10-Meter Walk Test

Indexing Metadata/Description

- **Outcome Measure/test:** 10-Meter Walk Test
- **Synonyms:** Timed 10-Meter Walk Test, 10-Meter Walking Test
- **Description/use:** The 10-meter walk test (10MWT) measures walking speed in meters per second over a short period of time
- **CPT codes**
  - 97001 Initial physical therapy evaluation
  - 97002 Physical therapy reevaluation
  - 97750 Physical performance test or measurement, with written report
- **Indications**
  - Impairments in functional mobility and gait
  - Suitable for individuals who can, at a minimum, ambulate in household settings (i.e., ≥14 meters)
  - Most commonly used for patients with neurological conditions and older adults(1)
- **Population**
  - The 10MWT has been tested in the following populations:(2)
    - Alzheimer's disease (AD)
    - Brain tumor
    - Children with neuromuscular diseases
    - Community-dwelling older adults
    - General neurologic movement disorders
    - Hip fracture
    - Lower limb amputation
    - Multiple sclerosis (MS)
    - Parkinson’s disease (PD)
    - Spinal cord injury (SCI)
    - Stroke
    - Traumatic brain injury (TBI)
- **ICD-9 codes**
  - 320–359: Diseases of the nervous system
    - 331 Alzheimer’s disease
    - 332 Parkinson’s disease
    - 340 Multiple sclerosis
    - 342 Hemiplegia and hemiparesis
  - 390–459: Diseases of the circulatory system
    - 430–438 Cerebrovascular disease
      - 438 Late effects of cerebrovascular disease
        - 438.2 Hemiplegia, hemiparesis
        - 438.9 CVA, late effect, unspecified
    - 780–799: Symptoms, signs, and ill-defined conditions
      - 781 Symptoms involving nervous and musculoskeletal systems
        - 781.2 Gait abnormality
        - 781.3 Lack of coordination
-797 Senility without mention of psychosis (frailty)
- 800–999 Injury/poison
- 800–804: Fracture of skull
- 820 Hip fracture
- 850–954: Intracranial injury excluding skull fracture
- 950–957: Injury to nerves and spinal cord
- 952 SCI
- V49.7 Lower limb amputation status

<ICD-10 codes>
- G00-G99 Diseases of the nervous system
  - G30.9 Alzheimer’s disease
  - G35 Multiple sclerosis
  - G20 Parkinson’s disease
- I60-I69 Cerebrovascular diseases
  - I63 Cerebral infarction
  - I69 Sequelae of cerebrovascular disease
- M00-M99 Diseases of the musculoskeletal system
- S00-T98 Injury and poisoning
  - S06 Intracranial injury
  - S12 Cervical SCI
  - S24 Thoracic SCI
  - S34 Lumbar or sacral SCI
  - S88 Traumatic amputation lower leg
- R00-R99 Symptoms and signs involving the nervous and musculoskeletal systems
  - R26 Abnormalities of gait and mobility
    - R26.2 Walking difficulty NEC
    - R26.9 Gait abnormality
  - R27 Other lack of coordination
  - R54 Age-related physical debility
- T14.7 Lower limb amputation

>G-Codes
- Mobility G-code set
  - G8978, Mobility: walking & moving around functional limitation, current status, at therapy episode outset and at reporting intervals
  - G8979, Mobility: walking & moving around functional limitation; projected goal status, at therapy episode outset, at reporting intervals, and at discharge or to end reporting
  - G8980, Mobility: walking & moving around functional limitation, discharge status, at discharge from therapy or to end reporting
- Changing & Maintaining Body Position G-code set
  - G8981, Changing & maintaining body position functional limitation, current status, at therapy episode outset and at reporting intervals
  - G8982, Changing & maintaining body position functional limitation, projected goal status, at therapy episode outset, at reporting intervals, and at discharge or to end reporting
  - G8983, Changing & maintaining body position functional limitation, discharge status, at discharge from therapy or to end reporting
- Self Care G-code set
  - G8987, Self care functional limitation, current status, at therapy episode outset and at reporting intervals
  - G8988, Self care functional limitation, projected goal status, at therapy episode outset, at reporting intervals, and at discharge or to end reporting
  - G8989, Self care functional limitation, discharge status, at discharge from therapy or to end reporting
- Other PT/OT Primary G-code set
  - G8990, Other physical or occupational primary functional limitation, current status, at therapy episode outset and at reporting intervals
- G8991, Other physical or occupational primary functional limitation, projected goal status, at therapy episode outset, at reporting intervals, and at discharge or to end reporting
- G8992, Other physical or occupational primary functional limitation, discharge status, at discharge from therapy or to end reporting

**Other PT/OT Subsequent G-code set**
- G8993, Other physical or occupational subsequent functional limitation, current status, at therapy episode outset and at reporting intervals
- G8994, Other physical or occupational subsequent functional limitation, projected goal status, at therapy episode outset, at reporting intervals, and at discharge or to end reporting
- G8995, Other physical or occupational subsequent functional limitation, discharge status, at discharge from therapy or to end reporting

<table>
<thead>
<tr>
<th>G-code Modifier</th>
<th>Impairment Limitation Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH</td>
<td>0 percent impaired, limited or restricted</td>
</tr>
<tr>
<td>CI</td>
<td>At least 1 percent but less than 20 percent impaired, limited or restricted</td>
</tr>
<tr>
<td>CJ</td>
<td>At least 20 percent but less than 40 percent impaired, limited or restricted</td>
</tr>
<tr>
<td>CK</td>
<td>At least 40 percent but less than 60 percent impaired, limited or restricted</td>
</tr>
<tr>
<td>CL</td>
<td>At least 60 percent but less than 80 percent impaired, limited or restricted</td>
</tr>
<tr>
<td>CM</td>
<td>At least 80 percent but less than 100 percent impaired, limited or restricted</td>
</tr>
<tr>
<td>CN</td>
<td>100 percent impaired, limited or restricted</td>
</tr>
</tbody>
</table>

Source: http://www.cms.gov

**Similar tests**
- Timed 4-meter walk test (4MWT)
- Timed Up and Go (TUG) test
- 6-minute walk test (6MWT)

**Reimbursement:** Reimbursement will depend on insurance contract coverage. No specific special agencies are applicable for this assessment, and no specific issues or information regarding reimbursement have been identified

**Test author(s): N/A**

**Contraindications/Precautions to test**
- Assistive devices can be used but should be kept consistent from test to test
- If physical assistance is needed for the patient to walk, the test should not be performed
- Patients performing this test may be at risk for falls. Follow facility protocols for fall prevention and provide appropriate guarding/assistance to ensure the patient’s safety while administering this test. This test should not be used if it cannot be completed safely or if the patient’s cognition and/or mental status prevents him/her from appropriately following commands

**Psychometric properties**

- **Reliability:** Excellent test–retest reliability has been reported in healthy adults, children with neuromuscular diseases, and patients with PD, SCI, and stroke. Excellent intrarater/intrarater reliability has been reported in healthy adults and in patients with SCI, stroke, and TBI.

- **Validity**
  - The 10MWT is reported to have excellent predictive validity in self-reported dependence with self-care and adequate to excellent predictive validity in self-reported dependence in functional mobility in MS. There is excellent predictive validity in stroke with instrumental activities of daily living (IADLs) and the Barthel Index.
  - Convergent validity is excellent between the TUG test and the 10MWT in SCI and between the 6MWT and the 10MWT in SCI and hip fracture.
  - In patients with SCI, the concurrent validity of the 10MWT as compared with the 6MWT depends on the patient’s level of ability.
Results of a study conducted in Thailand showed an excellent correlation between the 10MWT and the 6MWT but only for patients with good walking ability (a FIM locomotor [FIM-L] score of 7). There was a good correlation in subjects with a FIM-L of 6 and a poor correlation in subjects with FIM-L of 5.

In older adults gait velocity measured with the 10MWT differed from velocity measured with a computerized gait analysis system. Based on a study conducted in Germany involving 66 older adult patients, the authors suggest that the 10MWT is the gold standard and that the visual requirements of the computerized test environment may influence walking speed similar to a dual task paradigm in participants with mobility problems. Both gait velocity measurements were able to demonstrate differences between a subgroup of fallers and a subgroup of nonfallers.

**Internal consistency:** Not established

**Ceiling/floor effects:** Both floor and ceiling effects have been reported for measures of walking speed. They are only appropriate for patients who are able to perform the test yet find walking challenging.

- **Time to complete test:** < 5 minutes
- **Potential complications/adverse effects**
  - The 10MWT requires an individual to be able to ambulate a minimum of 14 meters (or 10 meters or 20 meters depending on variation of protocol used – see below)
  - The 10MWT only assesses walking ability and does not consider the physical assistance or devices required or endurance.
- **Test preparation/materials required:** Stopwatch or automatic timer, clear pathway at least 14 meters in length. A chair at each end of the course can be provided to the patient as needed. No training is required.
- **Test procedure:** There is variation in the testing procedures reported in the literature in terms of pacing, instructions, and distance. The two most common methods of performing the 10MWT are as follows:

  **Method 1**
  - Measure a 10-meter straight course and mark its ends with tape on the floor
  - Position the patient 2 meters behind the first tape line
  - Instruct the patient to walk at a comfortable rate until he/she is 2 meters past the second tape line. Start the timer when the patient crosses the first tape line and stop the timer when he/she crosses the second tape line. The distances before and after the course serve to minimize the effect of acceleration and deceleration and vary in different protocols from 2 meters to 5 meters
  - Repeat twice and average the 3 times
  - The test can also be used to measure fast walking speed. Instruct the subject to walk as above, but as fast as possible
  - Complete 3 times and average the times
  - Convert to meters/second: divide walking distance of 10 meters by elapsed time in seconds

  **Method 2**
  - Measure a 10-meter straight course and mark its ends with tape on the floor. Place tape markers 2 meters and 8 meters into the course
  - Position the patient at the first tape line
  - Instruct the patient to walk at a comfortable rate from the first tape line to the last tape line (10 meters apart). Start the timer when the toe of the lead foot crosses the second tape line (at 2 meters) and stop it when that toe crosses the third tape line (at 8 meters). The timed distance is thus 6 meters, with 2 meters on either side allowed for acceleration and deceleration
  - Complete 3 times and average the times
  - Convert to meters/second: divide walking distance of 6 meters by elapsed time in seconds

Another reported variation of the 10MWT is use of a static start with timing commencing at the start.

Verbal instructions and encouragement should be standardized.

- Verbal encouragement has been shown to improve speed.
- Common verbal instructions are “Walk at a comfortable pace until I say stop.” The start command is typically “Ready and go.”
• **Test scoring/interpretation**
  – Convert to meters/second by dividing walking distance in meters by elapsed time in seconds
  – Age- and sex-specific reference standards for healthy adults and for patients with chronic diseases are available. Use of normative values to interpret 10MWT scores should be done cautiously because of differing methods used in studies.
  - Reference values established in a study of 230 healthy volunteers(17)
  - Actual comfortable and fast gait speeds by decade for healthy adult men (not height normalized)(17)
    - 20s: 1.39/2.53 (meters/second)
    - 30s: 1.46/2.45
    - 40s: 1.46/2.46
    - 50s: 1.39/2.07
    - 60s: 1.36/1.93
    - 70s: 1.33/2.08
  - Actual comfortable and fast gait speeds by decade for healthy adult women (not height normalized)(17)
    - 20s: 1.41/2.47 (meters/second)
    - 30s: 1.42/2.35
    - 40s: 1.39/2.12
    - 50s: 1.40/2.01
    - 60s: 1.30/1.77
    - 70s: 1.27/1.74
  – The test is conducted in a controlled environment, and results cannot be directly translated to other environments (e.g., crossing a busy street)
  - Persons with TBI have been reported to walk significantly faster during clinical testing compared with normal environment conditions(1)
  - Additional research is needed to determine if discrepancy between clinical tests and natural environment is associated with community independence(1)

• **Test follow-up**
  – The scale properties (meters/second or time in seconds) of the 10MWT make it a responsive test for evaluating clinical interventions in many populations
  – The minimal detectable difference reported for hip fractures is a gait speed of 0.17 meters/second(14) and the minimal detectable difference for PD is a gait speed of 0.18 meters/second for PD(5)
  – The minimal clinically important difference for a substantial meaningful change is 0.13 meters/second in geriatrics and 0.14 meters/second in stroke(18)
  – Gait speeds have been correlated with functional ability, future health status, and rehabilitation needs(16)
  - Gait speed has been reported to predict discharge destination (e.g., home vs skilled nursing facility), hospitalization, disability, and mortality

**Coding Matrix**
References are rated using the following codes, listed in order of strength:

<table>
<thead>
<tr>
<th>M</th>
<th>Published meta-analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR</td>
<td>Published systematic or integrative literature review</td>
</tr>
<tr>
<td>RCT</td>
<td>Published research (randomized controlled trial)</td>
</tr>
<tr>
<td>R</td>
<td>Published research (not randomized controlled trial)</td>
</tr>
<tr>
<td>C</td>
<td>Case histories, case studies</td>
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<tr>
<td>G</td>
<td>Published guidelines</td>
</tr>
<tr>
<td>RV</td>
<td>Published review of the literature</td>
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<tr>
<td>RU</td>
<td>Published research utilization report</td>
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<tr>
<td>GI</td>
<td>Published quality improvement report</td>
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<tr>
<td>L</td>
<td>Legislation</td>
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<tr>
<td>PGR</td>
<td>Published government report</td>
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<tr>
<td>PFR</td>
<td>Published funded report</td>
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<tr>
<td>PP</td>
<td>Policies, procedures, protocols</td>
</tr>
<tr>
<td>X</td>
<td>Practice exemplars, stories, opinions</td>
</tr>
<tr>
<td>GI</td>
<td>General or background information/texts/reports</td>
</tr>
<tr>
<td>U</td>
<td>Unpublished research, reviews, poster presentations or other such materials</td>
</tr>
<tr>
<td>CP</td>
<td>Conference proceedings, abstracts, presentation</td>
</tr>
</tbody>
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**References**


