

The Efficacy of Vestibular Rehabilitation Therapy for Mild Traumatic Brain Injury: A Systematic Review and Meta-Analysis

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Abstract : Objective: mild Traumatic Brain Injury (mTBI) or concussion is a common yet undermanaged and underreported condition. This systematic review and meta-analysis aim to determine the efficacy of VRT as a treatment option for mTBI. Method: This review and meta-analysis was performed following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines and included RCTs and pre-VRT/post-VRT retrospective chart reviews. Records meeting the inclusion criteria were extracted from the following databases: Medline, Embase, and Cochrane Register of Controlled Trials (CENTRAL). Results: Eight articles met the inclusion criteria, and six RCTs were included in the meta-analysis. VRT demonstrated significant improvement in decreasing perceived dizziness at the end of the intervention program, as shown by DHI scores (SMD= -0.33, 95% CI -0.62 to -0.03, p=0.03, I2= 0%). However, no significant reduction in DHI was evident after two months of follow-up (SMD= 0.15, 95% CI -0.23 to 0.52, p=0.44, I2=0%). Quantitative analysis also depicts significant reduction in both VOMS (SMD=-0.40, 95% CI -0.60 to -0.20, p<0.0001, I2=0%) and PCSS (SMD= -0.39, 95% CI -0.71 to -0.07, p=0.02, I2=0%) following the intervention. Lastly, there was no significant difference between intervention groups on BESS scores (SMD= -0.31, 95% CI -0.71 to 0.10, p=0.14, I2=0%) and return to sport/function (95% CI 0.32 to 30.80, p=0.32, I2=82%). Conclusions: Current evidence on the efficacy of VRT for mTBI is limited. This review and analysis provide evidence that supports the role of VRT in improving perceived symptoms following concussion. There is still a need for high-quality trials evaluating the benefit of VRT using a standardized approach.

Keywords : concussion, traumatic brain injury, vestibular rehabilitation, neurorehabilitation

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