

The effect of exergaming on knee proprioception in older men: A randomized controlled trial

ABSTRACT

Background: Proprioception is the ability to sense the body position, muscle sense, joint stability and posture. As balance decreases during the process of aging, knee proprioception has a critical role in body balance and daily activities. Exergaming has shown to be a potentially effective and more enjoyable form of exercise delivery.

Objective: The purpose of this study was to determine the effect of an 8-week Xbox Kinect exercise program on knee proprioception in healthy older adults.

Methodology: Thirty-two elderly men who were 65 years of age or older were randomly allocated to either a control or experimental group (allocation ratio 1:1). The experimental group received an exergame intervention that included Xbox Kinect with games focusing on movements of the knee joint for 8 weeks (three times per week and 40 min per sessions). A Biodex Isokinetic Dynamometer was used to measure knee joint position sense before and after the exercise program.

Results: After eight weeks of training, knee proprioception significantly improved in the intervention group for several knee joint angles: 30° (3.5 ± 1.1), 45° (3.1 ± 0.9), and 60° (3.0 ± 0.6) compared to the control group 30° (5.2 ± 0.8), 45° (5.2 ± 0.8), and 60° (6.2 ± 0.9) (dominant leg F1, 28 = 23.469, $p = 0.001$. $\eta^2 = 0.456$; non-dominant leg F1, 28 = 23.076, $p = 0.001$. $\eta^2 = 0.452$).

Conclusion: The results from this study indicate that exergame intervention can enhance knee proprioception in elderly men.

Keyword: Aging; Falling; Knee proprioception; Exergame