

Impact of Repetitive Transcranial Magnetic Stimulation (TMS) on Spike Frequency and Brain Connectivity in Children with Benign Epilepsy with Centrotemporal Spike (BECTS)

Statistical Analysis Plan

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We used the Wilcoxon signed-rank test, a non-parametric test appropriate for data that is not normally distributed, to assess changes in IED frequency and brain connectivity (as measured by the weighted Phase Lag Index [wPLI] between six regions of interest, yielding 15 unique region-to-region pairs). First, we measured change *within* each session by comparing post-rTMS to pre-rTMS recordings (post vs. pre active rTMS IED & connectivity values; post vs. pre sham rTMS IED & connectivity values). Second, we compared the changes induced by active vs. sham rTMS to one another.

Given the multiple ROIs investigated, we adjusted significance thresholds using principal component analysis, which accounts for the effective number of independent tests. This method is suitable when data in each comparison are not completely independent, as is the case with EEG where signal represents summated activity from multiple regions. In contrast, correction methods that assume complete independence (e.g., Bonferroni) may set overly conservative thresholds that obscure meaningful findings.