Predicting discharge locomotor function for non-ambulatory individuals following stroke who participate in focused stepping practice during inpatient rehabilitation

Chris Henderson, PT, PhD
Jenni Moore, PT, DHS
T. George Hornby, PT, PhD

Study Purpose

1. Identify cutoff values in demographic and clinical measures to predict d/c locomotor function in non-ambulatory individuals following stroke participating in high intensity stepping training during inpatient rehabilitation

2. Develop clinical prediction rules for independent ambulation at d/c

Methods

• High intensity stepping program implemented as standard of care
  – Target 70-85% HRmax, RPEs 15-17
  – Maximize stepping 4/5 sessions/wk

• BBS, 10MWT, & 6MWT on 5th session/wk

• Primary dependent variable: Walk w/ contact guard or better at d/c

Results – Clinical Measures

<table>
<thead>
<tr>
<th>Admit Functional Status</th>
<th>Paretic LE strength (MMT avg)</th>
<th>BBS</th>
<th>10MWT (m/s)</th>
<th>6MWT (m)</th>
<th>6MWT LoA</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>1.8 [0.3-3.0]</td>
<td>5 [3-10]</td>
<td>0 [0.0-12]</td>
<td>8 [0-24]</td>
<td>2 [1-3]</td>
</tr>
</tbody>
</table>

DC Gait Function

- 0%: CGA
- 0-0.4: Ind Amb
- 0.4-0.8: Amb
- 0.8+: Independent ambulation
Results – Logistic Regression

• Admit measures (Sensitivity = 0.82, specificity = 0.61)

<table>
<thead>
<tr>
<th>p-value</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLE strength</td>
<td>0.004</td>
</tr>
<tr>
<td>Admit BBS</td>
<td>0.002</td>
</tr>
<tr>
<td>Constant</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Patient example
- Admit BBS = 5
- PLE strength = 1/5
- Score = 5 + (3 x 1) = 8

Patient has a 54% chance of walking with CGA or less at d/c

Results – Logistic Regression

• Week 1 measures (Sensitivity = 0.75, specificity = 0.86)

<table>
<thead>
<tr>
<th>p-value</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 BBS</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Constant</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Patient example
- Week 1 BBS = 15

Patient has a 74% chance of walking with CGA or less at d/c

Discussion and Conclusion

• Clinical prediction rule developed for stroke rehab with high intensity training

• Clinical, not demographic, measures independently discriminated > CGA at d/c
  - Admit BBS ≥ 5 is lower than previously reported
  - Week 1 measures were better predictors than admit measures

• Clinical prediction rule of walking with CGA or better
  - Admit: P strength and BBS
  - Week 1: BBS alone

• Results may only be applicable with attempts at similar PT interventions