Outcome Measures for the Clinician

Timed Single Limb Stance Test (SLST)

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.

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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

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Overview – Single Limb Stance Test

- Purpose: To assess static balance and the ability of the subject to stand on a pathological or sound limb.[1]

Single Limb Stance Test Psychometrics			
Reliable	Valid	MDC	Normative Data
Yes	Yes	Not Tested	Yes

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Requirements – Single Limb Stance Test

- Time: < 3 minutes
- Equipment
  - Stopwatch
- Space
  - approx. 1 sq. yard
    - Most anywhere
- Personnel: 1-2 persons
- Cost: Free

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Procedure – Single Limb Stance Test

- Subject begins in quiet standing
- Hands on hips
- Subject lifts 1 leg off the ground and stands unassisted
- Start time when foot is lifted off the ground
- Stop time when foot again makes contact with the ground, the foot makes contact with the stance leg, the stance foot moves on the floor, or when the hands leave the hips
- Time three trials per leg being tested and average times

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Video – Single Limb Stance Test

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Interpretation – Single Limb Stance Test

Normative Data

Unipedal Stance Test Time by Age Group and Gender for Eyes Open and Closed[3]						
Age & Gender Groups	Ages 18-39	Ages 40-49	Ages 50-59	Ages 60-69	Ages 70-79	Ages 80-99
Eyes Open Male	43.2 +/- 6.0	40.1 +/- 11.5	38.1 +/- 12.4	28.7 +/- 16.7	18.3 +/- 15.3	5.6 +/- 8.4
Eyes Open Female	43.5 +/- 3.8	40.4 +/- 10.1	36.0 +/- 12.8	25.1 +/- 16.5	11.3 +/- 11.2	7.4 +/- 10.7
Eyes Closed Male	10.2 +/- 9.6	7.3 +/- 7.4	4.5 +/- 3.8	3.1 +/- 2.7	1.9 +/- 0.9	1.3 +/- 0.6
Eyes Closed Female	8.5 +/- 9.1	7.4 +/- 6.7	5.0 +/- 5.6	2.5 +/- 1.5	2.2 +/- 2.1	1.4 +/- 0.6

*Participants unable to perform the single limb stance test for at least 5 seconds double their risk for sustaining an injury due to a fall.[4]

*A cut-off time of 10 sec. was found to distinguis h fallers and non-fallers with Parkinson's disease.[5]

- Non-fallers exhibited an average SLST time of 15 sec. in that study.

Reliability

- Excellent for Parkinson's Disease[2]

Validity

- Excellent[6] and Good[5] for Parkinson's Disease

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References – Single Limb Stance Test

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3. Springer BA, Marin R, Cyhan T, Roberts H, Gill NW. Normative values for the unipedal stance test with eyes open and closed. *J Ger Phys Ther*. 2007; 30(1): 8-15.
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5. Jacobs JV, Horak FB, Tran VK, Nutt JG. Multiple balance tests improve the assessment of postural stability in subjects with Parkinson’s disease. *J Neurol Neurosurg Psychiatry*. 2006; 77(3): 322-326.
6. Adkin AL, Frank JS, Jog MS. Fear of falling and postural control in Parkinson's disease. *Mov Disord*. 2003; 18(5): 496-502.

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