Virtual vs. Traditional Exercise Training in Previously Untrained Subjects

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ABSTRACT

Exergames (combination of exercise and video games) and virtual trainers are increasingly being used as an interventional tool for physical health management. These video games are produced by popular gaming systems and are designed to require total body movements. Companies claim exergames produce significant energy expenditure, and support exercise adherence. The purpose of this study is to compare the effects of a virtual fitness trainer (VFT) and exergames to a certified fitness trainer (CFT) and traditional exercise program. Participants included 18 college-aged males and females (18-30 yrs) with no prior experience with a fitness trainer and did not meet American College of Sports Medicine (ACSM) recommended daily values of physical activity. Subjects underwent maximal pre and post testing. Aerobic capacity, as well as core, upper body and lower body endurance were tested, along with blood pressure, maximal and average heart rates per session, and rate of perceived exertion. A within-subject design was used, whereby the same participants were instructed by a VFT in the first session of 8 weeks and by a CFT in the second 8-week session. There were two groups, which were counterbalanced. There were no significant differences between traditional training days missed and days missed with the virtual trainer. Subjects reporting mobile app use to log exercise had increased adherence, regardless of trainer. The results indicate HR and RPE response for CFT sessions were significantly higher than for VFT sessions. HR was 3.38% higher in males, 22.65% in females, while RPE was 13.5% higher in males, 14.56% in females. Limited research has evaluated interactive video game and virtual reality exercise. The aim of this study was to see if this form of training would be a comparable form of exercise. Some interesting evidence was uncovered. Subjects of the study reported enjoyment in using VFT and CFT. Slightly more preferred the CFT, but no significant difference was observed. Most subjects reported enjoying the convenience of VFT. Observations during the study uncovered avenues for future research, including examination of prediction equations used in the virtual games. The VFT and exergames consistently over-predicted caloric expenditure. Every virtual trainer and exergame examined performed at least one exercise considered unsafe by the ACSM, indicating the exergames are not adhering to safety guidelines, and may be predisposing users to increased risk of injury. Development of games that utilize this information may lead to more effective games.