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Transcranial Direct Current Stimulation (tDCS) for Anorexia Nervosa (project no. 85-17)

Authors

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Introduction

In our previous research, we uncovered very distinctive eye movement abnormalities in people with anorexia nervosa (AN) called square wave jerks (SWJs; small, involuntary and unconscious horizontal eye movements). These eye movements are indicative of altered functioning of a midbrain region, called the superior colliculus (SC). The SC plays a key role in the eye movement system, receiving inputs from different brain regions, including the inferior parietal lobule (IPL) to initiate and inhibit eye movements. Findings from our pilot research have also indicated reduced 'functional connectivity' (i.e. communication) between this region and the left IPL in individuals with AN. This is an important finding as these brain regions are not only involved in eye movement production, but also in multi-sensory integration and body image, key deficits, and arguably the driving-force behind AN behaviour.

Objectives

The aim of this study was to determine the efficacy of stimulating the left IPL of the brain with transcranial direct current stimulation (tDCS) to reduce AN symptomatology.

Methods

High-definition tDCS (or sham) was administered to the left IPL in 20 individuals with AN, in a double-blinded randomised controlled pilot and feasibility investigation. It was expected that stimulating the left IPL would project to the SC, and would: 1- increase the functional connectivity between these regions as determined by resting state functional magnetic resonance imaging (fMRI); 2- result in a reduction of SWJs; and 3- result in reduced AN symptomatology. Participants were tested pre-tDCS, post-tDCS (following 10 daily sessions of tDCS), and at 4- and 12-week follow-up. A detailed protocol can be found at: <http://dx.doi.org/10.1002/eat.23146>.

Results

The trial is ongoing. To date, seven participants have successfully completed the trial. As the study is double-blinded, detailed results are not yet available.

Conclusions

This study will provide pilot data to determine the feasibility and acceptability of this treatment, as well as potential efficacy for improving AN symptoms. Results from this trial are anticipated to inform a full-scale randomised controlled trial in the future.

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