

1. North Star Ambulatory Assessment (NSAA) – Version 2.0

Test Description

The NSAA is a 17-item scale that grades performance of various functional skills on a scale from 0 (unable), 1 (completes independently but with modifications), and 2 (completed without compensation).

NOTE: The order has been modified to enable more efficient conduct of the assessment.

- a. **Climb and Descend stairs: climb box step is performed step up right, step down right, step up left, step down left.**
- b. **Lifts head is performed before 'gets to sitting' and 'rise from floor' to avoid fatigue.**





Test Guidelines

- Performance of upright activities must not be completed if a lower limb injury exists. However, the subject may perform the head lift and gets-to-sitting items if he is able. Provide 'comments' on the source worksheet.
- Complete the NSAA in the order provided (Please note this has been modified from previous trials for a smoother administration).
- Do **NOT** use a mat.
- Please note the time in seconds **rounded to the nearest tenth** of a second for all timed tests (eg, rise from floor and 10 m 'run').
- Generally, activities are graded in the following manner:
 - Score of 2 = 'Normal' – no obvious modification of activity
 - Score of 1 = Modified method but achieves goal with no physical assistance
 - Score of 0 = Unable to achieve goal independently
- If you think the subject is capable of a better performance, due to non-compliance or improved understanding of task, it is acceptable to ask the subject to repeat the item and re-score if appropriate.
- If unsure if the performance on a particular item meets the higher criteria, give the subject the lower score.

Set-Up

- Mark off a 10-metre course in a long, quiet hallway or room. Provide a 'finish' line at approximately 11 metres to ensure the subject moves 'through' the 10-metre line, rather than slowing down prior to finishing.
- Ensure a clear floor space, measuring approximately 10 feet x 12 feet, is available for remaining assessments (i.e., rise from floor).

Conducting the Test

Test item 1: Standing				
Starting position	Feet must be no further than 10 cm apart and heels on the ground if possible. Arms by sides.			
Instruction	Can you stand up tall for me for as long as you can and as still as you can for three seconds with your heels flat on the ground?			
Scoring detail	When counting to 3 – Use “And 1, and 2, and 3” so that three seconds is achieved on the word of 3. Score 2 - Minimum count of 3 seconds.			
Activity	2	1	0	
Standing	Stands upright, still, symmetrical, without compensation (heels flat and hips in neutral rotation) for minimum count of 3 seconds	Stands still but with compensation (e.g. on toes or with legs abducted or with bottom stuck out/hip flexion, etc) for minimum count of 3 seconds	Cannot stand still or cannot stand independently, needs support (even minimal)	
Photographs/ Notes	 <p>Score 2 -Symmetrical heels flat</p> 	  <p>Score 1 – Asymmetric or compensation</p>		

Test item 2: Walk

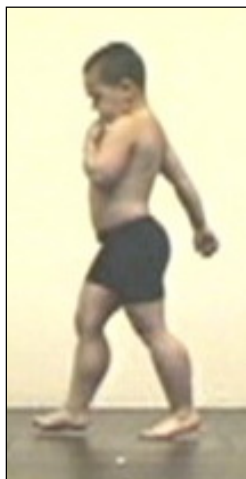
Starting position Standing. Observe walk for at least 10 steps in both sagittal and coronal planes.

Instruction Can you walk from A to B (state to and where from – approximately 8-10 feet) for me?

Scoring detail Score 1 - If the patient generally toe walks but occasionally gets heels flat, or can on request, they must score 1

Activity	2	1	0
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Walk	Walks consistently with heel-toe or flat-footed gait pattern	Persistent or habitual toe walker, unable to heel-toe consistently	Loss of independent ambulation – may use knee-ankle-foot orthosis (KAFO) or walk short distances with assistance
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Score 1 – habitual toe walker

Test item 3: Stand up from chair

Starting position Sitting in chair, bench or plinth with arms folded across chest with his hand up by his shoulders and with feet able to reach floor or supported on secure box. Adjust the seat height so that the hips and knees are at a 90° angle from the floor. Feet no more than shoulder width apart.

Instruction Can you stand up from the chair keeping your arms folded?

Scoring detail A size-appropriate chair (without arm-rests) or height adjustable plinth must be used. Alternatively, a box step under the feet to achieve the correct starting position may be used.

Score 2 - Arms must be kept crossed with the hands up by the shoulders throughout the activity to score 2

Activity 2 1 0

Stand up from chair Able to stand up keeping arms folded With help from thighs / push on chair / prone turn or alters starting position by widening base Unable

Photographs/ notes



Score 2 – keeps arms folded and stands up without widening base



Score 1 - Needs two hands to push and/or

Widened base






Score 0 -Unable to rise from starting position

Score 0 - Needs to change body position; and/or hips extended to slide forward from chair (not 90/90)

Test item 4 & 5: Stand on one leg Right & Left

Starting position	Standing.		
Instruction	Show me how long you can stand on your right / left leg with your arms at your side. Count "And 1, and 2, and 3"		
Scoring detail	Score 2 – Minimum count of 3 seconds required		
Activity	2	1	0
Stand on one leg	Able to stand in a relaxed manner (no fixation) for a count of 3 seconds	Stands but either momentarily or with trunk side-flexion or needs fixation e.g. by thighs adducted	Unable

Photographs / notes			
		Score 1 -Hooks leg behind standing leg	Score 0 -If needs to hold onto a table or person for support
	Score 2 – Relaxed and no fixation		
			
		Score 1 -Postural compensation / leaning to side	

Test item 6 & 8: Climb box step Right & Left

Starting position Standing in front of box step, toes no more than 20 cm (~8 in) away from box step.

Instruction Can you step onto the top of the box using your right/ left leg.

Scoring detail Box step must be 15 cm high. Score 1: If they need a hand for balance only – evaluators hand should be kept relatively high. Score 1: If they use a hand on their thigh. If in doubt whether this is used for balance or support offer them your hand and repeat test. Score 0: If they put weight through the evaluators hand (with one or two hands) or unable to climb step

They should not have their hands in their pocket.

Activity	2	1	0
Climbs box step	Faces step – no support needed	Goes up sideways / rotates trunk / circumducts hip or needs hand for balance	Unable to perform independently

Photographs / notes



Score 1 – Needs hand for balance only



Score 2 – Faces step



Score 1 - Rotates trunk or uses hand on thigh

Test item 7 & 9: Descend box step Right & Left

Starting position Standing on box step

Instruction Can you step down from the box using your right (or left) leg?

Scoring detail Box step must be 15 cm high.

Score 1: If they need a hand for balance only – evaluators hand should be kept relatively high. If they use a hand on their thigh. If in doubt whether this is used for balance or support offer them your hand and repeat test. Uses method that avoids flexing supporting knee (one on the box step)

Score 0: If they put weight through the evaluators hand (with one or two hands) or unable to descend step

They should not have their hands in their pocket.

Activity 2 1 0

Descends box step Faces forward, steps down controlling weight-bearing leg. No support needed Sideways, skips down or needs hand for balance Unable without more than minimal support, or requires hands for support

Photographs/ notes



Score 2 – faces forward



Score 1 – Needs hand for balance. No weight taken through hand.





Score 1 – Turning to side to descend

Test item 10: Lifts head from supine

Starting position Supine on a plinth or floor, arms folded across chest and the hands up by the shoulders. No pillow must be used.

Instruction Can you lift your head and touch your chin to your chest keeping your arms folded?

Scoring detail Ask patient to keep arms crossed over chest during the activity to avoid self-assistance.

Activity 2 1 0

Lifts head from supine In supine, full neck flexion, head must be lifted in mid-line. Chin moves towards chest

Head is lifted through side flexion, partial neck flexion, or with protraction.

Unable. No clearance of head from surface

Photographs / Notes



Score 2 – Chin on chest



Score 1 - Didn't achieve full range of flexion

Test item 11: Gets to sitting

Starting position Starting position supine on the floor, or large plinth with arms by side. No pillow must be used under head.

Instruction Can you get from lying into sitting?

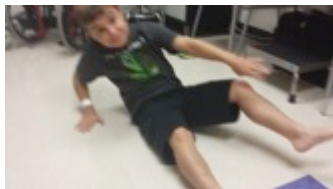
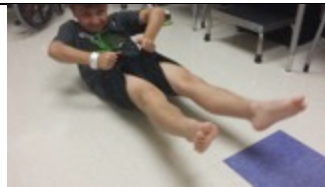
Scoring detail Aim is to move into long sitting rather than sitting over the edge of a plinth. Use of one hand or arm is acceptable to achieve a score of 2.

Score 1 if patient turns into prone or towards the floor to work their way into sitting or if uses two arms. Also score a one if the child uses leg momentum/rocking to get to sitting.

Activity 2 1 0

Gets to sitting	Starts in supine – may use one hand / arm to push up	Uses two arms / pulls on legs or turns towards floor or uses momentum/rocking	Unable
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Photographs
/notes



Score 1 - Pulls with both hands on legs

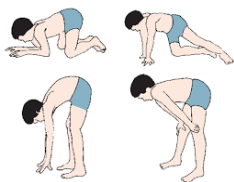
Score 2 - Only needs one arm to sit up

Test item 12: Rise from floor

Starting position Starting position supine with arms by sides, legs straight. No pillow to be used.

- Instruction**
- Give the following verbal instructions to the patient:
 - “When I say GO can you get up as fast as you can and stand up straight with your arms by your side like a soldier using as little support as possible”. Give the command “Ready, Set, GO!” and **start the stopwatch when saying “GO”**.
 - Stop the timer when the patient assumes an upright position with his arms by his side.

Scoring detail / Diagram Activity must be attempted without use of furniture in the first instance.



Score 1: If the patient gets to standing independently of any furniture but demonstrates any part of the maneuver described below.

Components of Gower’s manoeuvre:

Turns towards the floor (into a four-point kneeling position or rolls to prone).

Places hands on the floor to assist rising from floor and walks hands back in towards him.

Uses one or both arms to push up on legs to achieve upright standing.

Large base of support by abducting hips and extending knees.

Activity 2 1 0

Rise from floor	No evidence of Gower’s maneuver.	Exhibits at least one of the components described above – in particular rolls towards floor, and/or use hand(s) on legs	(a) NEEDS to use external support object e.g. chair, wall –still record time OR (b) Unable (time must be entered as N/A if the patient scores 0)
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Photographs / Note



Score 2 - Doesn't roll. Only 1 hand on floor to move into sitting



Score 1 – Rolls to prone



Score 0 – Uses chair



Score 1 - Uses hand on thigh

Test item 13: Stands on heels

Starting position	Standing on the floor. No shoes to be worn.		
Instruction	Can you stand on your heels? Count ‘And 1, and 2, and 3.’”		
Scoring detail	<p>Score 2: Must clear both feet at the same time using clear dorsiflexion</p> <p>Score 1: If both forefeet are lifted - all metatarsal heads of floor even if inversion is evident or clear dorsiflexion of one foot.</p> <p>Score 0: If uses inversion with lateral border (fifth metatarsal) of foot still on the ground or if just lifts toes.</p>		
Activity	2	1	0
Stand on heels	Both feet at the same time, clearly standing on heels only (acceptable to move a few steps to keep balance) for count of 3	Raises forefoot on both feet – all metatarsal heads off ground – or clearly dorsiflexes one foot only	Unable

Photograph / Notes



Score 1 - Both feet raised but only forefeet

Score 0 – Unable to raise even forefeet

Score 2 – Both feet raised

Test item 14: Jump

Starting position	Standing on the floor, feet comfortably close together		
Instruction	How high can you jump?		
Scoring detail	Want height, not forward movement. Small amount of forward movement acceptable		
Activity	2	1	0
Jump	Both feet at the same time, clear the ground simultaneously	One foot after the other (skip) or does not fully clear both feet at the same time	Unable

Photographs / Notes



Score 0 - Feet do not leave floor



Score 2 – Clears floor


Score 1 - One step after the other (skip)

Test item 15 & 16: Hop Right & Left leg

Starting position	Starting position standing on floor on right / left leg.
Instruction	Can you hop on your right / left leg?
Scoring detail	Score 2: Needs obvious floor clearance. Must land on one foot. If leaves floor but lands with two feet this is not a hop.

Activity	2	1	0
Hop	Clears forefoot and heel off floor	Able to bend knee AND raise heel , no floor clearance	Unable or only raises heel

Photographs / Notes			
	Score 2 – Clears foot off floor		

		
	Score 1 - Bends knee but foot does not leave floor	

Test item 17: Run (10 metres)

Starting position Standing

Instruction Give the following verbal instructions to the patient: **“When I say GO, you go as fast as you safely can all the way to me.** If you can run, then run. If you can’t then walk to me as fast as you can.” (Encourage child to run **past** the 10-metre mark) by standing at least one metre behind the line. Give the command **“Ready, Set – GO”**. Continuously encourage the patient until he crosses the finish line.


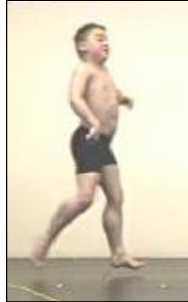
Start the timer when you say “GO”. Stop the timer when the second foot clears the finish line.

Scoring detail A straight 12-m walkway must be clearly marked at 10-m in a quiet department or corridor. A stopwatch must be used to time the walk. They must self-select speed after being asked to go ‘as fast as they can’. Score 1 - ‘Duchenne jog’ - not a true run (There is a double support phase), but it is faster than a walk. Characterised by excessive use of arms, trunk rotation, substantial ‘waddle’. No real ‘push-off’.



Activity 2 1 0

Run Both feet off the ground (no double stance phase during running) ‘Duchenne jog’ or fast walk Walk (No acceleration)

Photographs / Notes

Score 2 - Both feet off the ground
Definite ‘run’

Score 1 - Picks up speed but waddles and has one foot in contact with floor at all times

NSAA Brief Test Detail

Activity	2	1	0	Score
1. Stand	Stands upright, still and symmetrically, without compensation (with heels flat and legs in neutral) for minimum count of 3 seconds	Stands still but with some degree of compensation (e.g. on toes or with legs abducted or with bottom stuck out) for minimum count of 3 seconds	Cannot stand still or independently, needs support (even minimal)	
2. Walk	Walks with heel-toe or flat-footed gait pattern	Persistent or habitual toe walker, unable to heel-toe consistently	Loss of independent ambulation – may use KAFOs or walk short distances with assistance	
3. Stand up from chair	Keeping arms folded. Starting position 90° hips and knees, feet on floor/supported on a box step.	With help from thighs / push on chair / prone turn or alters starting position by widening base.	Unable	
4. Stand on one leg – right	Able to stand upright in a relaxed manner (no fixation) for count of 3 seconds	Stands but either momentarily or with trunk side-flexion or needs fixation e.g. by thighs adducted	Unable	
5. Stand on one leg - left	Able to stand upright in a relaxed manner (no fixation) for count of 3 seconds	Stands but either momentarily or with trunk side-flexion or needs fixation e.g. by thighs adducted	Unable	
6. Climb box step - right	Faces step – no support needed	Goes up sideways / rotates trunk / circumducts hip or needs hand for balance	Unable	
7. Descend box step – right	Faces forward, steps down controlling weight-bearing leg. No support needed	Sideways, skips down or needs hand for balance	Unable	
8. Climb box step - left	Faces step – no support needed	Goes up sideways / rotates trunk / circumducts hip or needs hand for balance	Unable	
9. Descend box step - left	Faces forward, steps down controlling weight-bearing leg. No support needed	Sideways, skips down or needs hand for balance	Unable	

Activity	2	1	0	Score
10. Lifts head	In supine, head must be lifted in mid-line. Chin moves towards chest	Head is lifted but through side flexion or with no neck flexion (protracts)	Unable	
11. Gets to sitting	Starts in supine – may use one hand / arm to push up	Uses two arms / pulls on legs or turns towards floor.	Unable	
12. Rise from floor	No evidence of Gower's maneuver.	Exhibits at least one of the Gower's components described– in particular rolls towards floor, and/or use hand(s) on legs	(a) NEEDS external support of object e.g. chair OR (b) Unable	Timed
13. Stands on heels	Both feet at the same time, clearly standing on heels only (acceptable to move a few steps to keep balance) for count of 3	Raises forefoot on both feet – all metatarsal heads off ground – or clearly dorsiflexes one foot only	Unable	
14. Jump	Both feet at the same time, clear the ground simultaneously	One foot after the other (skip) or does not fully clear both feet at the same time.	Unable	
15. Hop right leg	Clears forefoot and heel off floor	Able to bend knee and raise heel, no floor clearance	Unable	
16. Hop left leg	Clears forefoot and heel off floor	Able to bend knee and raise heel, no floor clearance	Unable	
17. Run (10 m)	Both feet off the ground (no double stance phase during running)	'Duchenne jog' or fast walk	Walk	Timed
TOTAL=	/34			

2. Timed Graded Functional activities

Rise From Floor

Place the participant in a supine position with his arms by his sides and his legs together. No shoes or socks should be worn.

Give the following verbal instructions to the participant: **“When I say GO you get up as fast as you can and stand up straight with your arms by your side like a soldier”**.

Give the command **“Ready steady – GO”** and start the stopwatch when saying **“GO”**.

Stop the timer when the participant assumes an upright position with his arms by his side.

Only provide a chair after the participant has attempted to stand from the floor for 30 seconds and failed.

Record the fastest time and the method they used to achieve this fastest time. You can repeat if you think they can do it faster or the grade was not representative of their usual ability.

Assign one of the following grades:

NSAA equivalent grade	Functional Grade	Description	
0	1	Unable to stand from supine, even with use of a chair	DO NOT RECORD TIME
0	2	Requires furniture to stand up from supine to full upright posture	DO NOT RECORD TIME*
1	3	Rolls over, stands up with both hands “climbing up” the legs to achieve full upright posture.	TIME
1	4	Rolls over, stands up with 1 hand support on leg	TIME
1	5	Rolls to the side and stands up with one or both hands on the floor to start to rise but does not touch legs	TIME
2	6	Stands up without rolling over or using hands on legs	TIME

* Using furniture to get up makes it easier / faster and if they have not used furniture before a faster time with furniture would not reflect progression accurately

10-Metre Run/Walk

10m run is graded during the performance of the test for the NSAA. You can repeat the test to check the time or the grade.

This test measures how fast the subject can run/walk 10 metres.

- Ask the subject to stand upright with both feet behind the starting line and toes touching the starting line.
- The evaluator should stand at a 12-metre mark. You stand 2 metres past the “finish line”
- Give the following verbal instructions to the subject: **When I say GO, you go as fast as you safely can all the way to me**
- Give the command **“ready set – GO”** and start the stopwatch when saying **“GO”**.
- Continuously encourage the subject until he crosses the finish line.
- Stop the timer when the **second** foot clears the finish line.

Note: Encourage the child to keep running across the finish line and not to slow down before the 10-metre mark.

Score the fastest time and record the method they used to complete it in the fastest time.

Assign one of the following grades:

NSAA equivalent grade	Functional Grade	Description
0	1	Unable to walk independently
0	2	Unable to walk independently but can walk with knee-ankle-foot orthosis (KAFO) or support from a person
0	3	Cannot increase walking speed, highly adapted, wide-based lordotic gait
1	4	Can pick up speed but cannot run, moderately adapted gait
1	5	Nearly running, but runs with a double stance phase, i.e., cannot achieve both feet off the ground
2	6	Runs and gets both feet off the ground (achieves flight)