

High Level Mobility Assessment Tool (HiMAT)

Name: _____

Date: _____

Purpose: The HiMAT is designed to assesses patients who suffer from high-level balance and mobility problems.

Minimum mobility requirement is independent walking over 15-20 meters (49'2"-65'7.5" feet) without gait aids (orthoses are permitted).

Patients are allowed a trial session prior to the scored assessment.

Thirteen items (Williams et al., 2005b) scored from 0-4 which assess a wide range of high-level activities including:

- Walking and running
- Jumping and balance items
- Stairs
- Hopping
- Skipping

Patients perform each task at their maximum safe speed (except for bounding and stair items).

Equipment Required: Stopwatch, Tape Measure, House brick or similar sized obstacle, Flight of 14 stairs, Walkway of 45 feet minimum

Age Ranges

Adolescent 13 – 17 YEARS, Adult 18 –64 YEARS, Elderly Adult 65 + YEARS

Normative Data-- Non-Specific Patient Population

Healthy 18-25 years (Williams et al, 2009; n = 103)

— 50-54 points for males (Median score of 54 points)

— 44-54 points for females (Median score of 51 points)

Standard Error of Measurement (SEM): 1.36 for Chronic TBI (Williams et al)

Minimal Detectable Change: +4 points or -2 points for chronic TBI (Williams et al)

School Age Children Norms (Eldridge et al, 2019)

Age	Girls Norm (SD)	Boys Norm (SD)
5-6	17.7 (3.1)	17.3 (3.8)
7-8	21.5 (3.6)	21.9 (3.9)
9-10	24.6 (3.5)	25.6 (3.6)
11-12	26.5 (3.4)	27.3 (3.4)

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ITEM	PERFORMANCE	SCORE						
		0	1	2	3	4	5	
1. WALK	sec	X	> 6.6	5.4-6.6	4.3-5.3	< 4.3	X	
2. WALK BACKWARD	sec		>13.3	8.1-13.3	5.8-8.0	< 5.8	X	
3. WALK ON TOES	sec		> 8.9	7.0 - 8.9	5.4-6.9	< 5.4	X	
4. WALK OVER OBSTACLE	sec		> 7.1	5.4-7.1	4.5-5.3	< 4.5	X	
5. RUN	sec		> 2.7	2.0-2.7	1.7-1.9	< 1.7	X	
6. SKIP	sec		> 4.0	3.5-4.0	3.0-3.4	< 3.0	X	
7. HOP FORWARD (AFFECTED)	sec		> 7.0	5.3-7.0	4.1-5.2	< 4.1	X	
8. BOUND (AFFECTED)	1)	cm		< 80	80-103	104-132	> 132	X
	2)							
	3)							
9. BOUND (LESS-AFFECTED)	1)	cm		< 82	82-105	106-129	> 129	X
	2)							
	3)							
10. UP STAIRS DEPENDENT (Rail OR not reciprocal: if not, score 5 and rate below)	sec		>22.8	14.6-22.8	12.3-14.5	<12.3		
11. UP STAIRS INDEPENDENT (No rail AND reciprocal: if not score 0 and rate above)	sec		> 9.1	7.6-9.1	6.8-7.5	< 6.8	X	
12. DOWN STAIRS DEPENDENT (Rail OR not reciprocal: if not score 5 and rate below)	sec		>24.3	17.6-24.3	12.8-17.5	<12.8		
13. DOWN STAIRS INDEPENDENT (No rail AND reciprocal: if not score 0 and rate above)	sec		> 8.4	6.6-8.4	5.8-6.5	< 5.8	X	
	SUBTOTAL							

TOTAL HiMAT SCORE _____ /54

High-level Mobility Assessment Tool

Instructions

- Subject suitability:** Assess high-level balance and mobility problems. Minimal mobility requirement for testing is independent walking over 20m (65 feet) without gait aids. Orthoses are permitted.
- Instructions:** Perform at their maximum safe speed except for the bounding and stair items.
- Walking:** The middle 10m (32 feet 9 in) of a 15-20m trial (49 feet 2 in – 65 feet 7 in) is timed.
 - Walk backward:** As for walking.
 - Walk on toes:** As for walking. Any heel contact during the middle 10m is recorded as a fail.
 - Walk over obstacle:** As for walking. A house brick is placed across the walkway at the mid-point. Patients must step over the brick without contacting it.
FAIL= step around the brick OR make contact with the brick.
 - Run:** The middle 10m (32'9") of trial is timed.
FAIL: Lack of consistent flight phase during the trial.
 - Skipping:** The middle 10m (32'9") of trial is timed.
FAIL: Lack of consistent flight phase during the trial.
 - Hop forward:** Stand on more affected leg and hop forward. The time to hop 10m meters is recorded.
 - Bound: (affected)** A bound is a jump from one leg to the other with a flight phase. Start behind line on less affected leg, hands on hips, and jump forward **landing on their more affected** leg. Bound is measured from the line to the heel of the landing leg. The average of three trials is recorded.
 - Bound: (less-affected)** Patients stand behind a line on their more affected leg, hands on hips, and jump forward **landing on their less affected** leg. The average of three trials is recorded.
 - 10-11. Up stairs:** Patients are asked to walk up a flight of 14 stairs as they normally would and at their normal speed. The trial is recorded from when the patient starts until both feet are at the top. Patients who use a rail or a non-reciprocal pattern are scored on **Up Stairs Dependent**. Patients who ascend the stairs reciprocally without a rail are scored on **Up Stairs Independent** and get an additional 5 points in the last column of Up Stairs Dependent.
 - 12-13. Down stairs:** As for Up stairs.

Scoring: All times and distances are recorded in the 'performance' column. The corresponding score for each item is then circled and each column is then subtotaled. Subtotals are then added to calculate the HiMAT score.