Timed Up & Go Test [TUG]

Purpose: Developed as a quick, clinical test of functional gait abilities for the elderly.[1]

Modifications: Having patient perform TUG with usual gait speed and at a face pace is one modification. TUG-manual requires patient perform holding a full cup of water, while TUG-cognitive requires the patient count backwards from a randomly selected number between 20 and 100.[2] Modified TUG (mTUG) incorporates split times to break the TUG into subsections (sit to stand, stand to walking, walk, turn, walk back, turn and sit).[3]

Time: Dependent on patient performance, 1-2 minutes to set up.

Equipment: Standard chair with arms, 3 meter (~10') walkway, cone or marker. For TUG manual a cup of water is needed, and for modified TUG two carpets or mats.

Note: The patient wears their usual footwear and may use their assistive device as needed.

Scoring: The patient is timed (in seconds) performing the test starting with the word "Go" and ending when the patient sits down. The patient should be given one trial run before being timed so they are familiar with the test before being timed. If the patient cannot complete the test a second time, this should be documented.

Reliability & Validity: Inter-rater reliability was excellent (0.98 to 0.99) for TUG, TUG-manual, TUG-cognitive.[2] mTUG has high inter-rater reliability and demonstrated concurrent validity with Berg Balance Scale, Functional Reach, and between mTUG split times and total TUG time.[3] In children with cerebral palsy the TUG had high test-retest and inter-rater reliability (ICC >0.95)[4] and in children with TBI good reliability was also found (ICC = 0.86) using the average of first two trials.[5] Also high correlations with GMFM, walking speed, and 10 second sit-to-stand test were found in children.[4]

Results:

Normal:

< 10 seconds in healthy elders between 60-80[6]
70-79 years old: males between 7-11 seconds; females between 8-10 seconds[6]
80-89 years old: males between 9-11 seconds; females between 9-12 seconds[6]
<13.5 seconds for TUG; < 14.5 seconds for TUG-manual; <15 seconds for TUG-cognitive (prediction rates for fallers between 87-90%)[2]

Standard error of measurement: 1 second[7]

Sensitivity (correctly predicts fallers): 87% [2]
80% (using ≥ 13.5 second cut off)[7]
Specificity (correctly predicts non-fallers): 87% [2]
100% (using ≥ 13.5 second cut off)[7]

Predict fall risk:

> 11.1 seconds in patients with vestibular disorders = increased risk of falls[8]
> 13.5 seconds in elderly patients = high risk of falls[2]

References:

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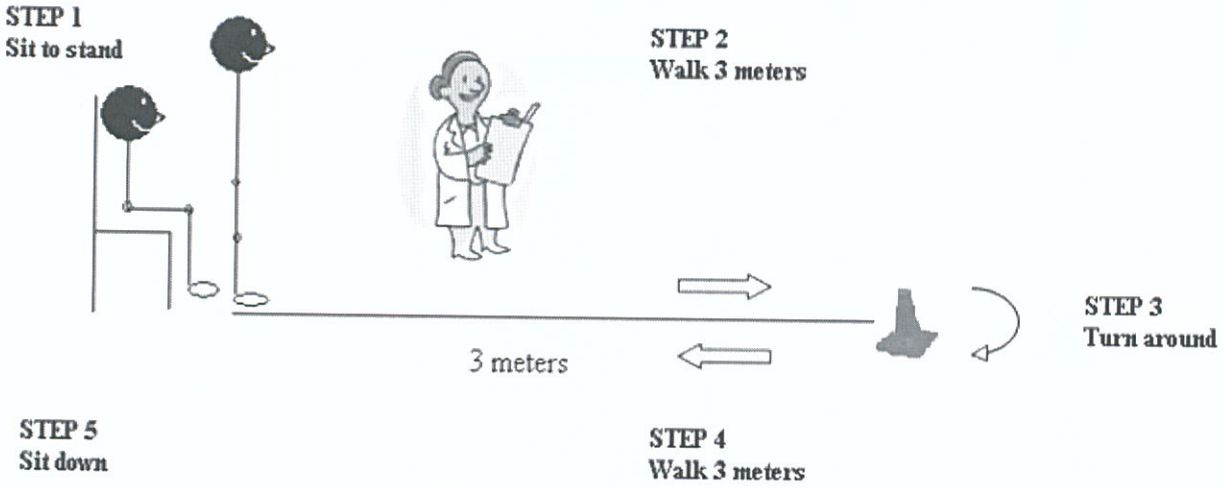
TUG, TUG-manual, & TUG-cognitive

The individual must stand up from a chair (not leaned up against a wall), walk a distance of 3 meters, turn around, walk back to the chair and sit down. One practice trial is permitted to allow the individual to familiarize him/herself with the task. Timing commences with the verbal instruction "go" and stops when the client returns to seated position. The individual wears their regular footwear and is permitted to use their walking aid (cane/walker). No physical assistance is given. TUG-manual requires patient hold a full cup of water during performance, while TUG-cognitive requires the patient count backwards from a randomly selected number between 20 and 100 during performance.

Figure 1. TUG, TUG-manual, and TUG-cognitive set up.



Modified TUG (mTUG)

mTUG uses the same patient instructions and general set up, but to make it easier for the therapist to collect split times, two mats are used under the chair and at the 3 meter mark. The following split times are collected:

Sit to stand
Gait initiation (stand to first step off mat)
Walk 3 meters (step off mat to step onto 2nd mat)
Turn (step onto mat, turn)
Walk 3 meters (step off mat and return)
Turn and sit (step onto mat, turn, and sit)

See Figure 2 for an example of set up.

Figure 2. mTUG set up.