<table>
<thead>
<tr>
<th>Reviewer ID: Christie Chan, John Zhu, Jeremy Mak, Kyle Diab</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of Outcome Measure:</strong> 6 Minute Walk Test</td>
</tr>
<tr>
<td><strong>Total articles:</strong> 15</td>
</tr>
<tr>
<td><strong>Author ID and Year</strong></td>
</tr>
</tbody>
</table>
| Amatachaya et al. 2014 | Cross-sectional | A major tertiary referral hospital in Thailand | N=94, 65 male  
Age (FIM7): 49.2 ±10.0  
Age (FIM6): 51.9 ±13.2  
Age (FIM5): 45.2 ±13.2  
Independent ambulatory individuals with SCI.  
FIM-Locomotor 7: 33; Time since Injury (months): 34.6 ± 26.56  
FIM-L 6: 31; Time since injury (months): 44.3 ± 43.2  
FIM-L 5: 30; Time Since Injury (months): 36.7 ± 30.6  
AIS-D=52  
Incomplete tetraplegia = 28 |
| Barbeau et al. 2007 | Longitudinal study comparing walking speed for 6MWT and the 15.2m walk test at 3, 6 and 12 months after entry into initial rehab | Spinal Cord Injury Locomotor Trial (SCILT) | SCILT: multi-center RCT  
N=107 AIS C and D  
N=38 ASIA B  
All had lesions b/w C5 and L3  
Group 1:  
N=66 individuals with SCI who completed both assessments 3 months after entry to rehab  
Group 2:  
N=69 individuals with SCI who completed both assessments 6 months after entry to rehab  
Group 3:  
N=70 individuals with SCI who completed both assessments 12 months after entry to rehab  
All patients underwent either 12 weeks of step training with body weight support on a treadmill combined with overground practice OR a defined overground mobility intervention (CONT). |
| Datta et al. 2009 | Cohort | The NeuroRecovery Network (NRN), a specialized network of treatment enters providing standardized, activity-based therapy for patients with SCI. | N=97 (71M, 26F)  
Mean Age: 38±17y  
Mean time since SCI = 11.9 months  
Incomplete SCI  
AIS C or D  
Mechanism of Injury:  
Motor Vehicle Accident = 34  
Fall = 29  
Sporting Accident = 16  
Other nontrauma = 8  
Medical/surgical = 6  
Violence = 4 |
| Ditunno et al. 2007 | Single-blinded, paralleled-group, multicenter randomized clinical trial | 6 regional SCI inpatient rehab. centres | N=146 (114M, 32F)  
Mean age = 32 years (range 16 – 69 years)  
Incomplete spinal cord injury patients who had a Functional Independence Measure locomotor score for walking of < 4 on entry. |
| Duffell et al. 2015 | Outpatient service at the Rehabilitation Institute of | | N=83 (26F, 57M)  
Age: 18 – 50  
Mean age = 47.28  
Incomplete SCI patients (AIS-C/D, SCI lvl above T10, 12month+ post |
<table>
<thead>
<tr>
<th>Study</th>
<th>Study Design</th>
<th>Sites/Participants</th>
<th>Details</th>
</tr>
</thead>
</table>
| Forrest et al. 2014      | Prospective observational cohort | Chicago 7 out-patient clinical sites in the Christopher and Dana Reeve Foundation NeuroRecovery Network (NRN) (Feb 2008-Apr 2011) | N=249, 190 male  
Mean age=42, SD=16  
Median time since SCI=0.7 yrs, range=0.1-21.6  
AIS-C = 20, D=179; 50 not evaluated  
Etiology: 15 non-trauma, 83 MVA, 54 fall, 45 sporting, 25 medicine/surgery, 10 other causes  
Median treatment sessions: 40; range=2-353 |
| Harkema et al 2016       | Prospective multicenter observational; NRS 13-item version | Chicago 6 outpatient rehabilitation centers in the Christopher and Dana Reeve Foundation NRN | N=152 (123M, 29F)  
Mean (SD) age: 36 (15)  
Median (range) time since SCI: 0.9 (0.1-45.2) years  
110 cervical, 42 thoracic  
AIS-A/B/C/D: 43/21/39/49  
Physician-referred outpatients without progressive lesions above T11, capable of stepping using body weight support, with ability to wean off anti-spasticity medication  
Median (range) number of sessions of NRN-standardized locomotor training: 70 (23-520) |
| Jackson et al. 2008      | A subcommittee of international experts evaluated locomotion measures | N/A | N = 54 expert raters |
| Musselman and Yang 2013  | Crossover trial               | N=20 (14M, 6F)  
Age: 46.0 ± 13.6  
Time since SCI (years): 5.4 ± 8.8  
Fast walkers (>0.5 m/s): N=9  
Self-selected walkers: N=11 |
| Olmos et al. 2008        | Cross-sectional study         | N=18 (12M, 6F)  
Age range: 19-72 years old  
All community-ambulating AIS D SCI patients, > 6 months post-injury, walking at a speed of at least 0.25 m/s |
| Pithon et al. 2015       | Ambulatory clinic of Hospital Universitário da Universidade Estadual de Campinas | N=9, all male  
Mean age = 32.78±11.58  
Time since SCI = 4-13yrs  
All AIS-A  
Lvl of injury T4~T12 |
median age: 58.5 yrs (range: 19-77)  
20 of 37 patients had a non-traumatic lesion injury level: 12 cervical, 14 thoracic, 11 lumbar |
| Tester et al 2016        | Prospective; testing the Neuromuscular 6 outpatient sites in the Christopher | N=72 (57M, 15F) completing 20 sessions of standardized locomotor training  
Mean (SD) age: 36 (15) |
<table>
<thead>
<tr>
<th>Author ID</th>
<th>Internal Consistency</th>
<th>Test-retest, Inter-rater, Intra-rater</th>
</tr>
</thead>
</table>
| van Hedel et al. 2005 | No data available | Intrarater = 0.981 (P<.001)  
Interrater = 0.970 (P<.001)  
Bland-Altman plot:  
Significant difference in intra-rater assessment (-20.5±27m) using paired t-test at p=0.002. No significant differences with inter-rater assessment (-14.8±33.6m). |
| Scivoletto et al. 2011 | No data available | The 6-MWT was tested on a longer track (50m) vs. on a short track (10m):  
The correlation between the results of the two methods was between 0.91 and 0.93  
The inter-rater reliability was between 0.99 and 1 for the two methods.  
The intra-rater reliability was between 0.98 and 0.99 for the two methods. |
| Pithon et al. 2015 | | Intra-rater reliability: $r^2 = 0.96$ |
## 2. VALIDITY

<table>
<thead>
<tr>
<th>Author ID</th>
<th>Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musselman and Yang 2013</td>
<td>Test-retest ICC: 0.989</td>
</tr>
</tbody>
</table>

### Musselman and Yang 2013

<table>
<thead>
<tr>
<th>Spearman correlation w/Walking Index for SCI (all P&lt;.001)</th>
</tr>
</thead>
<tbody>
<tr>
<td>At 3 months: $r = 0.76$</td>
</tr>
<tr>
<td>At 6 months: $r = 0.68$</td>
</tr>
<tr>
<td>At 12 months: $r = 0.69$</td>
</tr>
</tbody>
</table>

Spearman correlation w/50-foot Walking Speed (50-foot Walking Speed is very similar to 10-meter walk test) (all P<.001)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>At 3 months: $r = 0.95$</td>
</tr>
<tr>
<td>At 6 months: $r &gt; 0.80$</td>
</tr>
<tr>
<td>At 12 months: $r = 0.92$</td>
</tr>
</tbody>
</table>

Spearman correlation w/Functional Independence Measure- Locomotor Score (all P<.001)

<table>
<thead>
<tr>
<th>Spearman correlation w/Functional Independence Measure- Locomotor Score (all P&lt;.001)</th>
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</thead>
<tbody>
<tr>
<td>At 3 months: $r = 0.78$</td>
</tr>
<tr>
<td>At 6 months: $r = 0.69$</td>
</tr>
<tr>
<td>At 12 months: $r = 0.62$</td>
</tr>
</tbody>
</table>

Spearman correlation w/Berg Balance Scale (P<.001)

<table>
<thead>
<tr>
<th>Spearman correlation w/Berg Balance Scale (P&lt;.001)</th>
</tr>
</thead>
<tbody>
<tr>
<td>At 3 months: $r = 0.79$</td>
</tr>
</tbody>
</table>

The correlations with the Lower Extremity Motor Score at each of the time periods were 0.56 < $r$ < 0.63.

### Ditunno et al. 2007

Spearman correlation w/6 Minute Walk Test (6MW) and 10 Meter Walk Test (10MWT): $\rho = -0.95$, n=62

Correlations (Spearman rank):

6MW and Timed Up and Go (TUG): $\rho = -0.88$, n=62

Subgroups:

- WISCI II scores of 0 to 10:
  - 6MW and TUG: $\rho = -0.70$, n=15
  - 6MW and 10MWT: $\rho = -0.96$, n=15

- WISCI scores of 11 to 20
  - 6MW and TUG: $\rho = -0.78$, n=47
  - 6MW and 10MWT: $\rho = -0.93$, n=47

Dependent walking group:

- 6MW and TUG: $\rho = -0.74$, n=18
- 6MW and 10MWT: $\rho = -0.92$, n=19

Independent walking group:

- 6MW and TUG: $\rho = -0.88$, n=44
- 6MW and 10MWT: $\rho = -0.94$, n=43

Correlation of 6MW with Walking Index for Spinal Cord Injury (WISCI) II:

- Overall: $\rho = 0.60$, n=60
- Subgroups:
  - WISCI II scores of 0 to 10: $\rho = -0.22$, n=13
  - WISCI II scores of 11 to 20: $\rho = 0.64$, n=47
  - WISCI II dependent walking group: $\rho = -0.21$, n=15
  - WISCI II independent walking group: $\rho = 0.65$, n=45

### van Hedel et al. 2005

Correlations (Spearman rank):

6 Minute Walk Test (6MW) and 10 Meter Walk Test (10MWT): $\rho = -0.95$, n=62

6MW and Timed Up and Go (TUG): $\rho = -0.88$, n=62

Subgroups:

- WISCI II scores of 0 to 10:
  - 6MW and TUG: $\rho = -0.70$, n=15
  - 6MW and 10MWT: $\rho = -0.96$, n=15

- WISCI scores of 11 to 20
  - 6MW and TUG: $\rho = -0.78$, n=47
  - 6MW and 10MWT: $\rho = -0.93$, n=47

Dependent walking group:

- 6MW and TUG: $\rho = -0.74$, n=18
- 6MW and 10MWT: $\rho = -0.92$, n=19

Independent walking group:

- 6MW and TUG: $\rho = -0.88$, n=44
- 6MW and 10MWT: $\rho = -0.94$, n=43

Correlation of 6MW with Walking Index for Spinal Cord Injury (WISCI) II:

- Overall: $\rho = 0.60$, n=60
- Subgroups:
  - WISCI II scores of 0 to 10: $\rho = -0.22$, n=13
  - WISCI II scores of 11 to 20: $\rho = 0.64$, n=47
  - WISCI II dependent walking group: $\rho = -0.21$, n=15
  - WISCI II independent walking group: $\rho = 0.65$, n=45
<table>
<thead>
<tr>
<th>Author ID</th>
<th>Spearman correlation w/Lower Extremity Motor Score</th>
</tr>
</thead>
</table>
| van Hedel et al. 2006 | Within 1 month: $r = 0.54$ [P=.01]  
After 3 months: $r = 0.34$ [P=.12]  
After 6 months: $r = 0.49$ [P=.02]  
After 12 months: $r = 0.55$ [P<.01] |
| | Spearman correlation w/Walking Index for SCI II  
Within 1 month: $r = 0.78$ [P <.001]  
After 3 months: $r = 0.28$ [P=.20]  
After 6 months: $r = 0.36$ [P=.10]  
After 12 months: $r = 0.36$ [P=.10] |
| | Spearman correlation w/10-Meter Walk Test  
Within 1 month: $r = -0.91$ [P <.001]  
After 3 months: $r = -0.90$ [P<.001]  
After 6 months: $r = -0.87$ [P<.001]  
After 12 months: $r = -0.86$ [P<.001] |
| Datta et al. 2009 | Correlation between the first principle component of change in Berg Balance Scale items and changes in six-minute walk distance:  
Kendall $\tau =0.34$  
Spearman $p = 0.48$  
P<0.01 for all |
| Forrest et al. 2014 | “Significantly higher speeds occurred with higher classifications [SCI-FAI] for both the 6MWT and 10MWT”  
Pearson’s r with 10MWT:  
At enrollment in the NRN: $r=0.93$  
At discharge: $r=0.94$  
Overall: $r=0.94$  
Regression analysis with 10MWT shows regression differing significantly with line of agreement – 6MWT & 10MWT not redundant (p<0.001) |
| Amatachaya et al. 2014 | Pearson’s correlation with 10MWT:  
In FIM-L=6 patients, $r = 0.74$, p<0.001  
In FIM-L=7 patients, $r = 0.83$, p<0.001  
In FIM-L=5 patients, $r = 0.31$, p=0.113 |
| Jackson et al. 2008 | Content Validity:  
Expert Evaluations (52 votes):  
Valid or Useful: 19 (37%)  
Useful but requires validation: 30 (58%)  
Not useful or valid for research: 3 (6%) |
| Harkema et al 2016 | Pearson’s r (95%CI) with ASIA Motor Scales:  
UEMS: 0.24 (0.15-0.34)  
LEMS: 0.70 (0.64-0.76)  
ASIA Motor Score: 0.64 (0.58-0.71) |

3. RESPONSIVENESS

<table>
<thead>
<tr>
<th>Author ID</th>
<th>Responsiveness</th>
</tr>
</thead>
</table>
| van Hedel et al. 2006 | The 6MWT differed between 1 month and 3 months (mean score increased from 314 to 473 metres, P<.001) and between 3 months and 6 months (mean score increased from 473 to 502 metres, P=.01) but not between 6 months and 12 months (mean score decreased from 502 to 495 metres, P=.76)  
Friedman’s test ($\alpha = 0.05$) between 4 intervals:  
$DF = 3$  
$F_r = 38.9$ |
**P < 0.001**

Pair-wise comparisons via Wilcoxon’s signed rank test:
- Between intervals 1 and 2: P < .001
- Between intervals 2 and 3: P = .01
- Between intervals 3 and 4: P = .76

**Musselman and Yang 2013**
With 2 month endurance training:
SRM: 0.88

**Harkema et al 2016**
Standardized Response Means after Locomotor Training:
- All individuals: 0.48
- AIS-A/B: non-ambulatory
- AIS-C: 0.50
- AIS-D: 0.83

Median (range) number of sessions of NRN-standardized locomotor training: 70 (23-520)

**4. FLOOR/CEILING EFFECT** – no data available

**5. INTERPRETABILITY**

<table>
<thead>
<tr>
<th>Author ID</th>
<th>Interpretability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lam et al. 2007</td>
<td>SEM = 16.5 meters</td>
</tr>
<tr>
<td></td>
<td>MDC = 45.8 meters</td>
</tr>
<tr>
<td>van Hedel et al. 2006</td>
<td>6 MWT scores in metres: Mean (SD), Median</td>
</tr>
<tr>
<td></td>
<td>Within 1st month: 314 (137.0), 323</td>
</tr>
<tr>
<td></td>
<td>After 3 months: 473 (110.1), 465</td>
</tr>
<tr>
<td></td>
<td>After 6 months: 502 (132.6), 505</td>
</tr>
<tr>
<td></td>
<td>After 12 months: 495 (125.1), 285</td>
</tr>
<tr>
<td>Olmos et al. 2008</td>
<td>All participants were tested 3 times in both environments (Experimental – indoor gym and Natural – community setting) on the same time with an interval of 60 min between each test.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Experimental environment</th>
<th>Natural environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>382.39 m</td>
<td>401.44 m</td>
</tr>
<tr>
<td>Median</td>
<td>371.75 m</td>
<td>367.80 m</td>
</tr>
<tr>
<td>SD</td>
<td>120.988 m</td>
<td>130.276 m</td>
</tr>
<tr>
<td>Min</td>
<td>151 m</td>
<td>151 m</td>
</tr>
<tr>
<td>Max</td>
<td>560 m</td>
<td>584 m</td>
</tr>
</tbody>
</table>

**Barbeau et al. 2007**
Comparison of walking speed within subjects with upper motor neuron lesions during the SCIL T:

<table>
<thead>
<tr>
<th>Months after entry to trial:</th>
<th>n</th>
<th>Walking speed (m/s) over 6 minutes</th>
<th>Walking speed (m/s) over 15.2 m</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>66</td>
<td>0.64 (0.06)</td>
<td>0.72 (0.05)</td>
<td>.14</td>
</tr>
<tr>
<td>6</td>
<td>69</td>
<td>0.79 (0.05)</td>
<td>0.92 (0.06)</td>
<td>.29</td>
</tr>
<tr>
<td>12</td>
<td>70</td>
<td>0.88 (0.06)</td>
<td>1.08 (0.06)</td>
<td>.001</td>
</tr>
</tbody>
</table>

Gait speed was very similar at 3 and 6 month testing b/w 15.2m and 6 minute walking tests; however, gait speed was significantly faster during the 12 month follow up for the 15.2 m test.

Walking Speeds (Mean, Standard Error) Used for the 15.2-m Versus 6-Minute Walk by the Slowest, Middle (25%-75%), and Fastest Patients at Each Data Collection

<table>
<thead>
<tr>
<th>Time:</th>
<th>Variable:</th>
<th>Quartile:</th>
<th># of patients:</th>
<th>Mean (m/s) (Standard error)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 months</td>
<td>15.2-m 6-minute</td>
<td>Lower</td>
<td>14</td>
<td>0.20 (0.06)</td>
<td>.15</td>
</tr>
<tr>
<td></td>
<td>0.16 (0.06)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.2-m 6-minute</td>
<td>Middle</td>
<td>33</td>
<td>0.74 (0.05)</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.62 (0.29)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15.2-m 6-minute</td>
<td>Upper</td>
<td>19</td>
<td>1.55 (0.06)</td>
<td>.01</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------</td>
<td>--------</td>
<td>------</td>
<td>-------------</td>
<td>-----</td>
</tr>
<tr>
<td><strong>6 months</strong></td>
<td></td>
<td>Lower</td>
<td>10</td>
<td>0.18 (0.06)</td>
<td>.84</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle</td>
<td>39</td>
<td>0.86 (0.04)</td>
<td>.53</td>
</tr>
<tr>
<td><strong>12 months</strong></td>
<td></td>
<td>Lower</td>
<td>16</td>
<td>0.32 (0.07)</td>
<td>.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle</td>
<td>34</td>
<td>1.01 (0.06)</td>
<td>.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upper</td>
<td>20</td>
<td>1.88 (0.06)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Forrest et al. 2014
SRD = 0.08m/s (Nearly no diff. btwn fast (>=0.44m/s) & slow walkers (<0.44m/s))
MCID (for SCI-FAI < 5 at enrollment patients) = 0.11m/s (for slow walkers (<0.44m/s) = 0.1-0.15m/s)

Musselman and Yang 2013
MDC: 34.4 m (0.0956 m/s)
SEM: 12.3 m (0.0342 m/s)

Duffell et al. 2015
MDC: 37.1 m (0.103 m/s)

Tester et al. 2016
Smallest Real Difference* (SRD): 0.086m/s
*Analogous to Minimal Detectable Change

Harkema et al. 2016
Median (Range) 6MWT Distances:
- All individuals:
  - Enrollment: 0 (0-549)
  - Discharge: 0 (0-700)
- AIS-A/B:
  - Non-ambulatory
- AIS-C:
  - Enrollment: 0 (0-114)
  - Discharge: 0 (0-534)
- AIS-D:
  - Enrollment: 57 (0-549)
  - Discharge: 264 (0-700)
* Enrollment = pre-intervention; discharge = post-intervention; median (range) number of sessions of NRN-standardized locomotor training: 70 (23-520)