Rehab Measures - Timed Up and Go Dual Task; Timed Up and Go...

Title of Assessment
Timed Up and Go Dual Task; Timed Up and Go (Cognitive); Timed Up and Go (Motor); Timed Up and Go (Manual)

Link to instrument

Purpose
A dual-task dynamic measure for identifying individuals who are at risk for falls.

Acronym
TUG-DT (dual task), TUG-COG (cognitive), TUGman (manual task), TUGm (modified)

Instrument Reviewer(s)
Initially reviewed by Irene Ward, PT, DPT, NCS and the TBI EDGE taskforce of the Neurology Section of the APTA in 6/2012, Reviewed for the VestEDGE task force of the Vestibular section of the APTA by Elizabeth Dannenbaum MscPT in 2013; Updated with references from the PD population by Rosemary Gallagher, PT, DPT, GCS and the PD EDGE Taskforce of the Neurology Section of the APTA in 4/2013

Summary Date
29 01 2014

Description
• Individuals are given verbal instructions to stand up from a chair, walk 3 meters as quickly and safely as possible, cross a line marked on the floor, turn around, walk back, and sit down.
• In the TUG (Cognitive), individuals were asked to complete the test while counting backward by threes from a randomly selected number between 20 and 100.
• In the TUG (Manual) it has been suggested that the client must walk holding a cup filled with water (Shumway-Cook et al., 2000, Hofheinz and Schusterschitz, 2010)
• The test includes the time the individual takes to get out of the chair after he/she is told to "go".
• Individuals are permitted to use the assistive device they typically use in the community, but without the assistance of another person.
• Individuals are able to follow simple instructions.
• Lundin-Olsson et al (1998): TUG Manual: same as TUG, but individuals stand up, grasp a tumbler containing water placed on a table just beside the chair, carry the tumbler while walking, put it on the table and sit down

ICF Domain
Activity

Time to Administer
Less than 3 minutes

Number of Items
1 item

Equipment Required
• Stop watch
• Standard height chair with armrests
• Measuring tape
• Tape
• Cone

Training Required
No training

Actual Cost
Cost of equipment

Populations Tested
• Community Dwelling Elderly
• Vestibular Disorders

Standard Error of Measurement (SEM)
Not Established

Minimal Detectable Change (MDC)
Not Established

Minimally Clinically Important Difference (MCID)
Not Established

Cut-Off Scores
Community dwelling elderly:
(Shumway-Cook et al, 2000)
• Elderly subjects who completed the TUG (Cognitive) in ≤ 15 seconds were classified as fallers with an overall correct prediction rate of 87%.

Parkinsons Disease:
(Maranhao-Filho et al, 2011)
• Difference between TUG manual and Tug is > 4.5 sec, this indicates an increased risk of falls

Healthy adults
Normative Data

Community dwelling elderly:
(Hofheinz et al, 2010, n = 120 healthy older adults between the ages 60-87)

- Mean time to perform TUG is 8.39(1.36) seconds
- Mean time to perform TUG (Cognitive) is 9.82(2.39) seconds
- Mean time to perform TUG (Manual) is 11.56(2.11) seconds
- The performance times for the TUG and the TUG with dual task (cognitive and manual) do not differ significantly between men and women (P > 0.05). However, the mean values for different age groups (60-69, 70-79, 80-87 years old) differ significantly from each other. With increasing age, the time required to perform the different tests is longer.

(Shumway-Cook et al 2000)
- Mean scores for Elderly without falls history: TUG 8.4 sec, TUG man 9.7 sec, TUGcog 9.7 sec
(Caixeta et al, 2012)
- Elderly people (> 60 y.o.) with chronic peripheral vestibular dysfunction and dizziness (n = 76):
  Mean TUG cog: 12.08 (SD 2.07)

Parkinson’s Disease:
(Campbell et al 2003, n = 19 older adults: 9 with PD and self-reported problems with mobility (6M/3F, 8 (89%)reporting falls past 6 months, mean age 74.3 ± 7yrs, range 61-84) and 10 older adults without PD (4M/6F, 1 (10%) reporting falls past 6 months, mean age 76.4 ± 7 yrs, range 68-86)

Time to complete (seconds) by group and task.(mean/SD):

<table>
<thead>
<tr>
<th>Task</th>
<th>Healthy Older</th>
<th>PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TUG baseline</td>
<td>9.85 (1.44)</td>
<td>16.4 (3.8)</td>
</tr>
<tr>
<td>TUG low</td>
<td>10.77 (2.11)</td>
<td>16.5 (3.6)</td>
</tr>
<tr>
<td>TUG high</td>
<td>11.58 (2.63)</td>
<td>21.5 (7.9)</td>
</tr>
</tbody>
</table>

- TUG low: low cognitive demand
- TUG high: high cognitive demand

Test-retest Reliability

Community dwelling elderly:
(Hofheinz et al, 2010, n = 120 healthy older adults between the ages 60-87)

- Excellent test-retest reliability (r T1-T2 = 0.98 and r T1-T3 = 0.98)

Interrater/Intrarater Reliability

Community dwelling elderly:
(Shumway-Cook et al, 2000)

- Excellent interrater reliability (ICC = 0.99)

Community dwelling elderly:
(Hofheinz et al, 2010, n = 120 healthy older adults between the ages 60-87)

- Excellent intrarater reliability (ICC = 0.94)

Internal Consistency

Not Established

Criterion Validity
(Predictive/Concurrent)

Concurrent validity:

Community dwelling elderly:
(Hofheinz et al, 2010, n = 120 healthy older adults between the ages 60-87)

- Excellent correlation with Berg Balance Scale (r = -0.66)
(Caixeta et al, 2012, Vestibulopathic elderly (n = 76), without a control group)

- TUG cog-Mini Mental State Exam; low yet significant correlation (Spearman’s correlation coefficient: 0.36)
- TUG cog-Clock Test: no correlation (Spearman’s correlation coefficient: -0.2)

Parkinson’s Disease:

Maranhao-Filho et al (2011)

- Positive predictive Value of 71% for falls in older adults undergoing TUG-Cog versus 42% for those undergoing TUG simple

Predictive validity:

Community dwelling elderly:
(Shumway-Cook et al, 2000; n = 30; 15 fallers and 15 non-fallers; mean age of fallers= 86.2(6.4) years; mean age of non-fallers= 78.4 (5.8)

- High specificity (93.3%) for predicting non-fallers
- High sensitivity (80%) in positive prediction of falls

Construct Validity
(Convergent/Discriminant)

Not Established

http://www.rehabmeasures.org/Lists/RehabMeasures/PrintView.aspx?ID=1057
Content Validity
Not Established

Face Validity
Not Established

Floor/Ceiling Effects
Not Established

Responsiveness
Not Established

Professional Association Recommendations
Recommendations from the Neurology Section of the American Physical Therapy Association’s StrokEDGE Taskforce, MSEDGE Taskforce, SCI EDGE Taskforce, and the TBI EDGE Taskforce are listed below. These recommendations were developed by a panel of research and clinical experts using a modified Delphi process.

For detailed information about how recommendations were made, please visit: http://www.neuropt.org/go/healthcare-professionals/neurology-section-outcome-measures-recommendations

Abbreviations:
HR Highly Recommend
R Recommend
LS / UR Reasonable to use, but limited study in target group / Unable to Recommend
NR Not Recommended

Recommendations based on level of care in which the assessment is taken:

<table>
<thead>
<tr>
<th></th>
<th>Acute Care</th>
<th>Inpatient Rehabilitation</th>
<th>Skilled Nursing Facility</th>
<th>Outpatient Rehabilitation</th>
<th>Home Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS EDGE</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
</tr>
<tr>
<td>TBI EDGE</td>
<td>LS</td>
<td>LS</td>
<td>LS</td>
<td>LS</td>
<td>LS</td>
</tr>
</tbody>
</table>

Recommendations for use based on ambulatory status after brain injury:

<table>
<thead>
<tr>
<th></th>
<th>Completely Independent</th>
<th>Mildly dependent</th>
<th>Moderately Dependant</th>
<th>Severely Dependant</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBI EDGE</td>
<td>LS</td>
<td>LS</td>
<td>NR</td>
<td>NR</td>
</tr>
</tbody>
</table>

Recommendations based on EDSS Classification:

<table>
<thead>
<tr>
<th></th>
<th>EDSS 0.0 – 3.5</th>
<th>EDSS 4.0 – 5.5</th>
<th>EDSS 6.0 – 7.5</th>
<th>EDSS 8.0 – 9.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS EDGE</td>
<td>HR</td>
<td>HR</td>
<td>HR</td>
<td>NR</td>
</tr>
<tr>
<td>TBI EDGE</td>
<td>LS</td>
<td>LS</td>
<td>NR</td>
<td>NR</td>
</tr>
</tbody>
</table>

Recommendations for entry-level physical therapy education and use in research:

<table>
<thead>
<tr>
<th></th>
<th>Students should learn to administer this tool? (Y/N)</th>
<th>Students should be exposed to tool? (Y/N)</th>
<th>Is this tool appropriate for use in intervention research studies? (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS EDGE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>TBI EDGE</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Considerations

• Individuals are asked to perform subtraction. Language and educational levels should be considered when applying this test.
• Shumway-Cook et al, 2000 found that the TUG, TUG (Manual) and TUG (Cognitive) were all comparable in determining the likelihood of falls in older adults. Therefore, the addition of a dual-task did not increase the sensitivity of the TUG in predicting the likelihood for falls in that study.
• The effect on the reliability of the TUG (Cognitive) has not been studied in individuals with cognitive impairments. However, Rockwood et al reports poor test-retest reliability of the TUG in individuals with cognitive impairments.
• In PD, changes in gait under dual task conditions are proportional to the complexity of the secondary task performed. (Campbell et al 2003)
• TUG-Cog is simple to administer and interpret at the bedside. In the elderly, it greatly enhances measurement of the risk of falling. It should become part of the routine neurological examination.

Do you see an error or have a suggestion for this instrument summary? Please e-mail us!

Bibliography


Link to instrument

http://www.rehabmeasures.org/Lists/RehabMeasures/PrintView.aspx?ID=1057

3/25/2014