

Research Summary – Adapted Manual Wheelchair Circuit (AMWC/AMWC+3) – Wheeled Mobility

Author Year Country Research Design Setting	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
<p>Ribeiro Neto et al. 2020</p> <p>Cross-sectional study to determine the inclusion of three additional items to the AMWC (AMWC+3)</p> <p>Setting: NR</p>	<p>N=126 participants with SCI Median age 28.9 years Injury level: T1-L3 (high paraplegia [HP], medium paraplegia [MP], and low paraplegia [LP]) AIS: A or B Mean time since injury 35.3 months</p>	<p>Criterion validity:</p> <ul style="list-style-type: none"> AMWC was not able to discriminate scores by people in each subgroup: high paraplegia (HP, T1-T4; n=39), medium paraplegia (MP, T5-T11; n=49), and low paraplegia (LP, T12-L3; n=38) (Wilks' lambda=0.93, p=0.07). AMWC+3 was able to discriminate all paraplegia subgroups (Wilks' lambda=0.86, p<0.05). 		<p>Sensitivity: AMWC+3 ability score presented a better sensitivity compared to AMWC ability score (lower success rate for all subgroups, 38.5% vs. 82.1% for HP; 49.0% vs. 75.5% for MP; 78.9% vs. 94.7% for LP). The LP group presented a significantly higher AMWC+3 ability score compared to MP and HP (17.0 vs. 16.5 and 16.5, respectively, p≤0.05). AMWC+3 total time was significantly lower in LP compared to MP and HP (139.85 s vs. 242.52 s and 326.21 s, respectively, p≤0.05).</p>

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Cowan et al. 2011 Two clinical research and three rehabilitation centers	N=50 participants with chronic SCI 42M, 8F Mean (SD) age 41.9 (13.4) years Mean (SD) time since injury 11.8 (11.4) years Classification: paraplegia/tetraplegia AIS: A-D	Criterion validity: Discriminate between paraplegia and tetraplegia subgroups: <ul style="list-style-type: none"> Sum ability was higher for paraplegia than tetraplegia (paraplegia, 12.9 ± 1.2; tetraplegia, 9.8 ± 2.8; p<0.00). Sum performance times were lower for paraplegia than tetraplegia (paraplegia, 20.0 ± 4s; tetraplegia, 32.0 ± 1.97s; p<0.00). 	Test-retest Reliability: Sum ability score and sum performance time were reliable: ICCs > 0.90 for the whole sample and both subtests (paraplegia, tetraplegia)	

Research Summary – Adapted Manual Wheelchair Circuit (AMWC/AMWC+3) – Wheeled Mobility - Cross-cultural Validation Studies

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<p>Ribeiro Neto et al. 2019</p> <p>Cross-sectional study to translate, culturally adapt and validate the AMWC into Brazilian-Portuguese version</p> <p>Network Rehabilitation Hospitals</p>	<p>N=66 participants with traumatic SCI Median age 30.6 years Injury level: C5-L3 (tetraplegia [C5-C8], n=22; paraplegia [T1-L3], n=44) Median time since injury 30.8 months</p>	<p>Construct validity (Table 1):</p> <ul style="list-style-type: none"> The sum performance score and the AMWC-Brazil total item time presented a negative and significant correlation with the SCIM-III scale and subscales ($p<0.01$). Also, the sum ability score and 3-Minute of Wheeling had a positive and significant correlation with the SCIM-III scale and subscales ($p<0.01$). When this analysis was performed considering the 		<p>Floor/Ceiling effects: A floor effect was not observed. However, there was a ceiling effect for the paraplegia group, in which 36 of the 44 participants (81.8%) completed all tasks. For the tetraplegia group, 5 of the 22 participants (15.2%) attained the maximum score.</p>

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		injury level groups, the AMWC-Brazil's outcomes presented moderate to very high significant correlation to the SCIM- III scale and subscales for the TP group. The paraplegia group presented weak to moderate significant correlations, between the SCIM- III mobility and total score with all the AMWC outcomes.																											
	Table 1. Correlations between AMWC scores and Demographic Variables <table> <tr> <td></td><td>Ability Score</td><td>Performance Score</td><td>Total item Score</td><td>3-Minute Wheeling</td></tr> <tr> <td>Total</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Age</td><td>-0.18</td><td>0.31*</td><td>0.21</td><td>-0.21</td></tr> <tr> <td>TSI</td><td>0.12</td><td>-0.01</td><td>-0.03</td><td>0.01</td></tr> <tr> <td>BMI</td><td>0.09</td><td>0.04</td><td>0.00</td><td>-0.01</td></tr> </table>					Ability Score	Performance Score	Total item Score	3-Minute Wheeling	Total					Age	-0.18	0.31*	0.21	-0.21	TSI	0.12	-0.01	-0.03	0.01	BMI	0.09	0.04	0.00	-0.01
	Ability Score	Performance Score	Total item Score	3-Minute Wheeling																									
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Age	-0.18	0.31*	0.21	-0.21																									
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	SCIM-III Self-Care	0.67*	-0.67*		-0.74*		0.72*	
	SCIM-III Respiration & SM	0.57*	-0.51*		-0.49*		0.58*	
	SCIM-III Mobility	0.77*	-0.68*		-0.79*		0.73*	
	SCIM-III Total score	0.74*	-0.72*		-0.75*		0.78*	
	Tetraplegia							
	Age	-0.15	0.35*		0.15		-0.19	
	TSI	0.05	-0.23		-0.30*		0.23	
	BMI	0.01	0.21		0.10		-0.17	
	SCIM-III Self-Care	0.89*	-0.90*		-0.92*		0.89*	
	SCIM-III Respiration & SM	0.66*	-0.68*		-0.72*		0.63*	
	SCIM-III Mobility	0.93*	-0.92*		-0.92*		0.88*	
	SCIM-III Total score	0.90*	-0.90*		-0.92*		0.88*	
	Paraplegia							
	Age	-0.17	0.05		0.17		-0.12	
	TSI	0.33	-0.43*		-0.37		0.47*	
	BMI	-0.14	0.05		0.13		-0.06	
	SCIM-III Self-Care	0.21	-0.34†		-0.55*		0.47*	
	SCIM-III Respiration & SM	0.13	-0.08		-0.05		0.24	
	SCIM-III Mobility	0.40*	-0.33†		-0.56*		0.44*	

Last updated: December 31, 2024

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	SCIM-III Total score	0.36†	-0.41*	-0.50*	0.54*
	*Significant correlation: P < 0.01; † Significant correlation: P < 0.05 SM: Sphincter Management;				