

Reviewer ID: Tyra Chu, Carlos L. Cano Herrera, William Miller

Last updated: January 30th, 2024

Research Summary – Jebsen-Taylor Hand Function Test (JTHFT) – Upper Limb

Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
<p>Lynch & Bridle 1989</p> <p>Follow-up study of the long-term functional effects of traumatic central spinal cord injury.</p> <p>Patient's homes</p>	<p>N=18 Mean Age: 52 years, range 26 to 70 years Reliability sample: n=26 (6 with quadriplegia)</p>	<p>Overall mean Jebsen-Taylor test score and overall mean Klein-Bell Scale score: Spearman's $\rho = -0.635$, ($P < .01$)</p> <p><u>Jebsen-Taylor & Klein-Bell subscale:</u> Dressing: $\rho = -0.69$, ($P < .01$) Bathing/Hygiene: $\rho = -0.57$, ($P < .01$) Eating: $\rho = -0.45$, ($P < .05$)</p>		
<p>Jebsen et al. 1969</p> <p>Case-Control</p> <p>Unknown</p>	<p>Reported mean & standard deviation for Jebsen scores: N=300 AB subjects (30M, 30F from each of the following age categories: 20-29, 30-39,</p>		<p>Test-retest, Inter-rater, Intra-rater: Patients maintained their relative positions within the distribution of scores, indicating that each subtest was fairly reliable</p>	

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	40-49, 50-59, 60-94) Reliability study: N=26 Mean (SD) age of all participants: 34.5 (20) 1 post-poliomyelitis 4 cerebral palsy 6 hemiparesis due to cerebral vascular disease 5 rheumatoid arthritis 4 postburn 1 congenital hand anomaly 2 posttrauma 1 polyneuropathy 1 severe degenerative joint disease		To test for reliability 26 subjects with a stable hand disability were chosen and tested twice. Results from their test results were tested using Pearson product movement correlations coefficient. Coefficients ranged from 0.60 to 0.99 (P<.01)	

Research Summary – Jebsen-Taylor Hand Function Test (JTHFT) – Upper Limb – Cross-cultural Validation Studies

Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability											
<p>Panuccio et al. 2021</p> <p>Psychometric study to evaluate the internal consistency and validity of the Italian version of the Jebsen–Taylor hand function test (JTHFT-IT) in people with tetraplegia</p>	<p>N= 48 participants with tetraplegia 38 male and 10 female Mean (± SD) age 48 (± 15) yrs.</p> <p>Injury level: C2-C4 (n = 11), C5 (n = 14), and C6-C7 (n = 23). AIS A (n = 18), AIS B (n = 11), AIS C (n = 14), and AIS D (n = 5).</p>	<p>Pearson’s coefficient showed significant correlations for both concurrent validity (dynamometer) and construct validity (VLT-SV-IT). As shown in Tables 1 (left hand) and 2 (right hand), some items of the JTHFT-IT were correlated to the Van Lieshout test short version in Italian (VLT-SV-IT); there were more correlations for the dominant right hand than the left hand.</p>	<p>The internal consistency of the JTHFT-IT showed Cronbach’s α values of 0.94 for the left hand and 0.96 for the right hand. Table 3 reports the results for the left and right hand in the total population taken as a sample.</p>												
<p>Two Italian spinal units.</p>	<p>Table 1. Gold-standard analysis: Pearson’s correlation coefficient between the JTHFT-IT and the VLT-SV-IT, left-non-dominant-hand.</p>														
<table border="1"> <tr> <td>Left hand Non-dominant hand</td> <td>writing a24-letter</td> <td>Turning over a 3 × 5" card</td> <td>Pick up small common object</td> <td>Simulate feeding using tea spoon</td> <td>Stacking checkers</td> <td>Moving light cans</td> <td>Moving large weighted cans</td> </tr> </table>	Left hand Non-dominant hand	writing a24-letter	Turning over a 3 × 5" card	Pick up small common object	Simulate feeding using tea spoon	Stacking checkers	Moving light cans	Moving large weighted cans							
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Commented [CC1]: Comment from Bil Miller: Needs values and updated properties to be embedded in the clinician summary. Maybe we need to see if these can be summarized for easily bc there are a lot of values

Commented [CC2R1]: I think adding the Nobilia acceptability results added more valuable (and short info)

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	arc task	-0.24	-0.56 ^a	-0.50 ^a	-0.48 ^a	-0.52 ^a	-0.49 ^a	-0.45 ^a	
	Reaching forward	-0.21	-0.47 ^a	-0.41 ^a	-0.45 ^a	-0.41 ^a	-0.43 ^a	-0.14	
	Thumb opening	-0.40 ^a	-0.54 ^a	-0.60 ^a	-0.47 ^a	-0.57 ^a	-0.49 ^a	-0.76 ^a	
	Grip function of the thumb	-0.65 ^a	-0.64 ^a	-0.74 ^a	-0.62 ^a	-0.75 ^a	-0.65 ^a	-0.71 ^a	
	Grip strength of the thumb	-0.15	-0.58 ^a	-0.53 ^a	-0.50 ^a	-0.53 ^a	-0.50 ^a	-0.59 ^a	
	Finger opening	-0.11	-0.81 ^a	-0.74 ^a	-0.81 ^a	-0.79 ^a	-0.77 ^a	-0.60 ^a	
	Grip strength of the fingers	-0.21	-0.54 ^a	-0.54 ^a	-0.58 ^a	-0.54 ^a	-0.48 ^a	-0.73 ^a	
	Pen grip	-0.08	-0.50 ^a	-0.49 ^a	-0.51 ^a	-0.54 ^a	-0.51 ^a	-0.31 ^a	
	Lighting a match	-0.34 ^a	-0.54 ^a	-0.62 ^a	-0.51 ^a	-0.63 ^a	-0.52 ^a	-0.82 ^a	
	Opening a bottle	-0.39 ^a	-0.60 ^a	-0.55 ^a	-0.56 ^a	-0.59 ^a	-0.57 ^a	-0.17	
	VLT-SV-Total	-0.36 ^a	-0.73 ^a	-0.72 ^a	-0.68 ^a	-0.74 ^a	-0.67 ^a	-0.69 ^a	
	Dynamometer	-0.37 ^a	-0.29 ^a	-0.35 ^a	-0.25	-0.34 ^a	-0.26	-0.40 ^a	
^a Correlation is significant at the 0.05 level (two-tailed).									

Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample		Validity	Reliability	Responsiveness Interpretability			
Table 2. Gold-standard analysis: Pearson's correlation coefficient between the JTHFT-IT and the VLT-SV-IT, right-dominant-hand.								
	Right hand dominant hand	writing a 24-letter	Turning over a 3 x 5" card	Pick up small common object	Simulate feeding using teaspoon	Stacking checkers	Moving light cans	Moving large weighted cans
	Arc task	-0.55 ^a	-0.57 ^a	-0.73 ^a	-0.74 ^a	-0.80 ^a	-0.66 ^a	-0.66 ^a
	Reaching forward	-0.20	-0.14	-0.42 ^a	-0.27	-0.33 ^a	-0.33 ^a	-0.33 ^a
	Thumb opening	-0.64 ^a	-0.56 ^a	-0.85 ^a	-0.73 ^a	-0.77 ^a	-0.76 ^a	-0.76 ^a
	Grip function of the thumb	-0.74 ^a	-0.63 ^a	-0.94 ^a	-0.82 ^a	-0.73 ^a	-0.96 ^a	-0.96 ^a
	Grip strength of the thumb	-0.77 ^a	-0.72 ^a	-0.76 ^a	-0.95 ^a	-0.95 ^a	-0.76 ^a	-0.77 ^a
	Finger opening	-0.69 ^a	-0.62 ^a	-0.89 ^a	-0.81 ^a	-0.79 ^a	-0.86 ^a	-0.86 ^a
	Grip strength of the fingers	-0.67 ^a	-0.63 ^a	-0.79 ^a	-0.83 ^a	-0.88 ^a	-0.73 ^a	-0.72 ^a
	Pen grip	-0.66 ^a	-0.63 ^a	-0.93 ^a	-0.78 ^a	-0.74 ^a	-0.92 ^a	-0.92 ^a
	Lighting a match	-0.41 ^a	-0.56 ^a	-0.56 ^a	-0.55 ^a	-0.52 [*]	-0.57 ^a	-0.58 ^a
	Opening a	-0.19	-0.65 ^a	-0.68 ^a	-0.41 ^a	-0.41 ^a	-0.61 ^a	-0.61 ^a

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Nobilia et al. 2019	Total sample = 136 participants with at least one upper limb disorder diagnosis:	Internal Consistency and Construct Validity: Strong correlations	The intrarater ICC was 0.814 (95% CI [.615, .936]) for the dominant hand and	Acceptability: The average time to complete all subtests was 89.47 ± 67.98 s for																																																																											

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<p>Cross-sectional study to assess the psychometric properties of the Italian version of the Jebsen–Taylor Hand Function Test (JTHFT).</p> <p>Policlinico Umberto I University Hospital, Sant'Eugenio Hospital, and the spinal unit of CTO Andrea Alesini Hospital in Rome; Italy</p>	<p>Mean (± SD) age 54.79 (± 22.39) yrs. 80 female and 56 male. 15 (11%) participants had tetraplegia.</p>	<p>were found between all subtests ($p < .01$) and between the subtests and grip force measured with the dynamometer ($p < .05$). See table 1.</p>	<p>0.981 (95% CI [.948, .993]) for the nondominant hand.</p> <p>The interrater ICC was .818 (95% CI [.615, .936]) for the dominant hand and .821 (95% CI [.432, .953]) for the nondominant hand (see table 2).</p> <p>The reliability of the JTHFT–IT was a = .829 for the dominant hand and a = .415 for the nondominant hand.</p>	<p>the dominant hand and 167.11 ± 257.58 s for the nondominant hand (see table 3).</p>
<p>Table 1. Construct Validity: Correlations Between JTHFT–IT Subtests and Dynamometer Measures ($N = 136$)</p>				
		<p style="text-align: center;">Dynamometer Measures</p>		
<p>JTHFT Subtest</p>		<p>Dominant Hand</p>	<p>Nondominant Hand</p>	
<p>Writing</p>		<p>-0.494**</p>	<p>-0.307</p>	
<p>Simulated Page Turning</p>		<p>-0.498**</p>	<p>-0.410**</p>	
<p>Picking Up Small Common Objects</p>		<p>-0.571</p>	<p>-0.182**</p>	
<p>Simulated Feeding</p>		<p>-0.465**</p>	<p>-0.344</p>	

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	Stacking		-0.461**		-0.429																																																
	Lifting Large, Lightweight Objects		-0.456**		-0.440**																																																
	Lifting Large, Heavy Objects		-0.606**		-0.533**																																																
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<p>Note. JTHFT-IT = Jebsen-Taylor Hand Function Test, Italian version. *$p < .05$ (two-tailed). **$p < .01$ (two-tailed).</p> <p>Table 2. Intrarater and Interrater Reliability of the JTHFT-IT (N = 51)</p> <table border="1"> <thead> <tr> <th rowspan="2">Subtest</th> <th colspan="2">Intrarater Reliability, ICC [95% CI]</th> <th colspan="2">Interrater Reliability, ICC [95% CI]</th> </tr> <tr> <th>Dominant Hand</th> <th>Nondominant Hand</th> <th>Dominant Hand</th> <th>Nondominant Hand</th> </tr> </thead> <tbody> <tr> <td>Writing</td> <td>.791 [.512, .919]</td> <td>.998 [.994, .997]</td> <td>.658 [.092, .902]</td> <td>.778 [.584, .888]</td> </tr> <tr> <td>Simulated Page Turning</td> <td>.877 [.694, .959]</td> <td>.948 [.862, .981]</td> <td>.964 [.863, .991]</td> <td>.985 [.970, .993]</td> </tr> <tr> <td>Picking Up Small Common Objects</td> <td>.867 [.672, .950]</td> <td>.121 [-.368, .558]</td> <td>.446 [.213, .836]</td> <td>.484 [.155, .716]</td> </tr> <tr> <td>Simulated Feeding</td> <td>.264 [-.233, .651]</td> <td>.699 [.343, .879]</td> <td>.412 [.252, .813]</td> <td>.412 [.066, .669]</td> </tr> <tr> <td>Stacking</td> <td>.903 [.754, .964]</td> <td>.952 [.873, .982]</td> <td>.797 [.377, .945]</td> <td>.792 [.607, .895]</td> </tr> <tr> <td>Lifting Large, Lightweight Objects</td> <td>.904 [.755, .964]</td> <td>.813 [.556, .928]</td> <td>.807 [.399, .948]</td> <td>.798 [.618, .899]</td> </tr> <tr> <td>Lifting Large, Heavy Objects</td> <td>.803 [.537, .924]</td> <td>.776 [.483, .913]</td> <td>.821 [.432, .953]</td> <td>.818 [.652, .909]</td> </tr> </tbody> </table> <p>Note. CI = confidence interval; ICC = intraclass correlation coefficient; JTHFT-IT = Jebsen-Taylor Hand Function Test, Italian version.</p> <p>Table 3. Test Run Time for JTHFT-IT Subtests</p> <table border="1"> <thead> <tr> <th></th> <th>Seconds, M (SD)</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>						Subtest	Intrarater Reliability, ICC [95% CI]		Interrater Reliability, ICC [95% CI]		Dominant Hand	Nondominant Hand	Dominant Hand	Nondominant Hand	Writing	.791 [.512, .919]	.998 [.994, .997]	.658 [.092, .902]	.778 [.584, .888]	Simulated Page Turning	.877 [.694, .959]	.948 [.862, .981]	.964 [.863, .991]	.985 [.970, .993]	Picking Up Small Common Objects	.867 [.672, .950]	.121 [-.368, .558]	.446 [.213, .836]	.484 [.155, .716]	Simulated Feeding	.264 [-.233, .651]	.699 [.343, .879]	.412 [.252, .813]	.412 [.066, .669]	Stacking	.903 [.754, .964]	.952 [.873, .982]	.797 [.377, .945]	.792 [.607, .895]	Lifting Large, Lightweight Objects	.904 [.755, .964]	.813 [.556, .928]	.807 [.399, .948]	.798 [.618, .899]	Lifting Large, Heavy Objects	.803 [.537, .924]	.776 [.483, .913]	.821 [.432, .953]	.818 [.652, .909]		Seconds, M (SD)		
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	JTHFT Subtest	Dominant Hand	Nondominant Hand	
	Writing	29.81 (20.19)	88.25 (164.43)	
	Simulated Page Turning	9.27 (6.50)	10.69 (9.49)	
	Picking Up Small Common Objects	11.09 (6.38)	21.42 (36.14)	
	Simulated Feeding	16.52 (17.14)	19.82 (20.93)	
	Stacking	9.04 (8.36)	11.42 (14.41)	
	Lifting Large, Lightweight Objects	7.04 (5.95)	8.15 (7.28)	
	Lifting Large, Heavy Objects	6.66 (3.45)	7.33 (4.86)	
<p>Note. JTHFT-IT = Jebsen-Taylor Hand Function Test, Italian version; <i>M</i> = mean; <i>SD</i> = standard deviation.</p>				