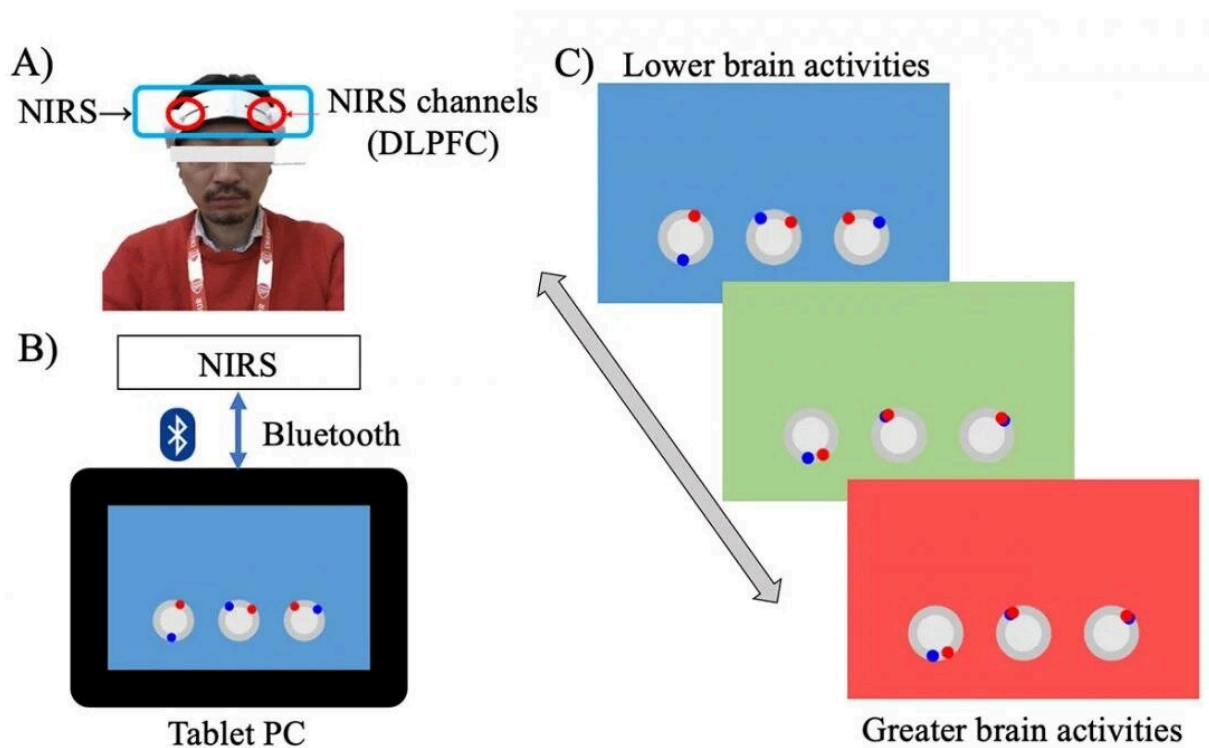


# Brain training with neurofeedback shows enhanced benefits on cognitive functions

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The new brain training with neurofeedback system. Credit: Rui Nouchi

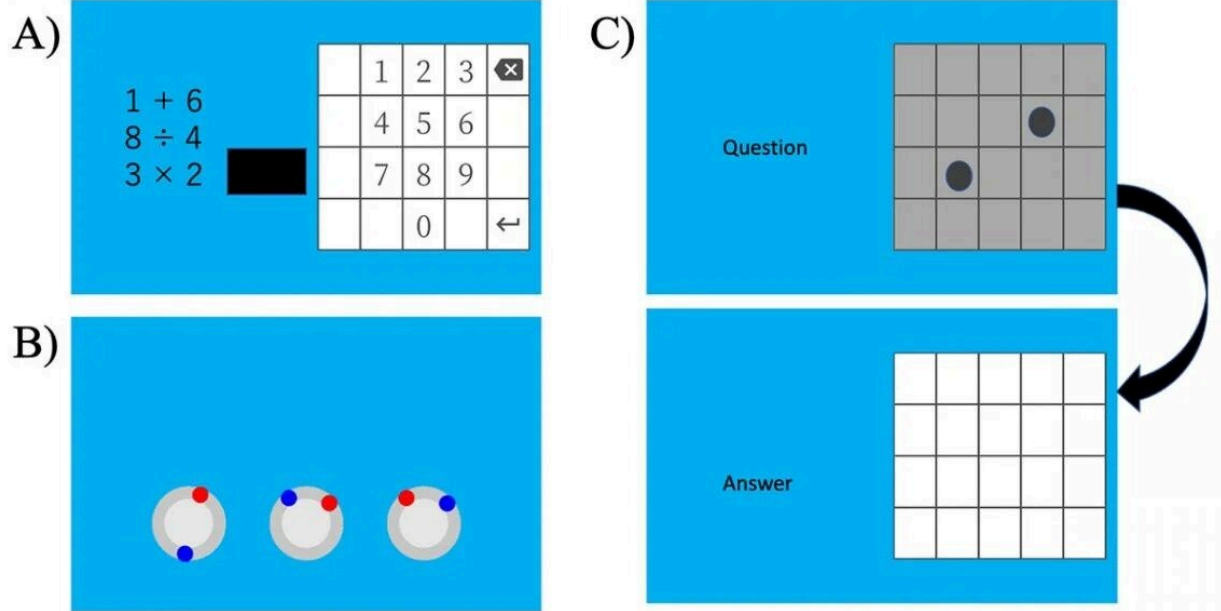
Brain training is structured and repeated practice that aims to improve cognitive functions. Studies on the impacts of brain training have produced mixed results. Nevertheless, researchers are still interested in exploring brain training's effects.

Now, a research group led by associate professor Rui Nouchi and professor Ryuta Kawashima from Tohoku University's Institute of Development, Aging and Cancer has developed a new training method involving neurofeedback, allowing trainees to monitor their [brain activity](#) as they perform tasks.

Neurofeedback has been used for decades to reinforce healthy [brain](#) functions. With previous research reporting a positive correlation between enhanced brain activities during brain training and improved cognitive functions, the research team was eager to discover whether brain training with greater brain activity via neurofeedback would positively impact cognitive performance.

To do so, participants in the study were divided into three groups. One group received brain training with neurofeedback; another received brain training only; and the last group were simply asked to play a puzzle game for 20 minutes every day for four weeks.

The brain training trained participants' processing speed, memory span, and attention by doing three different games in each category. The group receiving neurofeedback saw their screen color change according to how well they performed. They were able to freely increase their brain activity according to their responses.



Examples of the brain training games participants engaged in. Credit: Rui Nouchi

"We found that participants who did brain training with neurofeedback showed considerable improvements in [episodic memory](#), working memory, and attention," said Nouchi.

Details of the study were published in the journal *Brain Sciences*.

Nouchi stresses that more engagement whilst brain training might be the key to unlocking its benefits. "Our discovery points to the fact that greater brain activity during [brain training](#) is an important factor for improving cognitive functions."

**More information:** Rui Nouchi et al, Cognitive Training with Neurofeedback Using NIRS Improved Cognitive Functions in Young Adults: Evidence from a Randomized Controlled Trial, *Brain Sciences*

(2021). [DOI: 10.3390/brainsci12010005](https://doi.org/10.3390/brainsci12010005)

Provided by Tohoku University

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