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Effect of vr Based Wii Fit Training on Muscle Strength, Sensory Integration Ability and Walking Abilities in Patients with Parkinson's Disease: A Randomized Control Trial

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Abstract : Background: Virtual reality (VR) systems are proved to increase motor performance in stroke and elderly. However, the effects have not been established in patients with Parkinson’s disease (PD). Purpose: To examine the effects of VR based training in improving muscle strength, sensory integration ability and walking abilities in patients with PD by a randomized controlled trial. Method: Thirty six participants with diagnosis of PD were randomly assigned to one of the three groups (n=12 for each group). Participants received VR-based Wii Fit exercise (VRWii group) or traditional exercise (TE group) for 45 minutes, followed by treadmill training for another 15 minutes for 12 sessions in 6 weeks. Participants in the control group received no structured exercise program but fall-prevention education. Outcomes included lower extremity muscle strength, sensory integration ability, walking velocity, stride length, and functional gait assessment (FGA). All outcomes were assessed at baseline, after training and at 1-month follow-up. Results: Both VRWii and TE groups showed more improvement in level walking velocity, stride length, FGA, muscle strength and vestibular system integration than control group after training and at 1-month follow-up. The VRWii training, but not the TE training, resulted in more improvement in visual system integration than the control. Conclusions: VRWii training is as beneficial as traditional exercise in improving walking abilities, sensory integration ability and muscle strength in patients with PD, and such improvements persisted at least for 1 month. The VRWii training is then suggested to be implemented in patients with PD.

Keywords : virtual reality, walking, sensory integration, muscle strength, Parkinson’s disease
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