Effect of Repetitive Transcranial Magnetic Stimulation on Balance and Postural Stability in Individuals with Neurological Disorders: A Systematic Review

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ABSTRACT

Balance impairments are common in many neurological conditions and have a significant effect on quality of life. Repetitive Transcranial Magnetic Stimulation (rTMS) has gained attention as a potential therapeutic intervention for neurological conditions. Recently, there has been growing interest in its use to improve balance in patients with neurological conditions like stroke, ataxia, traumatic brain injury, and Parkinson's disease. To review the current evidence on the effectiveness of rTMS in enhancing balance in individuals with neurological disorders, a systematic search using multiple databases and search engines i.e. Science Direct, PubMed, and Google Scholar was conducted. The literature search yielded 253 studies. A total of articles were further evaluated to be included from which 7 met all the PRISMA guidelines. Randomised controlled trials, Cross-over trials and case series which were published from 2017-2024 were included. The literature identified was only in English language. The quality risk biasness of the selected studies was assessed by PEDro scale. A total of 4 randomized control trials, 2 cross-over trials and a case series were selected. According to PEDro analysis, studies were of good quality (score 4 to 6). The analysis revealed statistically significant improvement in scores of the Berg Balance Scale, Activities Specific Balance Confidence Scale, Dizziness Handicap Inventory, and Average Trace Error. Hence, rTMS, when combined with conventional rehabilitation methods, has the potential to improve balance and postural stability in many neurological conditions. Current literature indicates that rTMS is a promising intervention for improving balance and postural stability in neurological conditions. The findings provided a valuable reference for the development of optimised rTMS treatment plans in clinical practice.

Keywords: Activities Specific Balance Confidence Scale, Berg Balance Scale, PEDro, PRISMA.