

Section Editors
David C. Spencer, MD
Steven Karceski, MD

Preventing Alzheimer disease with exercise?

Steven Karceski, MD

WHAT DID THE AUTHORS STUDY?

In their article, “Total daily activity and the risk of AD and cognitive decline in older adults,” Buchman and colleagues¹ looked at how exercise affects a person’s thinking. More specifically, Dr. Buchman evaluated exercise, and how it might help a person who has Alzheimer disease (AD). He and his colleagues became interested in this because there are many reports that exercise helps a person to have better memory and clarity of thinking. All prior studies relied on self-reported exercise regimen. None has tried to carefully measure the amount of exercise or activity. In addition, most studies were retrospective, meaning that after the person developed AD, the doctor asked what the person’s activity was like.

To obtain the best results, Dr. Buchman decided to perform a prospective study. He did not know which people were going to have AD. He gathered a large amount of information on a big group of normal volunteers. He followed them over several years. During the study, some of the people developed AD. At the end of the observation period, he went back to see if exercise helped people to have clearer thinking and better memory. In other words, does exercise help to prevent AD?

Dr. Buchman works at Rush University. In the study, there were 716 people. All were involved in the Memory and Aging Project. All agreed to have their activity measured using actigraphy. They wore a special watch-like device on their wrist for up to 10 days. During that time, the device recorded movements of the arm and wrist. At the end of the observation period, a total “activity score” was calculated for each person using the information from the wrist device.

During the study, each person had at least 2 assessments of their thinking and memory. The assessment contained a combination of 19 separate tests for memory and thinking. Together, these tests were

scored to give an overall cognitive assessment for each person. The test results were compared to a NIH scale for dementia (AD is a type of dementia). Dr. Buchman used the test results and NIH scale to strictly define who developed AD during the study.

At the beginning of the study, no one had AD. Each person wore the actigraphy. On average, each person wore the device for just over 9 days to assess their activity level. Cognitive testing was done, and repeated each year. The group was followed for an average of 3.5 years. During that time, 10% (9.9% was the more accurate number) of the group developed AD (using the test results and NIH criteria).

WHAT DID THE AUTHORS FIND? At the end of the observation period, Dr. Buchman and his colleagues found that there was a strong association between exercise and the risk for developing AD. If a person had a low overall physical activity, they had a faster rate of cognitive decline. People with low activity were more likely to develop AD. Compared to those with high rates of activity, the risk of developing AD was 2 times higher.

Of course, there are many factors which can affect thinking and memory. For instance, social and cognitive activities also help to maintain good intellectual functioning. Dr. Buchman looked at this as well. Even accounting for these factors, there was still a strong association between high activity and a lower risk of AD.

One of the drawbacks of the actigraphy is that it measures both low-intensity and high-intensity activity. At the end of the study, we still do not know which kind of activity is better for memory and thinking. Future studies may help to understand this. However, studies like this “support encouragement of physical activity at any age, including at old age.”²

Section Editors
David C. Spencer, MD
Steven Karceski, MD

About Alzheimer disease

WHAT IS ALZHEIMER DISEASE? Information adapted from previous Patient Pages.^{3,4}

AD is a neurologic disease that affects the brain. A gradual loss of memory is one of the main symptoms that a person would experience. Other problems include difficulties with language and changes in behavior. The loss of neurologic function can occur over 5 to 20 years. At some point, if the disease becomes severe, a person with AD will need help with daily tasks such as eating, grooming, and proper hygiene. In other words, AD affects both the patient and the people around them.

About 4 million Americans have AD. It is estimated that more than 360,000 new cases occur each year. This number will probably increase as the population ages because aging itself is a major risk factor for the development of AD. AD is the fourth leading cause of death for adults. It kills more than 100,000 Americans each year.

WHAT ARE THE SYMPTOMS? Loss of recent memories (also called short-term memory) is usually the earliest warning. For instance, people will repeat stories in the same conversation. They may forget the details of the previous day; for instance, they may not recall what they had for lunch. Other features include the following:

- Misplacing belongings
- Difficulty doing familiar tasks
- Increasing confusion and disorientation to time and place
- Trouble finding the right words, not following conversations
- Changes in mood or behavior
- Changes in personality
- Poor or impaired judgment
- Loss of initiative (no “get-up-and-go”)

KNOW THE WARNING SIGNS Because AD is so gradual, in its early stages, many people fail to recognize that something is wrong. They may assume that such behavior is a normal part of getting older: “just a senior moment.” Even the person’s family may suspect something is wrong. Although forgetting things is common, if it is getting worse, it may be a sign of a more serious problem. The key to treatment is early

diagnosis. It is critical to see a doctor when you recognize or suspect AD symptoms.

HOW IS ALZHEIMER DISEASE DIAGNOSED?

When AD is suspected, it is important to have a complete medical and neurologic workup. The purpose of this evaluation is to uncover other causes of dementia that must be treated in very specific ways. This may include the following:

- A complete health history and physical examination
- Screening for depression
- Neurologic and mental status testing
- Blood and urine tests
- CT scan or MRI

WHAT CAUSES ALZHEIMER DISEASE?

The cause of AD is not fully known. It is not contagious. Although genetic forms have been identified, the most common form of AD does not run in families. Aging and inherited or genetic factors seem to play an important role.

WHAT ARE THE TREATMENTS?

Although there is currently no cure for AD, there are treatments that may help.

- Treat memory symptoms. The cognitive symptoms of AD should be treated as early as possible to slow the progression of the disease. Drugs called cholinesterase inhibitors may be considered in patients with mild to moderate disease. Vitamin E may also slow the progression, but should only be used if prescribed by the doctor.
- Treat behavioral problems. Suspiciousness, aggression, or resistance to care may be treated first by understanding what triggers these behaviors. Caregivers may learn how to change things in the environment to improve cooperation. Some examples include providing low lighting and music to improve eating behaviors, taking regular walks, scheduling toileting, and following consistent routines. Certain medications may also help, including drugs to treat depression.
- Caregivers need caring too. Caregiver training programs to learn more about the disease and

how to manage it help delay the time to nursing home placement. Support systems (adult day care, computer support networks, telephone support programs, and other respite programs) may also help.

PREVENTION Although there is no known way to prevent AD, researchers believe there are several things that will help keep your brain healthy:

Avoid harmful substances—excessive drinking and drug abuse are thought to damage brain cells.

Challenge yourself—read frequently, do crossword puzzles. Keep mentally active. Learn new skills. This strengthens the brain connections and promotes new ones.

Exercise regularly—even low to moderate level activity such as walking or gardening 3 to 5 times per week can make you feel better.

Stay socially active—family, friends, church, and a sense of community may all contribute to better brain health.

CAREGIVER HEALTH Families and friends can help by recognizing that AD impacts not only the patient, but also the primary caregiver. To take the best care of the patient with AD, the primary caregiver must take care of himself or herself. They

should be encouraged to learn more about the disease, avoid isolation, and seek support from family, friends, and professionals. Don't be afraid to ask your doctor questions.

FOR MORE INFORMATION

AAN Patients and Caregivers site

<http://patients.aan.com/golhome>

Alzheimer's Disease Education and Referral Center (ADEAR)

<http://www.alzheimers.nia.nih.gov>

National Institute of Mental Health (NIMH)

<http://www.nimh.nih.gov>

Alzheimer's Association

<http://www.alz.org>

Alzheimer's Foundation of America

<http://www.alzfdn.org>

REFERENCES

1. Buchman AS, Boyle PA, Yu L, Shah RC, Wilson RS, Bennett DA. Total daily physical activity and the risk of AD and cognitive decline in older adults. *Neurology* 2012;78:1323–1329.
2. Beeri MS, Middleton L. Being physically active may protect the brain from Alzheimer disease. *Neurology* 2012;78:1290–1291.
3. Jankowiak J, Knopman DS. Facing reality: the cost of Alzheimer dementia: who will pay? *Neurology* 2006;67: E11–E12.
4. Jankowiak J. Depression may be another risk for Alzheimer's dementia: your doctor can help. *Neurology* 2002;59: E4–E5.

Neurology Now: The AAN Publication for Patients and Caregivers

Neurology Now, an official publication of the American Academy of Neurology (AAN), provides patients and caregivers with credible, up-to-the-minute, balanced coverage of the latest advances in neurology research and treatment. The articles help people manage and make informed decisions about treatment options for a wide range of neurologic disorders.

Neurology Now is available free of charge to individuals with a neurologic disorder, their caregivers, and family members/friends residing in the United States only. To subscribe, go to neurologynow.com and click on the "Subscribe Now" tab.

Neurology[®]

Preventing Alzheimer disease with exercise?

Steven Karceski

Neurology 2012;78:e110-e112

DOI 10.1212/WNL.0b013e318255e0c9

This information is current as of April 23, 2012

Updated Information & Services	including high resolution figures, can be found at: http://n.neurology.org/content/78/17/e110.full
References	This article cites 4 articles, 4 of which you can access for free at: http://n.neurology.org/content/78/17/e110.full#ref-list-1
Citations	This article has been cited by 1 HighWire-hosted articles: http://n.neurology.org/content/78/17/e110.full##otherarticles
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): All Cognitive Disorders/Dementia http://n.neurology.org/cgi/collection/all_cognitive_disorders_dementia Alzheimer's disease http://n.neurology.org/cgi/collection/alzheimers_disease
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://www.neurology.org/about/about_the_journal#permissions
Reprints	Information about ordering reprints can be found online: http://n.neurology.org/subscribers/advertise

Neurology® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright Copyright © 2012 by AAN Enterprises, Inc.. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

