Benefits of the Wii Fit as an Exercise Program for Older Adults
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ABSTRACT
Abstract. Purpose: To determine if Wii Fit is an effective older adult exercise program compared to a traditional exercise program (TRAD) with respect to functional fitness (FF) and balance. Wii Fit women (n=4) were matched on multiple variables to TRAD subjects (Ss)(n=4) and a control group (CON)(n=4). Interventions were 8 weeks and consisted of flexibility, strength, balance, and cardio-respiratory training. Wii group followed the Wii program and TRAD participated in a traditional class. Pre and post measures included FF and balance. Results were evaluated using qualitative comparison. No baseline difference existed. With respect to FF, TRAD exhibited largest changes. With respect to balance, Wii exhibited similar large changes as compared to the TRAD group. Using Wii Fit appears to be as effective as TRAD for balance.

INTRODUCTION
Older adults have become a willing user of the Wii system. The use of gaming systems by older adults has been limited to rehabilitation. The Wii Fit is an interactive gaming system that offers programs to increase strength, endurance, balance, and flexibility. The goal of this project is to determine if the Wii Fit can improve functional fitness and balance in the older adult when compared to a traditional exercise class and control group. If successful, Wii Fit could benefit homebound populations, or individuals with no access to exercise facilities. Research is warranted to determine and quantify the physiological benefits of video game technology for the older adult, as there are currently no published studies. Results of the project could be useful in development of physical activity programs for older adults.

PURPOSE
To determine if Wii Fit is an effective older adult exercise program compared to a traditional exercise program (TRAD) with respect to functional fitness and balance.

METHODS
Participants
- Participants from a traditional physical activity program and a control group were drawn from previous similar studies of identical nature, study setting, population, and project length.
- Wii Fit participants were matched on pre-measures of age, BMI, arm curl and chair stand.
- Comparisons were made between the Wii, traditional, and control group
- 4 females drawn from the traditional class (71 ± 8 years)
- 4 females drawn from the control group (75 ± 1 years)

Intervention
This was an 8-week intervention study, utilizing the Wii Fit gaming system and corresponding balance board or TRAD physical activity program.
- Wii Fit was offered at a local senior center twice per week for 40 minutes and included flexibility (yoga), strength training (body resistance), balance training with balance games, and cardio-respiratory training.

RESULTS
No baseline differences between groups
Due to small sample size, results were evaluated using qualitative comparison
Percent change was calculated and group change was compared

Functional Fitness
Wii exhibited little change, the traditional group exhibited large changes, especially on measures of strength.

CONCLUSIONS
Results supported the hypothesis that the Wii group would improve on balance compared to traditional and control groups.
The Wii group exhibited larger improvement on many balance measures compared to the traditional and control groups.
Wii participants also improved similarly on the functional fitness measures of Up & Go and 12-min walk.

• The Wii group did not improve strength as measured by the arm curl and chair stand. This finding is not surprising as the Wii gaming system focuses more on balance and cardio activities.
• It should also be noted that many of the Wii strength exercises required using the body for resistance and were generally too difficult for the older adults to perform.

METHODS
Participants
- Limits of Stability: maximum distance a participant could lean in a particular direction without losing balance
- Four directions (front, right, back, left)
- Outcome Measures
  - Reaction time: amount of time from auditory “go” signal until movement is initiated
  - Movement velocity: quality of movement as indicated by speed of movement
  - Endpoint excursion: postural control as indicated by initial shift toward target
  - Maximum excursion: actual extent of the movement
  - Directional control: comparison of amount of movement in intended direction and extraneous movement away from target

Balance
Wii exhibited similar large changes compared to the traditional group and on some measures exceeded the traditional group
- Wii exhibited greatest balance improvement during the reaction time and movement velocity measures.

Flexibility
Strength
Mobility
Balance
Cardio-respiratory

Participants
- n = 4 (71.8 ± 8.9 years)
- n = 4 (71.8 ± 8.0 years)

Directional Control
Result Change (%)

End Point Excursion
Maximum Excursion
Result Change (%)

Movement Velocity
Result Change (%)

Reaction Time
Result Change (%)

Balance
Result Change (%)

Flexibility
Result Change (%)

Strength
Result Change (%)

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