Validation Of Self-Reported Balance And Mobility Measures In MS

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Background
- Clinician-administered performance measures form the gold standard in current practice for balance and mobility assessment in Multiple Sclerosis (MS).
- Self-reported instruments can be a useful alternative in providing an acceptable measure of disability due to minimal training required.
- Time constraints in clinical settings warrant the need to establish valid self-reported balance and mobility tools which can efficiently screen and target the ‘at-risk’ population.

Objectives
- To examine the relationship between the Activities-specific Balance Confidence (ABC) scale and MS Walking Scale-12 (MSWS-12) with various clinician-administered measures and retrospective fall history in people with MS.

Methods
- Retrospective.
- Sample of convenience (n=31).
- Criteria for inclusion: Clinically definite MS.

Table 1: Sample demographics (mean [range])

| Age (yr) | 54.7 (21-81) |
| Gender (M/F) | 20/9 |
| EDSS | 8.4 (3.1-12) |
| Time since diagnosis (yr) | 16.1 (1-29) |

Assessments
- The ABC scale\(^1\), a valid measure of balance confidence in elderly, where participants rate their balance confidence on a scale of 0% (not confident) to 100% (completely confident) for a series of 16 balance-challenging task related questions.
- The MSWS-12 questionnaire\(^2\): A 12-item patient based measure of walking ability in MS, where a participant rates the extent to which their ability to walk and perform activities in standing has been affected by MS in the previous 2 weeks on a scale of 1-5.
- Clinical balance and mobility measures:
  - Berg Balance Test (BBT)
  - Functional Reach (FR)
  - Timed-Up-and-Go (TUG)
  - Twenty-Five Foot Walk Test (25FWH)
  - Stairs Test (ST)
  - Six-Minute Walk Distance (6MWD)
  - Physical activity monitoring (SAPMON): usual physical activity monitored up to two weeks.
- Retrospective fall history in the previous month (falls/yr) and past year (falls/yr).

Figure 1: The ABC scale

Figure 2: The MSWS-12 scale

Figure 3: Berg Balance Test

Figure 4: Six-Minute Walk Test

Results
ABC scores were significantly correlated with BBT, TUG, 25FWALK, ST and 6MWD. MSWS-12 scores were also highly and significantly correlated with BBT, TUG, 25FWALK, ST and 6MWD. Both ABC and MSWS-12 demonstrated significant but low to moderate correlations with FR, 5AM stairs, falls/yr and falls/yr.

Table 2: Correlation of EDSS-C and Self-Report Scores

<table>
<thead>
<tr>
<th>EDSS-C</th>
<th>ABC</th>
<th>BBT</th>
<th>TUG</th>
<th>25FWH</th>
<th>ST</th>
<th>6MWD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.52</td>
<td>0.57</td>
<td>0.50</td>
<td>0.45</td>
<td>0.42</td>
<td>0.49</td>
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<td>2</td>
<td>0.58</td>
<td>0.62</td>
<td>0.55</td>
<td>0.49</td>
<td>0.46</td>
<td>0.53</td>
</tr>
<tr>
<td>3</td>
<td>0.60</td>
<td>0.64</td>
<td>0.57</td>
<td>0.50</td>
<td>0.48</td>
<td>0.55</td>
</tr>
<tr>
<td>4</td>
<td>0.62</td>
<td>0.66</td>
<td>0.59</td>
<td>0.52</td>
<td>0.48</td>
<td>0.57</td>
</tr>
<tr>
<td>5</td>
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<td>0.67</td>
<td>0.60</td>
<td>0.53</td>
<td>0.49</td>
<td>0.58</td>
</tr>
<tr>
<td>6</td>
<td>0.64</td>
<td>0.68</td>
<td>0.61</td>
<td>0.54</td>
<td>0.50</td>
<td>0.59</td>
</tr>
<tr>
<td>7</td>
<td>0.65</td>
<td>0.69</td>
<td>0.62</td>
<td>0.55</td>
<td>0.51</td>
<td>0.60</td>
</tr>
</tbody>
</table>

The significant correlations of the self-reported balance confidence (ABC) and the mobility measures (MSWS-12) with almost all the clinician-administered measures indicate varying degrees of comparative validity in measuring similar constructs.

Conclusions
- Self-measures such as ABC and MSWS-12 seem to be valid tools for balance and mobility assessment and thus can be used as surrogate end-points in people with MS.
- Such tools should be strongly encouraged in clinical settings for time-efficient identification of individuals with mobility impairments and ‘high-risk’ for falls.

References