The effect of virtual reality on visual vertigo symptoms in patients with peripheral vestibular dysfunction: a pilot study.

Pavlou M, Kanegaonkar RG, Swapp D, Bamiou DE, Slater M, Luxon LM.

Source
Centre of Human and Aerospace Physiological Sciences, King's College London, London, UK.
marousa.pavlou@kcl.ac.uk

Abstract

Individuals with vestibular dysfunction may experience visual vertigo (VV), in which symptoms are provoked or exacerbated by excessive or disorientating visual stimuli (e.g. supermarkets). VV can significantly improve when customized vestibular rehabilitation exercises are combined with exposure to optokinetic stimuli. Virtual reality (VR), which immerses patients in realistic, visually challenging environments, has also been suggested as an adjunct to VR to improve VV symptoms. This pilot study compared the responses of sixteen patients with unilateral peripheral vestibular disorder randomly allocated to a VR regime incorporating exposure to a static (Group S) or dynamic (Group D) VR environment. Participants practiced vestibular exercises, twice weekly for four weeks, inside a static (Group S) or dynamic (Group D) virtual crowded square environment, presented in an immersive projection theatre (IPT), and received a vestibular exercise program to practice on days not attending clinic. A third Group D1 completed both the static and dynamic VR training. Treatment response was assessed with the Dynamic Gait Index and questionnaires concerning symptom triggers and psychological state. At final assessment, significant between-group differences were noted between Groups D (p=0.001) and D1 (p=0.03) compared to Group S for VV symptoms with the former two showing a significant 59.2% and 25.8% improvement respectively compared to 1.6% for the latter. Depression scores improved only for Group S (p=0.01) while a trend towards significance was noted for Group D regarding anxiety scores (p=0.07). Conclusion: Exposure to dynamic VR environments should be considered as a useful adjunct to vestibular rehabilitation programs for patients with peripheral vestibular disorders and VV symptoms.

PMID:
23302708
[PubMed - in process]