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Determining the Effect of Dual-task Training and Virtual Reality on Cognitive-motor Interference in Patients with Parkinson's Disease: A Three-arm Single-blinded Multicentered Study Protocol

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Introduction: In Parkinson's Disease (PD), rehabilitation is a high-potential strategy for enhancing mental and physical abilities. Numerous studies have examined the impact of dual-task training on enhancing gait, balance, motor symptoms, and cognitive function in individuals with PD. Research have shown that virtual reality significantly enhances gait and balance in patients with PD compared to traditional therapy. However, there is a scarcity of literature that explores the combined effects of Dual-task Training (DTT) and Virtual Reality (VR) on Cognitive-Motor Interference (CMI) in individuals with PD.

Need for this study: DTT effectively improves cognitive deficits, while VR enhances motor abilities in individuals with PD. Hence, it would be expected that the combined treatment can greatly benefit the patients with PD.

Aim: To determine the effect of DTT and VR on CMI in patients with PD.

Materials and Methods: The participants recruited in this study protocol will be between 50 and 70 years old and randomly allocated into three groups. For five times a day for four weeks, experimental group 1 will receive treatment with VR, group 2 will receive DTT and group 3 will receive combined treatment of group 1 and group 2. Outcome measures, such as a modified version of the Unified Parkinson's Disease Rating Scale (MDS-UPDRS), Montreal Cognitive Assessment (MoCA), and the Timed Up-and-Go test (TUG), will be used to assess the subject pre-intervention and post-intervention.

Keywords: Cognition, Gait, Montreal Cognitive Assessment, Unified Parkinson's Disease Rating Scale