

Reviewer ID: Christie Chan, John Zhu, Jeremy Mak, Kyle Diab, Joanne Chi			
Type of Outcome Measure: 10 Meter Walk Test (10MWT)			Total articles: 23
Author ID Year	Study Design	Setting	Population (sample size, age) and Group
Rini et al. 2018	Cohort Study	Department of Physical Medicine and Rehabilitation, Christian Medical College, India	N=25 (22M/3F) Mean age: 27 years Age range: 18-60 years Mean time since injury: 5.5 years AIS A or B
Perez-Sanpablo et al. 2017	Observational, descriptive, transversal	National Institute of Rehabilitation, Mexico City	N=23 (15M/8F) Mean Age: 45.6 ± 12.6 years Mean Time since injury: 42 ± 117 months AIS D, motor subacute and chronic incomplete
Amatachaya et al. 2014	Cross-sectional	A major tertiary referral hospital in Thailand	N=95 (65M, 30 F) Age (FIM7): 49.2 ± 10.0 Age (FIM6): 51.9 ± 13.2 Age (FIM5): 45.2 ± 13.2 Independent ambulatory individuals with SCI FIM7: 33; Time since Injury (months): 34.6 ± 26.56 FIM6: 31; Time since injury (months): 44.3 ± 43.2 FIM5: 30; Time Since Injury (months): 36.7 ± 30.6 AIS-D=52 Incomplete tetraplegia = 28
Datta et al. 2009	Cohort	The NeuroRecovery Network (NRN), a specialized network of treatment centers 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, parallel-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	N=83, 57 male Mean age = 47.28 Incomplete SCI patients (AIS-C/D, SCI lvl above T10, 12month+ post injury, able to ambulate) treated with either Lokomat, tizanidine, or no

		n Institute of Chicago	intervention
Forrest et al. 2014	Prospective observational cohort	seven outpatient 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	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
Lam et al. 2008	Meta-analysis	N/A	N/A
Lemay & Nadeau 2010	Longitudinal	An intensive rehabilitation center in Montreal, Canada (Institut de readaptation Gingras-Lindsay de Montreal)	N=32 (25M, 7F) mean age: 47.9± 12.8 yrs Neurological level: 15 paraplegic, 17 tetraplegic Level of injury: 17 cervical, 10 thoracic, 5 lumbar Type of injury: 21 traumatic, 11 non-traumatic Inclusion criteria: (1) Adults with SCI AIS D either of traumatic or nontraumatic etiology and (2) the ability to walk 10m independently with or without upper-extremity assistive devices.
Musselman and Yang 2013	Crossover trial		N=20 (14M, 6F) Age: 46.0 ± 13.6 Time since SCI (years): 5.4 ± 8.8
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
Poncumhak, et al.	Cross-sectional	A tertiary rehabilitation	N=60, 42 male Mean age = 49.95

"Ability of walking..." 2014		center in Thailand	Mean time since injury = 55.5 yrs 26 traumatic, 34 non-traumatic 7 AIS-C, 53 AIS-D 23 tetraplegia, 37 paraplegia 30 with walking device, 30 without device Independent ambulatory SCI patients
Poncumhak, et al. "Reliability and validity..." 2013	Cross-sectional	A tertiary rehabilitation center, Thailand.	Validity Test: N=66 (46M, 20 F) FIM-L 6: N=33, mean age = 50.9±13.5, AIS-C=9, AIS-D=24, tetraplegia=9, paraplegia=24 FIM-L 7: N=33, mean age = 50.23±9.5, AIS-C=1, AIS-D=32, tetraplegia=13, paraplegia=20 Reliability Test: N=16, mean age = 50.8±10.3 AIS-C=2, AIS-D=15, tetraplegia=6, paraplegia=10
Saensook, et al. 2014	Cross-sectional		N=85, 59 male 30 used walkers, 7 used crutches, 11 used canes, 37 no device AIS-C = 22/85 59/85 paraplegia
Scivoletto et al. 2011		SCI unit of a rehabilitation hospital.	N=37 (28M, 9F) 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
Srisim et al. 2015	Prospective cohort study	Tertiary Rehab Center (Thailand)	N = 83 23 Multiple Fallers (Age: 44.21 ± 10.7): Time Since injury (months): 58.70 ± 60.03 AIS C: 9 (39%) 60 Non-multiple fallers (52.68 ± 11.21): Time Since injury (months): 46.72 ± 36.42 AIS C: 12 (20%)
Tester et al 2016	Prospective; testing the Neuromuscular Recovery Scale 14-item version	6 outpatient sites in the Christopher and Dana Reeve Foundation NeuroRecovery Network	N=72 (57M, 15F) completing 20 sessions of standardized locomotor training Mean (SD) age: 36 (15) Median (range) time since SCI: 0.7 (0.1-14.7) years N=45 longer than 6 months 44 cervical, 28 thoracic AIS-A/B/C/D: 17/10/20/25
van Hedel et al. 2006	Longitudinal study (1, 3, 6, and 12 months after injury)	European Multicenter Study of Human SCI	N=22 (18M, 4F) Mean age=45.5±16.7 years All subjects have incomplete injuries and have achieved walking capacity in early stages after injury. Cervical =13 Thoracic = 1 Lumbar = 7 Sacral = 1
van Hedel et al. 2009		European Multicenter	N=886 SCI subjects

		Study for Human Spinal Cord Injury (EM-SCI)	413 AIS A subjects: 39±18 yrs, 65% paraplegic, 19% female 113 AIS B subjects: 42±18 yrs, 44% paraplegic, 27% female 137 AIS C subjects: 48±20 yrs, 47% paraplegic, 32% female 223 AIS D subjects: 47±17 yrs, 37% paraplegic, 22% female
van Hedel et al 2005	Cross-sectional study with repeated assessment	SCI centre of university hospital in Switzerland	Validity: N = 75 (45M, 30F) Mean age = 54±20 years Cervical = 25 Thoracic = 21 Lumbar = 21 Sacral = 8 Reliability N = 22 (14M, 8F) Mean age = 52±20 years Cervical = 7 Thoracic = 7 Lumbar = 7 Sacral = 1
Wirz et al. 2010		Spinal Cord Injury Center of the Balgrist University Hospital, Zurich, Switzerland	N=42 (33M, 9F) mean age: 49.3±11.5 yrs AIS A: 2 AIS B: 2 AIS C: 35 AIS D: 3 Inclusion criteria: - received either inpatient rehabilitation or out-patient physiotherapy between January 1998 and September 2007 - experienced an SCI at least 1 year prior to enrollment able to walk for a minimum distance of 15 m

1. RELIABILITY

Author ID	Internal Consistency	Test-retest, Inter-rater, Intra-rater
van Hedel et al. 2005	No data available	Intrarater r = 0.983, P<.001 Interrater r = 0.974, P<.001 Bland-Altman plot: No significant differences between intra-rater (0.5±6.0s) and inter-rater (-0.1±7.0s) assessment
Scivoletto et al. 2011	No data available	The 10 MWT was tested with static start (10m) vs dynamic start (14m): The correlation between the results of the two methods was between 0.98 and 0.99. The inter-rater reliability was between 0.95 and 0.98 for both the methods. The intra-rater reliability was between 0.98 and 0.99.
Poncumhak et al.		Interrater: ICC (N=20) = 0.994 (95%CI=0.988~0.998), p<0.001

2014		
Poncumhak et al. 2013		Interrater: ICC = 0.999 (0.996-1.000) for FIM-L 6 (N=8); 1.000 (0.999-1.000) for FIM-L 7 (N=8)
Musselman and Yang 2013		Test-retest: ICC: 0.981 (self-selected pace) and 0.977 (fast pace)
Srisim et al. 2015		Interrater: ICC= 0.997 (0.994-0.998)
Perez-Sanpablo et al. 2017		Test-retest:ICC: 0.97-0.983
Rini et al. 2018		Test-retest: ICC: 0.99 [95%], SEM: 0.01
2. VALIDITY		
Author ID	Validity	
van Hedel et al. 2005	<p>10MWT and Timed Up and Go (TUG): $r = 0.89$, $n=70$ 6 Minute Walk Test (6MWT) and 10MWT: $\rho = -0.95$, $n=62$</p> <p>Subgroups: Walking Index for Spinal Cord Injury (WISCI) scores of 0 to 10: 10MWT and TUG: $r=0.92$, $n=23$ 6MWT and 10MWT: $r=-0.96$, $n=15$</p> <p>WISCI scores of 11 to 20 10MWT and TUG: $r=0.79$, $n=47$ 6MWT and 10MWT: $r=-0.93$, $n=47$</p> <p>Dependent walking group: 10MWT and TUG: $r=0.88$, $n=27$ 6MWT and 10MWT: $\rho=-0.92$, $n=19$</p> <p>Independent walking group: 10MWT and TUG: $r=0.86$, $n=43$ 6MWT and 10MWT: $\rho=-0.94$, $n=43$</p> <p>10MWT with WISCI II: Overall: $\rho=-0.68$, $n=67$</p> <p>Subgroups:</p> <ul style="list-style-type: none"> WISCI II scores of 0 to 10: $\rho = -0.24$, $n=20$ WISCI II scores of 11 to 20: $\rho = -0.49$, $n=47$ WISCI II dependent walking group: $\rho = -0.35$, $n=24$ WISCI II independent walking group: $\rho = -0.48$, $n=43$ 	
van Hedel et al. 2006	<p>10MWT time:</p> <p>Spearman correlation w/Lower Extremity Motor Score Within 1 month: $r = -0.45$ [P=.04] After 3 months: $r = -0.30$ [P=.18] After 6 months: $r = -0.40$ [P=.06] After 12 months: $r = -0.39$ [P=.07]</p>	

	<p>Spearman correlation w/Walking Index for SCI II Within 1 month: $r = -0.79$ [$P < .001$] After 3 months: $r = -0.21$ [$P = .35$] After 6 months: $r = -0.37$ [$P = .09$] After 12 months: $r = -0.37$ [$P = .09$]</p> <p>Spearman correlation w/6 minute 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: $r = -0.86$ [$P < .001$]</p>
Ditunno et al. 2007	<p>10MWT speed: Spearman correlation w/Walking Index for SCI (all $P < .001$) At 3 months: $r = 0.78$ At 6 months: $r = 0.85$ At 12 months: $r = 0.77$</p> <p>Spearman correlation w/6-Minute Walking Test (all $P < .001$) At 3 months: $r = 0.95$ At 6 months: $r > 0.80$ At 12 months: $r = 0.92$</p> <p>Spearman correlation w/Berg Balance Scale (BBS) (all $P < .001$) At 3 months: $r = 0.81$ At 6 months: $r > 0.80$ ($r = 0.86$) At 12 months: $r = 0.78$</p> <p>Spearman correlation w/Functional Independence Measure (FIM) ($P < .001$) At 3 months: $r = 0.57$</p> <p>Spearman correlation w/FIM Locomotor Score (all $P < .001$) At 3 months: $r = 0.80$ At 6 months: $r > 0.80$ At 12 months: $r = 0.66$</p> <p>Spearman correlation w/Lower Extremity Motor Score (all $P < .001$) At 3 months: $r = 0.64$ At 6 months: $r > 0.80$ At 12 months: $r = 0.92$</p>
Wirz et al. 2010	<p>The BBS correlated strongly and significantly with the 10MWT ($r = .93$, $P < .001$)</p> <p>10MWT correlations with: Falls total: $r = -.10$ ($P = .52$) Spinal Cord Independence Measure (SCIM) mobility score: $r = .89$ ($P < .001$) WISCI: $r = .81$ ($P < .001$) Falls Efficacy Scale (FES-I): $r = -.83$ ($P < .001$) Motor scores: $r = .60$ ($P < .001$)</p>
van Hedel et al. 2009	<p>10 MWT vs 5 functional ambulation categories constructed from SCIM II: correlation coefficients after: 1 month: $\rho = .84$ ($P < .001$) 3 months: $\rho = .93$ ($P < .001$) 6 months: $\rho = .95$ ($P < .001$) 12 months: $\rho = .97$ ($P < .001$)</p>
Datta et	<p>Correlation between the first principle component of changes in BBS item in ten-meter walk speed:</p>

al. 2009	<p>Kendall $\tau = 0.34$ Spearman $\rho = 0.46$</p> <p>$P < .01$ for all</p>
Lemay & Nadeau 2010	<p>Spearman's correlations of 10MWT with other walking scales: (all $P < .01$) BBS: 0.792 Spinal Cord Injury – Functional Ambulation Inventory (SCI-FAI) parameter: 0.777 SCI-FAI assistive devices: 0.788 SCI-FAI mobility: 0.756 WISCI II: 0.795</p> <p>The following are Pearson's product moment correlation instead of Spearman's ρ): 2MWT: 0.932 TUG: -0.646 (all $P < .01$)</p>
Forrest et al. 2014	<p>"Significantly higher speeds occurred with higher classifications [SCI-FAI] for both the 6MWT and 10MWT"</p> <p>Pearson's r with 6MWT: At enrollment in the NRN: $r = 0.93$ At discharge: $r = 0.94$ Overall: $r = 0.94$</p> <p>Regression analysis with 6MWT shows regression differing significantly with line of agreement – 6MWT & 10MWT not redundant ($p < 0.001$)</p>
Amatachaya et al. 2014	<p>Pearson's correlation with 6MWT: 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, $r = 0.31$, $p = 0.113$</p>
Poncumhak et al. 2014	<p>Score of > 0.67 m/second "had good-to-excellent capability to determine the ability of walking without a walking device of subjects with SCI"</p> <p>ROC curve area: 0.96 (95%CI=0.91~1.00) Sensitivity=90% Specificity=87%</p>
Poncumhak et al. 2013	<p>Point biserial correlations ($p < 0.05$): With FIM-L Scores: coefficient = 0.778 With TUGT Scores: coefficient = -0.692</p>
Srisim et al. 2015	<p>Unable to predict and discriminate non-multiple fallers and multiple fallers Ability of cut-off score (≥ 10 s) to predict risk of multiple falls: Sensitivity: 56% Specificity: 69% AUC: 0.57</p>
Jackson et al. 2008	<p>Content Validity: Expert Evaluations (53 votes): Valid or Useful: 32 (60%) Useful but requires validation: 20 (38%) Not useful or valid for research: 1 (2%)</p>
Harkema et al. 2016	<p>Pearson's r (95%CI) with ASIA Motor Scales: UEMS: 0.24 (0.15-0.34) LEMS: 0.69 (0.63-0.75) ASIA Motor Score: 0.63 (0.57-0.69)</p>

Perez-Sanpablo et al. 2017	<p>High criterion validity with 6MWT -0.86 to -0.95</p> <p>Moderate to High construct validity with WISCI-II r=-0.37 to -0.795</p> <p>Adequate construct validity with LEMS r= -0.4 to -0.39</p>
3. RESPONSIVENESS	
Author ID	Responsiveness
van Hedel et al. 2006	<p>The 10MWT differed between 1 month and 3 months (mean time taken to complete the test decreased from 13 to 8 seconds, P<.001) and between 3 months and 6 months (mean time taken to complete the test stayed at 8 seconds, P=.005) but not between 6 months and 12 months (mean time taken to complete the test stayed at 8 seconds, P=.91)</p> <p>Friedman's test ($\alpha = 0.05$) between 4 intervals: DF = 3 F_r = 41.4 P < 0.001</p> <p>Pair-wise comparisons via Wilcoxon's signed rank test: Between intervals 1 and 2: P<.001 Between intervals 2 and 3: P=.005 Between intervals 3 and 4: P=.91</p>
Musselman and Yang 2013	<p>With 2 month endurance training: SRM: 0.62 (Self-selected pace) and 0.75 (fast pace)</p> <p>With 2 month precision training: SRM: 0.64 (Self-selected pace) and 0.79 (Fast pace)</p>
Harkema et al 2016	<p>Standardized Response Means after Locomotor Training: All individuals: 0.51 AIS-A/B: non-ambulatory AIS-C: 0.50 AIS-D: 0.98</p> <p>Median (range) number of sessions of NRN-standardized locomotor training: 70 (23-520)</p>
4. FLOOR/CEILING EFFECT – no data available	
5. INTERPRETABILITY	
Author ID	Interpretability
Lam et al. 2008	<p>SEM: 0.05 m/s MDC: 0.13 m/s</p> <p>Mean change between 1 and 3 months post-injury: effect size = 0.92 Mean change between 3 and 6 months post-injury: effect size = 0.47</p>
Scivoletto et al. 2011	<p>The 10MWT was performed in a median of 19 s (25th–75th interquartile range 13–28), with the static start and in a median of 18.4s (25th–75th interquartile range 12.6–29.9) with the dynamic start (P=0.092).</p> <p>When examining the patients according to either high or low WISCI level, the results for static and dynamic starts were comparable. Patients (N=15) with high WISCI levels (18–20) performed the test in a median of 13.17s (25th–75th interquartile range 10.8–19) with the static start and a median of 12.7s (25th–75th interquartile range 10–18.5) with the dynamic one (P=.17). Patients (N=6) with low WISCI levels (9–12) performed the test in a median of 19.8s (25th–75th interquartile range 15–32.3) with the static start and a median of 19.8s (25th–75th interquartile range</p>

	14.6–30.9) with the dynamic one (P=.46).																		
van Hedel et al. 2006	10 MWT scores in seconds: Mean (SD), Median Within 1 st month: 13 (6.8), 11 After 3 months: 8 (3.2), 8 After 6 months: 8 (2.6), 7 After 12 months: 8 (2.6), 7																		
Lemay & Nadeau 2010	Mean (SD) 10-MWT score (m/s): All participants: 0.81 (0.34), range: 0.08-1.43 Paraplegia subgroup: 0.73 (0.32), range: 0.08-1.35 Tetraplegia subgroup: 0.87 (0.34), range: 0.34-1.43																		
Olmos et al. 2008	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. <table border="1" data-bbox="207 625 841 842"> <thead> <tr> <th></th> <th>Experimental environment</th> <th>Natural environment</th> </tr> </thead> <tbody> <tr> <td>Mean</td> <td>1.3706</td> <td>1.3567</td> </tr> <tr> <td>Median</td> <td>1.3400</td> <td>1.3150</td> </tr> <tr> <td>SD</td> <td>0.39251</td> <td>0.39079</td> </tr> <tr> <td>Min</td> <td>0.52</td> <td>0.51</td> </tr> <tr> <td>Max</td> <td>2.12</td> <td>1.91</td> </tr> </tbody> </table> <p>All above variables are in m/s.</p>		Experimental environment	Natural environment	Mean	1.3706	1.3567	Median	1.3400	1.3150	SD	0.39251	0.39079	Min	0.52	0.51	Max	2.12	1.91
	Experimental environment	Natural environment																	
Mean	1.3706	1.3567																	
Median	1.3400	1.3150																	
SD	0.39251	0.39079																	
Min	0.52	0.51																	
Max	2.12	1.91																	
Forrest et al. 2014	SRD = 0.10m/s (Nearly no diff. btwn fast (≥ 0.44 m/s) & slow walkers (< 0.44 m/s)) MCID (for SCI-FAI < 5 at enrollment patients) = 0.15m/s (for slow walkers (< 0.44 m/s) = 0.1-0.15m/s)																		
Duffell et al. 2015	MID = 0.11m/s																		
Poncumhak et al. 2014	SEM = 0.03																		
Musselman and Yang 2013	MDC: 0.15 (self-selected pace) and 0.17 (fast pace) m/s SEM: 0.05 (self-selected pace) and 0.06 (fast pace) m/s																		
Srisim et al. 2015	SEM: 0.20																		
Saensook et al. 2014	10MWT distinguishes subjects walking with canes and subjects walking with walkers ($p < 0.001$)																		
Tester et al 2016	Smallest Real Difference (SRD): 0.105m/s																		
Harkema et al 2016	Median (Range) 10MWT Speeds: All individuals: Enrollment: 0 (0-1.96) Discharge: 0 (0-2.62) AIS-A/B: Non-ambulatory AIS-C: Enrollment: 0 (0-0.49) Discharge: 0 (0-1.72) AIS-D: Enrollment: 0.25 (0-1.96) Discharge: 0.81 (0-2.62) * Enrollment = pre-intervention; discharge = post-intervention; median (range) number of sessions of NRN-standardized locomotor training: 70 (23-520)																		

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