

Using the “Timed Up and Go/TUG” Test to Predict Risk of Falls

Mimi Jacobs, PT, OCS, CSCS; Tim Fox, PT, MS

Assessing fall risk and using fall prevention strategies are important tools for managing geriatric patients. Assessment of fall risk may include a review of fall history, medications, underlying conditions, functional status, neurologic status, psychological factors, and environmental factors. An objective test of balance and functional status should be included in a comprehensive assessment of fall risk. Based on

the research literature, the “Timed Up and Go” (TUG) Test is an objective, valid, and reliable test.

The TUG Test measures, in seconds, the time a person takes to stand up from a standard armchair, walk 3 meters (about 10 feet), turn, walk back to the chair, and sit down again (Figures 1 and 2). The test is performed by the patient who wears regular footwear, uses customary assistive devices, if any, and walks at

a comfortable and safe pace. A practice trial is given, followed by 2 timed trials. The results of the timed trials are averaged. The time is then compared to normative values for age, gender, and research-based guidelines that measure increased risk of falls and functional decline. Observations of the transition phases (rising from the chair, initiating walking, turning, and sitting in the chair) are also documented.



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UTILIZING THE “TIMED UP AND GO/TUG” TEST TO PREDICT RISK OF FALLS

Mimi Jacobs, PT, OCS, CSCS Timothy Fox, MS, PT

INTRODUCTION

- Assessment of fall risk typically includes a review of: fall history, medications, underlying medical conditions, functional status, neurological status, psychological factors and environmental factors.
- The TUG Test provides objective data and assists with evaluation of functional status, psychological factors, and environmental factors.

OBJECTIVES

- Inform participants of an objective test to assess fall risk.
- Instruct participants to properly perform the TUG Test.
- Educate participants about the validity, reliability and supporting research of the TUG Test.

METHOD

- The TUG Test measures, in seconds, the time taken by an individual to: stand up from a standard armchair (approx seat height 46cm/18in), walk 3 m/ 9'10", turn, walk back to the chair and sit down.
- A practice trial is given, then 2 timed trials are averaged together.
- The time is then compared to normative values for age, gender and research based guidelines for increased risk of falls and functional decline.


SIT TO STAND


WALK 3m


TURN AROUND


APPROACH CHAIR


STAND TO SIT

- The test is performed with regular footwear, with the use of their customary assistive device, and at a comfortable and safe pace.
- No physical assistance is given.
- Observation of the transition phases (rising from the chair, initiating walking, turning, and descent into the chair) is also documented.

SAMPLE TEST FORM

See Handout

Date, Name, DOB, Age, Gender

Trial 1: _____ seconds

Trial 2: _____ seconds

Average: _____ seconds

Observation of Transitions:

Comparison to reference data:

Conclusions/Recommendations:

SUPPORTING RESEARCH

Developers:

- Mathias 1986
- Podsiadlo & Richardson 1991

Normative Values:

Age	M/F	Mean	Nml Range
60-69	M/F	8 sec	4-12 seconds
70-79	M	9	3-15
70-79	F	9	5-13
80-89	M	10	8-12
80-89	F	11	5-17

- Steffan et al. 2002

Predictive Validity:

A score of 14 seconds has a sensitivity and specificity of 87%

- Shumway-Cook et al. 2000

Intra and Inter-rater Reliability:

High (.92-.99)

- Morris et al. 2001
- Shumway-Cook et al. 2000

Various Populations:

Deconditioned Elderly
Mild Cognitive Impairment
Parkinson's Disease
RA, OA, CVA, Hip Fracture,
Total Joint Arthroplasty

CONCLUSION

The TUG Test is objective, valid, reliable, quick, low cost and easy to integrate into an existing fall prevention program.

Figure 1. Poster presentation at the 2006 annual symposium of the American Medical Directors Association (AMDA).

Figure 2.
TUG sample test form

SAMPLE TEST FORM
TIMED UP AND GO/TUG TEST TO PREDICT RISK OF FALLS

NAME: _____ GENDER: _____ DATE OF BIRTH: _____ DATE: _____
AGE: _____

NORMATIVE DATA¹

AGE	GENDER	MEAN (seconds)	NORMAL RANGE (seconds)
60-69	MALE	8	4-12
60-69	FEMALE	8	4-12
70-79	MALE	9	3-15
70-79	FEMALE	9	5-13
80-89	MALE	10	8-12
80-89	FEMALE	11	5-17

Instructions to patient: "On the word 'go' you are to get up and walk at a comfortable and safe pace to the line/cones 3 meters away, turn, return to the chair, and sit down again."

Observations may include (but are not limited to): quality of sitting and standing balance, safety during transfers, quality of gait, use of assistive device, ability to turn and change direction, activity tolerance, functional visual deficits, cognition; memory and safety awareness, footwear, any loss of balance episodes

TRIAL 1: _____ seconds OBSERVATIONS: _____

TRIAL 2: _____ seconds OBSERVATIONS: _____

AVERAGE: _____ seconds

Sensitivity and Specificity²:
If score < 14 seconds: 87% not a high risk of falls
If score ≥ 14 seconds: 87% high risk of falls

Multiple studies have confirmed the content validity, concurrent validity, and predictive validity of the test.²

Research supports the use of the TUG Test for people with Parkinson's

disease; elderly people with or without cognitive impairment (but who are able to follow directions); people with lower limb amputations, total joint arthroplasty, hip fracture,

rheumatoid arthritis and osteoarthritis; and deconditioned elderly people.

Multiple studies have confirmed a high intrarater and interrater reliability. The TUG Test can be performed by physicians, nurses, and physical and occupational therapists.

The TUG Test can be easily incorporated into an existing fall prevention program.

The information in this article was presented at the 2006 annual symposium of the American Medical Directors Association (AMDA). ALC

Mimi Jacobs is Executive Director, Fox GERI: Geriatric Education and Research Institute. Tim Fox is the Executive Director for Fox Rehabilitation: Geriatric Therapy at Home.

References

1. Steffan T, Hacker T, Mollinger L. Age- and gender-related test performance in community dwelling elderly people: six-minute walk test, Berg balance scale, Timed Up & Go Test, and gait speeds. *Phys Ther.* 2002;82:128-137.
2. Shumway-Cook A, Brauer S, Woollacott M. Predicting the probability for falls in community-dwelling older adults using the Timed Up & Go Test. *Phys Ther.* 2000;80(9):896-903.

Medicare Diabetic Measures That Pay

(continued from page 15)

AAFP Physician's PQRI Data Collection Sheet: Diabetes

The AAFP has developed data collection sheets to help you report measures and select quality codes at the time of service. These are available online at: www.aafp.org/online/etc/medialib/aafp_org/documents/prac_mgt/quality/cmspvrp/diabetes-measures.Par.0001.File.tmp/diabetesprimeasures.xls

Things to Know About the PQRI²

- Use your NPI to bill. Data are analyzed using an individual's NPI; bonuses are paid using an individual's taxpayer identification numbers (TINs).
- Choose at least 3 applicable measures to report.
- Measures reported use CPT Category II codes with ICD-9 codes that link to patient diagnoses. Once a CPT II code has been

PQRI and Pay-for-Performance Resources

PQRI and Pay-for-Performance Resources

AAFP PQRI Web site: www.aafp.org/practicemgt/pqri

CMS PQRI Web site: www.cms.hhs.gov/PQRI

List of 2008 PQRI measures: www.cms.hhs.gov/apps/ama/license.asp?file=/PQRI/Downloads/2008PQRI MeasuresList.pdf

Reading

1. Bagley B. How does your practice measure up? Bagley B. *Fam Pract Manag.* 2006;13(7):59-64.
2. Endsley S, Baker G, Kershner BA, Curtin K. What family physicians need to know about pay for performance. *Fam Pract Manag.* 2006;13(7):69-74.
3. Endsley S, Kirkegaard M, Baker G, Murcko AC. Getting rewards for your results: pay-for-performance programs. *Fam Pract Manag.* 2004;11(3):45-50.

reported, it must be included with the diagnosis 80% of the time to be eligible for the bonus payment.

- The reporting period for 2008 initiatives begins January 1, 2008, and ends December 31, 2008. CMS must receive claims by February 28, 2009, for them

to be included in the 2008 reporting period. ALC

References

1. Weinger K. Group medical appointments in diabetes care: is there a future? *Diab Spect.* 2003;16:104-107.
2. Bagley B. Measuring for Medicare: the Physician Quality Reporting Initiative. *Fam Pract Manag.* 2007;14(6):37-40.