'The Forgotten Joint Score'
Construct Validity and Test-Retest Reliability

Mihai Vioreanu, Justin Roe, Alison Waller, Justin Webb, Lucy Salmon
North Sydney Orthopaedic and Sports Medicine Centre.

NORTH SYDNEY ORTHOPAEDIC & SPORTS MEDICINE CENTRE

Introduction: As patient outcomes following total knee replacement (TKR) have continued to improve and patient expectations have increased over recent years, traditionally used scoring tools have begun to demonstrate a ceiling effect, potentially losing the ability to determine differences in outcome in a high functional range. It has recently been suggested that the ultimate goal of arthroplasty surgery is for the patient to be able to forget their prosthetic joint during regular day to day activities. A new scoring system, The Forgotten Joint Score (FJS) has been developed. The FJS focuses on the patients' awareness of their joint replacement during a range of day to day and recreational activities. This score consists of 12 questions where subjects are asked to rate their awareness of their joint replacement during various activities. The aims of this study was to investigate the test retest reliability and the construct validity of the FJS-12 in English, specifically for patients who have undergone TKR.

Methods: Patients undergoing TKR by the senior surgeon between 2006 and 2010 were invited to complete a questionnaire consisting of the FJS and the Knee Injury and Osteoarthritis Outcome Score (KOOS). The Western Ontario and McMaster Universities (WOMAC) osteoarthritis index scores were calculated from the KOOS score, and normalised in to a scale where high scores indicate a good outcome. WOMAC scores were normalised by summing the total score of each subscale and dividing by the maximum total score for the scale. Those who completed and returned their initial questionnaire were mailed a repeat questionnaire at 4 weeks.

Results: A total of 147 patients completed and returned both questionnaires and were included in the analysis. There were 68 females and 79 males with a mean age of 67 years (range 32-89). The right knee was involved in 75 cases. A Triathalon (Stryker) prosthesis was used in 120 knees and a Genesis II (Smith & Nephew) prosthesis was used in 27 knees. The mean time from surgery to completion of the first questionnaire was 39 months (range 18-72). The mean time between completion of questionnaires was 6 weeks (range 3-15).
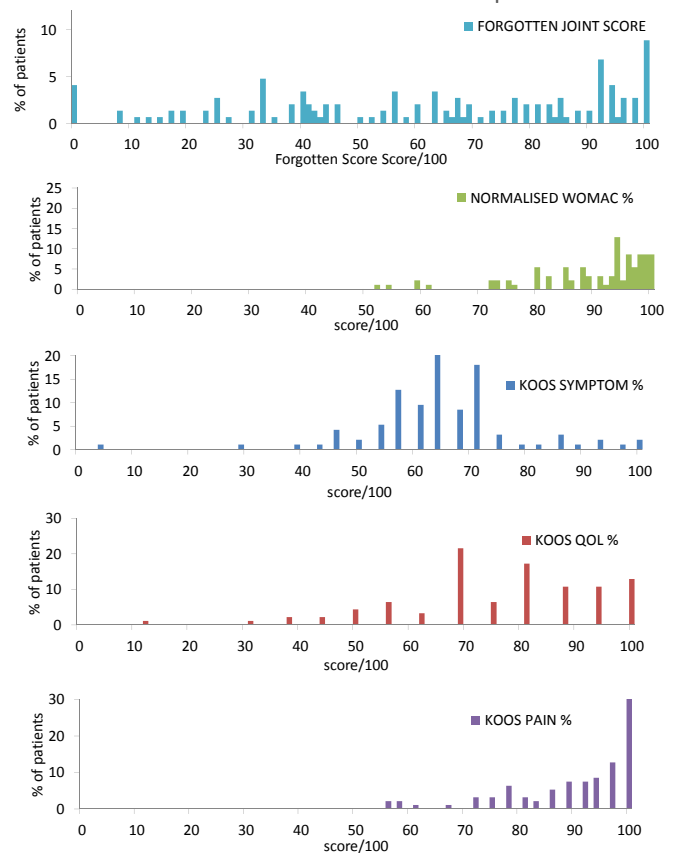
The FJS returned a mean score of 62 and 60 (range 0-100) and the normalised WOMAC overall mean score of 90 (range 52-100). The test-retest reliability was almost perfect for the FJS (ICC=0.97, 95% confidence interval 0.95-0.98), and the FJS subdomains (ICC>0.8) (Table 1).

Convergent construct validity of the FJS was correlated with Spearmans test to the KOOS Subscores of Quality of Life (0.63, p=0.001), Symptom (0.33, p=0.001), Pain (0.68, p=0.001) and ADL (0.66, p=0.001) and the Total WOMAC (0.70, p=0.001).

Results: Table 1   Test Retest Reliability Analysis of the FJS-12

	Intra Class Correlation	95% Confidence Interval	Landis & Koch Classification
Overall Score	0.97	0.95-0.98	Almost Perfect
Individual Questions			
Night Symptoms	0.88	0.84-0.92	Almost Perfect
Sitting	0.84	0.77-0.88	Almost Perfect
Walking	0.92	0.89-0.94	Almost Perfect
Bathing	0.88	0.84-0.92	Almost Perfect
Travelling	0.86	0.81-0.90	Almost Perfect
Stairs	0.94	0.92-0.96	Almost Perfect
Walking uneven ground	0.91	0.88-0.94	Almost Perfect
Rising	0.90	0.86-0.93	Almost Perfect
Standing	0.91	0.88-0.94	Almost Perfect
Housework/Gardening	0.91	0.87-0.93	Almost Perfect
Walking/Hiking	0.92	0.89-0.94	Almost Perfect
Favourite Sport	0.94	0.91-0.96	Almost Perfect

The distribution of the FJS to the Normalised WOMAC and KOOS Subscales is shown below. There is a much broader range of scores returned for the FJS-12 when compared to WOMAC and KOOS which have a cluster of results at or near perfect.

Conclusion: The FJS-12 is a reliable and valid outcome tool for TKR patients. It returns a broader spread of scores minimising the ceiling effect demonstrated by the WOMAC and KOOS pain scores. The FJS-12 is an additional patient derived outcome measure that shows promising results in minimising the ceiling effect seen in ever improving TKR results.

NORTH SYDNEY ORTHOPAEDIC & SPORTS MEDICINE CENTRE