The Heart Rate Response to Nintendo Wii Boxing in Young Adults

Bosch, Poloni, Thorton, et al.
Cardiopulmonary Physical Therapy Journal, Volume 23, June 2012

INTRODUCTION

• American College of Sports Medicine (ACSM) and American Heart Association (AHA) recommend 30 minutes of moderate intensity aerobic activity 5 days per week.
• More than 50% of Americans do not meet these requirements.
• Video games have led to a more sedentary lifestyle for many individuals.
• Nintendo Wii video games allow individuals to physically participate in the game potentially incorporating moderate intensity aerobic activity.
• Previous literature has focused on the use of Nintendo Wii active games as a method to meet ACSM guidelines for exercise.

PURPOSE/ OBJECTIVES

• To determine whether 30 minutes of Nintendo Wii sports boxing provides cardiopulmonary benefits and contributes to recommended daily amount of exercise in young adults.
• To describe the heart rate response (HRR) of healthy young adults who played Wii boxing for 30 minutes.
• To evaluate the influence of experience and fitness on the HRR.
• The researchers hypothesized the 30 minute session would provide cardiopulmonary benefits and that experience and fitness level would effect the HRR.

MATERIALS & METHODS

• Healthy young male and female adults at least 21 years of age.
• Participants were excluded if: over 40 years of age, pregnant, medications that would affect HR/ BP, history of cardiopulmonary disease, musculoskeletal injuries in the past 3 months or chronic pain.
• Participants first completed a questionnaire about their experience with Wii boxing.
• Participants then completed a maximal exercise treadmill test using a modified Astrand protocol to measure maximal heart rate (HR max) and oxygen consumption.
• Participants returned one week later to complete a Wii sports/Wii boxing tutorial and 30 consecutive minutes of Wii boxing.
• Testing began on the easiest level and participants progressed to the next level of play, providing a greater challenge, if they won the match.
• A researcher reset the game after each match to limit the amount of rest time during the session.
• Heart rate was measured continuously, with a 60 second average displayed on the computer monitor.
• Rate of perceived exertion (RPE) was measured every 5 minutes using the Borg RPE 6-20 scale.

RESULTS

• Percent of time spent in each heart rate intensity stratification based on Nintendo Wii Sports Boxing experience. 1. 2 ≤ 50% - 63% maximum heart rate (HRmax); 2 ≤ 64 - 76% HRmax; 4 ≥ 77% - 93% HRmax; 5 ≥ 94% HRmax.

DISCUSSION

• Results support hypothesis that Nintendo Wii boxing can provide cardiovascular benefits.
• Mean HR response and mean RPE proved adequate to meet the guidelines for moderate intensity exercise set by ACSM.
• Limitations of the study include: the use of only healthy young adults, the use of only HR response and RPE, and effects of only one session of Wii boxing on HR response.
• Future studies should investigate the longitudinal training effects of Wii boxing and the effects of Wii boxing in other populations.

CLINICAL SIGNIFICANCE

• Wii boxing can be used as moderate intensity exercise for persons with lower cardiovascular fitness.
• The results are more pertinent for pediatric and geriatric populations than young and middle aged adults.
• The video game system may provide more enthusiasm and participation from children during their therapy session.
• Wii boxing may be better for activities such as standing balance and endurance.

CONCLUSION

• Wii Boxing can be used as an effective exercise among persons with lower levels of cardiovascular fitness.
• For it to be effective the person must fully participate with little rest between rounds and games and movements.
• Some optimal physical therapy settings for the use of Wii Boxing are geriatric or pediatric settings.

REFERENCES


Presented by: Lindsay Matijevich and Patrick Fleming