

Exergaming Intervention in Sedentary Community Members Improves Attitudes Towards Exercise and General Health

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Abstract

BACKGROUND: Interactive video game technology has been utilized in rehabilitative settings. Research is limited in its possible role as a within-the-home exercise for those without access to a gym, or fitness center.

PURPOSE: To compare quality of life and emotional well being in sedentary community members.

METHODS: Middle aged men and women exercised using Wii Fit for 20 minutes, three days a week, for eight weeks. The SF-36 questionnaire and the Subjective Exercise Experience Scale (SEES) were administered before and after the intervention.

RESULTS: Physical functioning scores approached significance after intervention (84.6 to 90.4, $p < 0.08$). The SEES showed that after exergaming subjects felt slightly tired, but not drained. They also reported feeling positive and not discouraged post exercise.

CONCLUSION: Exergaming might improve physical functioning and have a positive effect on sedentary individuals attitudes toward exercise and general health.

Background

Regular participation in physical activity is one of the most effective ways to prevent obesity, cardiovascular disease and other morbidities¹ as well as improve quality of life, increase functional independence and reduce chronic depression in older adults with and without disabilities². In order to implement this behavior change, alternative, innovative, long-term, economically feasible interventions and therapeutic approaches are needed. The Nintendo Wii® has been utilized in rehabilitative settings. However, research is limited in its possible role as a within-the-home exercise instrument for those who do not have a gym membership, or who otherwise cannot regularly make it to their local fitness center. The purpose of this pilot study is to determine the feasibility, compliance level, and safety of using the Nintendo Wii® to measure overall health utilizing self-reported questionnaires in older adults who participate in regular “exergaming”.

References

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Objective

- To compare at baseline and at week eight changes in quality of life and emotional well-being using Nintendo Wii® with respect to self reported questionnaires.

Methods

- 12 sedentary adults, 50-64 years old, recruited locally
- 24 exercise visits (20 min/visit, 3 visits/week) over 8 weeks
- Subjects self selected activities from the Nintendo Wii Fit® during each exercise visit
- Pre- and post-study SF-36 Questionnaire
- One time post intervention Subjective Exercise Experience Questionnaire (SEES)
- SAS Statistical Suite version 9.1
- Means and standard deviations computed for all scaled data
- 1-way ANOVA and paired samples t-test (two-tailed)

Table 1: Nintendo Wii® Fit Exercises

Mode	Options
Aerobic	Hula Hoop, Basic Step, Synchronized Running, Rhythmic Boxing
Strength	Push-up, Side Plank, Front Lunge, Triceps Extension, Leg Raise
Balance	Table Tilt, Penguin Slide, Soccer Heading, Ski Slalom/Jump
Yoga	Palm Tree, Warrior, Downward-Facing Dog, Triangle, Roman Chair

Results

Table 2: Subject Demographics (n=12)

Characteristics	Mean ± SD
Age (years) 2 Males, 10 Females	56.6 ± 3.6
Height (cm)	160.0 ± 46.2
Weight (kg) - Pre	79.2 ± 19.1
Weight (kg.) - Post	79.1 ± 19.2
Fat Mass (kg) - Pre	31.5 ± 10.0
Fat Mass (kg) - Post	31.6 ± 11.4
Fat Mass % - Pre	39.6 ± 7.7
Fat Mass % - Post	39.5 ± 7.9
Ethnicity	
-Caucasian	N=10
-African American	N=1
-Asian	N=1

Table 2. Subject demographics taken at the initial screening visit and final testing visit.

Results

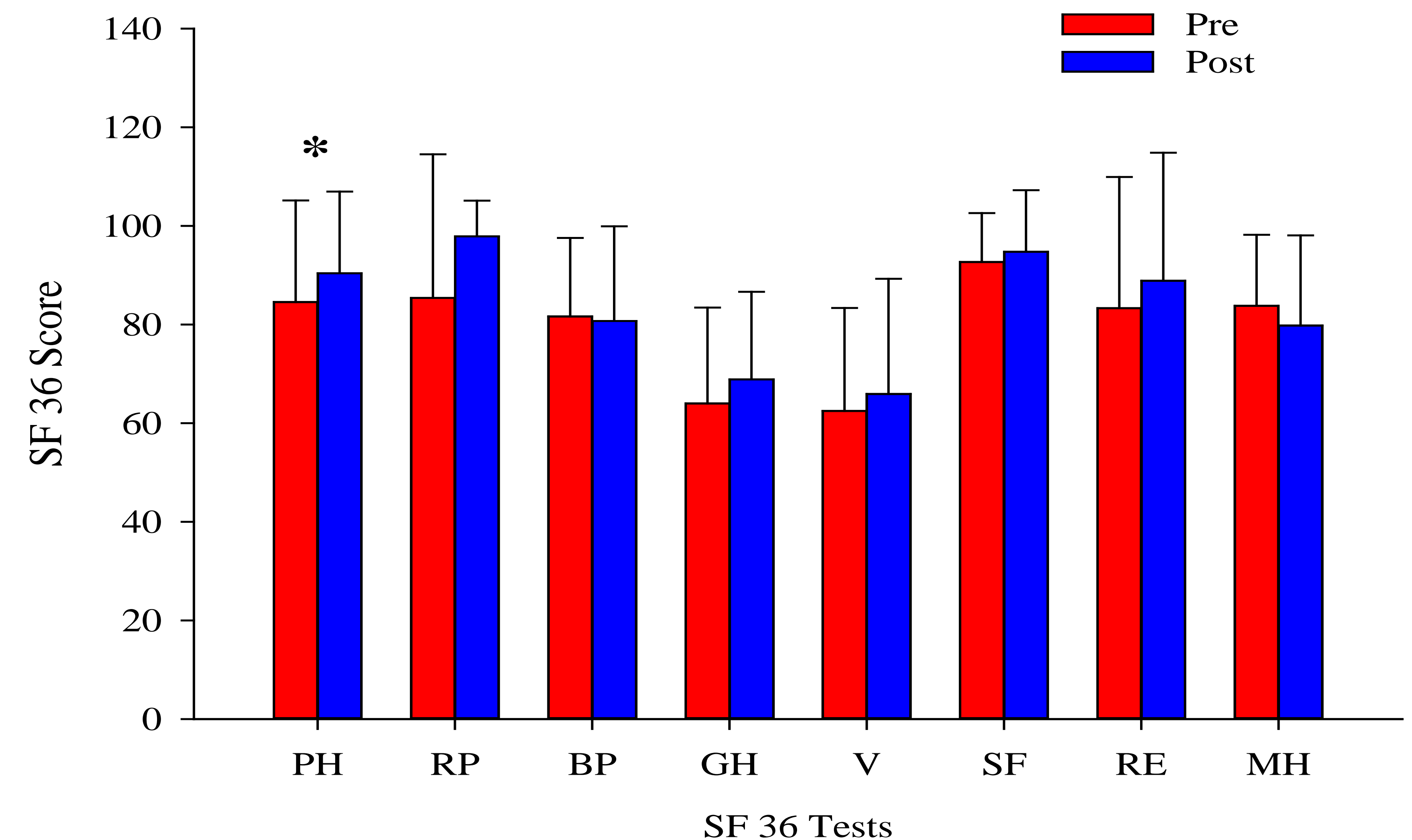


Figure 1. Short Form 36 Questionnaire. Data represented as Mean± SEM. PH = Physical Functioning; RP = Role Physical; BP= Bodily Pain; GH = General Health; V = Vitality; SF = Social Functioning; RE = Role Emotional; MH = Mental Health. Physical Functioning (PH) scores approached significance (84.6 before to 90.4 after, $p < 0.08$).

Table 3: Subjective Exercise Experience Questionnaire

Response	Mean ±SEM
Positive	6.8 ±0.2
Great	6.5 ±0.2
Terrific	5.9 ±0.4
Strong	4.1 ±0.5
Fatigued	2.7 ±0.7
Tired	2.6 ±0.6
Exhausted	1.9 ±0.5
Drained	1.8 ±0.3
Discouraged	1.8 ±0.4
Awful	1.1 ±0.1
Crummy	1.0 ±0.0
Miserable	1.0 ±0.0

Table 3. Subjective Exercise Experience Questionnaire. Data represented as Mean± SEM. Questionnaire scale was based on asking how the subject felt at that particular moment with the choice of 1 – 7, 1 being “not at all” and 7 being “very much so”.

Discussion

The Short Form 36 Questionnaire (SF-36) measures quality of life through multiple self-reported questions regarding the subjects health and well being. The SF-36 was administered pre and post 8 weeks of exercise intervention. Post exercise intervention the SF-36 physical functioning scores approached significance ($p < 0.08$). The Subjective Exercise Experience Questionnaire (SEES) is used to measure how subjects felt after exercising with the Nintendo Wii Fit®. It was administered immediately post exercise. The results from the SEES showed that the exercise sessions utilizing the Nintendo Wii Fit® left subjects feeling positive and not drained or discouraged. All subjects reported feeling positive and great post exercise and no subjects felt awful, crummy or miserable.

Conclusion

These findings suggest, according to the SEES, that attitudes toward exercise and general health may be improved after 8 weeks of playing the Nintendo Wii Fit for 20 minutes a day/three days a week. Improved attitudes towards exercise and general health can lead to an increased quality of life and overall well being. The Nintendo Wii Fit can eliminate a possible barrier to exercise by providing previously sedentary individuals with a positive exercise experience. Eliminating this barrier to exercise can increase compliance of new exercise programs for previously sedentary individuals.