Reviewer ID: Christie Chan, John Zhu, Jeremy Mak, Gita Manhas			
Type of Outcome Measure: Berg Balance Scale (BBS)			**Total articles:** 9
Author ID and Year	**Study Design**	**Setting**	**Population (sample size, age) and Group**
Jørgensen et al. 2017	Cross-sectional	Sunnaas Rehabilitation Hospital, Norway	N=46 (32M, 14F) Mean age (SD) = 54.4 (17.0) Duration of injury = 6.5 years; range 1-41 years AIS A, B and C = 15% AIS D = 85% 74% able to walk 10m without aid Inclusion criteria: - able to walk in Norwegian cohort - able to accomplish Mini-BESTest
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.
Wirz et al. 2010	Longitudinal study	Spinal Cord Injury Center of the Balgrist University Hospital, Zurich, Switzerland	42 subjects (33M, 9F) Mean age: 49.3±11.5 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
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
Harkema	Prospective	6 outpatient	N=152 (123M, 29F)

et al 2016	multicenter observational; NRS 13-item version	rehabilitation centers in the Christopher and Dana Reeve Foundation NRN	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)
Lemay & Nadeau 2010	Longitudinal study	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.
Tamburella et al. 2014	Serial Cross-sectional		N = 23 (9F, 14M) Age: 48.27 ± 15.94 All AIS D Time Since Injury (months): 16.43 ± 19.03
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
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%) Chronic SCI

1. RELIABILITY

Author ID	**Internal Consistency**	**Test-retest, Inter-rater, Intra-rater**

Jørgensen et al. 2017	IC=0.94	No data available
Wirz et al. 2010	No data available	In addition to the rater (first author) who obtained the BBS directly from the patients, 3 additional PTs rated the BBS independently, based on video recordings. The agreement among the raters, relating the items as calculated using Kendall's coefficient of concordance, ranged between .838 and .979 (*P*<.001). For the total score, the intraclass correlation coefficient was .953 (95% confidence interval = 0.910-0.975).
Tamburella et al. 2014	No data available	Intrarater reliability ICC: 0.97
Srisim et al. 2015	No data available	Interrater ICC= 0.998 (0.996-0.999)

2. VALIDITY

Author ID	**Validity**
Jørgensen et al. 2017	Convergent: Correlation of BBS with: • Mini-BESTest: r = 0.899; P<0.001 • Timed Up and Go (TUG): r = -0.75; P<0.001 • Spinal Cord Independence Measure version III (SCIM): r = 0.88; P<0.001 • Walking Index for Spinal Cord Injury version II (WISCI): r = 0.63; P<0.001 • Fall Efficiency Scale – International (FES-I): r = -0.68; P<0.001 • Fear of falling: r = -0.32; P=0.83 Divergent: No correlation of BBS with Quality of Life (QOL) questionnaire (r = 0.19; P=0.20)
Ditunno et al. 2007	Spearman correlation of the BBS: • w/Walking Index for SCI At 3 months: r = 0.91 At 6 months: r = 0.89 At 12 months: r = 0.92 • w/50-Foot Walking Speed At 3 months: r = 0.81 At 6 months: r = 0.86 At 12 months: r = 0.78 • w/Functional Independence Measure (FIM) At 3 months: r = 0.76 At 6 months: r = 0.72 At 12 months: r = 0.77 • w/FIM Locomotor Score

	At 3 months: r = 0.89 At 6 months: r = 0.86 At 12 months: r = 0.86 All correlations P<.001
Wirz et al. 2010	Spearman correlations: There was no statistical association between the number of falls and the score on the BBS (falls total: r=-0.17, P=.28) The BBS correlated strongly and significantly with the SCIM mobility score (r=.89, P<.001), WISCI (r=.82, P<.001), and with the 10MWT (r=.93, P<.001) Participants with high values on the BBS also rated significantly higher on the motor score (r=.62, P<.001). Higher scores on the BBS were significantly associated with lower scores on the FES-I (r=-.81, P<.001)
Datta et al. 2009	With the exception of correlations involving BBS item 3 (sitting with back unsupported), all correlation coefficients (Spearman rank correlation) were positive - suggests that a higher rate of change in each of these BBS variables indicated faster recovery for a patient. The size of the correlation coefficients ranged from very small (P=.03 for item 1, sitting to standing, and 14, standing on one leg) to very large (P=.85 for items 9, picking up object from the floor from a standing position, and 10, turning to look behind over left and right shoulders while standing). Correlation between the first principal component of change in BBS items and changes in clinical measures of walking: (Kendall's τ, Spearman rank (ρ)) 6MWT: (.34*, .48*) SCI-FAI Gait subscale: (.22*, .31*) SCI-FAI Assistive Devices subscale: (-.07 (P=.42), -.10 (P=.40)) SCI-FAI Walking Mobility subscale: (.33*, .44*) 10MWT speed: (.34*, .46*) *P<.01
Lemay & Nadeau 2010	Spearman's correlations with other walking scales: (all P<.01) SCI-FAI parameter: 0.747 SCI-FAI assistive devices: 0.714 SCI-FAI mobility: 0.740 2MWT: 0.781 WISCI II: 0.816 10MWT: 0.792 TUG: -0.815 The results showed that subjects with paraplegia and tetraplegia differed regarding the relation between their use of assistive devices and the BBS score obtained. For the paraplegia group, walker users (n=3; 20%) had BBS scores below 30/56, whereas those in the tetraplegia group (n=5; 29%) had a broader range of BBS scores (31–55/56). The use of two walking aids (cane, crutches) was restricted to the paraplegia group (BBS range 44–51/56; n=4). Walking with a cane or without any assistive devices was achieved with a BBS score above 50 in the paraplegia group. It ranges from 39 to 56 in the tetraplegia group. Except for two participants, walking with no assistive device in the tetraplegia group was seen when the score in the BBS was normal (56/56).
Srisim et al. 2015	Unable to predict and discriminate non-multiple fallers and multiple fallers Ability of cut-off score (≥ 40 scores) to predict risk of multiple falls: Sensitivity: 65% Specificity: 53% AUC: 0.61
Tambure lla et al.	ES: 0.78

2014	
Harkema et al 2016	Pearson's r (95%CI) with ASIA Motor Scales: UEMS: 0.30 (0.19-0.41) LEMS: 0.79 (0.74-0.85) ASIA Motor Score: 0.75 (0.69-0.81)

3. RESPONSIVENESS

Author ID	**Responsiveness**
Jøgensen et al. 2017	Known groups: • BBS able to discriminate b/w community walkers without walking aids vs. participants using mobility aids (P<0.001); cutoff points >47/56 on BBS. • BBS able to discriminate b/w participants with high vs. low concerns about falling (P<0.001); cutoff points ≤46/56 on BBS. • Specificity for BBS in discriminating low vs. high concerns about falling was low (55%). • BBS could not discriminate b/w infrequent vs. recurrent fallers (P=0.78)
Harkema et al 2016	Standardized Response Means after Locomotor Training: All individuals: 0.59 AIS-A/B: 0.52 AIS-C: 0.65 AIS-D: 0.91 Median (range) number of sessions of NRN-standardized locomotor training: 70 (23-520)

4. FLOOR/CEILING EFFECT

Author ID	**Floor/Ceiling Effect**
Jørgensen et al. 2017	A ceiling effect was present (28% of participants obtained maximal score)
Lemay & Nadeau 2010	A ceiling effect was present (37.5% of subjects reached maximal score)

5. INTERPRETABILITY

Author ID	**Interpretability**
Jørgensen et al. 2017	Median total score: 51/56 Maximum score (%n): 28.3 Minimum score (%n): 0
Wirz et al. 2010	Mean (SD) BBS score: 41.1 (15.2) Median (range) BBS score: 44 (11-56)
Lemay & Nadeau 2010	Published data for 56 individuals with SCI: Population: BBS score: mean (SD), range Individuals with SCI (n=32): 47.9 (10.7), 17-56 Paraplegia (n=15): 44.8 (13.0), 17-56 Tetraplegia (n=17): 50.7 (7.5), 31-56
Tamburella et al. 2014	MDC_{95}: 5.74; SEM: 2.07; %MDC = 17.2
Srisim et al. 2015	SEM: 0.66
Tester et al 2016	Smallest Real Difference (SRD): 2.5

Harkema et al 2016	Mean (SD) BBS Scores: All individuals: Enrollment: 11 (16) Discharge: 17 (20) AIS-A/B: Enrollment: 3 (2) Discharge: 4 (2) AIS-C: Enrollment: 5 (6) Discharge: 13 (15) AIS-D: Enrollment: 26 (19) Discharge: 36 (20) * Enrollment = pre-intervention; discharge = post-intervention; median (range) number of sessions of NRN-standardized locomotor training: 70 (23-520)