

Noninvasive brain stimulation leads to fine motor improvement after stroke

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A blood clot forming in the carotid artery. Credit: American Heart Association

Stroke is common and accompanied by complex disabilities—such as lower and upper limb disability, speech impairment, and chronic post-stroke pain. An analysis of published studies found that non-invasive

brain stimulation may have beneficial effects on fine motor movement in stroke patients and healthy participants. The findings are published in the *European Journal of Neurology*.

The meta-analysis examined the effects of two common non-invasive brain stimulation technologies—transcranial direct current stimulation (tDCS) and transcranial magnetic stimulation (TMS)—on hand and finger movement, like picking up objects, writing, or similarly precise tasks that are often affected after a stroke.

The investigators observed statistically significant gains in fine motor movement in [stroke patients](#) following tDCS and TMS; however, time since onset of [stroke](#) event, the severity of impairment, combination of non-invasive brain stimulation with other interventions, and risk of bias were all relevant factors. Fine motor improvement in healthy participants' non-dominant hand (a surrogate to an impaired [hand](#)) was also observed.

"Encouragingly, research to refine these gains, understand their impact on lifestyle, and determine best responders to these types of treatments is happening now," said lead author Dr. Anthony O'Brien, of the Spaulding Neuromodulation Center, an affiliate of Harvard Medical School.

More information: A. T. O'Brien et al, Non-invasive brain stimulation for fine motor improvement after stroke: a meta-analysis, *European Journal of Neurology* (2018). [DOI: 10.1111/ene.13643](https://doi.org/10.1111/ene.13643)

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