Effects of the Balance Master and Nintendo Wii as Balance Training Instruments with Independent Community Dwelling Adults 55 years or Older

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Introduction

PURPOSE

The purpose of this study was to examine the effects of balance training using the NeuroCom Balance Master and Nintendo Wii Fit with independent, community- dwelling adults aged 55 years and older.

1) Is the Nintendo Wii Fit a valid tool for balance training when compared to the NeuroCom Balance Master 6.1?

2) Is there a difference in training effect of the Nintendo Wii Fit and the NeuroCom Balance Master 6.1?

SUBJECTS

Volunteers were recruited from Eskaton Village Retirement Community in Carmichael, California

32 Total Participants [Avg. age: 81.5 yrs ± 6.5 (Range: 69–93 yrs)

Balance Master Group: 10 (5 female, 5 male)
Avg. age: 82.2 yrs ± 5.6

Wii Group: 18 (12 female, 6 male)
Avg. age: 80.3 yrs ± 7

Neuro Com Balance Master

Nintendo Wii Fit

Methods & Materials

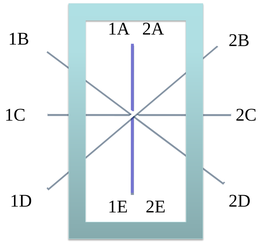
METHODS AND MATERIALS

Before and after balance training, subjects completed the Balance Self-Efficacy Scale (BES), performed the Functional Reach Test (FRT), and the Star Excursion Balance Test (SEBT). Subjects were randomly assigned to either the NeuroCom Balance Master or Nintendo Wii Fit training group. Training consisted of four balance activities lasting approximately thirty minutes one time per week for eight weeks. Subjects in both groups also received a home exercise program.

Balance Master Exercises	Wii Fit Exercises
Rhythmic Weight Shifting	Table Tilt (marble game) Unilateral
Stance	Yoga Tree
Lunges (stepping)	Lunges (stationary)
Step Ups/Step Downs	Aerobic Free Step

EXPERIMENTAL DESIGN

Pre-test/Post-test repeated measures design
Pre-test (3 balance measures)
Random assignment
Intervention (2 groups)
Post-test



Star Grid Positions

Analysis and Results

ANALYSES

Independent Variables	Outcome Variables
Treatment Group	BES scores
Time of Measure	FRT scores
Age	SEBT scores

- Paired t-test used to compare pre-post test scores of subjects within treatment groups
- ANCOVA used to assess differences between treatment groups
- Statistical significance was set at $\alpha < .01$
- SPSS version 17.0 used to perform all analyses

RESULTS

Age correlated significantly with all outcome variables ($p \leq .001$).

Star Grid Positions (SEBT)
- Balance Master
  - Significant improvement reaching forward (p=.007) and backward (p=.005).
- Wii Fit
  - No significant change

Balance Self Efficacy (BES)
- Balance Master: No significant change
- Wii Fit: No significant change

Functional Reach (FR)
- Balance Master: No significant change
- Wii Fit: No significant change

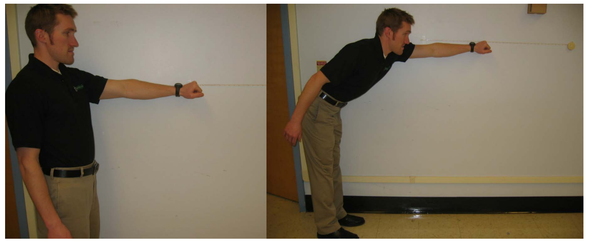
Discussion

LIMITATIONS

Sample size (n=27)
Outliers
Inconsistencies between groups
Activities chosen limit tailoring of treatment
Activities lacked congruency
Dosage

CONCLUSION

In a group of community dwelling older adults, the effects of balance training with the NeuroCom Balance Master and Nintendo Wii Fit are highly dependent on age. There was no significant difference on level of improvement between the two training techniques for any of the outcome variables measured. Training on the NeuroCom Balance Master produced within group improvement on the SEBT but not on the BES or FRT. Training on the Nintendo Wii Fit did not produce improvement on the SEBT, BES, or FRT.



Functional Reach