

## **Dose-response relationship of transcutaneous spinal direct current stimulation in healthy humans: A proof of concept study**

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***Abstracts will be considered for both poster and platform presentations***

### ***Neurorehabilitation***

Non-invasive transcranial direct current stimulation has been shown to modulate cortical excitability in various studies. Similarly, recent preliminary studies suggest that transcutaneous spinal direct current stimulation (tsDCS) may engender a modulation effect on spinal and cortical neurons. The purpose of this study was to evaluate the dose-response effects of tsDCS in healthy subjects and thereby lay groundwork for expanding treatment options for patients with spinal cord injury (SCI). Nine healthy subjects received each of the following 2 tsDCS conditions: Anodal and cathodal, in random order with at least 1 week washout period between each session. In order to test safety and dose response, various current intensities were used (2, 2.5 and 3 mA) for 20 minutes. The active electrode was placed vertically over T10-T11, and the reference electrode was placed over the left shoulder. To evaluate corticospinal excitability, motor evoked potentials over soleus muscle elicited by transcranial magnetic stimulation were measured. To assess spinal cord excitability, H- and M- wave over soleus muscle to calculate Hmax/ Mmax ratio were measured. Linear regression showed a dose response with cathodal tsDCS on motor evoked potentials measured from the left leg as well as with anodal tsDCS on Hmax/ Mmax ratio measured from the left leg. These findings indicate tsDCS effects are dose-dependent. These effects should be investigated in a larger sample.