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Research Summary – Modified Functional Reach Test (mFRT) – Upper Limb

Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
[Gatica-Rojas et al. (2024)](#) Cross-sectional study Chile	N=10 (9M, 1F) Mean (SD) age: 29 (7.77) years ASIA A (n = 10) Level of injury: upper thoracic (n = 5), lower thoracic (n = 5) Mean (SD) time post injury: 56.6 (50.56) months	**Correlation with center of pressure (CoP) variables:** Significant correlations were found between the mediolateral reaches of the mFRT and corresponding CoP variables. The rightward and leftward reaches of the mFRT both showed strong correlations with CoP variables during the leftward reach. Additionally, the leftward mFRT exhibited moderate correlations with CoP variables in the same, rightward, and forward directions. See table 1.		

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Table 1. Correlation of the variables of the COP and the variables of the mFRT for the total study group

Measures	Forward Reach	*p* Value	Right Reach	p Value	Left Reach	*p* Value
FR CoP$_{Sway}$	0.30	0.340	0.45	0.141	0.64 *	0.025
SD$_{ML}$	0.28	0.382	0.36	0.252	0.42	0.172
SD$_{AP}$	0.18	0.566	0.37	0.241	0.6 *	0.041
V$_{ML}$	0.08	0.816	−0.08	0.804	0.27	0.400
V$_{AP}$	0.17	0.589	0.27	0.391	0.49	0.102
RR CoP$_{Sway}$	0.43	0.166	0.39	0.215	0.64 *	0.030
SD$_{ML}$	0.36	0.246	0.49	0.102	0.64 *	0.025
SD$_{AP}$	0.50	0.095	0.58 *	0.046	0.64 *	0.026
V$_{ML}$	0.39	0.204	0.58 *	0.050	0.69 *	0.013
V$_{AP}$	0	1.000	0.20	0.528	0.31	0.331
LR CoP$_{Sway}$	0.25	0.428	0.82 *	0.001	0.78 *	0.003
SD$_{ML}$	0.12	0.719	0.74 *	0.006	0.79 *	0.002
SD$_{AP}$	0.45	0.138	0.64 *	0.024	0.6 *	0.041
V$_{ML}$	0.44	0.152	0.71 *	0.01	0.66 *	0.020
V$_{AP}$	0.31	0.326	0.72 *	0.010	0.63 *	0.030

FR: forward reach; RR: right reach; LR: left reach. CoP: center-of-pressure; CoP$_{Sway}$: area of CoP sway in cm^2; SD$_{ML}$ and SD$_{AP}$: standard deviation of CoP in the directions mediolateral and

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	anterior–posterior, both in mm; V_{ML} and V_{AP}: CoP velocity in the directions mediolateral and anterior–posterior. * Significant correlations $p < 0.05$. Pearson correlation test.			
[Katz-Leurer et al. (2009)](#) Israel Reliability study Post-stroke in-patient rehabilitation department at Hadassah University Hospital, Jerusalem, Israel	N=45 (5M) 10 patients for test-retest reliability study, 35 patients for response/validity study Mean age: 63±6 years Responsiveness/ validiy study: Mean age: 60±5.5 years 18 Male	Correlation with Balance Master (BM), Stroke Assessment Scale (SAS), and Functional Independence Measure (FIM): First Evaluation: Forward mFRT and BM: 0.55 Forward mFRT and FIM: 0.51 Forward mFRT and SAS: 0.35 Second Evaluation: Forward mFRT and BM: 0.50 Forward mFRT and FIM: 0.45 Forward mFRT and SAS: 0.21	**Test-retest reliability** ICC=0.90-0.95	

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[Lynch et al. (1998)](#) Test-retest Scheduled medical appointments for Magee Rehabilitation Hospital's USA	N = 30 (M) Mean age 30.8±7.2yrs (range 18-45yrs) AIS A and B (i.e. complete motor) Group 1 – C5-6 (n=10) Group 2 – T1-4 (n=10) Group 3 – T10-12 (n=10)		*Mean of three trials taken. This was repeated a second time, 10 minutes following the first test session. There was one rater.* **Intraclass correlation coefficient.** Group 1 – 0.94 Group 2 – 0.85 Group 3 – 0.93	**Interpretability** Group 1 (C5-C6) had an SD of 7.6 cm, Group 2 (T1-4) had an SD of 4.3 cm and Group 3 (T10-12) had an SD of 5.6 cm. See top of document for population characteristics. SEM and MDC for mFRT for each group: Please see table below.

		SEM	MDC	
	Group 1 (C5-C6)	1.86	5.16	
	Group 2 (T1-T4)	1.67	4.62	
	Group 3 (T10-12)	1.48	4.11	