DOES VIRTUAL REALITY IMPROVE BALANCE AND POSTURAL CONTROL IN PATIENTS WITH PERIPHERAL VESTIBULAR DYSFUNCTION?

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Dizziness, vertigo, poor balance, difficulty walking, blurred vision, and nausea are commonly reported in patients with vestibular dysfunction. Quality of life, both mental and physical, can be negatively altered. Physical therapists help patients relearn motor skills and allow them to translate those refinements into functional activities in their everyday lives. One way to encourage motor learning and transfer of skills is by including virtual environments.

Virtual reality (VR) has been shown to improve balance and gait in vestibular patients.[1] One of the advantages of VR is that it allows patients to undergo visual experiences that resemble real-life events and to be exposed to virtual objects found within the environment. The controlled, slow exposure to the visual scenes may allow individuals to become familiar to the provoking stimuli and help decrease their symptoms. VR can potentially change sensory processing in these patients; however, the impact of VR on balance and postural control remains unknown in VR patients.

Subjects ranged from 35-64 years old with a primary diagnosis of peripheral vestibular dysfunction. Participants randomly assigned to Group 1 received 60 minutes of traditional vestibular rehabilitation once a week for 8 weeks. The participants in Group 2 received 30 minutes of vestibular rehabilitation plus 30 minutes of virtual reality. Primary outcomes included Functional Gait Assessment, Modified Clinical Test of Sensory Interaction in Balance, and Preferred Gait Speed. The secondary outcome measures included Dizziness Handicap Inventory, Activities Based Specific Balance Confidence Scale, and Visual Vertigo Analogue Scale.

The results showed the experimental group made greater improvements in FGA, gait speed, DHI, ABC scale, and VVAS score compared to the control group. The results of MCTSIB and VAS had the same number for the control and experimental groups.

In conclusion, patients with vestibular disorders showed significant improvements in self-report and performance measures from week 1 to discharge. The hypothesis was proven to be correct, virtual reality did have an impact on balance and postural control in patients with peripheral vestibular dysfunction.

References:

1. Cano Porras D, Sharon H, Inzelberg R, Ziv-Ner Y, Zeilig G, Plotnik M. Advanced virtual reality-based rehabilitation of balance and gait in clinical practice. *Ther Adv Chronic Dis*. 2019;10:204062231986837