

**NINDS CDE Notice of Copyright  
North Star Ambulatory Assessment (NSAA)**

<b>Availability:</b>	<p><b>Publicly available:</b> <a href="#">North Star Ambulatory Assessment</a>.</p> <p><b>For further information contact:</b> <a href="#">Muscular Dystrophy, UK</a>.</p>
<b>Classification:</b>	<p><b>Supplemental – Highly Recommended</b> for Congenital Muscular Dystrophy (CMD) studies with ambulatory CMD patients.</p> <p><b>Supplemental</b> for Duchenne Muscular Dystrophy/Becker Muscular Dystrophy (DMD/BMD) and Spinal Muscular Atrophy (SMA)</p>
<b>Short Description of Instrument:</b>	<p>The North Star Ambulatory Assessment has been developed by the Physiotherapy Assessment and Evaluation Group of the North Star Clinical Network for the assessment of ambulant boys with Duchenne muscular dystrophy (DMD).</p> <p>Test details and instructions for the patient and a scoring sheet with details for grading should be used in conjunction with each other.</p> <p><b>Specific Construct Measured:</b> Motor abilities - proximal and axial muscle strength</p>
<b>Scoring Information / Special Instructions</b>	<p>17 tasks activities with progressive difficulty</p> <ul style="list-style-type: none"> <li>• Each task is given a score from 0–2; max score 34.</li> <li>• Total score of 0 is completely non-ambulant; 34 able to complete all tasks fully</li> </ul> <p><b>Activities are graded in the following manner:</b></p> <p style="padding-left: 20px;">2 – ‘Normal’ – no obvious modification of activity</p> <p style="padding-left: 20px;">1 – Modified method but achieves goal independent of physical assistance from another</p> <p style="padding-left: 20px;">0 – Unable to achieve independently</p> <p><b>Administration:</b> If administered by a trained clinical evaluator, test takes approximately 10–15 min to administer</p> <p><b>Equipment</b></p> <p>15cm high box step, height appropriate chair/height adjustable plinth, stopwatch, 10m marked ‘runway’</p> <p><b>General test instructions</b></p> <p>If you think that the child is capable of a better performance, it is acceptable to ask the child to repeat the item and re-score if appropriate. You should attempt all activities at each assessment</p> <p>Do not use a mat unless it is required to gain co-operation. If a mat must be used, make sure it is not heavily padded. Note in comments and do so for all subsequent evaluations</p> <p>Please note that for many of the items socks and shoes should not be worn</p> <p>For the timed tests – rise from floor and 10m ‘run’ - please note the time in seconds and only to the nearest tenth of a second</p> <p><b>Rise from floor</b> Components of Gowers’ manoeuvre:</p> <p style="padding-left: 20px;">Turns towards the floor (into a four-point kneeling position or rolls to prone)</p> <p style="padding-left: 20px;">Places hands on the floor to assist rising and walks hands back in towards him</p> <p style="padding-left: 20px;">Uses one or both arms to push up on legs to achieve upright standing</p> <p style="padding-left: 20px;">Large base of support by abducting hips and extending knees</p>

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<b>Rationale / Justification</b>	<p>Validated only in DMD boys &gt;3y of age</p> <p><b>Limitations for CMD:</b></p> <ul style="list-style-type: none"> <li>• Will not be able to use in non-ambulatory patients</li> <li>• Focuses somewhat on whether or not patient is toe walking</li> <li>• No data in typically developing children.</li> </ul> <p><b>Advantages in CMD:</b></p> <ul style="list-style-type: none"> <li>• Tests proximal and axial muscle strength</li> </ul>
<b>References:</b>	<p><b>Key References:</b> Mazzone, E. S., Messina, S., Vasco, G., Main, M., Eagle, M., D'Amico, A., . . . Mercuri, E. (2009). Reliability of the North Star Ambulatory Assessment in a multicentric setting. <i>Neuromuscul Disord</i>, 19(7), 458–461.</p> <p>Mazzone, E., Martinelli, D., Berardinelli, A., Messina, S., D'Amico, A., Vasco, G., . . . Mercuri, E. (2010). North Star Ambulatory Assessment, 6-minute walk test and timed items in ambulant boys with Duchenne muscular dystrophy. <i>Neuromuscul Disord</i>, 20(11), 712–716.</p> <p>Mazzone, E., Vasco, G., Sormani, M. P., Torrente, Y., Berardinelli, A., Messina, S., . . . Mercuri, E. (2011). Functional changes in Duchenne muscular dystrophy: a 12-month longitudinal cohort study. <i>Neurology</i>, 77(3), 250–256.</p> <p>Scott, E., Eagle, M., Mayhew, A., Freeman, J., Main, M., Sheehan, J., . . . Muntoni, F. (2012). Development of a functional assessment scale for ambulatory boys with Duchenne muscular dystrophy. <i>Physiother Res Int</i>, 17(2), 101–109.</p> <p><b>Other References:</b> De Sanctis, R., Pane, M., Sivo, S., Ricotti, V., Baranello, G., Frosini, S., . . . Mercuri, E. (2015). Suitability of North Star Ambulatory Assessment in young boys with Duchenne muscular dystrophy. <i>Neuromuscul Disord</i>, 25(1), 14–18.</p> <p>Eagle M, Scott E, Main M, Sheehan J, Michelle M, Guglieri M, Straub V, Bushby K. Steroids in Duchenne muscular dystrophy (DMD): Natural history and clinical evaluation using the North Star Ambulatory Assessment (NSAA). Poster presented at the World Muscle Society Conference, Sicily. Abstract in <i>Neuromuscul Disord</i>. 2007; 17(9–10): 774</p> <p>Ergul, Y., Ekici, B., Nisli, K., Tatli, B., Binboga, F., Acar, G., . . . Omeroglu, R. E. (2012). Evaluation of the North Star Ambulatory Assessment scale and cardiac abnormalities in ambulant boys with Duchenne muscular dystrophy. <i>J Paediatr Child Health</i>, 48(7), 610–616.</p> <p>Mayhew, A., Cano, S., Scott, E., Eagle, M., Bushby, K., &amp; Muntoni, F. (2011). Moving towards meaningful measurement: Rasch analysis of the North Star Ambulatory Assessment in Duchenne muscular dystrophy. <i>Dev Med Child Neurol</i>, 53(6), 535–542.</p> <p>Mayhew, A. G., Cano, S. J., Scott, E., Eagle, M., Bushby, K., Manzur, A., &amp; Muntoni, F. (2013). Detecting meaningful change using the North Star Ambulatory Assessment in Duchenne muscular dystrophy. <i>Dev Med Child Neurol</i>, 55(11), 1046–1052.</p> <p>Scott E, Eagle M, Main M, Sheehan, J. The North Star Ambulatory Assessment. Poster presented at the Annual Meeting of the British Paediatric Neurology Association, 2006. Abstract in <i>Dev Med Child Neurol</i> 2006; 48(Supp. 104): 27.</p>