

Functional Reach Test for Adults with Lower-Limb Amputations

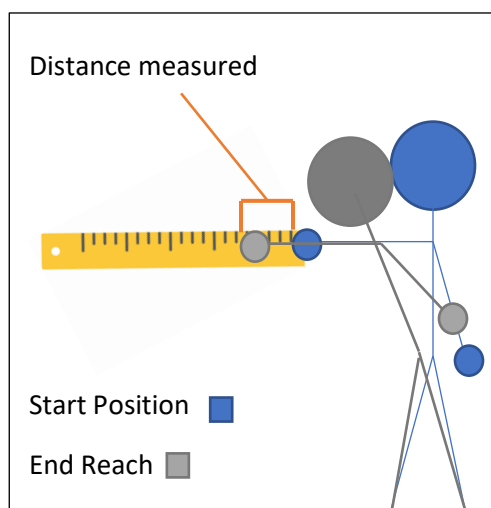
Description: The Functional Reach Test (FRT) is a performance-based outcome measure that may be used to assess dynamic balance in patients with one or more lower-limb amputations who use a prosthesis.

Equipment: A yardstick and strong tape to adhere it to the wall.

Test Set-Up¹: Instruct the patient to stand next to, but not touching, a wall and position the arm that is closer to the wall at 90 degrees of shoulder flexion with a closed fist. Tape the yardstick to the wall such that the start of the yardstick is aligned with the top of the shoulder (i.e. acromion) extending parallel to the ground in front of the patient.

Patient Instructions: "Make a fist. Reach forward as far as possible without taking a step or touching the wall."

Clinician Instructions: Patient should use their ipsilateral arm if they have a unilateral amputation, and their dominant arm if they have bilateral amputations.⁴ Measure the position of the 3rd metacarpal prior to the reach. Record the end position of the reach, then subtract the value of the start position for the score. Perform 5 trials and average the last 3 (the first two are practice).⁴ Guard from the front, as this is the direction the patient will fall if they lose their balance.



Psychometric Properties:

Reliability & Validity: Unknown

SEM, MDC, MCID: Unknown

Floor/Ceiling Effect: No floor or ceiling effect³

| Reference Values for Adult Populations (cm) | Mean [95% CI] |
|---|-------------------|
| Unilateral Amputation; age 58±16y (n=64) ³ | 21.0 [19.3, 22.7] |
| Transmetatarsal Amputation; age 62±9y (n=15) ⁴ | 19.1 [14.8, 23.5] |

| Normative Data for Able-Bodied Adults (cm) | Mean [95% CI] |
|--|-------------------|
| Community-dwelling Older Adults (n=21 studies) ⁵ | 26.6 [25.1, 28.1] |
| Non-community dwelling Older Adults (n=5 studies) ⁵ | 15.4 [13.5, 17.4] |

¹Duncan PW, Weiner DK, et al. Functional reach: a new clinical measure of balance. *J Gerontol.* 1990;45(6): M192-197. ² Duncan PW, Studenski S, Chandler J, Prescott B. Functional reach: predictive validity in a sample of elderly male veterans. *J Gerontol.* 1992;47(3):M93-98 ³Greameaux V, Damak S, Troisgros O, et al. Selecting a test for the clinical assessment of balance and walking capacity at the definitive fitting state after unilateral amputation: a comparative study. *Prosthet Orthot Int.* 2012;36(4):415-422. ⁴Mueller MJ, Salsich GB, & Strube MJ. Functional limitations in patients with diabetes and transmetatarsal amputations. *Phys Ther.* 1997;77(9):937-943. ⁵Rosa MV, Perracini MR, & Ricci NA. Usefulness, assessment and normative data of the Functional Reach Test in older adults: a systematic review and meta-analysis. *Arch Gerontol Geriatr.* 2019;81:149-170.