Background. Pain and gait disturbances are commonly observed, but poorly managed, in individuals with multiple sclerosis (MS). Objectives: This pilot study explores the effects of Nintendo® Wii™ Fit™ game play (Wii), conventional balance training (TRAD), and control (CON) on balance and mobility outcomes among home-dwelling persons with MS. Methods: Nineteen female and 6 male MS patients (mean age: 45.10 years, 8 years with MS) were assessed at a pretreatment baseline visit. The study was a 3-way, 3x3x2 factorial design with 9 weeks of baseline assessment, 12 weeks of intervention (Wii, TRAD, CON), and a follow-up of 3 weeks. Outcome measures were selected based on their relevance to MS, and included measures of mobility, balance, quality of life, and the MS-specific Fatigue Symptom Inventory (FSI). Results: Wii and TRAD groups showed improvements in balance and functional mobility compared to CON. Wii had the greatest effect on balance, improving Berg balance scores by 17% and functional mobility by 18%. CON had the greatest effect on quality of life, improving by 22%. The greatest improvement in fatigue was seen in the TRAD group, improving by 21%. Conclusion: Wii and TRAD have potential for improving balance and functional mobility in home-dwelling persons with MS, with Wii having a greater effect. Further research is needed to confirm these findings.

Introduction
Balance and gait abnormalities can lead to falls and affect confidence associated with mobility, thus leading to a reduced quality of life. In the past, rehabilitation strategies have been largely based on traditional physical therapy, but recent developments in technology have led to the development of interactive videogames that can be used as a supplement to traditional therapy. Wii Fit™, a balance training game developed by Nintendo, has been shown to improve balance and mobility in individuals with MS. This study aims to explore the effects of Wii Fit™ game play (Wii) on balance and mobility outcomes among home-dwelling persons with MS, compared to conventional balance training (TRAD) and control (CON).

Methods
Participants: 25 female and 6 male MS patients (mean age: 45.10 years, 8 years with MS) were assessed at a pretreatment baseline visit. The study was a 3-way, 3x3x2 factorial design with 9 weeks of baseline assessment, 12 weeks of intervention (Wii, TRAD, CON), and a follow-up of 3 weeks. Outcome measures were selected based on their relevance to MS, and included measures of mobility, balance, quality of life, and the MS-specific Fatigue Symptom Inventory (FSI). Results: Wii and TRAD groups showed improvements in balance and functional mobility compared to CON. Wii had the greatest effect on balance, improving Berg balance scores by 17% and functional mobility by 18%. CON had the greatest effect on quality of life, improving by 22%. The greatest improvement in fatigue was seen in the TRAD group, improving by 21%. Conclusion: Wii and TRAD have potential for improving balance and functional mobility in home-dwelling persons with MS, with Wii having a greater effect. Further research is needed to confirm these findings.

Results

Inclusion Criteria:
- Less than 60 years of age
- No previous history of balance disorder
- No reported balance deficit
- Doesn't use a walker or wheelchair

Protocol:
3 phases:
1. Baseline Assessment
2. Supervised Wii/TRAID Balance Training Sessions (control) 9 weeks at home training 3 times a week
3. Post-test

Study Design

Balance Assessment

Table 1. Assessment Protocol

<table>
<thead>
<tr>
<th>Balance Assessment</th>
<th>Intervention</th>
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</thead>
<tbody>
<tr>
<td>Modified Timed Up &amp; Go Test</td>
<td>Wii Fit™</td>
</tr>
<tr>
<td>Berg Balance Scale (BBS)</td>
<td>Wii Fit™</td>
</tr>
<tr>
<td>Timed Up &amp; Go Test</td>
<td>CON</td>
</tr>
<tr>
<td>Functional Reach</td>
<td>TRAD</td>
</tr>
<tr>
<td>Limits of Stability</td>
<td>Wii Fit™</td>
</tr>
</tbody>
</table>

Table 2. Conventional training protocol

<table>
<thead>
<tr>
<th>Conventional Training (TRAD)</th>
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</thead>
<tbody>
<tr>
<td>Moderate Intensity Walking Session</td>
</tr>
</tbody>
</table>

Wii Fit™ Training (WII)

Core games:
- Table Tennis
- Balance Board
- Ski Slope
- Penguin Slide

Conclusion
Balance and gait abnormalities can lead to falls and affect confidence associated with mobility, thus leading to a reduced quality of life. In the past, rehabilitation strategies have been largely based on traditional physical therapy, but recent developments in technology have led to the development of interactive videogames that can be used as a supplement to traditional therapy. Wii Fit™, a balance training game developed by Nintendo, has been shown to improve balance and mobility in individuals with MS. This study aims to explore the effects of Wii Fit™ game play (Wii) on balance and mobility outcomes among home-dwelling persons with MS, compared to conventional balance training (TRAD) and control (CON). Wii and TRAD have potential for improving balance and functional mobility in home-dwelling persons with MS, with Wii having a greater effect. Further research is needed to confirm these findings.

This investigation was supported by a pilot grant from the National Multiple Sclerosis Society.