

# Memory training video games can increase brain power

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Image credit: Openeducation

(Medical Xpress) -- In a recent study published in the *Proceedings of the National Academy of Sciences*, Dr. Susanne Jaeggi from the University of Michigan looked at the use of specialized video games have the ability to help children solve problems easier.

While games like [Brain Age](#) claim to give your brain the workout it needs, there is no evidence that these types of games really do the job, though they may be on the right track.

The study led by Jaeggi looked at 62 school children between the ages of

eight and nine. The children were divided into two groups with one half of them receiving 15 minutes a day of a specialized [video game workout](#) that tested their working memory.

The [working memory](#) is the brain's ability to remember information in order to solve a problem. For example, when solving simple mathematical problems such as  $25 \times 4$ , the brain must first remember simple parts such as  $2 \times 4$  and  $5 \times 4$  in order to solve the problem.

During the test, the children receiving the daily game were shown a picture of a frog on a lily pad. This image was shown in one of six sections for a period of three seconds. Within a few sequences of images, the frog was shown again. The children had to remember which spot they had originally seen the frog and click a button if the frog was shown in the same section. As the children became better at the test, the game became more difficult and stretched the memory of the children.

After the memory tests, all children, including the ones who had not received the memory test, were administered fluid intelligence tests. The results showed that the children who had improved the most on the memory tests scored the highest results on the fluid tests, even a full three months later.

The memory testing did not work well for all children however and some even failed to improve. Jaeggi believes that this can be contributed to a few different possible explanations. The memory tests were frustrating for some [children](#), while for others she believes motivation may have been a reason behind a failure to improve. Another recent study on IQ testing, [shown here](#), shows that motivation plays a role and she believes that this can be seen here as well.

While this study does not prove that brain training through video games will improve a person's ability to learn, Jaeggi believes it shows that it is

possible.

**More information:** Short- and long-term benefits of cognitive training, *PNAS*, Published online before print June 13, 2011, [doi: 10.1073/pnas.1103228108](https://doi.org/10.1073/pnas.1103228108)

## Abstract

Does cognitive training work? There are numerous commercial training interventions claiming to improve general mental capacity; however, the scientific evidence for such claims is sparse. Nevertheless, there is accumulating evidence that certain cognitive interventions are effective. Here we provide evidence for the effectiveness of cognitive (often called “brain”) training. However, we demonstrate that there are important individual differences that determine training and transfer. We trained elementary and middle school children by means of a videogame-like working memory task. We found that only children who considerably improved on the training task showed a performance increase on untrained fluid intelligence tasks. This improvement was larger than the improvement of a control group who trained on a knowledge-based task that did not engage working memory; further, this differential pattern remained intact even after a 3-mo hiatus from training. We conclude that cognitive training can be effective and long-lasting, but that there are limiting factors that must be considered to evaluate the effects of this training, one of which is individual differences in training performance. We propose that future research should not investigate whether cognitive training works, but rather should determine what training regimens and what training conditions result in the best transfer effects, investigate the underlying neural and cognitive mechanisms, and finally, investigate for whom cognitive training is most useful.

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