Comments on “Noninvasive Brain Stimulation for Poststroke Dysphagia: A Meta-Analysis for Randomized Controlled Trials” by Zhu et al.

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Dear Editor,

We read the recently published article “Noninvasive Brain Stimulation for Poststroke Dysphagia: A Meta-Analysis for Randomized Controlled Trials” by Zhu and Gu [1] with great interest. This was a meta-analysis of seven articles that evaluated the effectiveness of repetitive transcranial magnetic stimulation (rTMS) or transcranial direct current stimulation (tDCS) for managing post-stroke dysphagia. As the authors described in their article, the effectiveness of rTMS and tDCS for post-stroke dysphagia remains controversial, therefore warranting a meta-analysis. However, there are some important issues.

First, different outcome measurements were analyzed together for the meta-analysis. A variety of tools or scores were used to assess improvements in the severity of dysphagia in the included studies: functional oral intake scale, videofluoroscopic swallowing studies, videofluoroscopic dysphagia scale, penetration-aspiration scale, dysphagia outcome and severity scale, functional dysphagia scale, and standardized swallowing assessment, swallowing-related quality of life questionnaire, and maximal tongue strength measurement. Each study included in the meta-analysis used only a few of the abovementioned measurement tools. Therefore, the measurement tools used in the studies included in Zhu and Gu meta-analysis

were different for each study. For the accurate evaluation of the effectiveness of rTMS and tDCS on post-stroke dysphagia, outcome measurements in each study should have been classified according to the type of evaluation methods and analyzed separately. Second, a study (Kim et al.) included in this meta-analysis recruited patients with traumatic brain injury (TBI) and performed rTMS on them [2]. Because this meta-analysis aimed to evaluate the effect of rTMS and tDCS on post-stroke dysphagia, Zhu et al. should have controlled or deleted the outcomes of patients with TBI.

In Zhu and Gu meta-analysis, the standardized mean differences for rTMS and tDCS on post-stroke dysphagia were 1.08 and 1.43, respectively. Based on Cohen’s study, these effect size values can be interpreted as rTMS and tDCS having a large positive therapeutic effect on post-stroke dysphagia [3]. However, due to the aforementioned issues, we believe that the results of Zhu et al.’s study may not be reliable.

Conflict of Interest Statement

The authors declare no conflict of interest.

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Author Contributions

S.Y. and M.C.C.: concept and study design, writing of manuscript, critical editing of the manuscript. M.C.C.: supervised the study. All authors have read and agreed to the published version of the manuscript.

References

- 1 Zhu Y, Gu L. Noninvasive brain stimulation for poststroke dysphagia: a meta-analysis for randomized controlled trials. [Eur Neurol](#). 2021;1–8. Online ahead of print.
- 2 Kim L, Chun MH, Kim BR, Lee SJ. Effect of repetitive transcranial magnetic stimulation on patients with brain injury and dysphagia. [Ann Rehabil Med](#). 2011;35(6):765–71.
- 3 Cohen J. [Statistical power analysis for the behavioral sciences](#). 2nd ed. Hillsdale, NJ, USA: Erlbaum; 1988.