Study Title: Modulating brain activity to improve goal-directed physical activity in older adults

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Statistical Methods

Overall approach: Exploratory analyses will be used to assess outcomes distributions, and any necessary transformations (e.g., to combat significant skew) will be performed prior to estimation of mean treatment effects. Said estimation will use mixed effects linear regression of post-intervention within three days after the last brain stimulation session and again within three days after the last behavior session, with random intercepts and slopes to account for serial correlation in repeated measurements on individuals. Models will control for baseline outcomes in analysis of covariance.

Two-way repeated-measures ANOVA will be used to examine the effect of intervention on primary and secondary functional outcomes. The effect of the 10-session tDCS intervention on the primary functional outcome (daily step count) will be analyzed with a two-way repeated-measures ANOVA. The dependent variable will be *the change in average daily step count from the two-week baseline to each two-week study period of the behavioral intervention.* Model effects included group (tDCS, sham), time (two-week period), and their interaction. The effect of intervention on secondary functional outcomes, which will be collected at baseline, after the two-week brain stimulation intervention, and after the behavioral intervention. Dependent variables will be *the changes in each functional outcome from baseline to each follow-up visit.* The model's effects included group (tDCS, sham), time (post-stim, final) and their interaction.

The feasibility outcomes are the completion rates for the brain stimulation sessions and the behavior sessions, respectively. We will use independent t-tests to examine the differences between two study arms.