

Research finds exercise has a significant impact on immune cells that support brain function

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New research published in *Aging Cell* provides insights into how exercise may help to prevent or slow cognitive decline during aging.

For the study, investigators assessed the expression of genes in [individual cells](#) in the brains of mice. The team found that exercise has a significant impact on [gene expression](#) in microglia, the [immune cells](#) of the central nervous system that support brain function. Specifically, the group found that exercise reverts the gene expression patterns of aged microglia to patterns seen in young microglia.

Treatments that depleted microglia revealed that these cells are required for the stimulatory effects of exercise on the formation of new neurons in the brain's hippocampus, a region involved in memory, learning, and emotion.

The scientists also found that allowing mice access to a running wheel prevented and/or reduced the presence of T cells in the hippocampus during aging. These immune cells are not typically found in the brain during youth, but they increase with age.

"We were both surprised and excited about the extent to which [physical activity](#) rejuvenates and transforms the composition of immune cells within the brain, in particular the way in which it was able to reverse the negative impacts of aging," said co-corresponding author Jana Vukovic, Ph.D., of The University of Queensland, in Australia.

"It highlights the importance of normalizing and facilitating access to tailored exercise programs. Our findings should help [different industries](#) to design interventions for elderly individuals who are looking to maintain or improve both their physical and mental capabilities."

More information: Exercise rejuvenates microglia and reverses T cell accumulation in the aged female mouse brain, *Aging Cell* (2024). [DOI: 10.1111/accel.14172](#)

Provided by Wiley

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