



## Enhancement Of Motor Recovery Through Left Dorsolateral Prefrontal Cortex Stimulation After Acute Ischemic Stroke

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**Background:** Two previous studies, which investigated transcranial direct current stimulation (tDCS) use in motor recovery after acute ischemic stroke, did not show tDCS to be effective in this regard. We speculated that additional left dorsolateral prefrontal cortex (DLPFC) stimulation may enhance post stroke motor recovery.

**Methods:** In the present randomized clinical trial, 20 acute ischemic stroke patients were recruited. Patients received real motor cortex (M1) stimulation in both arms of the trial. The two arms differed in terms of real vs. sham stimulation over the left DLPFC. Motor component of the Fugl-Meyer upper extremity assessment (FM) and Action Research Arm Test (ARAT) scores were used to assess primary outcomes, and non-linear mixed effects models were used for data analyses.

**Results:** Primary outcome measures improved more and faster among the real stimulation group. During the first days of stimulations, sham group's FM scores increased 1.2 scores per day, while real group's scores increased 1.7 scores per day ( $P = 0.003$ ). In the following days, FM improvement decelerated in both groups. Based on the derived models, a hypothetical stroke patient with baseline FM score of 15 improves to 32 in the sham stimulation group and to 41 in the real stimulation group within the first month after stroke. Models with ARAT scores yielded nearly similar results.

**Conclusion:** The current study results showed that left DLPFC stimulation in conjunction with M1 stimulation resulted in better motor recovery than M1 stimulation alone.

**Key words:** Transcranial direct current stimulation; acute stroke; function recovery; rehabilitation



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