

## **THE ROLE OF TRANSCRANIAL DIRECT CURRENT STIMULATION AND MOTOR SEQUENCE LEARNING IN STROKE REHABILITATION**

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**Introduction:** While there are significant advances in the treatment of acute cerebral ischaemia, rehabilitation is still the core treatment option for stroke patients. The main aim of the standard rehabilitation is the induction of the cortical plasticity using repetitive motor task, which recently was incorporated into computer assisted motor learning. With external stimulation of the brain the cortical excitability can be increased which can possibly modulate plasticity. In our study the effectivity of two new rehabilitation technique, a computer assisted motor sequence learning and an external brain stimulation approach, transcranial direct current stimulation (tDCS), were assessed.

**Methods:** 34 ischaemic stroke patients were randomized into three groups. The first group (n=13) underwent transcranial direct current stimulation and carried out motor sequence learning task, the second group (n=10) performed motor sequence learning task with sham stimulation, the third group (n=11) received only the standard rehabilitation. Patients performed 15 minutes computer assisted visuo-motor sequence learning task. Hand motor function was measured on the first and last day with Jebsen-Taylor test.

**Results:** Hand function as measured on the Jebsen-Taylor test significantly improved in patients in the motor sequence learning and tDCS stimulated groups (tDCS group in five sub-tasks (p0.047), while sham stimulated group in two sub-tasks (p0.011)). On the contrary, standard rehabilitation group did not show any improvement.

**Conclusion:** According to our results, we can conclude that computer assisted motor sequence learning can facilitate the rehabilitation, while tDCS can improve the effect, as part of a combined therapy.

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