DOI: 10.7860/JCDR/2025/80478.21773

The Efficacy of Dual Task Training in Improving Cognitive Motor Functions in Traumatic Brain Injury Patients: A Systematic Review

Saundarya Kumari, JRPSCPT, Department of Physiotherapy, Swami Vivekanand Subharti University, Meerut, Uttar Pradesh, India.
Shikha Singh, Department of Physiotherapy, Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation, MM (DU), Mullana, Ambala, Haryana, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Shikha Singh,

Department of Physiotherapy, Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation, MM (DU), Mullana, Ambala, Haryana, India.

E-mail: shikhasinghmpt@gmail.com

ABSTRACT

Introduction: Cognitive and motor impairments are common sequelae of Traumatic Brain Injury (TBI), often disrupting patients' ability to perform daily activities that require simultaneous physical and mental effort. DTT, which involves performing cognitive and motor tasks concurrently, has been proposed as an effective rehabilitation strategy.

Aim: To examine the efficacy of Dual-task Training (DTT) in improving cognitive and motor function in patients with TBI.

Materials and Methods: A systematic review and meta-analysis were conducted, including randomised controlled trials and observational studies focussing on TBI patients undergoing DTT. Outcome measures included improvements in cognitive function (e.g., attention, executive functioning) and motor performance (e.g., gait stability, balance). Additionally, the transfer of dual-task improvements to real-world tasks was evaluated.

Results: DTT significantly improved cognitive-motor interaction, with marked enhancements in reaction time, task accuracy, and gait parameters under dual-task conditions. Patients also demonstrated better attention allocation and increased adaptability in dynamic environments. Importantly, improvements were maintained in follow-up assessments, suggesting lasting neuroplastic effects. However, the efficacy of DTT was influenced by factors such as injury severity, task complexity, and training duration.

Conclusion: DTT is an effective and promising intervention for improving cognitive and motor function in TBI patients, facilitating their reintegration into daily life. Future research should explore optimal task combinations, individualized training protocols, and long-term outcomes to maximise its clinical applicability.

Keywords: Cognitive function, Executive functioning, Gait stability