HOME-BASED EXERCISE TO PREVENT FALLS IN PEOPLE WITH MS

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Falls in Multiple Sclerosis

- Approximately 50% of persons with MS fall in a 6 month period
  - Of these who fall, a significant portion require medical attention
    • 2.8-4 times greater risk for hip fracture
      (Bhattacharya et al., 2014; Bazelier et al., 2012)

Falls and Disability

Fall

- Dysfunctional fear of falling
- Decreased physical activity

Decline in general function
- Loss of strength
- Loss of balance confidence
- Mobility impairment
- Increased falls risk

Disability
Fall Risk Factors in MS

• ~20 risk factors for falls have been investigated in persons with MS (Gunn et al. 2013).
  – 400 in healthy older adults

A retrospective study of 1089 persons with MS and falls (Finlayson et al., 2007):
  – Worsening impairment (disability)
  – balance and walking function

Home-based exercise

• Advantages
  – Minimize transportation issues
    • Other barriers to exercise
  – Cost effective?

• Disadvantages
  – Compliance
  – Lack of supervision
  – safety
Home-based Exercise Program

• 12 week home based program
  – 10 individualized progressive exercises targeting balance and lower limb strength
  - Manualized
  - Compliance logs
    - Biweekly phone calls compliance/adverse event
  – 4 training sessions
    • Week1, Week 2, Week 4 and Week 8

Project FARRMS: Fall Risk Reduction in MS

• Phase 1 RCT conducted to examine the safety and efficacy of 12-week home-based exercise program on fall risk in persons with MS.


Supported in part by pilot research grant from Consortium of MS Centers
Outcomes

• Physiological Profile Assessment (Lord, 2003)
Physiological Profile Assessment (PPA)

- Combined scores from physiologic tests used to provide an overall fall risk score
- Range: -2 (very low risk) to +4 (very marked risk)
- Falls-risk score over 1 is associated with a 60.7% risk of future fall
- Score less than one is linked with an 11.6% risk of future fall
- PPA is predictive of falls in persons with MS (Gunn et al. 2013)
Participant Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Exercise</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>61.5 (5.0)</td>
<td>59.6 (6.4)</td>
<td>0.47</td>
</tr>
<tr>
<td>MS Duration (years)</td>
<td>17.7 (11.3)</td>
<td>13.9 (6.7)</td>
<td>0.39</td>
</tr>
<tr>
<td>Gender (F/M)</td>
<td>10/2</td>
<td>8/2</td>
<td>0.45</td>
</tr>
<tr>
<td>Assistive Device (none/cane/walker)</td>
<td>4/3/5</td>
<td>4/2/4</td>
<td>0.84</td>
</tr>
<tr>
<td>EDSS_{sr} (median, IQR)</td>
<td>5.5 (2.5)</td>
<td>5.0 (2.5)</td>
<td>0.60</td>
</tr>
</tbody>
</table>
Physiological Fall Risk

Fall Risk Decreases After Home-based Exercise!!

Participants’ Feedback

Most beneficial aspect of program:
- “Learning new exercises to strengthen my core muscles, meeting with instructors to check progress and alter or modify exercise”
- “Learning that I can do some exercises”
- “getting me back into exercising regularly”
- “Improved bladder function”

• Least Beneficial aspect of program
  - “travel”
  - last visit
Adverse events

- 1 fall related injury (broken foot)
  - in control group
- 1 exacerbation
- Minor musculoskeletal pain

FARRMS 2 (RH21)

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Conclusion

• Home-based exercise can safely reduce fall risk and falls in high risk individuals with MS