World Academy of Science, Engineering and Technology
International Journal of Medical and Health Sciences
Vol:18, No:07, 2024

Estimating the Effect of a Newly Developed Portable Innovative Balance Room System with a Digital Game Program on Falls and Incontinence Symptoms in the Elderly

Authors : Özge Çeliker Tosun, Melda Başer Secer, Ismail Düşmez, Sedat Çapar, Ilkay Kozak, Melahat Aktaş, Furkan Can Şimşek, Gökhan Tosun

Abstract : Purpose: Portable innovative balance room system with digital game program; It was created to be able to be divided into small areas, such as inside the house, garden, balcony, to enable the person to enter and perform both evaluation and exercise safely, and to ensure that these results can be stored and sent to the therapist live or later when desired. The aim is to compare the effectiveness of the exercise program applied by the elderly within this system and the exercise program implemented under the supervision of a physiotherapist on balance and urinary incontinence symptoms. Materials and Methods: The study was conducted in a randomized controlled manner on 63 people with urinary incontinence (mean age: 75.5 years) at Narlıdere Nursing Home Elderly Care and Rehabilitation Center. Elderly people participating in the study were divided into 3 groups: 1. Group, an exercise program consisting of pelvic floor muscle training and OTOGA exercises, 2. Group, only pelvic floor muscle training, and 3. Group, pelvic floor muscle training and Otoga exercises in the form of a digital game program in a portable balance room system. (self-administered) for 12 weeks. Pelvic floor distress inventory (PTDE-20) and bladder diary were used to evaluate the incontinance symptoms of the cases. Pelvic floor muscle function was evaluated with superficial EMG. Berg, Fall Effectiveness Scale (FES) and Functional Status Evaluations (Chair Stand Test, Eight (8) Food Up and Go Test, Chair Sit and Reach Test, Two Minutes Step Test) were used to evaluate balance. The existence of differences between groups was analyzed using Krusskal Wallis analysis of variance, and the difference between before and after exercise was analyzed with Wilcoxon tests. Results: After treatment, PTDE-20, daily urinary incontinence and toilet visits values decreased significantly in all three groups ($p < 0.001$). While there was a statistically significant increase in pelvic floor muscle EMG values in the 2nd and third groups after treatment, there was no change in the other group (2nd Group PFM average EMG before-after: 5.5 (4.15-10.95) - 10.95 (8.68-13.68), P=0.05, 3 Group PFM average EMG before-after: 6.5 (4.28-11.55) - 11.75 (8.67-14.26), p=0.04). While BERG score, Chair Stand Test, Eight (8) Food Up and Go Test, and Two Minutes Step Test values increased in all groups ($p<0.05$), Fall Effectiveness Scale (FES) values did not change after treatment. Conclusion: Although pelvic floor muscle training combined with balance exercises reduces symptoms, it may not lead to a positive improvement in the functions of the pelvic floor muscles. For this reason, recovery lasts for a short time, and then symptoms may reoccur in the future. However, thanks to the new system, when balance exercises are combined with a game program for the pelvic floor muscles, a double effect can be achieved with a single application and both incontinence and balance problems can be treated in a safe environment where the person can do it himself. But more work needs to be done on this subject. However, thanks to the new system, a double effect can be achieved with a single application, and both incontinence and balance problems can be treated in a safe environment where the person can do it himself. But more work needs to be done on new system

Keywords : fall, urinary incontinance, balance, elderly
Conference Title : ICAHT 2024 : International Conference on Aging, Health and Technology
Conference Location : Toronto, Canada
Conference Dates : July 18-19, 2024