

The L Test for Adults with Lower-Limb Amputations

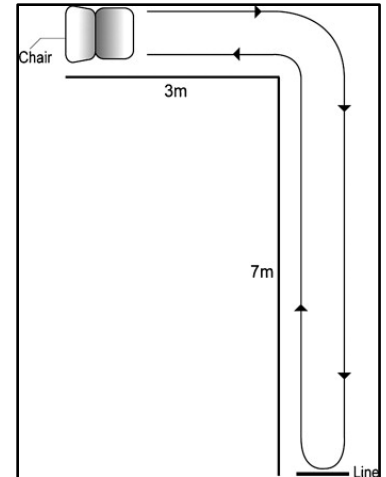
Description: The L Test of Functional Mobility (L Test) is a performance-based measure that can be used to assess physical function, including dynamic balance ability,² in patients with a lower-limb amputation who are using a prosthesis. The test is a modification of the Timed Up and Go (TUG) designed to overcome the ceiling effect of the TUG found in higher-functioning patients.

Equipment: Standard chair without armrests;¹ lines on the floor indicating the 3-meter mark and the 7-meter mark as shown in the Figure; stopwatch; assistive device prn

Test Set-Up: Have patient sit on the chair with his or her back against the chair, arms resting on the chair's arms, and if applicable, assistive device at hand.

Patient Instructions³: "On the word 'go,' stand up from the chair, walk to the first line, turn 90 degrees, and walk to the 2nd line, then turn 180 degrees, and return to sit in the chair." [Clinician Demonstrates]

Clinician Instructions³: Start the timer on the word "go" and stop the timer when the patient's buttocks first hits the seat surface when they return. The patient may use an assistive device if needed. Allow 1 practice and then time and record at least 1 trial. The patient walks at their comfortable walking speed.



Psychometric Properties:

Intrarater Reliability¹: ICC (95% CI): 0.97 (.93-.98)
 Interrater Reliability¹: ICC (95%CI): 0.96 (.94-.97)
 Test-Retest Reliability⁷: ICC (95% CI):.95-.99 (.80-.99)
 Standard Error of Measurement^{1,7}: .77-3 s
 Minimal Detectable Change (at 95%)⁷: 2.98-3.19 s
 Minimal Clinically Important Difference⁵: 4.5 s
 Concurrent Validity¹

Normative Data for Able-Bodied, Community-Dwelling Adults (s) ⁴	
Age Group	Mean±SD
60-69 years (n=34; mean age: 64±2)	20.1±3.1
70-79 years (n=31; mean age: 74±3)	27.3±8.9
80+ years (n=40; mean age: 85±4)	35.9±16.6

Reference Values for Adult Populations (s)	mean±SD
Unilateral Transtibial Amputation ¹ (n=69)*	29.5±12.8
Unilateral Transfemoral Amputation ¹ (n=24)*	41.7±16.8
Unilateral Traumatic Amputation ¹ (n=56)*	26.4±7.8
Unilateral Dysvascular Amputation ¹ (n=37)*	42.0±17.8
Unilateral Amputation ¹ ; age <55 years (n=46) [√]	25.4±6.8
Unilateral Amputation ¹ ; age ≥55 years (n=47) [√]	39.7±17.1
Unilateral Transtibial ⁷ , Dysvascular (n=20) [∞]	31.3±7.3
Unilateral Transtibial ⁷ , Non-Dysvascular (n=20) [∞]	23.4±3.5
Unilateral Transfemoral/ <i>Bilateral</i> ⁷ (n=20) [∞]	36.1±19.8
Male Soccer Players with a Unilateral Transtibial Amputation ⁶ who were longer-term prosthesis users (12±7 years); age: 26±7 years	11.2±1.8
Sedentary Males with a Unilateral Transtibial Amputation ⁶ who were longer-term prosthesis users (13±7 years); age: 33±6 years	16.3±9.7
*age: 55±11 years; 11±14 years since amputation	
[√] 11±14 years since amputation	
[∞] age range: 25-80 years; 1-60 years since amputation	

¹Deathe, A.B., Miller, W.C. The L Test of Functional Mobility: Measurement Properties of a Modified Version of the Timed "Up & Go" Test Designed for People with Lower-Limb Amputations. *Phys Ther.* 2005;85:626-635. ²Nguyen, V.C., et al. Measurement Properties of the L Test for Gait in Hospitalized Elderly. *Am J Phys Med Rehabil.* 2007;86:463-468. ³Resnik, L., Borgia, M. Reliability of Outcome Measures for People with Lower-Limb Amputations: Distinguishing True Change from Statistical Error. *Phys Ther.* 2011;91:555-565. ⁴Medley, A., Thompson, M. Contribution of Age and Balance Confidence to Functional Mobility Test Performance: Diagnostic Accuracy of L Test and Normal-Paced Timed Up & Go. *J Geriatr Phys Ther.* 2015;38:8-16. ⁵Rushton, P.W., et al. Minimal Clinically Important Difference of the L Test for Individuals with Lower-Limb Amputation. *Prosthet Orthot Int.* 2015;39:470-6. ⁶Guchan, Z., et al. Determination of the Effects of Playing Soccer on Physical Fitness in Individuals with Transtibial Amputation. *J Sports Med Phys Fitness.* 2017;57: 879-8866. ⁷Hunter, S.W., et al. Determining Reliability of a Dual-Task Functional Mobility Protocol for Individuals With Lower Extremity Amputation. *Arch Phys Med Rehabil.* 2018;99:707-712.