

Research Summary – Trunk Assessment Scale for SCI (TASS) – Balance

Author Year Country Research Design Setting	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
Sato et al. 2025 Study to confirm the responsiveness and MCIDs of the TASS Japan (one institution is located in Japan's Tohoku region and the other is in the Kanto region).	N=48 (N=35 at discharge; N=22 at 1-month post-admission) Mean (SD) age 64.1 (10.4) years Traumatic tetraplegia (n=23), traumatic paraplegia (n=6), non-traumatic tetraplegia (n=5), non-traumatic paraplegia (n=14) Tetraplegia complete (AIS A) (n=6), tetraplegia incomplete (AIS B, n=1; AIS C, n=4; AIS D, n=17), paraplegia complete (AIS A) (n=3), paraplegia incomplete (AIS C, n=7; AIS D, n=10) Median (25% percentile, 75% percentile) time from	Responsiveness as Longitudinal Validity: - At 1 month after admission, the Spearman's ρ between the change in the TASS and: - The change in the TCT-SCI: 0.15 (95% CI: -0.45–0.31) - The change in the UEMS: 0.39 (95% CI: 0.09–0.62) - The change in the LEMS: 0.39 (95% CI: -0.04–0.54) - The change in the mFIM was 0.36 (95% CI: -0.07–0.52).		MCIDs: At 1 month post-admission, the TASS score of the responders (n = 22) improved by 2.64 ± 3.44 points (95% CI: 1.11–4.16), and that in the non-responders (n = 18) improved by 1.67 ± 3.63 points (95% CI: -0.14–3.47). The change difference was thus 0.97, the MDC was 3.47, the slope of the regression line of the TASS with the GRCS as a regressor was 0.55 (P= 0.40), the average change was 2.63 points, and the cut-off point indicated by

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	onset to admission 64.0 (44.8, 1934.0)	- At discharge, the Spearman's rho between the change in the TASS and: - The change in the TCT-SCI: 0.59 (95% CI: 0.29–0.77) - The change in the UEMS: 0.58 (95% CI: 0.50–0.82) - The change in the LEMS: 0.53 (95% CI: 0.18–0.66) - The change in the mFIM: 0.52 (95% CI: 0.33–0.74). The AUC of the ROC curve for identifying responders and non-responders by the GRCS was 0.55 (95% CI: 0.37–0.73) at 1 month		the ROC curve was 1.00 (specificity 0.44, sensitivity 0.64). At discharge, the TASS score in the responders (n=35) was improved by 6.66 ± 7.23 points (95% CI: 4.17–9.14), and that in the non-responders (n=10) was improved by 1.60 ± 2.27 points (95% CI: -0.02–3.22). The change difference was thus 5.06, the MDC was 3.22, the slope of the regression line of the TASS with the GRCS as a regressor was 2.08 (P= 0.09), the average change was 6.66 points, and the cut-off

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		of hospitalization and 0.78 (95% CI: 0.64– 0.92) at discharge.		point shown by the ROC curve was 5.00 (specificity 0.90, sensitivity 0.60). See table 1.
	Table 1. MCIDs threshold values for TASS			
		At 1 month	At discharge	
	Change difference	0.97	5.06	
	Regression	0.55	2.08	
	Average change	2.64	6.66	
	Receiver Operating Characteristic	1.00	5.00	
Sato et al. 2025 Rasch analysis to confirm the structural validity of the Trunk Assessment Scale for Spinal Cord Injury (TASS)	N=104 participants with subacute SCI 86M, 18F Mean(SD) age 63.5 (12.2) years Neurological level of injury: Cervical (n=64), thoracic (n=25), lumbar (n=15) AIS A (n=24), AIS B (n=5), AIS C (n=25), AIS D (n=50)			The TASS was observed to be a unidimensional and highly reproducible scale of item difficulty hierarchy that sufficiently identifies the superiority of the examinee’s ability. One TASS item was a misfit based on the infit and outfit mean

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Two rehabilitation hospitals, Japan	Median (25th percentile, 75th percentile) days from onset to admission and assessment 326.0 (70.8, 2127.5) days			square; another item also showed a DIF contrast for age. Several items were found to require a synthesis or modification of the content. The TASS showed a floor effect, and most of the non- scorers were individuals with a complete SCI.
Sato et al. 2024 Psychometric study to evaluate the criterion validity of the TASS and the construct validity of the TASS and TCT- SCI Rehabilitation hospital, Japan	N=30 Mean (SD) age 63.8 (10.7) years 5M, 25F Traumatic tetraplegia (n=15), traumatic paraplegia (n=5), non- traumatic tetraplegia (n=2), traumatic paraplegia (n=8) AIS A (n=6), AIS B (n=0), AIS C (n=8), AIS D (n=16) Mean (SD) time from	Criterion validity: The Spearman's rho between the TASS and the TCT-SCI was 0.68 (95% CI: 0.58–0.89). Construct validity: Moderate-to-high correlation coefficients were revealed with the LEMS ($r_s=0.80$ [0.63- 0.90]), the UEMS ($r_s=0.46$ [0.12-0.70]),		The cut-off point for identifying ambulators with SCI to maximize both sensitivity and specificity was 26 of the 44 possible points (specificity: 60.0, sensitivity: 80.0), and the AUC was 0.81 (95%CI: 0.65–0.96).

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	onset to assessment 1142.0 (1720.7) days	the WISCI-II ($r_s=0.67$ [0.41-0.83]), and the mFIM ($r_s=0.62$ [0.33-0.80]).		
Sato et al. 2022 Cross-sectional study to evaluate the reliability and calculate the measurement error of the Trunk Assessment Scale for Spinal Cord Injury (TASS) and trunk control test (TCT-SCI) in individuals with SCI Rehabilitation Hospital in Japan	N=9 8M, 1F Mean (SD) age 64.0 (11.2) years Etiology: Traumatic (n=7), non-traumatic (n=2) Diagnosis: Cervical cord injury (n=3), cervical spondylotic myelopathy (n=1), thoracic cord injury (n=5) AIS A (n=3), AIS B (n=0), AIS C (n=2), AIS D (n=4) Mean (SD) time from onset to assessment 3515.9 (5984.2) days		Inter-rater reliability: ICC=0.99 (0.97, 1.00) The kappa coefficients were excellent for 7 items ($\kappa=0.85-1.00$), acceptable for 1 item ($\kappa=0.76$), and below acceptable for 1 item ($\kappa=0.62$). Intra-rater reliability: ICC=0.99 (0.97, 1.00) The kappa coefficients were excellent for 8 items ($\kappa=0.88-1.00$) and acceptable for 1 item ($\kappa=0.75$).	The SEMs of the total scores obtained from the inter-rater reliability was 1.47 points, and the MDC ₉₅ was 4.07 points, respectively. The SEM of the total scores derived from the intra-rater reliability was 1.39, and the MDC ₉₅ was 3.86 points.