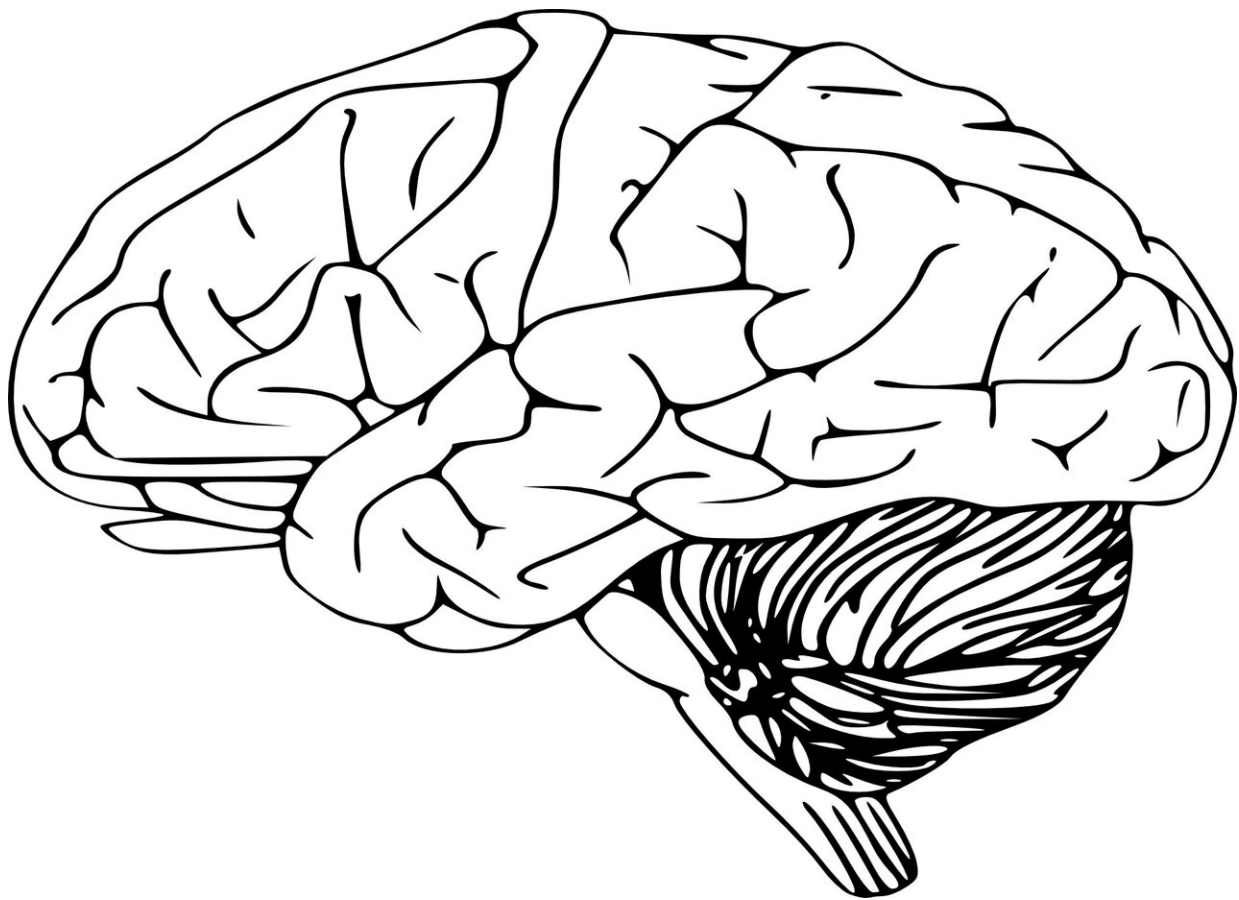


Razor-sharp memory function in older adults linked to faster movement and better mental health, study suggests

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People in their eighties who can recall everyday events and life experiences as well as someone 20 to 30 years younger—known as superagers—are also more likely to have greater movement speed than typical older adults. They also have lower rates of anxiety and depression, according to a new study published in *The Lancet Healthy Longevity* journal.

Most people's memory function gradually declines as they age; however, superagers appear to be able to avoid this age-related deterioration.

First author Marta Garo-Pascual, of the Queen Sofia Foundation Alzheimer Centre, Madrid, said, "We are now closer to solving one of the biggest unanswered questions about superagers: whether they are truly resistant to age-related memory decline or they have coping mechanisms that help them overcome this decline better than their peers."

"Our findings suggest superagers are resistant to these processes, though the precise reasons for this are still unclear. By looking further into links between superaging and movement speed we may be able to gain important insights into the mechanisms behind the preservation of memory function deep into old age."

While previous research has found differences in [brain structure](#) and certain lifestyle factors—such as stronger social connections—among superagers compared with typical older adults, most studies have had small sample sizes and did not track changes over time. As a result, in-depth understanding of demographic, lifestyle, or clinical factors that help to preserve memory function into old age is currently lacking.

To help address these knowledge gaps, the authors conducted one of the largest analyses of superagers to date. Superagers and typical older adults were discovered within an ongoing project designed to help identify

early indicators of Alzheimer's disease. The Vallecas Project cohort in Madrid is composed of people aged 69 to 86 years with no neurological or severe psychiatric disorders.

Of the cohort's 1,213 participants, recruited between 2011 and 2014, 64 superagers and 55 typical older adults, performing well on several cognitive tasks but not displaying superager memory ability, were identified and included in the new study.

Superagers and typical older adults were identified based on their performance in the Free and Cued Selective Reminding Test (FCSRT), which is used to assess people's memory function. Superagers did at least as well as the average person around 30 years younger with the same [education level](#). Older adults performed within a normal range for their age and education. All typical superagers and normal older adults were 79.5 years or older. Most superagers were women (38/64, 59%), as were most typical older adults (35/55, 64%).

Participants had up to six annual follow-up visits, during which demographic and [lifestyle factors](#) were recorded. Participants also underwent MRI scans to measure gray matter volume and completed a range of clinical tests. Blood samples were taken to screen for biomarkers for neurodegenerative disease and a key genetic risk factor for Alzheimer's disease. A machine learning computer model including 89 demographic, lifestyle, and clinical predictors was used to identify factors associated with superagers.

In line with previous studies, MRI scans showed superagers to have more gray matter—tissue vital for normal brain function—in key brain areas involved in memory, and also in a part of the brain involved in movement. Superagers' overall level of gray matter in key areas also degenerated more slowly over five years than in typical older adults.

Using the machine learning computer model, the authors found faster movement speed and better [mental health](#) were the factors most often associated with superagers.

Superagers performed better in the Timed Up and Go Test—which gauges people's mobility—and a finger tapping test that measures fine motor function, indicating they have better mobility, agility, and balance than do typical older adults. This observation was made despite no differences in self-reported exercise levels between superagers and typical older adults.

In clinical tests to measure levels of anxiety and depression, superagers scored lower than typical older adults. Previous research suggests depression and anxiety can impair performance on memory tests in people of all ages, and are risk factors for developing dementia.

Senior author Dr. Bryan Strange, of the Universidad Politécnica de Madrid, said, "Though superagers report similar activity levels to typical older people, it's possible they do more physically demanding activities like gardening or stair climbing. From [lower blood pressure](#) and obesity levels to increased [blood flow](#) to the brain, there are many direct and indirect benefits of being physically active that may contribute to improved cognitive abilities in old age."

"We have shown before that when young adults make movements at the same time as seeing pictures, they are more likely to later remember the picture than if they don't move. It's also possible that having better brain health in the first place may be what's responsible for superagers having faster movement speed."

"Further research in these areas may ultimately reveal ways to help preserve memory function in more older people. What we have, however, discovered is that there is an overlap between risk or protective

factors for dementia and those associated with superaging (such as blood pressure, glucose control and mental health)."

"This raises a possibility that some putative risk factors for dementia are, in fact, contributing to age-related decline in memory-related brain activity that may act in parallel or additively with dementia pathophysiology to amplify memory impairment."

Other self-reported differences were also observed, including that superagers' lifestyles in midlife were generally more active, were satisfied with their sleep duration, and were more likely to have a musical background—either taught or amateur—than did typical older adults. Superagers also demonstrated greater independence in their day-to-day living and scored higher in intelligence tests.

Blood sample analysis indicated that superagers have lower levels of biomarkers for neurodegeneration than do typical older adults. There were also no differences found between them based on the presence of a major genetic risk factor for Alzheimer's disease, called APOE e4.

The authors acknowledge some limitations to their study. As with any observational study, it is not possible to say whether the factors reported have any direct effect on superaging. Despite using 89 variables, the machine learning model was only able to distinguish superagers from typical older adults around 66% of the time, indicating that additional factors—possibly genetic—are linked with superaging. Further research into overlap between genetic links with superaging and genes associated with fast muscle movements among the elderly could help to narrow the search.

Writing in a linked Comment, Alexandra Touroutoglou, Bonnie Wong, and Joseph M Andreano, of Harvard University, who were not involved in the study, said, "The findings of Garo-Pascual and colleagues study

are consistent with reports of resilience to Alzheimer's disease in superaging, although the mechanisms underlying this resilience remain unknown. More efforts are needed to refine and harmonize definitions of superaging in multisite studies using large and diverse cohorts. Large-scale studies will allow further exploration of resilience factors in superagers, which could lead to new insights in the prevention of [age-related memory decline](#)."

More information: Marta Garo-Pascual et al, Brain structure and phenotypic profile of superagers compared with age-matched older adults: a longitudinal analysis from the Vallecas Project, *The Lancet Healthy Longevity* (2023). [www.thelancet.com/journals/lan ...](http://www.thelancet.com/journals/lan...)
[https://doi.org/10.1016/S2666-7568\(23\)00079-X/fulltext](https://doi.org/10.1016/S2666-7568(23)00079-X/fulltext)

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