Immediate and Sustained Effects of 5-Day transcranial direct current stimulation of the motor cortex in phantom limb pain

Key Take-Away:

The relief from phantom limb pain is linked to increased movement of the phantom limb. The researchers were successful in evaluating the benefits of 5 days treatment with transcranial direct current stimulation (tDCS) in patients with phantom limb pain.

The study explored the analgesic effects of transcranial direct current stimulation (tDCS) over the motor cortex on postamputation phantom limb pain (PLP).

ABSTRACT:

Background:

The study explored the analgesic effects of transcranial direct current stimulation (tDCS) over the motor cortex on postamputation phantom limb pain (PLP).

Methods:

Eight subjects with unilateral lower or upper limb amputation and chronic PLP were enrolled in a crossover, double-blind, sham-controlled treatment program.

For 5 consecutive days, anodal (active or sham) tDCS was applied over the motor cortex for 15 minutes at an intensity of 1.5 mA.

Results:

The 5-day treatment with active, but not sham, tDCS induced a sustained decrease in background PLP and in the frequency of PLP paroxysms, which lasted for 1 week after the end of treatment.

Moreover, on each day of active tDCS, patients reported an immediate PLP relief, along with an increased ability to move their phantom limb. Patients’ immediate responses to sham tDCS, on the contrary, were variable, marked by an increase or decrease of PLP levels from baseline.

Conclusion:

These results show that a 5-day treatment of motor cortex stimulation with tDCS can induce stable relief from PLP in amputees.

Neuromodulation targeting the motor cortex appears to be a promising option for the management of this debilitating neuropathic pain condition, which is often refractory to classic pharmacologic and surgical treatments.