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 $\pm$ 12.6 years Mean Time since injury: 42 $\pm$ 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, paralled-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 Rehabilitatio	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 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	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	10MWT and Timed Up and Go (TUG): r = 0.89, n=70 6 Minute Walk Test (6MWT) and 10MWT: ρ = -0.95, n=62 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 WISCI scores of 11 to 20 10MWT and TUG: r=0.79, n=47 6MWT and 10MWT: r=-0.93, n=47 Dependent walking group: 10MWT and TUG: r=0.88, n=27 6MWT and 10MWT: ρ=-0.92, n=19 Independent walking group: 10MWT and TUG: r=0.86, n=43 6MWT and 10MWT: ρ=-0.94, n=43 10MWT with WISCI II: Overall: ρ=-0.68, n=67 Subgroups: • WISCI II scores of 0 to 10: ρ = -0.24, n=20 • WISCI II scores of 11 to 20: ρ = -0.49, n=47 • WISCI II dependent walking group: ρ = -0.35, n=24 • WISCI II independent walking group: ρ = -0.48, n=43
van Hedel et al. 2006	**10MWT time:** **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]

	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] **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]
Ditunno et al. 2007	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 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 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 Spearman correlation w/Functional Independence Measure (FIM) (P<.001) At 3 months: r = 0.57 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 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
Wirz et al. 2010	The BBS correlated strongly and significantly with the 10MWT (r=.93, P<.001) 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)
van Hedel et al.2009	10 MWT vs 5 functional ambulation categories constructed from SCIM II: correlation coefficients after: 1 month: ρ=.84 (P<.001) 3 months:ρ=.93 (P<.001) 6 months:ρ=.95 (P<.001) 12 months:ρ=.97(P<.001)
Datta et	Correlation between the first principle component of changes in BBS item in ten-meter walk speed:

al. 2009	Kendall τ = 0.34 Spearman p = 0.46 P<.01 for all
Lemay & Nadeau 2010	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 The following are Pearson's product moment correlation instead of Spearman's ρ): 2MWT: 0.932 TUG: -0.646 (all P<.01)
Forrest et al. 2014	"Significantly higher speeds occurred with higher classifications [SCI-FAI] for both the 6MWT and 10MWT" Pearson's r with 6MWT: At enrollment in the NRN: r=0.93 At discharge: r=0.94 Overall: r=0.94 Regression analysis with 6MWT shows regression differing significantly with line of agreement – 6MWT & 10MWT not redundant (p<0.001)
Amatachaya et al. 2014	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
Poncumhak et al. 2014	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" ROC curve area: 0.96 (95%CI=0.91~1.00) Sensitivity=90% Specificity=87%
Poncumhak et al. 2013	Point biserial correlations (p<0.05): With FIM-L Scores: coefficient = 0.778 With TUGT Scores: coefficient = -0.692
Srisim et al. 2015	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
Jackson et al. 2008	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%)
Harkema et al 2016	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)

Perez-Sanpablo et al. 2017	High criterion validity with 6MWT -0.86 to -0.95 Moderate to High construct validity with WISCI-II r=-0.37 to -0.795 Adequate construct validity with LEMS r= -0.4 to -0.39
3. RESPONSIVENESS	
Author ID	**Responsiveness**
van Hedel et al. 2006	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) Friedman's test (α = 0.05) between 4 intervals: DF = 3 F_r = 41.4 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=.005 Between intervals 3 and 4: P=.91
Musselman and Yang 2013	With 2 month endurance training: SRM: 0.62 (Self-selected pace) and 0.75 (fast pace) With 2 month precision training: SRM: 0.64 (Self-selected pace) and 0.79 (Fast pace)
Harkema et al 2016	Standardized Response Means after Locomotor Training: All individuals: 0.51 AIS-A/B: non-ambulatory AIS-C: 0.50 AIS-D: 0.98 Median (range) number of sessions of NRN-standardized locomotor training: 70 (23-520)
4. FLOOR/CEILING EFFECT – no data available	
5. INTERPRETABILITY	
Author ID	**Interpretability**
Lam et al. 2008	SEM: 0.05 m/s MDC: 0.13 m/s 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
Scivoletto et al. 2011	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). 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

<table>
<tr><td></td><td>14.6–30.9) with the dynamic one (P=.46).</td></tr>
<tr><td>van Hedel et al. 2006</td><td>10 MWT scores in seconds: Mean (SD), Median
Within 1st 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</td></tr>
<tr><td>Lemay & Nadeau 2010</td><td>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</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.

<table><tr><td></td><td>Experimental environment</td><td>Natural environment</td></tr><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></table>All above variables are in m/s.</td></tr>
<tr><td>Forrest et al. 2014</td><td>SRD = 0.10m/s (Nearly no diff. btwn fast (>=0.44m/s) & slow walkers (<0.44m/s))
MCID (for SCI-FAI < 5 at enrollment patients) = 0.15m/s (for slow walkers (<0.44m/s) = 0.1-0.15m/s)</td></tr>
<tr><td>Duffell et al. 2015</td><td>MID = 0.11m/s</td></tr>
<tr><td>Poncumhak et al. 2014</td><td>SEM = 0.03</td></tr>
<tr><td>Musselman and Yang 2013</td><td>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</td></tr>
<tr><td>Srisim et al. 2015</td><td>SEM: 0.20</td></tr>
<tr><td>Saensook et al. 2014</td><td>10MWT distinguishes subjects walking with canes and subjects walking with walkers (p<0.001)</td></tr>
<tr><td>Tester et al 2016</td><td>Smallest Real Difference (SRD): 0.105m/s</td></tr>
<tr><td>Harkema et al 2016</td><td>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)</td></tr>
</table>

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Articles up-to-date as of: July 2019