

Supplementary Material

Improving the Validity in Upper Limb Measurements for people with tetraplegia: An Investigation with Construct Specification Equations

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Supplementary 1. TUAQ items ordered from easiest to most difficult according to Wangdell et al (7) and measurement values for each explanatory variable, .

	Explanatory variables	Hand grip	Hand strength	Arm strength	Stabilization positioning arm	ROM Dominant hand	ROM Not Dominant hand	Trunk control	Coordination	Sequence complexity	Joints
TUAQ items											
1	Eating with a fork or spoon	0.01 (1.26)	-3.45 (1.74)	1.89 (1.32)	1.68 (1.58)	-0.47 (1.24)	-0.9 (1.24)	-1.38 (1.12)	1.24 (1.84)	-0.5 (1.4)	2.73 (1.38)
2	Drinking from a bottle	0.01 (1.26)	0.69 (1.82)	2.32 (1.3)	1.08 (1.54)	-0.08 (1.26)	-1.16 (1.24)	-1.08 (1.08)	0.48 (1.72)	-2.65 (1.62)	1.96 (1.14)
3	Grasp and reposition book/tablet	-0.78 (1.26)	-0.82 (1.66)	0.51 (1.44)	-1.6 (1.5)	-1.25 (1.28)	-1.16 (1.26)	-3.46 (2.1)	-0.31 (1.86)	-1.5 (1.44)	0.43 (0.96)
4	Shaving/put on makeup	1.66 (1.32)	-3.45 (1.74)	2.32 (1.3)	1.68 (1.58)	0.32 (1.28)	0.3 (1.22)	-0.8 (1.04)	3.16 (3.72)	4.22 (1.92)	4.14 (2.16)
5	Writing with a pen (with your best hand)	0.41 (1.28)	-2.74 (1.62)	-1.38 (1.68)	-1.06 (1.46)	-0.85 (1.24)	-2.72 (1.66)	-2.13 (1.34)	0.96 (1.72)	0.51 (1.46)	0.3 (0.9)
6	Pick up items form a flat surface	0.01 (1.26)	-3.45 (1.74)	-0.05 (1.54)	-2.21 (1.6)	-1.67 (1.32)	-2.02 (1.44)	-1.08 (1.08)	0.27 (1.86)	-2.65 (1.62)	0.71 (0.92)
7	Adjust upper half clothing pulling down back to waist level	0.01 (1.26)	-0.82 (1.66)	3.18 (1.32)	1.08 (1.54)	-0.08 (1.26)	-0.41 (1.20)	1.4 (1.16)	-0.12 (1.72)	0 (1.42)	1.96 (1.14)
8	Handle banknotes credit card in/out of wallet	0.82 (1.28)	-4.31 (2)	1 (1.38)	-1.6 (1.5)	-1.25 (1.28)	-1.43 (1.26)	-1.08 (1.08)	0.96 (1.72)	0.51 (1.46)	-0.28 (0.88)
9	Open previously opened jars	0.01 (1.26)	1.5 (1.78)	1.45 (1.34)	-0.02 (1.44)	0.32 (1.28)	0.54 (1.18)	-0.8 (1.04)	-0.49 (1.86)	-2.04 (1.5)	1.66 (1.06)
10	Cut food when eating (with your best hand)	1.66 (1.32)	2.25 (1.7)	2.75 (1.32)	1.68 (1.58)	-1.25 (1.28)	-0.65 (1.24)	-0.54 (1.02)	1.24 (1.84)	-0.99 (1.4)	1.15 (0.96)
	Reliability	0.66	0.94	0.45	0.48	0.47	0.53	0.48	0.24	0.50	0.68=