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Peer Review

Review of: "Effect of High-Frequency Repetitive Transcranial Magnetic Stimulation on Upper-Limb Function After Stroke: A Systematic Review and Meta-Analysis"

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Thank you for the opportunity to review your manuscript. This paper presents a systematic review of high-frequency repetitive Transcranial Magnetic Stimulation (HF-rTMS) for improving upper limb motor function in post-stroke patients, a very interesting topic in this field. The review is detailed and addresses the main points of concern. However, some points require further clarification, elaboration, or additional data to strengthen the findings and conclusions. The critical points for improvement are outlined below.

1. Study Selection (Section 3.1)

- Clarifying Inclusion/Exclusion Criteria: The paper states that 16 studies were included, but the specific inclusion and exclusion criteria are not clearly outlined in this section. Providing more details —such as the types of study designs (e.g., randomized controlled trials, cohort studies) and participant characteristics—would help readers better understand the selection process.
- Inter-Rater Agreement (Kappa Values): The reported kappa values for inter-rater agreement range from 0.56 to 1.0, but their implications are not discussed. For example, a kappa value of 0.2 (slight agreement) between reviewers TH and TP could be a concern. Did this discrepancy impact the selection process, and if so, how was it resolved? Including more information on disagreements and how they were handled would improve transparency.

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2. Study Characteristics (Section 3.2)

• Sample Size and Statistical Power: The included studies have a wide range of sample sizes (12 to 69 participants), but there is no mention of statistical power analysis. Given this variability, it would be helpful to discuss whether these studies had sufficient power to detect meaningful effects.

• Adverse Events Reporting: While adverse events (e.g., headaches, tingling, seizures) are mentioned, there is limited information on how these events were assessed and recorded. Clarifying how adverse events impacted the study outcomes would provide a clearer picture of the safety profile of rTMS in stroke rehabilitation. Additionally, the lack of EEG pre-screening for seizures in Chervyakov et al. (2019) is a crucial point—further discussion on its potential impact on study validity would be valuable.

• Time Post-Stroke and Stroke Severity: The paper refers to different post-stroke phases (e.g., early vs. late subacute), but there is no discussion on how these variations might have influenced outcomes. Since stroke recovery is highly time-sensitive, elaborating on the effects of rTMS timing would strengthen the analysis.

3. Treatment Characteristics (Section 3.3)

• Protocol Details: The paper describes various rTMS protocols, but additional details—such as the rationale behind specific frequencies and intensities—would be useful. Is there evidence suggesting that certain protocols are more effective than others? The variation in rTMS protocols and control group treatments (e.g., coil placement differences) also raises questions about consistency and comparability across studies. Could the authors discuss whether these differences affected treatment efficacy?

• Control Group Variability: The study mentions differences in control group treatments (e.g., coil placement, physical therapy), which could introduce confounding variables. It would be helpful to clarify how these variations might have influenced the results and whether they impacted the overall conclusions about rTMS efficacy.

• Outcome Measures: The outcome measures (e.g., FMA, ARAT) are listed, but more context on why these specific measures were chosen would be beneficial. Were they validated for rTMS interventions? Were there any concerns about their sensitivity or appropriateness for assessing treatment effects?

4. Risk of Bias (Section 3.4)

• Bias Assessment Transparency: While the paper provides an overview of the bias assessment, more details on the methodology would be helpful. How were the risk of bias categories (low, high, unclear) assigned? Were there any disagreements between reviewers in these assessments, and how were they resolved?

• Randomization Concerns: The paper flags two studies (49, 46) for potential issues with randomization but does not elaborate on the implications. Did the lack of information on allocation concealment impact the studies' internal validity? Discussing how this might have influenced the overall findings would add valuable context.

5. General Suggestions for Improvement

• Study Limitations: A more in-depth discussion of the limitations (e.g., small sample sizes, protocol variability, potential biases) would provide a clearer picture of the findings' reliability and generalizability.

Declarations

Potential competing interests: No potential competing interests to declare.