Brain-training Research Notes

The benefit of certain activities is their ability to tap into multiple areas of brain engagement (memory, critical thinking, etc.), says [**Michael Cuccaro, Ph.D.,**](https://med.miami.edu/faculty/michael-cuccaro-phd) co-director, John P. Hussman Institute for Human Genomics at The University of Miami Miller School of Medicine. “Our brains are quick to figure out ways to perform certain activities to allow us to conserve resources. Those activities that are fairly unchanging will not provide benefit over time.”

Puzzles and games, particularly those that require critical thinking, problem-solving, and memory recall, have been associated with a reduced risk of dementia, says Patrick Porter, Ph.D, neuroscience expert and founder of [**BrainTap**](https://braintap.com/). “These activities stimulate the brain by challenging it to find patterns, make connections, and think creatively. They require mental flexibility and encourage the brain to adapt and reorganize neural networks, enhancing cognitive reserve.”

A researcher describing their work: “I think this study supports the importance of integrating games, puzzles, and challenges into social settings.”

In another study, 107 older adults with mild cognitive impairment played games four times a week. One group used the cognitive training program Lumosity and the other group worked on a digital crossword puzzle. Researchers followed the participants for more than a year, assessing their cognitive and functional skills and measuring their brain volume with MRIs throughout the study.

Interestingly, the older adults who did the crossword puzzles regularly had significantly less cognitive decline, better functional skills and maintained more brain volume compared to those assigned to play the brain training game. Researchers did conclude that more research is needed to better understand why the crossword puzzles worked better.

For their analysis, researchers combined the evidence from 33 studies with about 2,000 participants. They found that cognitive training — typically in the form of online computer games designed for older adults — may lead to some benefits in overall cognition compared to no treatment. They also found some improvements in verbal fluency. It appears these improvements can last for a few months or more. The review did not find that cognitive training was better than other active treatments for mild dementia. Researchers concluded this is an area that requires more extensive investigation.

In terms of [memory games](https://www.goodrx.com/health-topic/senior-health/do-memory-games-work) for dementia on smartphones, none are FDA-approved or [FDA-cleared](https://www.goodrx.com/healthcare-access/medication-education/fda-approval-vs-fda-clearance) for this purpose. These brain training apps have no clear clinical evidence for helping with or preventing dementia. Some companies actually [got in trouble](https://www.ftc.gov/news-events/news/press-releases/2016/01/lumosity-pay-2-million-settle-ftc-deceptive-advertising-charges-its-brain-training-program) for making these claims in the past.

[30 Best Games For The Brain to Unlock Your Potential (2024) (scienceofpeople.com)](https://www.scienceofpeople.com/brain-games/)

This site is a treasure trove of information and links to existing games.

It seems that crossword puzzles are effective and there is some research to back it up. Similar for bingo and card matching.

Some potential directions:

1. Sound Memory: Play a sequence of sounds and ask users to repeat the sequence, like BopIt. A music element? V

2. <https://skribbl.io/> A multiplayer drawing/guessing game. Super fun. Hurdles of how to make drawing easier.

3. Incorporate gesture into one of the staples, like Crossword or Card Matching.

4. Gesture-based Tetris. Learning a new game conceptually is hard. Try to keep it more classic.

5. One study found Mario 64 is effective. Maybe something like that with a focus on puzzles? Or is that too much? It might feel like a whole game within an app, as opposed to a mini-game for brain-training.

Nature theme everything?