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Exergaming intervention in sedentary middle-aged adults improves cardiovascular endurance, balance and lower extremity functional fitness

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Background: Interactive video game technology has been extensively utilized in rehabilitative settings. However, few studies have explored the potential benefits of interactive video games as an exercise instrument for middle-aged adults who do not have a gym membership or who otherwise cannot regularly make it to their local fitness center. Features of interactive exergaming (modeling proper exercise biomechanics, increasing self-monitoring of behavior, encouraging participants to set health-related goals and rewarding regular use) may help promote physical activity and consequently improve balance, cardiovascular endurance and functional fitness.

Purpose: To compare balance, cardiovascular health and functional fitness in relation to exercise tests in sedentary adults before and after exergaming (n=12, 56+4 years, 162.1+10.9 cm, 79.2+19.1 kg, 39.6±7.7% fat mass).

Methods: Subjects initially underwent balance, cardiovascular endurance and functional fitness tests before engaging in exergaming for 20 min/3d/wk. After eight weeks, balance, cardiovascular health and functional fitness were retested.

Results: Exergaming improved Single-Leg-Stand time (3.2+0.4s to 7.9+1.4s, $p<0.05$), Sit-To-Stand repetitions (14.2+1.7 to 16.8+1.3, $p<0.05$) and YMCA 3-Minute Step Test heart rate recovery (103+7.9 to 95+3.2, $p<0.05$) while eliciting a habitual voluntary moderate-intensity exercise level in previously sedentary individuals.

Conclusion: Exergaming increased cardiovascular endurance, balance and lower extremity functional fitness while meeting American College of Sports Medicine guidelines for moderate-intensity exercise. Exergaming should be considered a viable option for home exercise programs to meet ACSM physical activity recommendations and improve overall quality of life.

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