**Figure-of-8 Walk Test for Adults with Lower-Limb Amputations**

**Description:** The Figure-of-8 Walk Test (F8WT) is a clinical test assessing gait during cognitive load, requiring planning and execution of two turns. Gait assessment is measured through time, number of steps, and smoothness of movement. This test can be modified to adjust the amount of cognitive load applied to the patient. F8WT time is faster among physically active adults post-amputation compared to sedentary peers, although the number of steps remains consistent. F8WT performed at fast speed differentiates between mobility levels among adults with unilateral transfemoral amputations.

**Equipment:** 2 cones; taped course; stopwatch; assistive devices as needed

**Test-Set Up:** Tape the path as shown in Figure 1. Both loops should be 2.5 feet long, separated by a taped start line. Place two cones in each pathed circle, indicating where the patient will be turning. The patient should begin with the loop in front of the start line, finishing with the loop behind the line.

**Patient Instructions:** “Walk around the 2 cones as quickly and accurately as possible.”

**Clinician Instructions:** After giving the verbal instructions, demonstrate the sequence and allow for questions. Assistive devices are allowed and should be noted. Start the stopwatch when the patient initiates movement and stop when both feet reach the initial starting line. Allow two trials, recording the best timed trial and number of steps for that trial. Faster times and fewer steps indicate better gait.

**Modifications:** The F8WT may be modified to pose different challenges to the individual. No reference data is available for these modified versions.

1. carrying a tray without spilling two water cups to increase the task's cognitive load.
2. walking on soft, uneven terrain created by securing additional foam slates underneath foam mats to simulate a non-predictable walking environment.

**Psychometric Properties:**

**Validity & Reliability:** Unknown

**SEM, MDC, MCID:** Unknown

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**Reference Values for ‘Fast-Speed’:**

<table>
<thead>
<tr>
<th>Unilateral Lower-Limb Loss ≥ 1yr Prior</th>
<th>Time, sec mean [95%CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transitibial</strong></td>
<td></td>
</tr>
<tr>
<td>K3, aged 50 (95%CI: 46-55) yrs (n=28)</td>
<td>6.39 [5.94-6.83]</td>
</tr>
<tr>
<td>K4, aged 40 (95%CI: 35-46) yrs (n=22)</td>
<td>5.80 [5.29-6.30]</td>
</tr>
<tr>
<td><strong>Transfemoral</strong></td>
<td></td>
</tr>
<tr>
<td>K3, aged 50 (95%CI: 40-61) yrs (n=10)</td>
<td>8.34 [7.59-9.09]</td>
</tr>
<tr>
<td>K4, aged 38 (95%CI: 26-49) yrs (n=7)</td>
<td>6.84 [5.94-7.73]</td>
</tr>
</tbody>
</table>

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1 Hess RJ, Brach JS, Piva SR, VanSwearingen JM. Walking skill can be assessed in older adults: validity of the Figure-of-8 Walk Test. Phys Ther. 2010;90(1):89–99.

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This handout is the property of Dr. J. Megan Sions, PhD, DPT, PT, Director of the Delaware Limb Loss Studies at the University of Delaware in Newark, DE; meg@udel.edu. Handout may be used and distributed without modification for clinical and educational purposes. Updated May 2023.