Six-Minute Walk Test

Key Points

- The 6MWT must be performed *twice* to account for a learning curve.
  **Note: consistency in administering the test is imperative.*
- If the two tests are performed on the same day, *at least 30 minutes* rest should be allowed between tests.
  **Note: debilitated individuals may require tests to be performed on separate days, preferably less than one week apart.*
- Results of both tests are recorded with the best result used to determine functionality.
- A health professional trained in CPR with the ability to run the test must be present.

Required Equipment

- Walking Track or Area
  - The walking track or area must be the same for both/all tests for a patient
  - The track may be a continuous track (oval or rectangular) or a point-to-point area (stop- turn around-go back).
  - The track or area should be flat with no blind turns, traffic or obstacles.
  - The minimum walking length of 25m (82 feet) should be marked in meter (feet) increments.
    **Note: If you do not have access to a 25m track, make sure you use the same point-to-point area for all tests (be aware that the distance walked may be less due to the patient having to slow down and turn more often in the six minutes).*
- Stethoscope, vital sign equipment, pulse oximeter
- Stop watch
- Portable oxygen delivery system
- Chairs in position for the patient to rest
- Dyspnea scale

Before the 6MWT

- Ensure that you have already obtained a medical history for the patient and have taken into account any precautions or contraindications to exercise testing.
- Instruct the patient to dress comfortably, wear appropriate footwear and to avoid eating for at least two hours before the test (where possible or appropriate).
- Any prescribed inhaled bronchodilator medication should be taken within one hour of testing or when the patient arrives for testing.
- The patient should rest for at least 15 minutes before beginning the test.
- A comfortable ambient temperature and humidity should be maintained for all tests.
- Record:
  - Blood pressure
  - Heart rate
  - Oxygen saturation
  - Dyspnea score
    ** Note: Show the patient the dyspnea scale (e.g., Borg scale) and give consistent instructions on how to obtain a score.*

- **Instructions to the Patient**
  **Note: Instructions must be consistent.*
  (Put the instructions on a laminated card and read them out loud to the patient.)
  - Describe the walking track or area to the patient.
  - Explain the objective of the test.
  - Provide instructions on what to do and what not to do during the test.
  - Emphasize reporting any untoward effects.
  - Sample instructions:
    "You are now going to do a six-minute walking test. The object of this test is to walk as quickly as you can for six minutes around the track (or up and down the corridor etc… depending on your track set up) so that you cover as much ground as possible. You may slow down if necessary. If you stop, I want you to continue to walk again as soon as possible. You will be kept informed of the time and you will be encouraged to do your best. Your goal is to walk as far as possible in six minutes. Please do not talk during the test unless you have a problem or if I ask you a question. You must let me know if you have any chest pain or dizziness. When the six minutes is up I will ask you to stop where you are. Do you have any questions?"

➢ **Begin the Test** by instructing the patient to start walking and start the stop watch.

➢ **During the Test**
- Monitor the patient for untoward signs and symptoms.
- Use standard encouragements during the test. Example:
  - At minute one: "Five minutes remaining. Do your best!"
  - At minute two: "Four minutes remaining. You're doing well - keep it up!"
  - At minute three: "Half way point. Three minutes remaining. Do your best!"
  - At minute four: "Two minutes remaining. You're doing well - keep it up!"
  - At minute five: "One minute remaining. Do your best!"

➢ **At the End of the 6MWT**
- Put a marker on the distance walked.
- Have the patient sit down or if the patient prefers, allow to the patient to stand.
  **Note: The measurements taken before and after the test should be taken with the patient in the same position.*
- Immediately record oxygen saturation (SpO_2)%, heart rate, and dyspnea rating on the recording sheet.
- Measure the excess distance with a tape measure and add up the total distance.
- The patient should remain in a clinical area for at least 15 minutes following an uncomplicated test.

Clinical Notes

Normally the clinician does not walk with the patient during the test to avoid the problem of setting the walking pace. The pulse oximeter should be applied immediately if the patient chooses to rest and at completion of the six-minute walking period. Any delay may result in readings being recorded that are not representative of maximum exercise response.

In some instances, the clinician may choose to walk with the patient for the entire test (e.g., if continuous oximetry is desired). If this is the case the clinician should try to walk slightly behind the patient to avoid setting the walking pace. Alternatively, if the oximeter is small and lightweight, it may be attached to the patient and checked throughout the test without interfering with walking pace.

- **<u>If the Patient Stops During the Six Minutes</u>**
  - Allow the patient to sit in a chair if they wish.
  - Measure the SpO_2% and heart rate.
  - Ask the patient why they stopped.
  - Record the time the patient stopped (but keep the stop watch running).
  - Encourage the patient to begin walking as soon as he/she is feeling better and offer encouragement every 15 seconds if necessary.
  - Monitor the patient for untoward signs and symptoms.

- **<u>Stop the Test in the Event of Any of the Following</u>**
  - Chest pain suspicious for angina.
  - Evolving mental confusion or lack of coordination.
  - Evolving light-headedness.
  - Intolerable dyspnea.
  - Leg cramps or extreme leg muscle fatigue.
  - Persistent $SpO_2 < 85\%$.
  - Any other clinically warranted reason.

- **<u>Predicted Normal Values for the 6MWT</u>**
  The following predictive equation uses the reference values determined from a study that performed two 6MWTs and recorded the best result*: (For more details see Troosters T, Gosselink R, Decramer M. Six minute walk distance in healthy elderly subjects. Eur Respir J. 1999;14: 270-274).*
  - Predicted six-minute walk distance in healthy elderly = 631 ± 93 meters
  - Predictive equation: $6MWD_{pred} = 218 + (5.14 \times height_{cm} - 5.32 \times age) - 1.80 \times weight_{kg} + 51.31 \times gender$
    Note: Gender is factored into the equation by male = 1, female = 0.

6MWT as an Outcome Measure

The change in the distance walked in the 6MWT can be used to evaluate the efficacy of an exercise training program or to trace the natural history of change in exercise capacity over time.

The minimum clinically important difference (i.e., improvement) in the distance walked in a 6MWT has been estimated as 54 meters (with 95% confidence limits of 37 to 71 meters) (*For further details, see Redelmeier, 1997*).

However, this improvement in 6MWT distance may not occur in patients who walk a very short distance in their 6MWT before pulmonary rehabilitation. For these patients, it may be more reasonable to evaluate efficacy based on the percent change rather than a change in a set number of meters. However, the actual percent change that equates to a clinical improvement has not yet been established - further research is required.