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Evaluating the Effectiveness of Virtual Reality and Conventional Therapy for Improving Balance and Fall Prevention in Geriatric Population: A Systematic Review

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ABSTRACT

Background: Elderly people are more susceptible to balance impairments and associated injuries. Innovative interventions including Virtual Reality (VR), Motor Imagery (MI) training have the potential to enhancing balance, mobility & functional outcomes. Through visual and auditory feedback, VR improves motor learning and MI stimulates brain pathways to strengthen motor patterns. This review evaluates evidence from studies comparing VR, MI & conventional exercises for enhancing balance and lowering fall risks among older adults.

Purpose: To evaluate the comparative effectiveness of VR-based and conventional therapies in enhancing balance and preventing falls in older adults.

Inclusion Criteria: All the articles included in this review involved interventions using VR and conventional exercises. The article has to be written in English language.

Methods: A comprehensive literature search will be conducted across multiple databases, including PubMed, Scopus, Web of Science, and Google Scholar focused on VR and conventional approaches. 20 articles included in the review.

Results: VR interventions demonstrated significant improvements in balance and fall risk metrics, comparable to conventional therapies. Common assessment tools including Time Up and Go Test and Berg Balance Scale demonstrated improvements across interventions. Participants in VR programs showed higher adherence and motivation, highlighting its practicality and acceptability among elderly. Combined interventions including VR and motor imagery, enhanced both physical and cognitive outcomes.

Conclusion: VR-based therapy is a promising alternative to conventional exercises for improving balance and reducing fall risks in older adults. However, further research is needed to optimize protocols and explore long-term effects.

Implications: These findings support integrating VR-based interventions into geriatric rehabilitation to promote independence and reduce fall-related injuries.

Keywords: Virtual reality, conventional therapy, fall prevention

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