

Dementia fighter: Orienteering helps brain and body alike, with greater benefits for those who move quickest

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A new study finds orienteering helps both brain and body, with greater benefits for those who move quickest. Credit: McMaster University

The sport of orienteering, which simultaneously combines exercise with

challenging navigation, may be better for the brain than exercise alone, according to new research from kinesiologists at McMaster University.

In fact, the more vigorous the orienteering, the greater the benefits, which could be used to fight [cognitive decline](#), dementia and catastrophic diseases such as Alzheimer's.

The study, a follow-up to [research published in 2023](#), examined the cognitive effects of orienteering at different levels of intensity.

The researchers focused on orienteering because it requires athletes to navigate quickly through a series of checkpoints across an unknown terrain, using only a map and compass.

Through focused attention and deduction, orienteers use [spatial information](#) to make quick decisions while moving through a course.

This form of navigation employs the hippocampus, an area of the brain which is more susceptible to [age-related decline](#) than others.

Degeneration in this region can impair learning, memory and spatial cognition.

"Remarkably, even a single orienteering session improved spatial memory in our study participants," says lead author Emma Waddington, a graduate student in the Department of Kinesiology at McMaster who conducted the work with colleagues at Western University.

"This suggests that participating in orienteering, even infrequently, could enhance spatial abilities, with the potential to delay their decline with age."

For the study, published in the journal [PLOS One](#), groups of active, healthy young adults with no orienteering experience navigated a course

on the McMaster campus, some by walking and others by running. A control group exercised vigorously without having to navigate.

Using [blood samples](#), researchers measured participants' levels of lactate, an indicator of exercise intensity, and brain-derived neurotrophic factor (BDNF), a promoter of brain plasticity. They tested memory performance before and after the sessions.

Researchers found that running increased lactate, BDNF and memory to a greater degree than walking, with particular benefits for spatial memory among those running while orienteering.

Losing the ability to find one's way is among the earliest and most common symptoms of Alzheimer's disease, which affects half of all afflicted individuals, even in the mildest stage of the disease.

"With no known cure for dementia, [preventative measures](#) that can help to stave off age-related cognitive decline are essential," says Jennifer Heisz, Canada Research Chair in Brain Health and Aging at McMaster University, who supervised the research.

Modern-day dependency on vehicles featuring navigation guided by GPS may mean that most people don't use their wayfinding skills, possibly leading to [spatial memory](#) deficits and a diminished sense of direction, which orienteering could revive, she says.

Exploring the long-term effects of orienteering over time on human cognition and in different age groups is an important area for future study, the researchers say.

More information: Emma E. Waddington et al, Orienteering

combines vigorous-intensity exercise with navigation to improve human cognition and increase brain-derived neurotrophic factor, *PLOS ONE* (2024). [DOI: 10.1371/journal.pone.0303785](https://doi.org/10.1371/journal.pone.0303785)

Provided by McMaster University

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