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Abstracts will be considered for both poster and platform presentations

Neurotrauma (TBI, spinal cord injury, etc.)

Objective: Spinal cord injury (SCI) is a devastating ailment that can cause lifelong detriment as patients suffer from varying levels of functional compromise. With a significant population suffering from SCI, up to 300,000 Americans according to the National Spinal Cord Injury Statistical Center, it is imperative that research is completed to aid in recovery and maximizing function in these individuals. The primary objective of this research is to evaluate the effects of a non-invasive form of brain stimulation called transcranial direct current (tDCS) paired with intensive, task-oriented upper extremity motor training in subjects with SCI.

Design: Selected subjects received 12 sessions of sham tDCS paired with task-oriented motor training and 12 sessions of anodal tDCS paired with task-oriented motor training in a cross-over, randomized, double blinded design. Outcome measures for motor performance included Spinal Cord Independence Measure-III (SCIM-III), Canadian Occupational Performance Measure (COPM), and Medical Research Council scale (MRC), administered at baseline, at midpoint, and immediately post-intervention.

Participants/methods: Following written informed consent, two subjects (Age 30 and 62; American Spinal Injury Association Impairment Scale C; neurological level C5-C6) with chronic SCI were enrolled. The intervention comprised 24 sessions of tDCS in conjunction with intensive, task-oriented upper extremity training (3 sessions per week over 8 weeks). tDCS was the only independent variable.

Results: Anodal tDCS yielded greater improvement in SCIM-III, COPM and MRC scores (mean±SE: 4.2±3.0, 2.0±0 and 31.0±2.0, respectively) compared to sham tDCS (mean±SE: -0.5±0.5, 0.3±0.3 and 12.6±4.5, respectively).

Conclusion: This study is the first to evaluate adjuvant effects between tDCS and upper extremity motor training in motor incomplete SCI. We have found evidence supporting tDCS as a relevant intervention to enhance the effects of motor training for people with motor incomplete SCI. Larger trials to substantiate the preliminary findings are warranted.

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