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Video Games Offer Promising Way To Tackle Early Alzheimer's Signs

By [StudyFinds Analysis](#) · Reviewed by [Steve Fink](#)

Research led by Patrick Manser (ETH Zurich)

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In A Nutshell

- A small Swiss trial found that older adults with mild cognitive impairment who played a “serious exergame” program (*Brain-IT*) for 12 weeks showed increases in brain volume in regions tied to memory.
- Brain scans revealed protective effects on both gray and white matter, with hippocampal and thalamic volume changes weakly linked to improved delayed memory.
- Participants trained nearly six times a week on average, combining movement, puzzles, and breathing exercises at home.
- The findings are exploratory but point to a potential new, accessible way to support brain health in early Alzheimer’s disease.

ZURICH, Switzerland — Playing specially designed video games might do more than entertain older adults with memory problems. A new study suggests these games could potentially help protect brain regions vulnerable to early Alzheimer’s disease, though the research is still exploratory.

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Scientists found that people with [mild cognitive impairment](#) who played exergames (video games that combine physical movement with thinking tasks) showed increases in brain volume in areas crucial for memory. Some of these brain changes were also weakly linked with better performance on memory tests.



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How Doctors Turned Games Into Medicine

Researchers studied 30 older adults with an average age of 72 who had mild neurocognitive disorder, the medical term for mild cognitive impairment. Most participants (87%) had laboratory evidence pointing to the cause of their memory problems, with 62% showing signs of [Alzheimer's disease](#).

Half the group received their usual medical care. The other half also used a gaming system called *Brain-IT* at home. Players stood on a pressure-sensitive platform and controlled games by moving their bodies while solving puzzles. The system also included breathing exercises designed to help with stress and focus.

Each participant was instructed to train at least five times a week for 12 weeks, with each session lasting at least 24 minutes. On average, participants completed about 71 sessions, or nearly six per week. The games adjusted automatically depending on each person's performance, creating a personalized workout for both body and brain.



By stepping to the right, a study participant confirms that the product was on the shopping list. (Credit: Jonas Weibel)

Brain Scans Show Volume Increases in Memory-Linked Regions

After three months, brain scans revealed differences between the groups. People who used the gaming system showed increases in [gray matter](#) volume in several brain regions, including the hippocampus (the brain's main memory center), thalamus, and anterior cingulate cortex.

The hippocampus findings are especially notable. In Alzheimer's disease, this region [typically shrinks](#) as memory declines. Seeing increases in hippocampal volume runs counter to what doctors usually expect.

The study, published in [Alzheimer's Research & Therapy](#), also found signals of a protective effect on the brain's [white matter](#), the internal wiring that helps different regions communicate. Advanced imaging showed higher integrity measures in the intervention group compared to controls, suggesting preserved connectivity.

Importantly, increases in hippocampal and thalamic volume were weakly correlated with better scores on delayed memory tasks. The authors stress these were modest links, not proof that every brain change led to a memory gain.

More Engaging Than Exercise Alone

Previous research has shown that physical exercise benefits [brain health](#). However, this study suggests that combining movement with thinking challenges and technology may offer additional benefits.

The training delivered multiple forms of stimulation — visual, auditory, and tactile feedback — that required players to coordinate their movements

while solving problems. This multisensory approach may help the brain form new connections more effectively than traditional exercise programs.

Participants stuck with the program. Across 12 weeks, they logged nearly 1,700 minutes of training, showing they found the games engaging rather than tedious.

The study does have limitations. With only 30 people, the results need confirmation in larger trials. The three-month timeframe doesn't show whether benefits last long-term or require ongoing training. The group was predominantly male, and the small sample size means that the results may not be applicable to everyone.

Researchers also couldn't tease apart which component was most helpful: the physical activity, the mental challenges, the breathing exercises, or the combination.

A Promising Step Forward

Despite these limitations, the findings are encouraging. Hippocampal shrinkage has long been considered an inevitable part of Alzheimer's [progression](#). Finding an intervention that may help counteract this shrinkage represents a novel approach to treating [memory problems](#).

The technology-based approach also has practical advantages. Unlike many medical treatments, gaming can happen at home, making it potentially more accessible. The system automatically adjusts difficulty and tracks progress, allowing it to be standardized while still tailored to individuals.

Right now, treatments for [mild cognitive impairment](#) mainly focus on slowing decline rather than improving function. This exploratory research

suggests that with the right approach, partial recovery of memory and brain structure might be possible.

Paper Summary

Methodology

Randomized controlled trial with 41 older adults with mild neurocognitive disorder; 30 completed (average age 72, 27% female). Participants were assigned to either usual care or usual care plus *Brain-IT* exergame training at home (≥ 24 minutes per session, ≥ 5 times weekly, for 12 weeks). MRI scans measured gray and white matter volumes, and cognitive tests assessed global cognition and verbal memory.

Results

Participants using *Brain-IT* showed moderate to large increases in hippocampal, thalamic, and anterior cingulate cortex volume compared to controls. White matter integrity also showed protective effects in several regions. These structural changes were weakly correlated with better delayed memory scores.

Limitations

Small sample size, exploratory design, short timeframe, and limited generalizability. The study couldn't isolate which component of the intervention — physical activity, cognitive challenges, or breathing exercises — drove the benefits.

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