

Exercise offers protection against Alzheimer's

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Higher levels of daily physical activity may protect against the cognitive decline and neurodegeneration (brain tissue loss) from Alzheimer's disease (AD) that alters the lives of many older people, researchers from Massachusetts General Hospital (MGH) have found. In a paper in *JAMA Neurology*, the team also reported that lowering vascular risk factors may

offer additional protection against Alzheimer's and delay progression of the devastating disease. The findings from this study will be presented at the Alzheimer's Association International Conference (AAIC) in Los Angeles by the first author of the study, Jennifer Rabin, Ph.D., now at the University of Toronto, Sunnybrook Research Institute.

"One of the most striking findings from our study was that greater physical activity not only appeared to have [positive effects](#) on slowing cognitive decline, but also on slowing the rate of brain tissue loss over time in normal people who had high levels of amyloid plaque in the brain," says Jasmeer Chhatwal, MD, Ph.D. of the MGH Department of Neurology, and corresponding author of the study. The report suggests that physical activity might reduce b-amyloid (Ab)-related cortical thinning and preserve gray matter structure in regions of the brain that have been implicated in episodic memory loss and Alzheimer's-related neurodegeneration.

The pathophysiological process of AD begins decades before clinical symptoms emerge and is characterized by early accumulation of b-amyloid protein. The MGH study is among the first to demonstrate the protective effects of physical activity and vascular risk management in the "preclinical stage" of Alzheimer's disease, while there is an opportunity to intervene prior to the onset of substantial neuronal loss and clinical impairment. "Because there are currently no disease-modifying therapies for Alzheimer's disease, there is a critical need to identify [potential risk](#)-altering factors that might delay progression of the disease," says Chhatwal.

The Harvard Aging Brain Study at MGH assessed physical activity in its participants—182 normal older adults, including those with elevated b-amyloid who were judged at high-risk of cognitive decline—through hip-mounted pedometers which counted the number of steps walked during the course of the day.

"Beneficial effects were seen at even modest levels of physical [activity](#), but were most prominent at around 8,900 steps, which is only slightly less than the 10,000 many of us strive to achieve daily," notes co-author Reisa Sperling, MD, director of the Center for Alzheimer's Research and Treatment, Brigham and Women's Hospital and Massachusetts General Hospital and co-principal investigator of the Harvard Aging Brain Study.

Interventional approaches that target [vascular risk factors](#) along with physical exercise have added beneficial properties, she adds, since both operate independently. Vascular risk factors measured by the researchers were drawn from the Framingham Cardiovascular Disease Risk Score Calculator, and include age, sex, weight, smoking/non-smoking, blood pressure, and whether people are on treatment for hypertension.

Through ongoing studies MGH is working to characterize other forms of [physical activity](#) and lifestyle changes that may help retard the progress of Alzheimer's disease. "Beta amyloid and tau protein build-up certainly set the stage for cognitive impairment in later age, but we shouldn't forget that there are steps we can take now to reduce the risk going forward—even in people with build-up of these proteins," says Chhatwal. "Alzheimer's [disease](#) and the emergence of [cognitive decline](#) is multifactorial and demands a multifactorial approach if we hope to change its trajectory."

More information: *JAMA Neurology* (2019). [DOI: 10.1001/jamaneurol.2019.1879](#)

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