

**Research Summary – Box and Block Test (BBT) – Upper Limb**

<b>Author Year Research Design Setting (country)</b>	<b>Demographics and Injury Characteristics of Sample</b>	<b>Validity</b>	<b>Reliability</b>	<b>Responsiveness Interpretability</b>
<p><a href="#">Lili et al.</a> 2023</p> <p>Observational cross-sectional study to determine which aspects of independence in activities of daily living are correlated with upper extremity functioning in individuals with SCI</p> <p>Outpatient clinic at Sahlgrenska University Hospital in Gothenburg, Sweden</p>	<p>N = 25 participants with SCI                      Mean (range) age: 58.4 (44.6-72.2) years                      18 males, 7 females                      Aetiology: Traumatic (n = 20), non-traumatic (n = 5)                      Level of injury: Cervical (n = 17), thoracic (n = 8)                      ASIA: A-B (n = 14), C-D (n = 11)                      Mean (SD) time since injury: 17.5 (15.4) years</p>	<p><b>Correlation analysis (Spearman coefficients) between SCIM-III subscales or SCIM-III total and BBT:</b></p> <ul style="list-style-type: none"> <li>- SCIM-self-care: 0.55 (P&lt;0.01)</li> <li>- SCIM-total: 0.33</li> <li>- SCIM-mobility: 0.29</li> <li>- SCIM-respiration/sphincter: 0.12</li> </ul>		

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<p><a href="#">Platz et al.</a> 2005</p> <p>Multicentre cohort study</p> <p>Three European referral centres for neurorehabilitation (Germany (KB), UK (UNUT), Italy (CNM))</p>	<p>N=56 (31M, 25F) Median age (range): 54 (13-92)</p> <p>Stroke N=37 (24M, 13F) Median age (range): 62 (22-92)</p> <p>Multiple Sclerosis N=14 (4M, 10F) Median age (range): 43 (28-60)</p> <p>Traumatic Brain Injury N=5 (3M, 2F) Median age (range): 34 (13-50)</p>	<p><b>Construct Validity:</b> Spearman's rho correlation of Box and Block Test with:</p> <p>Fugl-Meyer motor = 0.921</p> <p>Fugl-Meyer sensation = 0.285</p> <p>Fugl-Meyer joint motion/pain = 0.433</p> <p>Action Research Arm Test = 0.951</p> <p>Motricity Index = 0.798</p> <p>Ashworth Scale = -0.383</p> <p>Hemispheric Stroke Scale = -0.676</p>	<p><b>Test-retest:</b> ICC for dominant hand = 0.963</p> <p><b>Inter rater:</b> ICC for dominant hand = 0.993</p>	

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		Modified Barthel Index = 0.044		
<p><a href="#">Chen et al.</a> 2009</p> <p>Cohort study</p> <p>6 hospitals in Taiwan; departments of physical medicine and rehabilitation</p>	<p>N=62 (45M, 17F) Mean age (SD): 61.0 (9.9)</p> <p>98% right hand dominant; 2% left hand dominant</p> <p>Side of hemiplegia: 50% Right; 50% Left</p> <p>Months since stroke: Median = 8 Range = 3.0-21.8</p>		<p><b>Test-Retest:</b> ICC for more affected hand = 0.98 ICC for less affected hand = 0.93</p>	<p><b>Standard Error of Measurement:</b> More affected hand = 1.99 Less affected hand = 2.84</p> <p><b>Minimal Detectable Change:</b> 5.5 blocks per minute Percentage change = 18%</p>
<p>Mathiowetz et al. 1985</p> <p>Cross-sectional study</p> <p>Urban, suburban and rural Milwaukee</p>	<p>N=628 (310M, 318F) Age range: 20-94 years</p> <p>12 age groups (5-year intervals; exception 75+) Average group N=26.2</p>		<p><b>Inter-rater:</b> ICC for right hand = 1.000 ICC for left hand = 0.999</p>	<p><b>Normative Mean (SD) Values:</b> RH dominant Male: 76.9 (11.6) LH dominant Male: 75.4 (11.4) RH dominant Female: 78.4 (10.4)</p>

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(shopping centers, fairs, senior centers, a rehabilitation center, a university)	288M & 295F right hand dominant; 22M & 23F left hand dominant  Inclusion criteria: <ul style="list-style-type: none"> <li>• Subjects 20-59 years free of disease/injury impacting upper dexterity</li> <li>• Subjects 60+ had no acute pain in upper limbs, had been out of hospital for &gt;6 months, and maintained a normal lifestyle</li> </ul>			LH dominant Female: 75.8 (9.5)