

Outcome Measures for the Clinician

Timed up and Go (TUG)



Special contributions made by:

Jason Kahle - Jason Highsmith

Brian Kaluf - Tyler Klenow

Introduction

- Outcome measures are clinical tests that are used to evaluate a patient's level of function in certain rehabilitation domains including mobility, ambulatory status, and balance.
- The “Outcome Measures for the Clinician” series is designed to give the average clinician the tools to perform outcome measures in the clinic and use outcome measures to improve clinical evaluation, enhance clinical notes, and improve reimbursement for O & P interventions.
- Outcome measures can be used to show medical necessity for orthotic and prosthetic interventions by showing that a patient can:
 - Achieve a required milestone like variable cadence
 - Surpass a threshold of reduced fall risk
 - Return to a score that is average among a patient's normal peers
 - Improve a score by a clinically significant amount
- *References and information from this presentation may be copied into clinical notes and letters of medical necessity.
- *A comprehensive instructional video of the outcome measure will be included as part of this presentation.



Using Outcome Measures

- Outcome measures should be used in an initial evaluation of a patient to establish a baseline score for future comparison.
- A measure should be repeated after the delivery of an O & P intervention to show improvement in function and to show medical necessity
- Reasoning for use of an outcome measure should also be included in clinical notes including:
 - Validity
 - The ability of an outcome measure to test what it is intended to test
 - Reliability
 - The ability of an outcome measure to be consistently repeated
 - Minimum Detectable Change (MDC)
 - The smallest difference in a test score that can be determined to be significant
 - Normative Data
 - score ranges from normal and pathological populations from which to compare

Overview – Timed Up and Go

- Purpose: To assess mobility, walking ability, balance, and fall risk in adults¹

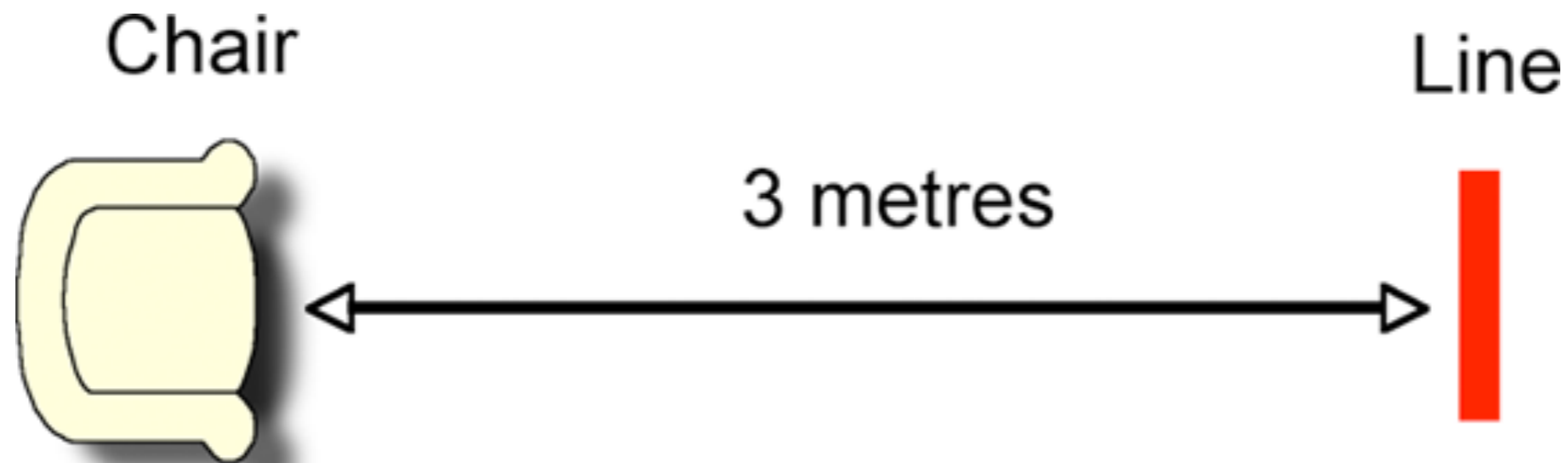
Timed Up and Go Psychometrics			
Reliable	Valid	MDC	Normative Data
Yes	Yes	Yes	Yes

Requirements – Timed Up and Go¹

- Time: < 3 minutes
- Equipment
 - Armchair
 - seat height 44-47cm
 - Stopwatch
- Space
 - Hallway
 - approx. 5 meters
- Personnel: 1-3 persons
- Cost: Free

Procedure – Timed Up and Go¹

- Subject begins seated in chair
- Command: “Go”
- Subject rises, walks 3 meters to line, Turns around, walks back to chair and sits down
- Comfortable and safe pace
- Start time at command “go”⁸
- End time when subject is seated
- 1 untimed practice trial
- Use same assistive device between tests



- Illustration: <http://www.slips-online.co.uk/healthcareprofessional/assess.aspx>

Video – Timed Up and Go

Interpretation – Timed Up and Go

Normative Data

TUG times for community-dwelling elderly ²			
Age (years)	Gender	Mean (sec)	SD
60-69	Male	8	2
	Female	8	2
70-79	Male	9	3
	Female	9	2
80-89	Male	10	1
	Female	11	3

Balance and Mobility Times for Older Adults ⁸	
Multiple Fallers	Non-multiple Fallers
25.0 sec +/- 6.9	16.2 sec +/- 5.3

MDC

TUG Minimum Detectable Change	
Time (sec)	Population
2.9	Stroke ⁴
4.85	Parkinson's Disease ⁶
3.5	Parkinson's Disease ³
10.8	Acute SCI ⁷

Threshold Values

Threshold Times Indicating Fall Risk by Population	
Population	Threshold
Lower Extremity Amputees	>19 sec. ⁸
Community-dwelling elderly	>13.5 sec. ⁹
Older Stroke Patients	>14 sec. ¹⁰
Hip Osteoarthritis	>10 sec. ¹¹

Validity

- Excellent for geriatric population⁵
- Excellent for stroke population⁴

Reliability

- Excellent for community-dwelling elderly²
- Excellent for geriatric population⁵
- Excellent for stroke population⁴

References – Timed Up and Go

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