

Targeted brain training may help you multitask better

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The area of the brain involved in multitasking and ways to train it have been identified by a research team at the IUGM Institut universitaire de gériatrie de Montréal and the University of Montreal.

The research includes a model to better predict the effectiveness of this [training](#). Cooking while having a conversation, watching a movie while browsing the Web, or driving while listening to a radio show – [multitasking](#) is an essential skill in our daily lives. Unfortunately, it decreases with age, which makes it harder for seniors to keep up, causes them stress, and decreases their confidence. Many commercial software applications promise to improve this ability through exercises. But are these exercises truly effective, and how do they work on the [brain](#)? The team addresses these issues in two papers published in *AGE* and *PLOS ONE*.

Targeted Action for a Specific Result

The findings are important because they may help scientists develop better targeted cognitive stimulation programs or improve existing training programs. Specialists sometimes question the

usefulness of exercises that may be ineffective simply because they are poorly structured. "To improve your cardiovascular fitness, most people know you need to run laps on the track and not work on your flexibility. But the way targeted training correlates to cognition has been a mystery for a long time. Our work shows that there is also an association between the type of cognitive training performed and the resulting effect. This is true for healthy seniors who want to improve their attention or memory and is particularly important for patients who suffer from damage in specific areas of the brain. We therefore need to better understand the ways to activate certain areas of the brain and target this action to get specific results," explained Sylvie Belleville, who led the research.

Researchers are now better able to map these effects on the functioning of very specific areas of the brain. Will we eventually be able to adapt the structure of our brains through highly targeted training? "We have a long road ahead to get to that point, and we don't know for sure if that would indeed be a desirable outcome. However, our research findings can be used right away to improve the daily lives of aging adults as well as people who suffer from [brain damage](#)," Dr. Belleville said.

The Right Combination of Plasticity and Attentional Control

In one of the studies, 48 seniors were randomly allocated to training that either worked on plasticity and attentional control or only involved simple practice. The researchers used functional magnetic resonance imaging to evaluate the impact of this training on various types of attentional tasks and on brain function. The team showed that training on plasticity and attentional control helped the participants develop their ability to multitask. However, performing two tasks simultaneously was not what improved this skill. For the exercises, the research participants instead had to modulate the

amount of attention given to each task. They were first asked to devote 80% of their attention to task A and 20% to task B and then change the ratio to 50:50 or 20:80. This training was the only type that increased functioning in the middle prefrontal region, or the area known to be responsible for multitasking abilities and whose activation decreases with age. The researchers used this data to create a predictive model of the effects of [cognitive training](#) on the brain based on the subjects' characteristics.

Provided by University of Montreal

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