THE EFFECTS OF THE WII ON BALANCE IN THE ELDERLY

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Objectives

- Introduction
- Literature review
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- Research Design
- Recruitment
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- Methods
- Results
- Conclusion
Introduction

- Greater than one third of adults 65 years and older fall each year

- Gait abnormalities, poor strength and balance are major risk factors for falling in the elderly

- Balance training alone or in combination with strengthening exercises, improves gait and balance therefore reducing the risk of falls
Introduction

- Although conventional PT, has been proven to improve balance, more recent studies are beginning to investigate interactive virtual reality gaming systems, such as Nintendo® Wii, and their effects on several areas including balance, strength, and the cardiovascular system in different populations.
  - Wii focuses on 4 main areas: gait, balance, coordination, and functional exercises
  - Instant visual feedback, enjoyment of therapy, and low cost are some advantages
Gap in the Knowledge

- The Wii, along with other motion sensing gaming systems, is relatively new
  - Released in 2006
- Only a few studies have been published
- Not enough information found in the literature about its effects on health and fitness on certain populations
The Wii offers new and entertaining ways of becoming more active, especially for the elderly.

Wii sports are sufficient to meet ACSM/AHA guidelines to maintain or improve health as the metabolic equivalents (METs) required to complete Wii tennis and boxing were >3 METs.\(^2\)

Literature Review

- Improved functional fitness measures
  - Up & Go
  - 12-min walk

- The Wii gaming system focused more on balance and cardiovascular activities.

Balance has several components including visual, vestibular, and somatosensory systems. A deficit in any areas may have a great impact on an individual’s static and dynamic stability.

Consequences of falls are serious as they are associated with high rates of mortality and morbidity.

PT has been shown to improve gait and balance in the elderly, consequently reducing risk of falls.

The purpose of this study was to investigate the effects of playing Nintendo® Wii Bowling game on balance in older adults.

Hypothesis

A Wii Bowling program will help improve overall balance in the elderly.
Research Design

- 20 subjects over age 65 divided into 2 groups
- Pretest-posttest control group design
  - Group 1 placed into a Wii Bowling program
  - Group 2 (control) did not bowl
- Outcome Measures
  - Berg Balance Test
  - TUG
- Statistical analysis
  - Independent T-test to compare the 2 groups
  - Dependent T-test to compare the difference within the group on the Wii Bowling program
  - alpha level of p< .05
Recruitment

- Flyer
- VOLUNTEERS at an adult home
- Jones Manor on the Sound in Bayville NY
- Signed consent form
NINTENDO ® WII RESEARCH STUDY

VOLUNTEERS WANTED!!!!!

LOOKING FOR VOLUNTEERS OVER THE AGE OF 65 TO PARTICIPATE IN A RESEARCH STUDY ON THE EFFECTS OF WII BOWLING ON BALANCE.

PLEASE EMAIL: TINGENIT@NYIT.EDU OR CALL TERRY INGENITO AT (516-686-7692).

PRINCIPAL INVESTIGATOR: TERRY INGENITO

NYIT
New York Institute of Technology
Inclusion & Exclusion Criteria

Inclusion Criteria:
- Age: 65 and Older
- Independently ambulatory with or without assistive devices
- Good overall health

Exclusion Criteria:
- Non-ambulatory
- No known serious medical conditions
- Taking medication that interferes with balance
- Any other health issues that would interfere with a subject’s safety during exercise
- Significant muscular or neuralgic deficiency
- Congestive heart failure
- Severe chronic obstructive pulmonary disease
- Severe cognitive impairment
Methods

- This was an NYIT-BHS-RB approved study

- Subjects were placed in either the control group experimental based on convenience

- Both groups underwent Pre BERG & TUG outcome measures
Methods

- The experimental group received pre Wii bowling training
- The experimental group participated in 3 Wii bowling games in the seated position, for 30 min, 2x/week for 8 weeks. The control group did not participate in Wii bowling
- Both groups underwent Post BERG & TUG outcome measures
- Independent t-test was used to compare the differences between the groups prior to the start of the study.
- Dependent t-test was used to compare the differences within subjects in the experimental group
Results

- There was no significant difference found between the groups at the onset of the study.

- The Berg scale rating pre and post Nintendo® Wii bowling were significantly different ($p=0.006$), with a mean difference of pre and post of 7.7.

- Although there was a decrease in time on the TUG test pre and post, it was not statistically significant ($p=0.272$).
Conclusion

- We believe the significant improvements noted in the Berg Balance test was due to the experimental group weight shifting and reaching in the seated position.
- We speculate there was no significant improvements in the TUG scores as the test is more dynamic while the Berg has several components including dynamic, as well as static balance components.
- Our hope as a result of the study was for successful implementation bowling leagues in other facilities to improve balance nationwide.
Future studies that assess the use of the Nintendo® Wii using larger groups
Conclusion

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References


