

# At-home cognitive remediation may help cognitive symptoms in multiple sclerosis

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Demyelination by MS. The CD68 colored tissue shows several macrophages in the area of the lesion. Original scale 1:100. Credit: [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/) Marvin 101/Wikipedia

Cognitive impairment is one of the core symptoms of multiple sclerosis (MS)—and one of its most troubling concerns for many people with the condition. Now, a new study from NYU Langone Medical Center may

provide hope for symptomatic relief for some of the cognitive issues associated with the neurological disease.

In a randomized controlled trial, people with MS who used a computer-based cognitive remediation training program at home for 12 weeks had significantly higher cognitive test scores than those who used a placebo computer program. The [new research was presented April 17](#) at the American Academy of Neurology's 68th Annual Meeting in Vancouver.

"This trial demonstrates that computer-based cognitive remediation accessed from home can be effective in improving cognitive symptoms for individuals with MS," says lead study author Leigh Charvet, PhD, an associate professor in the Department of Neurology, and director of MS Research at NYU Langone's Multiple Sclerosis Comprehensive Care Center. "The remote delivery of an at-home test and findings of cognitive benefit may also be generalizable to other neurological conditions in which cognitive function is compromised."

Cognitive problems in MS may impact memory, attention and concentration, information processing, verbal fluency and executive functioning, according to the National Multiple Sclerosis Society. Problems people with MS may experience include difficulty finding the right words and keeping up in conversations, or trouble remembering routines at home or work. These changes may be linked to atrophy and volume loss in the brain's grey matter, according to the researchers.

Previous studies showed that cognitive remediation—or training programs to reverse cognitive declines, offer potential benefits for people with MS. But, to ensure maximum benefit, many of these programs require in-person treatment sessions in an outpatient setting multiple times a week for at least an hour. This can prove difficult for those with MS who are not able to take time off from jobs, or those with disease-associated disability who cannot easily get to a physician's

office.

To test the efficacy of an at-home cognitive remediation treatment intervention, 135 people with MS who were experiencing [cognitive problems](#) were randomized to receive either the active, computerized training program (71 participants) or a placebo program with ordinary computer games (64 participants).

The cognitive remediation training program used in the study was a research version of Posit Science's Brain HQ, in which patients are instructed to play a series of games and tasks. Participants in both groups were asked to train for one hour per day, five days a week for 12 weeks. Technical support and weekly coaching sessions were provided by a study technician.

People with MS who engaged in cognitive remediation through Brain HQ improved 29 percent on neuropsychological tests, compared to 15 percent improvement for those in the placebo group. While improvement was noted across a range of specific cognitive measures in the active group, there were no improvements measured in activities of daily living.

The researchers also argue that the program's superiority over the placebo group was clear, and the active group in the study probably would have had even greater gains had they been as compliant in the study as the placebo group, which engaged with the computer program on average 19 hours more than their study counterparts.

"Many patients with MS don't have the time or resources to get to the clinic several times a week for cognitive remediation, and this research shows remotely- supervised cognitive training can be successfully provided to individuals with MS from home," says senior study author Lauren B. Krupp, MD, professor of neurology and director of the

Multiple Sclerosis Comprehensive Care Center. "Future studies will look at which patients with MS might respond most to cognitive remediation, and whether these improvements can be enhanced or sustained over longer periods of time."

Provided by New York University School of Medicine

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