Reducing Fatigue Symptoms Using Neurostimulation
Improving Wellbeing Through Home-Based Treatments

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BACKGROUND and RATIONALE

- Increased diagnoses of chronic fatigue after the COVID-19 pandemic
- Reduction in quality of life and early retirement
- Current treatments: antidepressants, CBT, general changes to lifestyle (diet, exercise, sleep patterns)
- tDCS (non-invasive brain stimulation technique) effective in enhancing performance in MS individuals affected by fatigue
- Lab experiments are limited in neurostimulation sessions and not naturalistic

Schematic of tDCS functioning

- Non-invasive
- Inexpensive
- Little-to-no side effects
- Easy to use

Direction of current flow

Cathodal Electrode Anodal Electrode

Neuromodulation

EXPERIMENT 1A

GROUPS

150 participants

Active Sham

EXPERIMENT 1B

Randomly chosen subgroup (42 participants total) from EXPERIMENT 1A to perform computerised task pre-[-T1] and post-stimulation [-T2] period while EEG data is being recorded

- Recording of EEG data to be compared at the two different time points
- Recording of physiological data in parallel with Experiment 1A

EXPERIMENT 1C

- Same subgroup to perform attentional task with EEG recording 3 months after stimulation period end

ANALYSIS and EXPECTED RESULTS

- Two-factor mixed-design 2x3 (group x time) ANOVA
- Pearson’s r correlation and regression analysis: baseline fatigue scores and demographics, post-stimulation outcome, etc.
- What demographic benefits more from tDCS intervention?
- Increase in pre- vs post-stimulation for:
  1. Scores of perceived fatigue
  2. Performance in attentional tasks
  3. Sleep quality scores
- Increase in active vs sham-stimulation for:
  1. Scores of perceived fatigue
  2. Performance in attentional tasks
  3. Sleep quality scores
- Exploratory analysis on oscillations and ERP components

REFERENCES


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