

Regular aerobic exercise boosts memory area of brain in older women

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Regular aerobic exercise seems to boost the size of the area of the brain (hippocampus) involved in verbal memory and learning among women whose intellectual capacity has been affected by age, indicates a small study published online in the British Journal of Sports Medicine.

The hippocampus has become a focus of interest in dementia research because it is the area of the brain involved in verbal memory and learning, but it is very sensitive to the effects of aging and neurological damage.

The researchers tested the impact of different types of exercise on the hippocampal volume of 86 women who said they had mild memory problems, known as mild cognitive impairment -- and a common risk factor for dementia.

All the women were aged between 70 and 80 years old and were living independently at home.

Roughly equal numbers of them were assigned to either twice weekly hour long sessions of aerobic training (brisk walking); or resistance training, such as lunges, squats, and weights; or balance and muscle toning exercises, for a period of six months.

The size of their hippocampus was assessed at the start and the end of the six month period by means of an MRI scan, and their verbal memory and learning capacity was assessed before and afterward using a validated test (RAVLT).

Only 29 of the women had before and after MRI scans, but the results showed that the total volume of the hippocampus in the group who had completed the full six months of aerobic training was significantly larger than that of those who had lasted the course doing balance and muscle toning exercises.

No such difference in hippocampal volume was seen in those doing resistance training compared with the balance and muscle toning group.

However, despite an earlier finding in the same sample of women that aerobic exercise improved verbal memory, there was some evidence to suggest that an increase in hippocampal volume was associated with poorer verbal memory.

This suggests that the relationship between brain volume and cognitive performance is complex, and requires further research, say the authors.

But at the very least, aerobic exercise seems to be able to slow the shrinkage of the hippocampus and maintain the volume in a group of women who are at risk of developing dementia, they say.

And they recommend regular aerobic exercise to stave off mild cognitive decline, which is especially important, given the mounting evidence showing that regular exercise is good for cognitive function and overall brain health, and the rising toll of dementia.

Worldwide, one new case of dementia is diagnosed every four seconds, with the number of those afflicted set to rise to more than 115 million by 2050, they point out.

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Journal Reference:

1. L. F. ten Brinke, N. Bolandzadeh, L. S. Nagamatsu, C. L. Hsu, J. C. Davis, K. Miran-Khan, T. Liu-Ambrose. **Aerobic exercise increases hippocampal volume in older women with probable mild cognitive impairment: a 6-month randomised controlled trial.** *British Journal of Sports Medicine*, 2014; DOI: [10.1136/bjsports-2013-093184](https://doi.org/10.1136/bjsports-2013-093184)
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