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The Effect of Transcranial Direct Current Stimulation (tDCS) on the Balance of Children with Autism Spectrum Disorder: A Randomized Controlled Trial

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1. Round 1

1.1. Reviewer 1

Reviewer:

The opening sentence defines ASD but could benefit from a more precise description of the "other unknown factors." Please consider specifying potential genetic, environmental, or epigenetic factors that have been hypothesized in the literature to provide a clearer context.

The prevalence rates cited ("1 in 68 children to 1 in 36 children") lack a direct citation. Please ensure that these statistics are properly referenced to the appropriate studies or reports to enhance credibility.

The list of various intervention programs is extensive. It would be helpful to categorize these interventions (e.g., physical therapies, behavioral therapies) and discuss their comparative effectiveness based on existing meta-analyses.

The placement of the cathode electrode is described to prevent lateral current flow. Providing a reference or rationale for this specific placement strategy would substantiate this methodological choice.

The statement "the control group did not receive any treatment" suggests a passive control. To improve the study design, consider implementing a sham stimulation for the control group to account for placebo effects.

The statistical methods are appropriately chosen; however, detailing how missing data (if any) were handled would provide a more comprehensive understanding of the analysis robustness.

Authors revised and uploaded the document.

1.2. Reviewer 2

Reviewer:

The criteria for diagnosing ASD are well-listed; however, it would strengthen the introduction to briefly mention the diagnostic tools or assessments (e.g., DSM-5) used to evaluate these criteria.

The statement about postural control disorders being "consistently observed" in individuals with ASD should include specific references or data to support this claim, ensuring it is evidence-based.

When discussing the impact of static and dynamic balance on daily activities, consider providing specific examples or referencing studies that quantify this impact to illustrate the significance more effectively.

The transition to discussing measurement methods (e.g., force plates, fMRI) feels abrupt. It might be beneficial to create a separate subsection or clearly delineate this part to maintain a logical flow in the introduction.

The discussion on abnormal brain connections is comprehensive; however, integrating a diagram or model illustrating these neural pathways could aid in reader comprehension.

The rationale for selecting tDCS over other neurostimulation techniques is implied but not explicitly stated. Clarifying why tDCS is preferred or its advantages compared to alternatives like TMS would strengthen the argument.

The description of the quasi-experimental design is clear; however, providing more detail on the randomization process (e.g., randomization technique, allocation concealment) would enhance methodological transparency.

The selection criteria mention "moderate and mild autism." It would be beneficial to specify the diagnostic criteria or tools used (e.g., ADOS, CARS) to categorize the severity levels, ensuring reproducibility.

The explanation of the force plate data processing is thorough. However, including information about inter-rater reliability or calibration procedures for the force plate would ensure measurement validity.

The presentation of demographic comparisons is clear. To enhance clarity, consider including effect sizes (e.g., Cohen’s d) alongside p-values to convey the magnitude of differences between groups.

Ensure that all tables are referenced in the text before their appearance. Additionally, clarify abbreviations (e.g., COPx, COPy) in the table captions for better readability.

The explanation of tDCS mechanisms mentions both neuroplasticity and functional connectivity alterations. Integrating recent findings or citing studies that specifically link these mechanisms to balance improvements in ASD would reinforce the discussion.

Authors revised and uploaded the document.

2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.

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