



Measuring physical performance in hip and knee osteoarthritis

Reliability study of the recommended OARSI core set of performance-based tests

Tolk JJ, Janssen RPA, Kox H, van Doesburg C, Reijman M

Dept. of Orthopaedic Surgery, Máxima Medical Center

Introduction

In measuring treatment outcome after total knee- or hip arthroplasty multiple methods of assessment are available. For the assessment of physical function self-reported measures of function (patient reported outcome measures, PROMs) or assessment of the execution of a specific task associated with function (performance based tests) can be used.

Performance based tests are regarded complementary to these PROMs and a core set of tests assessing walking, stair negotiation and sit-to-stand movement is recommended by the OARSI.¹ Although specific tests are recommended, the measurement properties are not sufficiently examined.² In this study the reliability of the OARSI core set of functional performance measures is analysed.

Study objective

To analyse the test-retest reliability of the OARSI core set of functional performance measures

Results (2)

Reliability assesment

	Chair test	Stair test	Walking test
Hip OA			
ICC	0.82	0.79	0.63
SEM	1.15	1.84	0.18
Knee OA			
ICC	0.96	0.97	0.98
SEM	0.50	1.56	0.05

ICC=intra-class-coefficient

SEM = Standard error of Measurement

OARSI core set of performance-based tests

30s Chair Stand test
(no. of repetitions)



10 Step Stair Test
(seconds)



40m. Fast Paced Walk Test
(m/sec)



Methods

Patients with end stage hip or knee osteoarthritis (OA), awaiting total hip or knee arthroplasty were included. The OARSI core set of performance-based measures, consisting of the "30 second chair-stand test", "40 m fast-paced walk test" and "10-step stair test" were performed.¹ A retest procedure was performed after a 30 to 45 minute interval.

Baseline characteristics and mean test scores are presented. Comparison of means between hip and knee OA groups using an independent sample's T-test. For test reliability assessment intra-class-coefficients (ICC) are calculated and the standard error of measurement (SEM) is presented.

Patient Characteristics

	Hip OA (n = 24)	Knee OA (n = 24)
Gender, male n (%)	7 (28)	15 (63)
Side, right n (%)	15 (63)	13 (54)
Age, years	64.8 (± 9.9)	69.5 (± 8.2)
BMI, kg/m ²	26.3 (± 3.3)	30.1(± 5.9)



Results (1)

Test-retest measurements

Baseline	Hip OA	Knee OA
Chair Test	10.1 (± 2.7)	9.7 (± 2.4)
Stair Test	13.2 (± 4.1)	18.3(± 9.3)
Walk Test	1.33 (± 0.29)	1.32 (± 0.36)
Retest		
Chair Test	11.5 (± 2.7)	10.2 (± 2.7)
Stair Test	12.6 (± 3.1)	18.2 (± 8.8)
Walk Test	1.40 (± 0.31)	1.33 (± 0.37)

Chair Test in no. of repetitions, Stair Test in seconds, Walking Test in m/sec.

Conclusion

The OARSI core set of performance-based tests have moderate to excellent reliability in end stage knee and hip osteoarthritis patients.

Further research on the construct validity and responsiveness of these tests is needed.

Correspondence to: J.J. Tolk, Jaap.Tolk@MMC.nl

References: 1. Dobson F, et al. OARSI recommended performance-based tests to assess physical function in people diagnosed with hip or knee osteoarthritis. Osteoarthritis Cartilage 2013;21(8):1042-52. 2. Dobson F, et al. Measurement properties of performance-based measures to assess physical function in hip and knee osteoarthritis: a systematic review. Osteoarthritis Cartilage 2012;20(12):1548-62.