this area suggests that persons with Mild Cognitive Impairment (changes in thinking that often precede Alzheimer’s) who are more physically active appear to have slower volume loss in the hippocampus, a region of the brain essential to forming memories. These physically active individuals have better maintenance of overall thinking abilities including the ability to plan and multitask than those who are more sedentary.

Dr. Burns and Dr. Jak caution that their study findings need to be replicated to ensure greater certainty. In the meantime, it can’t hurt to hope that brain shrinkage can be reduced through improved physical fitness.

Exercise Can Improve Your Mood

Many people with Alzheimer’s experience symptoms of depression. The stress of living with memory loss combined with changes in the brain chemistry can result in disrupted sleeping or eating habits, increased feelings of sadness or hopelessness, and a disinterest in previously enjoyed activities. Depression can also affect thinking and concentration, and worsen some of the symptoms of Alzheimer’s. Doctors often prescribe an antidepressant to try to treat these symptoms, but it is well-documented that routine exercise can also be a helpful remedy. Exercise can help to build a healthy appetite, influence and regulate sleep patterns, and release endorphines in the brain that contribute to a feeling of well-being. Many people with Alzheimer’s say they feel brighter, more alert, and in a better mood after physical exercise. In their study published in 2003, Linda Teri, PhD and colleagues at the University of Washington in Seattle found that structured exercise training combined with teaching caregivers behavioral management techniques improved physical health and depression in persons with Alzheimer’s.

Exercise Can Reduce Stress

As with symptoms of depression, it is also common for individuals with Alzheimer’s to have spells of irritability, impatience, or agitation. These feelings can result from the frustrating daily encounters with memory loss and other symptoms. Everyone needs to let off a bit of steam sometimes, and exercise is an excellent outlet for frustrations. Just as many feel more alert after exercise, others report the beneficial calming effects of physical activity. The focus on physical exercise can take the mind off of worries and relaxes the thoughts a bit.

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Maintaining Strength, Flexibility, and Coordination

Some people with Alzheimer’s become more sedentary. Lack of meaningful activity can lead to decreased muscle strength, bone density loss, and reduced flexibility. Maintaining strong muscles, balance, and coordination can help you function independently for a longer period of time and reduce risk for falls or other serious injuries. In 2008, Australians Megan Wraith, PhD and Arthur Criddle, MD reported their research findings that home exercises, supervised by a caregiver, helped men and women with early Alzheimer’s improve their balance and maintain their independence and quality of life over a year-long period.

Consult with your physician before beginning any new exercise routine.

There are many forms of exercise and you will need to determine the one best suited to you. Walking and swimming are two popular and excellent sources of physical exercise and can be combined with stretching and strengthening routines to round out your fitness program. You can check with your local senior center or YMCA (in the USA) for exercises classes. Some may offer Yoga, or the Chinese-based practices of Tai chi, or Qigong. These forms of gentle, focused exercise can help with strength and balance.

It is important to tailor a program to meet your own specific needs, health conditions, and body type. See this page for a new helpful exercise guide to use as a resource in developing your exercise routine.

EXERCISE RESOURCE

The National Institute on Aging’s updated exercise guide for older adults has something for everyone. Exercise & Physical Activity: Your Everyday Guide from the National Institute on Aging, is based on decades of research that shows the benefits of physical activity for older adults, including those with Alzheimer’s.

The FREE OF CHARGE guide describes the benefits of physical activity and healthy eating, explains how to get started, and demonstrates four types of exercises—endurance, strength, balance, and flexibility—that can be done at little or no cost, often at home. It also suggests ways to modify activities so that people with chronic conditions and disabilities can exercise safely.

The guide includes exercise through household chores and hobbies, such as raking leaves and dancing, as well as traditional exercises such as strength training, jogging, and aerobics classes. The message is to be active in ways that suit your lifestyle, interests, health, and budget. The guide also offers practical tips on when to talk with the doctor about exercise and information on being active in specific situations, such as walking in rural areas.

Exercise & Physical Activity: Your Everyday Guide from the National Institute on Aging is available in print and online at http://www.nia.nih.gov/Exercise.
People with Alzheimer’s Discuss:
Things That Help to Get Us Through the Tough Times

In a recent support group meeting in San Diego, California, participants with Alzheimer’s discussed the challenges of living with memory loss and other symptoms. Discussion led to the various actions, attitudes, or relationships each person relies on to get through challenging times. Do you relate to any of these responses? What helps you to make it through tough times?

**Humor** – It’s good to be able to laugh and lighten the load sometimes. It doesn’t make everything go away, but it somehow makes it all manageable when you can find the humor in life.

**A sense of perspective – It’s good to be alive** – Alzheimer’s is hard sometimes, but I’m glad I’m still here to talk about it!

**Focusing on the good and the positive – being thankful for what you still have** - Realize that there is a lot to enjoy still and that despite having Alzheimer’s there could be worse things in life to have to deal with. There are a lot of things that we can still do and we have access to so much more help and resources than many people in the world. We need to count our blessings every day.

**Don’t be too quick to judge circumstances** – Some things are not as bad as they may initially seem. When I was diagnosed, I thought my life was over, but I’ve learned to cope pretty well. I don’t jump to drastic conclusions now and that helps me stay a little more even during the rough times.

**Luck** – Sometimes it seems like good luck can happen when you least expect it. I know some things have happened in my life that just seemed like a stroke of luck came at just the right time. I don’t always know why the rough times or the good times happen. If can just seem like the luck of the draw.

**Perseverance** – Just keep at it one step at a time, one day at a time.

**Marrying the right person** – It was the most important decision I made and we’ve helped each other through a lot of hard times.

**Effective communication** – If your communication is destructive your relationship and life will go downhill. My wife and I talk through the hard times and that helps a lot.

**If you have a problem, get it out as soon as possible** – Don’t hold things in. Reach out to someone during the rough times and it will help you get through them.

**A good dog** – They’ll listen to you for hours and will go through any rough time with you!

**Make some plans** – Look at what you can and can’t do. If you make a good plan, you have something to anticipate and look forward to. The rough times can pass if you can have good things to take their place.
During an art therapy session, we suggested to participants that they make a line and see where it takes them. This participant titled his finished piece “Can’t Find My Way Out,” but added, “The worst thing is giving up. Don’t quit!”

Dance/movement therapy is a unique feature of Mind Matters. Movement, non-verbal communication, and body awareness exercises help to facilitate discussions about memory loss challenges, emotions, and the changes in daily living that the participants face. Participants learn about common experiences and are able to increase their self-expression.

Feedback from participants and their family members has been overwhelmingly positive. Participants have shared how much they enjoy attending, and how they feel less isolated and more proactive in helping themselves. We asked participants, “Why is Mind Matters important to you?” Here are some of their responses:

“‘The camaraderie of the group.’

“The information I learn here is good, and to know I’m not alone.”

“I’ve learned a lot about people I wouldn’t have known otherwise.”

“It helps us to find ways to improve our memory.”

“I’ve enjoyed the openness here. We’re not competing, and we have fun.”

“It opens my mind. I find it stimulating.”

“It’s a nice atmosphere. People aren’t judgmental.”

“I find it relaxing. My spouse doesn’t have to worry about what I’m doing.”

For more information about Mind Matters or other House of Welcome programs at the North Shore Senior Center call 847-242-6250 or visit http://www.nssc.org.
RESEARCH UPDATES

Results from DHA Clinical Trial

DHA is one of the omega-3 fatty acids and is essential to human nutrition and healthy brain cell function. DHA is found in fatty fish such as salmon and investigators hoped that DHA supplementation might be beneficial to brain functioning in people with Alzheimer’s disease (AD).

The nation-wide Alzheimer’s Disease Cooperative Study, funded by the National Institute on Aging, recently released findings from a large double-blind, randomized, placebo-controlled clinical trial comparing DHA supplement with placebo in over 400 people with mild-to-moderate Alzheimer’s who were followed for 18 months to examine in detail whether DHA would slow progression. Although supplements increased levels of DHA in the blood of persons with AD who received the treatment, the supplement did not slow the rate of decline as compared with persons on the placebo. Researchers concluded that based on the results of this trial, DHA supplements (usually in the form of fish oil) are not an effective treatment for Alzheimer’s. While these results are disappointing, it is important information for families who may spend extra money on supplements of questionable worth in treating Alzheimer’s-related memory loss.

The potential benefit of DHA in preventing age-related cognitive changes in people who do not have Alzheimer’s may hold more promise and is still an area of active study.

New Discoveries in Alzheimer’s Disease Genes

Since the early 1990s, researchers have been discovering genetic risk factors for Alzheimer’s disease and this area remains an active area of interest. Scientists have determined rare genetic mutations that are responsible for some cases of familial young-onset Alzheimer’s (about 1 percent of all Alzheimer’s cases). Other genes, however, are “susceptibility” genes in that their presence increases risk for Alzheimer’s but does not inevitably result in the disease. For example, Apolipoprotein E (ApoE) is a gene that is responsible for carrying cholesterol in the blood. One form of this gene - ApoE4 - is present in up to 40% of people who develop Alzheimer’s later in life and contributes to risk of developing the disease.

At the recent International Conference on Alzheimer’s Disease held in Vienna, Austria, scientists reported on a number of new genetic findings that warrant further investigation. The studies use gene arrays to examine markers for 500,000 sites of genetic variation in DNA, and are called Genome-Wide Association studies (GWAS). The largest GWAS to date, using DNA from about 20,000 people, suggested that Apolipoprotein J/clusterin (ApoJ) might contribute to genetic risk for AD. ApoJ is a protein that occurs in all body fluids and has been studied for its role in aging, injury response, and the immune system. It may also bind to the beta amyloid protein and influence its processing in the body. Abnormal deposits of beta amyloid are found in the brains of people with Alzheimer’s and many of the

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treatments under investigation are targeting ways to arrest or remove these damaging protein deposits. Understanding the role of genetic markers such as ApoJ in Alzheimer’s can help scientists to identify new targets or pathways for prevention and treatment of the disease.

**Stem Cells and Alzheimer’s**

Scientists at the University of California, Irvine, recently reported on their promising work with neural stem cells in laboratory mice. Stem cells are unique due to their ability to develop into any other cell made by the human body. Stem cells are of great interest to medicine and science because of their potential to replace cells that die off in many illnesses including stroke, heart disease, Parkinson’s, and Alzheimer’s.

In this study, the brains of mice genetically modified to have Alzheimer’s were injected with mouse neural stem cells. The stem cells secreted a protein called brain-derived neurotrophic factor (BDNF) that helped to sprout new neurites (communication connections between brain cells) in the mouse brains. This resulted in improved memory performance in the mice. Lead scientist Mathew Blurton-Jones, PhD states, “The neural stem cells were helping the brain form new synapses and nursing the injured neurons back to health.” The Alzheimer’s mice who had BDNF injected directly into their brains also improved, but not as much as those who received the neural stem cells. The stem cells seemed to provide a more long-term and consistent supply of BDNF.

The benefits of stem cells and BDNF are exciting new areas of research and we will keep readers apprised of any updates.

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**QUESTION AND ANSWER**

*“Can my children or I be tested for any Alzheimer’s genes?”*

Many people with Alzheimer’s wonder if there is a reason why they developed the disease. Some have a family history of Alzheimer’s with a parent, sibling, or multiple family members who have been affected. Others may have no significant family history, but wonder if they have a genetic risk factor that led to the onset.

At present, most doctors do not recommend routine genetic testing for Alzheimer’s. The exception is in individuals with a family history where the disease begins in members at a very young age (in their 30s, 40s, or 50s). In these individuals there could be a chance of a familial genetic mutation. These rare “presenilin” genes are determinant – that is, if you carry the gene mutation, you will certainly develop Alzheimer’s at a young age and there is a 50% chance that the gene will be passed on to your offspring. Knowing whether you carry the gene could have an impact on family planning and planning for the future. However, many people who develop Alzheimer’s at a younger age do not carry these genetic mutations.

Other genes can predict greater risk of developing Alzheimer’s, but are not determinant (see genetics news on page 6). There is little reason at present to be tested for these genes because there is no treatment that would be prescribed based on the test results. At present genetic markers are used primarily for research purposes only.
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