

# **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° ( $3.5 \pm 1.1$ ), 45° ( $3.1 \pm 0.9$ ), and 60° ( $3.0 \pm 0.6$ ) compared to the control group 30° ( $5.2 \pm 0.8$ ), 45° ( $5.2 \pm 0.8$ ), and 60° ( $6.2 \pm 0.9$ ) (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