L Test for Functional Mobility (L Test): Reference Guide

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Introduction

The L Test for Functional Mobility (L Test) is a performance-based outcome measure designed to assess basic functional mobility and was developed to address ceiling effects noted with the Timed-Up-And-Go (TUG) test. The L Test requires a higher level of skill with turns to both the left and the right as well as a sit-to-stand transfer [1].

Establishing Author: Deathe 2005[1]   **Data Type:** Ratio

Measurement Type: Performance-Based Outcome Measure   **Assessment Type:** Observer

Psychometric Properties

The L Test has been shown to have a high level of psychometric properties in a variety of populations including lower limb amputees [1], hospitalized elderly [2] and chronic stroke [3].

Table 1. A comparison of psychometric properties tested in common outcome measures

Outcome measure	Reliability			Validity	Responsiveness		Normative Data
	Test-Retest	**Inter-rater**	**Intra-rater**		**MDC**	**Floor/Ceiling Effect**	
FSST	yes	no	yes	yes	no	floor	yes
Single Limb Stance	yes	no	no	yes	no	ceiling	yes
Timed Up & Go	yes	Yes	yes	yes	yes	ceiling	yes
L-Test	no	yes	yes	yes	yes	none	yes

Reliability. Excellent Inter-rater reliability and intra-rater reliability has been demonstrated for lower limb amputees[1], hospitalized elderly [2], and chronic stroke [3].

Validity. Validity in lower Limb Amputees was established through concurrent validity, discriminate validity as well as face validity [1]. For geriatric hospitalized patients [2] and chronic stroke patients [3], criterion validity was established.

Responsiveness. The L Test was found to be responsive in lower limb amputee [1], and chronic stroke patients [3]. The Minimal Detectable Change for chronic stroke patients was 4 s [3], and the Minimal Clinically Important Difference (MCID) for lower limb amputees was 4.5s [4].

Required Resources

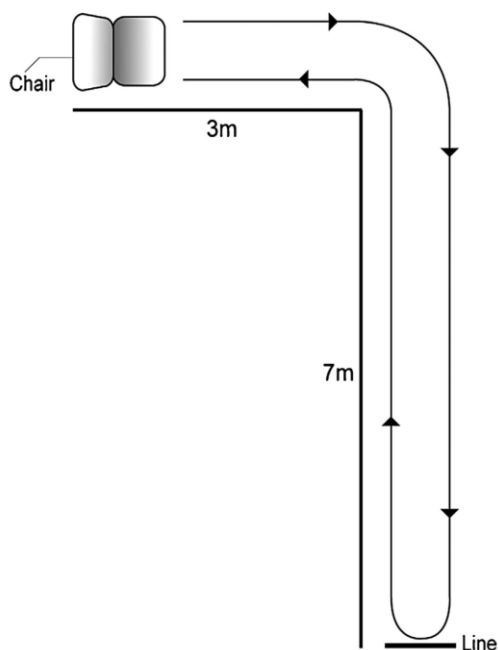**Time:** < 5 minutes

Personnel: 1 person

Equipment: a stopwatch and chair of standard height (seat height 46cm, arm height 67cm)

Space: about 18 square meters: 7m walkway and 3 m walkway at 90 degrees, space for chair and turnaround

Cost: Free

Test Administration

1. Set up the a chair (seat height 46cm, arm height 67cm)
2. Place a piece of tape on the floor 3 m away from chair, and 7 m away from this point at a 90 degree angle.
3. Instruct the subject to stand up when you say "Go" and walk to the first line, turn 90 degrees and walk to the second line on the floor and return along the same path as quickly and safely as possible.
4. Start the stopwatch when you say "Go" and stop it when the subject sits again

The subject receives one demonstration and one practice trial. The subject then completes two trials with the better time being recorded.

Figure 1. Testing configuration. The subject begins seated in a standard chair, walks to a line 3m away, turns at a 90 deg angle and walks to another mark 7m away and returns along the same path to sit in the chair.

Interpretation

Shorter time to finish the test represents better functional mobility. Normative data for various patient populations as well as Minimal Detectable Change (MDC) values are summarized in the tables below. Clinicians can compare results from testing patients against these times and use to that to justify the prescription of an orthotic or prosthetic intervention. Medical necessity can be shown by:

- Returning a patient to a score that is average among a patient's normal peers.
- Reduction in time that exceeds the Minimal Detectable Change (MDC) or Minimally Important Clinical Difference (MCID).

Limitations

Any subject that cannot perform the tasks in the L Test will encounter a floor effect

Documentation in Clinical Notes

Example: When assessed with the L Test of Functional Mobility (L Test) patient scored 48 s today. This shows an decrease/increase in time since last assessed on 99/99/9999 and represents and improvement/regression in the functional ambulation. This improvement was greater/less than the Minimal Detectable Change (MDC) established for this population, and the patient also improved/did not improve past the fall risk cut-off score. In comparison to normative data for this population, the patient's current score is higher/lower/similar.

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Disclaimer: The Authors, the Outcomes Research Committee, and the American Academy of Orthotists and Prosthetists does not endorse the use of any single outcome measure over any other single outcome measure and declares no

conflict of interest in the presentation of this measure. There may be multiple versions of the instructions published in research literature. This reference guide has attempted to remain consistent with the instructions from the original developers of the outcome measure wherever possible, however in some instances one version of the instructions was chosen for ease of use in the clinic.

Table 2. Normative data for the TUG

L-Functional Test Normative Data

Population	Time	SD	Number	age mean (range)
Amputees				
Transtibial Amputee[1]	29.5	12.8	69	55.9 (23-88)
Transfemoral Amputee[1]	41.7	16.8	24	55.9 (23-88)
Traumatic Amputee[1]	26.4	7.8	56	55.9 (23-88)
Dysvascular Amputee[1]	42	17.8	37	55.9 (23-88)
No Walking Aid[1]	25.5	6.4	55	55.9 (23-88)
Walking aid[1]	43.3	17.5	37	55.9 (23-88)
Younger than 55 yo[1]	25.4	6.8	46	55.9 (23-88)
Older than 55 yo[1]	39.7	17.1	47	55.9 (23-88)
Lower Limb Amputees[5]	34.5	19.3	30	54 (21-76)
Hospitalized Elderly[2]	62	47	50	84 (75-97)
Chronic Stroke[3]	60	28	33	52.4

Table 3. Timed up and Go MDC

Minimal Detectable Change (MDC) and Minimally Important Clinical Difference (MCID)

Population	MDC	MCID
Lower Limb Amputees[4]	N/A	4.6
Chronic Stroke[3]	4	N/A

References

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