

Research Summary – Mini-BESTest – Lower Limb and Walking

Author Year Country Research Design Setting	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
Mooroka et al. 2025 Prospective cohort study to establish the responsiveness and Minimal Important Change of the Mini-BESTest in people with subacute traumatic incomplete cervical SCI Advanced Critical Care Center of the hospital, Saitama, Japan	N = 50 with SCI who could maintain the standing position for 30 s without assistance within 7 days of injury Mean (SD) age: 68.3 (13.4) years 37M, 13F ASIA D Level of injury: Cervical Mean (SD) time since injury to assessment: 5.0 (1.5) days			Responsiveness: The correlations of BBS change scores and Mini-BESTest change scores were moderately significant ($\rho = 0.57$, $p < 0.05$) Minimal Important Change (MIC): The correlation between global rating of change and changes in test scores was moderately significant for the Mini-BESTest ($\rho = 0.48$, $p < 0.05$). Global rating of change was the anchor in the test because the correlation coefficient was >0.3.

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				The MIC _{receiver operating characteristic curve methods} with global rating of change as the anchor was 5.0 (AUC: 0.81, 95% CI: 0.69-0.93) for the Mini-BESTest. The MIC _{predict} values for Mini-BESTest was 4.1. This value was adjusted because the proportion of participants who "improved" was 64%, not 50%. After adjustment, the MIC _{adjusted} values was 3.7 for Mini-BESTest. The anchor-based MICs exceeded 36 participants (72%) for the Mini-BESTest.
Morooka et al. 2024 Observational study to	N = 20 with SCI who could stand without assistance Mean (SD) age: 64.3 (15.2) years 14M, 6F		Intra-rater reliability: ICC: 0.98 (0.95-0.99) SEM: 1.13 MDC ₉₅ : 3.14	Ceiling and floor effects: No ceiling (5.0%) nor floor effects (0.0%): Skewness: -0.28

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investigate the ceiling and floor effects of BBS, Mini-BESTest, and Brief-BESTest, and determine the intra- and inter-rater reliabilities, as well as the MDC of the Mini-BESTest and Brief-BESTest in patients with acute and subacute incomplete cervical SCI Advanced critical care center of our university hospital, Japan	ASIA D Mean (SD) time since injury: 19.6 (15.7) days		The intra-rater reliability of individual item scores exhibited values of moderate or above (0.52 or higher) for all items, with excellent reliability for nine items, good reliability for four items, and moderate reliability for one item (Rise to toes). Inter-rater reliability: ICC = 0.97 (0-93-0.99) SEM: 1.38 MDC₉₅: 3.84 The inter-rater reliability of individual item scores showed excellent reliability,	

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			with a relatively low agreement for 1 item (Rise to toes)	
Roy et al. 2021 Psychometric study to assess the test-retest and inter-rater reliability of the mini-BESTest in adults with SCI Public rehabilitation setting, Canada	23 adult patients with SCI 17M, 6F Mean (SD) age 55.2 (14.5) years Level of injury: Tetraplegia (n = 13), paraplegia (n = 10) AIS B (n = 1), AIS D (n = 22) Traumatic (n = 14), non-traumatic (n = 9) Injury level: C2-L5 Mean (SD) time since injury 49.3 (28.6) days *Five participants needed a walking device to perform the walking items of the mini-BESTest (walker: n = 4; two canes: n = 1) and two participants		Test-retest reliability: ICC = 0.94 Inter-rater reliability: ICC = 0.96	MDC: The MDC of the total score was 4 points.

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	needed ankle-foot orthoses.			
Chan et al. 2019 Cross-sectional study Rehabilitation hospital (Lyndhurst Center, Toronto Rehabilitation Institute-University Health Network, Canada)	21 adult patients with chronic motor incomplete SCI 7M, 14F Mean (SD) age 56.9 (14.0) years Level of injury: C1 – L5 Traumatic (n = 7) and non-traumatic (n = 14) Fallers (at least one fall during the 8-month follow-up period) (n = 14) Mean (SD) time since injury 7.3 (9.0) years	Concurrent validity: Mini-BESTest scores were inversely correlated with center of pressure velocity when standing with eyes open ($r = 0.54-0.71$, $P < 0.05$), but not with eyes closed ($p > 0.05$). Convergent validity: Lower extremity strength (manual muscle testing of 12 lower extremity groups [0 – 5]) showed a strong correlation with mini-BESTest total scores ($r = 0.73$, $P < 0.001$).	Test-retest reliability: - Total score: ICC = 0.98, 95% CI, 0.95-0.99, $p < 0.01$ - Anticipatory: ICC 0.98, 95% CI, 0.95-0.99, $p < 0.01$ - Reactive: ICC = 0.94, 95% CI, 0.84-0.97, $p < 0.01$ - Sensory: ICC = 0.95, 95% CI, 0.87-0.98, $p < 0.01$ - Dynamic: ICC = 0.97, 95% CI, 0.93-0.99	
Jørgensen et al. 2017	46 adult patients with chronic SCI 32M, 14F	Convergent validity: Between BBS and Mini-	Internal consistency: Cronbach $\alpha = 0.95$	The median sum scores for the Mini-

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Cross-sectional validation study to validate and compare psychometric performances of the BBS and Mini-BESTest in individuals with chronic SCI Sunnaas Rehabilitation Hospital, Norway	Mean (SD) age 54.5 (17.0) years AIS A, B, and C (n = 7) and AIS D (n = 39) Median (minimum-maximum) time since injury 6.5 (1-41) years *Thirty-five participants (74%) were able to walk 10 meters without walking devices, and 22 participants (48%) classified themselves as community walkers not using walking aids.	BeSTest (rs = 0.90, P < .001). • TUGT (rs = -0.75) • SCIM-mobility items (rs = 0.88) • 10-MWT (rs = -0.88) • WISCI II (rs = 0.63) • FES-I (rs = -0.68) Divergent validity: There was no correlation between the Mini-BESTest and the general QoL question (rs = .19, P = .20). Known-groups validity: Mini-BESTest could differentiate community walkers without walking aids from participants using aids (p < 0.01) versus participants		BESTest were 20 (range: 0–28). Floor/ceiling effects: No floor or ceiling effects were observed for the Mini-BESTest; 1 participant scored 0, and 2 participants scored the maximum of 28 points.

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		using mobility aids, with cutoff points at 19/28. It could also discriminate participants with low/high concerns about falling (dichotomized at median sum score on FES-I) with cutoff points of $\leq 19/28$ ($P < .001$). Mini-BeSTest couldn't discriminate between infrequent/recurrent fallers ($P = .64$).		