

Reduced muscle strength associated with risk for Alzheimer's

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Individuals with weaker muscles appear to have a higher risk for Alzheimer's disease and declines in cognitive function over time, according to a report in the November issue of *Archives of Neurology*.

Alzheimer's disease is characterized by declines in memory and other cognitive (thinking, learning and memory) functions, according to background information in the article. However, it is also associated with other features, such as impaired gait and other motor functions, depression and decreased grip strength.

Patricia A. Boyle, Ph.D., and colleagues at Rush University Medical Center, Chicago, studied 970 [older adults](#) (average age 80.3) who did not have dementia at their initial evaluation. Each participant underwent a structured initial evaluation that included a medical history, 21 tests of cognitive function, neurologic and neuropsychological evaluations and a composite measure of [muscle strength](#) derived from testing in 11 muscle groups. During an average of 3.6 years of follow-up, each participant completed at least one additional identical evaluation.

Over the study period, 138 participants (14.2 percent) developed Alzheimer's disease. Muscle strength scores ranged from -1.6 to 3.3 units; for each one-unit increase at the beginning of the study, older adults had about a 43 percent decrease in the risk of developing Alzheimer's disease during follow-up. Those at the 90th percentile of muscle strength had about a 61 percent reduced risk of developing Alzheimer's disease compared with those in the 10th percentile.

The association between muscle strength and risk for Alzheimer's disease remained even after other factors, including body mass index and physical activity level, were considered. "Because Alzheimer's disease develops slowly over many years and its hallmark is change in cognitive function, we examined the association of muscle strength with [cognitive decline](#)," the authors write. Individuals who were stronger at the beginning of the study experienced a slower rate of decline.

"Finally, in an analysis that excluded participants with dementia or mild cognitive impairment at baseline, muscle strength was associated with the risk of developing mild cognitive impairment, the earliest manifestation of cognitive impairment," the authors write. "Overall, these data show that greater muscle strength is associated with a decreased risk of developing Alzheimer's disease and mild cognitive impairment and suggest that a common pathogenesis may underlie loss of muscle strength and cognition in aging."

The basis for this association is unknown, they note. Possibilities include damage to the mitochondria, which produce energy for the body's cells, that may contribute to loss of both [muscle strength](#) and cognitive function. Alternatively, decreased strength could result from stroke or other disorders of the central nervous system that also may reveal subclinical Alzheimer's disease.

More information: *Arch Neurol.* 2009;66[11]:1339-1344.

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