

Online Supplement

**Rasch Analysis of the Upper-Limb Sub-scale of the STREAM Tool in
an Acute Stroke Population**

Table S1 – Response Frequencies

Item #	Response					
	0	1a	1b	1c	2	Missing
1	0	5	102	6	8	4
2	8	4	94	11	5	3
3	0	6	102	4	6	7
4	10	4	90	5	10	6
5	11	4	88	8	9	5
6	12	5	88	5	10	5
7	10	5	74	18	11	7
8	15	4	71	17	14	4
9	18	3	73	17	11	3
10	18	3	65	16	18	5

Table S2 - Residual Correlation Matrix

Item	1	2	3	4	5	6	7	8	9	10
1	1.000									
2	0.005	1.000								
3	0.619*	0.160*	1.000							
4	-0.167	0.107	-0.055	1.000						
5	-0.115	0.150*	-0.119	0.798*	1.000					
6	-0.421	-0.165	-0.324	0.230*	0.348*	1.000				
7	-0.218	0.063	-0.101	-0.072	0.011	0.284*	1.000			
8	-0.171	-0.484	-0.487	-0.517	-0.445	-0.152	0.027	1.000		
9	-0.242	-0.404	-0.420	-0.476	-0.438	-0.171	-0.268	0.693*	1.000	
10	-0.265	-0.299	-0.304	-0.290	-0.503	-0.254	-0.334	0.416*	0.486*	1.000

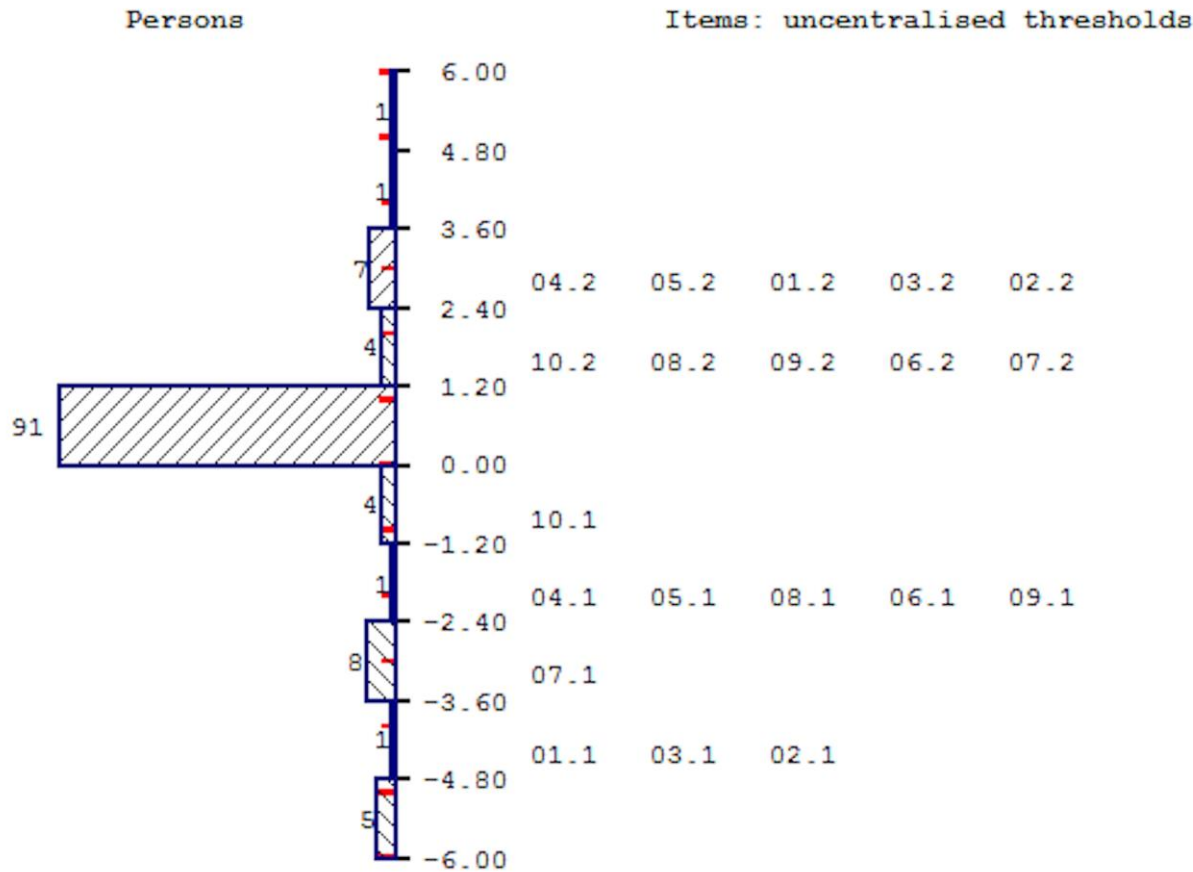
* Residual correlations more than 0.2 above the average correlation of -0.09

Table S3 – Conversion to an Ordinal Scale

Original Score	Scaled Score	Original Score	Scaled Score
0	0	10	10.82
1	1.74	11	11.84
2	3.14	12	12.70
3	4.26	13	13.48
4	5.28	14	14.20
5	6.22	15	14.88
6	7.10	16	15.60
7	7.98	17	16.36
8	8.84	18	17.24
9	9.82	19	18.42
<i>Next column</i>		20	20.00

Figure S1 – Person-Item Map

Figure S1: Re-scored STREAM Item-Person Map



The figure shows the location of 123 individuals (minus 2 extreme scoring persons) on a logit scale from -6.00 (easiest/lowest) to 6.00 (hardest/highest), on the left. The right side of the figure shows the corresponding logit locations of each item-score threshold, where the first two digits refer to the item number, and the third digit refers to the score (e.g. 01.1 refers to item number 1 and a score of 1 on that item – in the new scoring system described in table 4). Within the new scoring system there is clear separation between ‘normal’/unimpaired ability to conduct a certain movement (score of 2), and impairment (score of 1). As well as a clear hierarchy of items, with 1,2 and 3 being the easiest, then 7, then 4,5,6,8 and 9, and finally 10 is the hardest.

The Rasch analysis identified two individuals in the sample population with extreme scores. The first demonstrated no impairment during assessment, despite having suffered a right internal carotid artery stroke. Further investigation of the clinical notes revealed that the patient only demonstrated signs of hemi-neglect, with no evidence of residual motor deficit. The second individual identified by the Rasch model was consistently unable to perform any of the actions involved in the STREAM assessment (scoring 0 for every item), which was found to be consistent with the clinical diagnosis of UL paralysis as a result of a dense middle cerebellar artery infarct.