

Core Measure: Five Times Sit-To-Stand (5TSTS)

Overview	<ul style="list-style-type: none">• The Five Times Sit to Stand Test measures one aspect of transfer skill. The test provides a method to quantify functional lower extremity strength and/or identify movement strategies a patient uses to complete transitional movements.
Number of Test Items	<ul style="list-style-type: none">• 1
Scoring	<ul style="list-style-type: none">• The score is the amount of time (to the nearest decimal in seconds) it takes a patient to transfer from a seated to a standing position and back to sitting five times.
Equipment	<ul style="list-style-type: none">• Standard height chair (43-45 cm, 17-18 inches) with a backrest.• Stopwatch
Time (new clinician) Time (experienced clinician)	<ul style="list-style-type: none">• Less than 5 minutes• Less than 5 minutes
Cost	<ul style="list-style-type: none">• Free
Logistics-Setup	<ul style="list-style-type: none">• The chair should be free-standing• Subjects are allowed to place their feet comfortably under them during testing.¹
Logistics-Administration	<ul style="list-style-type: none">• One trial is administered.• A patient is instructed to sit with arms folded across their chest and with back against the chair. A patient with hemiplegia can have the impaired arm at his/her side or in a sling.• Instruct the patient: "I want you to stand up and sit down five times in a row, as quickly as you can, when I say 'Go'. Be sure to stand up fully and try not to let your back touch the chair back between each repetition. Do not use the back of your legs against the chair."• Time starts when the tester says "Go."• Time stops when the patient's body touches the chair following the fifth repetition.• If individuals are unable to complete the first sit to stand independently, without use of arms, the test is terminated.^{1,2}
Logistics-Scoring	<ul style="list-style-type: none">• Document the time in seconds (to the nearest decimal) required to complete the test. If the patient cannot perform five stands to complete the test without use of arms, a score of 0 seconds should be documented. When possible within the medical record it is also recommended to note the reason, such "unable to perform five repetitions." The tester can

	document the number of stands, time, or compensatory movements for baseline information, but this should not be considered a trial of the 5TSTS Test.
Additional Recommendations	<ul style="list-style-type: none"> • 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. • Recommend review of this standardized procedure and, on an annual basis, establish consistency within and among raters using the tool.

Common Questions and Variations

1. "What if I don't have a chair that is 43-45 cm (17-18 inches) high?"
 - a. This is the recommended height for completing the test. If the chair used is a different height, the height should be measured, documented and reported as a deviation from this standardized procedure.
 - b. Using the same chair height is recommended for ongoing assessments to capture change in the patient.
 - c. Note that this recommended chair height is different from the recommended chair height in the Berg Balance Scale (18-20 inches).

2. "What if the individual's feet don't touch the floor when they have their back against the backrest?"
 - a. In this scenario, it is permissible to allow the individual to move forward in the chair until their feet are flat on the floor. It is recommended that the deviation from standardized protocol be documented as well.

3. "What if the individual is very tall?"
 - a. It would be appropriate to use a taller chair or apply a seat cushion to bring the hip flexion angle to 90 degrees when in the seated position.³ This condition should be documented as a variation of the standardized procedure.

4. "What if my patient cannot stand without using his/her hands?"
 - a. When following the standardized procedure, it would be appropriate to document 0 for the score. While 0 seconds would be the fastest possible time to complete the test, it is also impossible and therefore would be clear in any medical record that the patient was unable to perform the test. When possible within the medical record it is also recommended to note the reason, such as "unable; requires use of hands". At the point in time when the patient is able to complete 5 sit-to-stands without the use of upper extremities, a baseline 5TSTS score can be recorded.
 - b. Arm and hand position influence the momentum and strategy for the sit to stand transition and influence 5TSTS Test scores.³ If the patient cannot complete the assessment with arms folded, it is permissible to allow the individual to utilize his or her hands to assist. This deviation from standardized protocol should be documented. The standardized protocol score would still be "unable".

5. "What if my patient cannot complete five repetitions?"
 - a. If the patient does not complete *five repetitions*, a score of 0 seconds should be recorded. When possible within the medical record it is also recommended to note the reason, such as "unable to perform five repetitions". The clinician can, however, use his or her clinical judgement to record a time for fewer repetitions or provide physical assistance to help the patient complete the assessment, as this information may be valuable to explore change over time for the individual patient.

6. "What if my patient has a loss of balance and requires physical assistance to prevent a fall?"
 - a. Providing assistance during the test is a deviation from the standardized procedure, however, it may be necessary to prevent patient injury. If physical assistance is provided, the patient should be given a score of 0. When possible within the medical record it is also recommended to note the reason, such as "unable to complete test without assistance".

7. "Should my patient touch their back against the back rest between each repetition of sit to stand?"
 - a. No, the patient should be encouraged to avoid touching his/her trunk to the backrest between each repetition to minimize utilization of momentum to complete the sit to stand.

8. "Should I include a practice session or multiple trials?"
 - a. Yes, a practice session can ensure familiarization with the test.⁴ So, if a clinician feels a practice session is warranted then one may be performed.
 - b. If a patient has limited endurance, consider an abbreviated practice trial of 2 sit to stands to ensure that the patient understands all components of the test.⁵

9. "Does foot position matter?"
 - a. Yes, foot position can impact sit to stand time and has been found to be a limitation in some studies exploring the 5TSTS in neurologic populations.^{1,6} A posterior foot position has been shown to have faster sit to stand times in patients with chronic stroke.³
 - b. Foot position should be self-selected by the patient.

References

1. Whitney SL, Wrisley DM, Marchetti GF, Gee MA, Redfern MS, Furman JM. Clinical measurement of sit-to-stand performance in people with balance disorders: validity of data for the Five-Times-Sit-to-Stand Test. *Phys Ther.* 2005;85(10):1034-1045.
2. Duncan RP, Leddy AL, Earhart GM. Five times sit-to-stand test performance in Parkinson's disease. *Arch Phys Med Rehabil.* 2011;92:1431-6.
3. Kwong PWH, Ng SSM, Chung RCK, Ng CYF. Foot placement and arm position affect the Five Times Sit-to-Stand Test time of individuals with chronic stroke. *BioMed Research International.* 2014; 636530.
4. Møller, Andreas Buch, et al. Validity and variability of the 5-repetition sit-to-stand test in patients with multiple sclerosis. *Disabil Rehabil.* 2012;34(26):2251-2258.
5. Bohannon, Richard W., et al. Sit-to-stand test: performance and determinants across the age-span." *Isokinet Exerc Sci.* 2010;18:4235-240.
6. Mong Y, Teo TW, Ng SS. 5-repetition sit-to-stand test in subjects with chronic stroke: reliability and validity. *Arch Phys Med Rehabil.* 2010;91(3): 407-413.