Validity and Reliability of a Measurement of Objective Functional Impairment in Lumbar Degenerative Disc Disease: The Timed Up and Go (TUG) Test

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BACKGROUND
There are few objective measures of functional impairment to support clinical decision making in lumbar degenerative disc disease (DDD).

OBJECTIVE
We present the validation (and reliability measures) of the Timed Up and Go (TUG) test.

METHODS
In a prospective, 2-center study, 253 consecutive patients were assessed using the TUG test. A representative cohort of 110 volunteers served as control subjects. The TUG test values were assessed for validity and reliability.

RESULTS
The TUG test had excellent intra- (intraclass correlation coefficient: 0.97) and interrater reliability (intraclass correlation coefficient: 0.99), with a standard error of measurement of 0.21 and 0.23 seconds, respectively. The validity of the TUG test was demonstrated by a good correlation with the Visual Analog Scale (VAS) back (Pearson’s correlation coefficient [PCC]: 0.25) and VAS (PCC: 0.29) leg pain, functional impairment (Roland-Morris Disability Index [PCC: 0.38] and Oswestry Disability Index [PCC: 0.34]), as well as with health-related quality of life (Short Form-12 Mental Component Summary score [PCC: -0.25], Short Form-12 Physical Component Summary score [PCC: -0.32], and EQ-5D [PCC: -0.28]). The upper limit of "normal" was 11.52 seconds. Mild (lower than the 33rd percentile), moderate (33rd to 66th percentiles), and severe objective functional impairment (higher than the 66th percentile) as determined by the TUG test was <13.4 seconds, 13.4 to 18.4 seconds, and >18.4 seconds, respectively.

CONCLUSION
The TUG test is a quick, easy-to-use, valid, and reliable tool to evaluate objective functional impairment in patients with lumbar degenerative disc disease.
disease. In the clinical setting, patients scoring a TUG test time of over 12 seconds can be considered to have functional impairment.

ABBREVIATIONS
BMI, body mass indexDDD, degenerative disc diseaseHRQOL, health-related quality of lifeICC, intraclass correlationLDH, lumbar disc herniationLSS, lumbar spinal stenosisODI, Oswestry Disability IndexOFI, objective functional impairmentPCC, Pearson's correlation coefficientPCS, Physical Component SummaryRMDI, Roland-Morris Disability IndexSF, Short FormVAS, visual analog scale.

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