

Effectiveness of Virtual Reality-Augmented Rehabilitation in Patients with Shoulder Subacromial Impingement Syndrome: A Pilot Study

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INTRODUCTION:

Shoulder impingement syndrome is one of the most common shoulder disorders encountered in the clinic. The main treatment is physical therapy but there are usually repetitive and patients were less motivated. Virtual reality (VR) application is more interactive and fun for rehabilitation program.

METHODS:

5 patients were selected through the inclusion and exclusion criteria of the study. Patients divided into control and VR groups to observe the pain and shoulder function for the course of 12 weeks. The control group received conventional shoulder physiotherapy regime while VR group is supplemented with VR game sessions for the first 8 weeks of intervention. Visual analogue scale and Constant-Murley Shoulder Scoring System were used to assess the pain and shoulder functional outcomes in both groups. The assessments were carried out before the intervention and both 8th and 12th week of intervention.

RESULTS:

Not much improvement observed in pain intensity and shoulder function of the control group for the course of 12 weeks. However, there were improvement seen in the intensity of pain and shoulder function in majority of the patients in the VR group. The shoulder functional outcomes had remained constant after the completion of VR sessions at 8th week of study.

DISCUSSIONS:

Pekyavas et al^[1] and Rizzo et al^[2] in 2017 had used VR to assess the outcome of patients with shoulder impingement

syndrome. There were improvements in the pain, range of motion, functionality and impingement of the shoulders after 6 weeks of intervention. Systematic review done by Lin et al in 2019 of randomized controlled trials from 2008-2018 showed improvement involving various musculoskeletal disorders after using VR in terms of pain, function and mobility. VR also showed improvements in the functional performance and balance in patients with Parkinson's disease as seen in a study by Feng et al in 2019. There were also improvements in the hand grip strength and functional task in stroke patients after undergone VR training in 2013 in a study by Stryla et al. Comparatively to our study, there are improvements of the pain, shoulder function and the shoulder impingement in VR group as compared to the control group during the course of 12 weeks.

CONCLUSION:

In this short-term review, the VR training has good outcomes to the pain and shoulder function of patients with shoulder impingement syndrome.

REFERENCES:

1. Pekyavas NO, Ergun N. Comparison of virtual reality exergaming and home exercise programs in patients with subacromial impingement syndrome and scapular dyskinesis: Short term effect. *Acta Orthop Traumatol Turc.* 2017; 51(3): 238-242. doi:10.1016/j.aott.2017.03.008
2. Rizzo JR, Thai P, Li EJ, Tung T, Hudson TE, Herrera J, et al. Structured Wii protocol for rehabilitation of shoulder impingement syndrome, *Ann Phys Rehabil Med.* 2017; 60(6): 363-370. doi:10.1016/j.rehab.2016.10.004