

### Core Measure: Six Minute Walk Test (6MWT)

<b>Overview</b>	<ul style="list-style-type: none"><li>• The 6MWT is a sub-maximal exercise test used to assess walking endurance and aerobic capacity. Participants will walk around the perimeter of a set circuit for a total of six minutes.</li></ul>
<b>Number of Test Items</b>	<ul style="list-style-type: none"><li>• 1 item</li></ul>
<b>Scoring</b>	<ul style="list-style-type: none"><li>• The score of the test is the distance a patient walks in 6 minutes (measured in meters and can round to the nearest decimal point).</li></ul>
<b>Equipment</b>	<ul style="list-style-type: none"><li>• Stopwatch</li><li>• Chair</li><li>• Measuring instrument (meters)</li><li>• At least a 12 meter long hallway or open area (e.g., quiet gym) with a smooth, consistent surface</li><li>• Markings to indicate turnaround (e.g.: cones)</li><li>• Mechanical lap counter or pencil and paper</li></ul>
<b>Time (new clinician)</b>	<ul style="list-style-type: none"><li>• Less than 10 minutes</li></ul>
<b>Time (experienced clinician)</b>	<ul style="list-style-type: none"><li>• Less than 10 minutes</li></ul>
<b>Cost</b>	<ul style="list-style-type: none"><li>• Free</li></ul>
<b>Logistics-Setup</b>	<ul style="list-style-type: none"><li>• A hallway or open area at least 12 meters long with a smooth, consistent surface</li><li>• There should be a clear pathway on the sides and at either end.</li><li>• A turnaround point approximately 49 in (124 cm) wide with clear markings should be set up at both ends</li><li>• A chair should be placed at one end.</li></ul>
<b>Logistics-Administration</b>	<ul style="list-style-type: none"><li>• Prior to administering the measure, the patient should be sitting in a chair, rested, near the starting point of the test.</li><li>• Please review any contraindications and take resting vital signs [e.g. heart rate, blood pressure, oxygen level, Borg Rate of Perceived Exertion<sup>1</sup>, etc.] as indicated<sup>2</sup></li><li>• Instructions to the patient in sitting<sup>3</sup>:<ul style="list-style-type: none"><li>○ <i>“The aim of this test is to walk as far as possible in six minutes. You will walk back and forth in the hallway. Six minutes is a long time to walk, so you will be exerting yourself. You may get out of breath or become tired. You are allowed to slow down, to stop, and to rest as necessary. You may stand and rest, but resume walking as soon as you are able. Are you ready to do that?”</i></li></ul></li></ul>

	<ul style="list-style-type: none"> <li>○ “Walk to the turnaround point at each end. I am going to use this counter to keep track of the laps you complete. Remember the aim is to walk as far as possible, but do not run or jog.”</li> <li>○ “Start now or when you are ready.”</li> <li>○ Encouragement (eg, “You’re doing a good job and you have 5 minutes left, or “Keep up the good work. You have 4 minutes to go.” ) is given after each minute of the test; no other communication should occur during the test.</li> <li>● The patient may take as many standing rests as they like, but the timer should keep going and record the number of rests taken and the total rest time.</li> <li>● Patients may use any assistive device or bracing that they are currently using. The type of device and/or bracing must be documented.</li> <li>● When administering the test, do not walk in front of or directly beside the patient, as this may “pace” the patient and influence the speed and distance they walk. Instead, walk at least a half step behind the patient.</li> <li>● If a patient requires assistance, only the minimum amount of assistance required for a patient to complete the task should be provided. The level of assistance documented, however, should reflect the greatest amount of assistance provided during the test. For example, if a patient required minimum assistance for the majority of the test but required moderate assistance for stability on one occasion, the patient should be rated as requiring moderate assistance. Assistance should be provided to prevent a fall or collapsing (i.e. knee buckling, trunk collapse, etc). Assistance should <u>not</u> be provided for limb swing, or any other manner in which the assistance is propelling the patient forward. <ul style="list-style-type: none"> <li>○ The level of physical assistance documented using an ordinal 7-point scale is described below. <ul style="list-style-type: none"> <li>1 = <i>total assistance</i> [patient performs 0%-24% of task]*</li> <li>2 = <i>maximum assistance</i> [patient performs 25%-49% of task]</li> <li>3 = <i>moderate assistance</i> [patient performs 50%-74% of task]</li> <li>4 = <i>minimum assistance</i> [patient performs 75%-99% of task]</li> <li>5 = <i>supervision</i> [patient requires stand-by or set-up assistance; no physical contact is provided]</li> <li>6 = <i>modified independent</i> [patient requires use of assistive devices or bracing, needs extra time, mild safety issues]</li> <li>7 = <i>independent</i></li> </ul> </li> <li>*<b>Note:</b> if your patient requires <i>total assistance</i>, a score of 0 should be documented</li> </ul> </li> </ul>
<b>Logistics-Scoring</b>	<ul style="list-style-type: none"> <li>● Distance (in meters) covered in six minutes is calculated by multiplying the number of total laps by 12 meters and adding the distance of the partial lap completed at the time the test ended.</li> <li>● If the patient needs to stop and sit prior to the end of the six minutes, the test ends, and the distance ambulated is recorded.</li> <li>● <u>Document the distance in meters, the level of assistance, and type of assistive device and/or bracing used.</u></li> </ul>

	<ul style="list-style-type: none"> <li>• If a patient requires <i>total assistance</i> or is unable to ambulate at all, a score of 0 meters should be documented.</li> </ul>
<p><b>Additional Recommendations</b></p>	<ul style="list-style-type: none"> <li>• Vital signs (e.g. heart rate, blood pressure, oxygen level, Borg Rate of Perceived Exertion,<sup>1</sup> etc.) should be assessed pre and post test, as indicated<sup>2</sup></li> <li>• Patients should not talk during the test, as this depletes their respiratory reserves. Exceptions to this are if the patient requests to stop the test or needs to report any symptoms (e.g. pain, dizziness).</li> <li>• The person administering the test also should not talk, except to provide updates every minute (as described above). Talking during the test can distract the patient and affect their score on the test.</li> <li>• For patients who are unable to walk, but have a goal and the capacity to achieve walking, a baseline a score of 0 meters should be documented.</li> <li>• To track change, it is recommended that this measure is administered a minimum of two times (admission and discharge), and when feasible, between these periods, under the same test conditions for the patient.</li> <li>• Recommend review of this standardized procedure and, on an annual basis, establish consistency within and among raters using the tool.</li> </ul>

**Common Questions and Variations**

1. “My current setting does not have a 12-meter hallway or open area available. What should I do?”
  - a. Length of the track does matter. According to one study, using shorter hallways or “tracks” resulted in patients walking shorter overall distances on the 6MWT compared to when they used longer hallways<sup>4</sup> Therefore, it is recommended that the test be administered consistent with recommendations above.
  - b. If your facility does not have a 12 meter hallway, the test can be administered outside over level ground, free of street crossings.
  - c. If your facility does not have a 12 meter hallway, AND you can’t administer the test outside due to safety, weather, unlevel surfaces, etc., the test can still be administered over a shorter track, and a consistent administration procedure should be utilized each time the test is performed. The shorter track distance and any other modifications should be documented and clearly identified as a variation from the standardized procedure detailed above. Be aware that the results may not be comparable to published normative values or appropriate to include in an aggregate analysis. Additionally, the 6MWT may have limited feasibility in certain settings with limited walkway space (hospital room, home environment). Thus, clinicians will need to determine the feasibility and appropriateness of the 6MWT in specific situations. If unable to administer due to limited feasibility, the clinician should document “unable to administer” and provide an explanation in the patient's medical record.

2. "In my setting the longest area available transitions from laminate flooring to carpet. Is this a problem?"
  - a. Ideally the floor surface would be hard and flat<sup>2</sup> throughout, as well as being the same, however this may not be possible in all settings, particularly in the home. The test should still be administered in the area that you have, and a consistent administration procedure and environment be utilized each time the test is performed. The variation in surface or environment should be documented and clearly identified as a variation from the standardized procedure above. Be aware that the results may not be comparable to published normative values or appropriate to include in an aggregate analysis.
  
3. "My patient requires contact guard assist, can I still administer this measure?"
  - a. Yes, If physical assistance is needed for a patient to complete the 6MWT, please document the distance in meters, the level of assistance provided, and the assistive device or bracing used.
  - b. The level of physical assistance documented using an ordinal 7-point scale is described below.
    - 1 = *total assistance* [patient performs 0%-24% of task]\*
    - 2 = *maximum assistance* [patient performs 25%-49% of task]
    - 3 = *moderate assistance* [patient performs 50%-74% of task]
    - 4 = *minimum assistance* [patient performs 75%-99% of task]
    - 5 = *supervision* [patient requires stand-by or set-up assistance; no physical contact is provided]
    - 6 = *modified independent* [patient requires use of assistive devices or bracing, needs extra time, mild safety issues]
    - 7 = *independent*

\***Note:** if your patient requires *total assistance*, a score of 0 should be documented
  - c. It is important to note that the assisted test may not be directly comparable to the distance that patient walks without assistance, and it may not be compared to published normative values.
  
4. "My patient stumbled during the measure and I jumped in to catch them and prevent a fall. How do I score this measure?"
  - a. If the patient is able to resume walking, the trial can continue. The number of times and the distance at which the patient stumbled should be documented.
  - b. The level of physical assistance required should be documented using an ordinal 7-point scale described below.
    - 1 = *total assistance* [patient performs 0%-24% of task]\*
    - 2 = *maximum assistance* [patient performs 25%-49% of task]
    - 3 = *moderate assistance* [patient performs 50%-74% of task]
    - 4 = *minimum assistance* [patient performs 75%-99% of task]
    - 5 = *supervision* [patient requires stand-by or set-up assistance; no physical contact is provided]
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    - 7 = *independent*

**\*Note:** if your patient requires *total assistance*, a score of 0 should be documented

5. “My patient has impaired cognition and gets distracted during the test, frequently forgetting the intended goal. Can I still administer this measure?”
  - a. Yes. Examiners can use brief verbal, visual, or tactile cues to keep a patient on-task and to remind him/her of the goal, but be consistent (e.g., “Keep going. Walk to the mark.”). Document the type and frequency of the required cues.
6. “My patient can’t walk for 6 consecutive minutes. Why can’t I just do the 2 Minute Walk, instead?”
  - a. The good news is that any patient with goals to improve walking distance and capacity can perform the 6MWT. Even if your patient has to end the test well before the 6 minutes are over, he/she can still receive a score (distance walked) on this test. In some cases the score might be just a few meters distance.
  - b. In order to decrease variability in practice and for consistency of measurement across episodes and the continuum of care, the 6MWT is the preferred measure of walking endurance. It is recommended that clinicians use this measure instead of (or in addition to) other measures of walking endurance.
7. “My patient needs to stop and sit during the 6MWT. Is it acceptable to keep the clock running while they sit, and then have them stand and continue walking?”
  - a. The test stops when a person needs to sit and rest, and this is the distance recorded. A patient can take as many standing rest breaks as needed, even leaning against a wall, but standard procedure is to stop the test when a person needs to sit because this indicates the true distance the patient can walk.<sup>2</sup>
8. “Can the patient use an assistive device during the test?”
  - a. Yes, the patient can use an assistive device during the test. Recommendations include documenting the assistive device and keeping the assistive device consistent between trials and reassessments.
  - b. Inappropriate assistive devices can have a negative impact on walking speed and therefore reduce the validity of the test. It is likely that the type of assistive device a patient needs may change over time. If/when a different assistive device is indicated, the reason behind a different device choice should be noted.
  - c. If the patient no longer needs the assistive device, or has progressed to a less restrictive device, it would be appropriate to repeat the test with this change in conditions and document this fact.
  - d. It is appropriate to have the patient utilize the assistive device which he/she is most likely to use in his/her own environment.
9. “Can the patient use orthoses or bracing during the test?”
  - a. Yes, the patient should wear the walking devices necessary for ambulation (AFO, KAFO, Neuroprostheses, etc). The walking device should be documented and kept consistent between trials and assessments.
  - b. If the patient no longer needs the orthosis which was used in the initial test, it is appropriate to repeat the test without the orthosis and document this fact.

- c. It is appropriate to have the patient utilize the orthosis or brace which he/she is most likely to use in his/her own environment.
10. "What about monitoring vital signs after the test. Should I check them?"
- a. It is always good practice to monitor vital signs, particularly in patients with cardiovascular or pulmonary involvement. Per the American Thoracic Society Guidelines, it is up to the clinician's judgement on which and if vitals should be obtained.<sup>2</sup>

## References

1. Eston RG, Thompson M. Use of ratings of perceived exertion for predicting maximal work rate and prescribing exercise intensity in patients taking atenolol. *Br J Sports Med.* 1997;31(2):114-119.
2. ATS statement: guidelines for the six-minute walk test. *Am J Respir Crit Care Med.* 2002;166(1):111-117.
3. Quinn, L., H. Khalil, H. Dawes, N. E. Fritz, D. Kegelmeyer, A. D. Kloos, J. W. Gillard, M. Busse and N. Outcome Measures Subgroup of the European Huntington's Disease (2013). "Reliability and minimal detectable change of physical performance measures in individuals with pre-manifest and manifest Huntington disease." *Phys Ther* **93**(7): 942-956.
4. Scivoletto, G., F. Tamburella, L. Laurenza, C. Foti, J. F. Ditunno and M. Molinari (2011). "Validity and reliability of the 10-m walk test and the 6-min walk test in spinal cord injury patients." *Spinal Cord* **49**(6): 736-740.