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**Transcranial direct current stimulation of the motor cortex in the treatment of chronic nonspecific low back pain: a randomized, double-blind exploratory study.**

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**Abstract**

**OBJECTIVES:**

To test the proof of principle that active anodal transcranial direct current stimulation (tDCS) applied to the motor cortex reduces pain significantly more than sham stimulation in a group of participants with chronic nonspecific low back pain.

**METHODS:**

The study utilized a within-participants sham-controlled, interrupted time series design. A sample of 8 participants was recruited. After 3 days of baseline measures, patients entered a 15-day experimental period (Mondays to Fridays) for 3 consecutive weeks. During this period each patient received sham stimulation daily until a randomly allocated day when active stimulation was commenced. Active stimulation was then given daily for the remaining days of the experimental period. Both the participants and the assessors were blinded. The primary outcomes were average pain intensity and unpleasantness in the last 24 hours measured using a visual analogue scale. Secondary outcomes included self-reported disability, depression and anxiety, a battery of cognitive tests to monitor for unwanted effects of stimulation, and patients' perceptions of whether they had received active or sham stimulation. Data were analyzed using generalized estimating equations.

**RESULTS:**

No significant effect was seen in the primary outcomes between active and sham stimulation (average pain intensity P = 0.821, unpleasantness P = 0.937) or across any other clinical variables. There was evidence that patients may have been able to distinguish between the active and sham conditions (P = 0.035).

**DISCUSSION:**

These results do not provide evidence that tDCS is effective in the treatment of chronic back pain. The use of a small convenience sample limits the generalizability of these findings and precludes definitive conclusions on the efficacy of tDCS in chronic nonspecific low back pain.