

Masters Athletes Have Superior Brain Function

Years of exercise preserve cognitive abilities.

By [Michelle Hamilton](#)

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Forget gray hair and slower race times. Science, once again, offers considerable consolation for the aging athlete. Two recently published studies add to the growing body of evidence that regular exercise preserves brain function, including memory, and lowers the risk of dementia and Alzheimer's disease.

The two studies examined the brains of 10 masters athletes and 10 sedentary but otherwise healthy older adults. The athletes—regionally and nationally ranked runners recruited from running clubs and races—were age 72 on average and had been exercising for 15 or more years. The inactive adults had an average age of 74.

[The first study](#) compared the brain structure and cognitive abilities of the two groups. [The second](#) attempted to determine why the master athletes outperformed their contemporaries—and a younger control group—on some cognitive tests in the first study.

MRI scans in the first study showed that all the older adults had less gray matter than the nine young adults who served as a control group (average age 27). But the masters athletes had higher concentrations of both gray and white matter than their sedentary counterparts in key areas that

control movement, memory and perception. White matter transmits messages between gray matter, the brain's outer layer where information is processed.

In the first study, the masters group scored higher than the sedentary group in cognitive tests involving language. They also outperformed the sedentary and the younger control groups on test for "working memory," the parts of the brain responsible for attention, multi-tasking and decision-making.

"That these masters athletes who were in their 70s were performing as well as the young controls is massively impressive already, but that they out-performed the young in a few categories, that's the big picture here," says Benjamin Tseng, Ph.D., a researcher in the Exercise and Environmental Medicine lab at Texas Health Presbyterian Hospital in Dallas and the lead author of both studies.

The second study, published in the journal *NeuroImage*, found that the white matter of older athletes was healthier than the sedentary group's.

"White matter impacts how quickly someone can retrieve a piece of information and how well they can solve a problem," says Tseng. "While brain tissue volume is important, the integrity of the white matter fiber tracts is just as critical."

The results suggest that older athletes have a lower risk for dementia and Alzheimer's disease, according to Tseng. But he emphasizes the key message here is the extraordinary benefits of long-term exercise—and that's it's never too late to start.

"Brain plasticity [changes] can happen even later in life and that's an important message from the study," he says, noting that some of the athletes began running in their 40s and 50s.

Was it the number of year or the frequency and intensity that lead to better brain health? It's unclear, says Tseng, but likely a combination of consistency over time.

Tseng says it's not just the exercise that helps. "Being out and about is very good for your brain," he says. "The social interactions, meeting new people, seeing new places all stimulate the brain."