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Original article

Transcultural validation of the Oxford Shoulder Score for the French-speaking population



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ABSTRACT

Purpose: Patient-reported outcome measures (PROMs) have been gaining in popularity over the last decade. The Oxford Shoulder Score (OSS) is a well-established self-administered questionnaire for shoulder evaluation adapted for the English-speaking population. The aim of the present study was to develop a translation and a transcultural adaptation of the OSS and to assess its validity in native French-speaker patients with shoulder pain.

Methods: The translation process was carried out following a translation/back-translation methodology by two translators. All patients completed the French OSS, the Subjective Shoulder Value (SSV), and the Constant score. Internal consistency was tested using Cronbach's α coefficient. Validity was assessed by calculating the Pearson correlation coefficient between the OSS and the Constant score and the SSV.

Results: One hundred forty-four patients suffering from degenerative or inflammatory diseases of the shoulder were included in this study. The average time required to complete the French OSS was 2 min and 45 s. Seventy patients were asked to complete the questionnaire twice (test/retest reliability). Internal consistency was high with Cronbach's α coefficient = 0.93. The intraclass correlation coefficient was 0.91 (95% CI: 0.88–0.94) for test/retest reliability. The French OSS score was significantly correlated with the Constant–Murley score ($r = 0.73$ and $P < 0.0001$) and with the SSV ($r = 0.68$ and $P < 0.0001$).

Conclusions: The present study shows that the French version of the OSS is reliable, valid, and reproducible. The sensitivity to change now needs to be evaluated. This score was adapted to the French-speaking population for the self-assessment of patients with degenerative or inflammatory disorders of the shoulder.

Level of evidence: Level 1, Test of previously developed criteria, diagnostic test study.

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1. Introduction

Degenerative lesions of the shoulder occur very frequently and their incidence increases with age [1,2]. The Constant–Murley score, which is a composite score, is currently considered the gold standard in Europe to assess the shoulder and is widely used by the orthopaedic community to follow up on shoulder pathologies. However, questions remain on the reproducibility of this score [3–6]. To solve this problem, healthcare professionals are taking an increasing interest in self-administered patient-reported outcome measures (PROMs). Several self-administered questionnaires are available to assess the shoulder [7–11] among which regional questionnaires should be distinguished [8,11,12] such as the DASH

score (Disabilities of the Arm, Shoulder and Hand) and the SF-36 as well as specific questionnaires adapted to the shoulder which evaluate pain and shoulder function [9,10,13–15]. Among these questionnaires, the OSS (Oxford Shoulder Score) [13] is considered to be quick, simple, and reliable for the English-speaking population. This score was initially developed at the University of Oxford in 1996. It is a self-administered questionnaire designed to evaluate pain and shoulder function through 12 questions. This questionnaire was initially developed to measure results following shoulder surgery (excluding instability surgery for which a specific Oxford questionnaire exists). This score's validity and sensitivity to change were initially assessed by its promoters by comparing it to the Constant score [16], the SF-36 [11], and the HAQ (Stanford Health Assessment Questionnaire) [17]. This score has since been adapted in different languages but not in French [18–21]. The Oxford hip and knee scores have already been validated in French [22,23].

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The objective of this study was to develop a translation and a transcultural adaptation of the OSS, and to assess its validity in French-speaking patients with shoulder pain.

2. Material and methods

2.1. French translation of the OSS

We followed the recommendations of Beaton et al. [24] published in 2000 during all stages of the translation. Two translators (a native English speaker and a native French speaker) independently translated the questionnaire into French. These translations were then combined (preliminary translation), after consultation with the working group comprising the translators and the expert committee (two specialized orthopaedic surgeons and two methodologists). Another pair of translators (a native English speaker and a native French speaker) translated the preliminary translation into English (back-translation). A new meeting took place between the translators and the expert committee, to resolve any discrepancies between the original English version of the score and the version translated back into English. A pre-final version was thus obtained and tested on a panel of 30 patients (pre-test). Finally, the pre-final version was submitted to the original authors of the OSS, who validated the final version of the score.

2.2. Patients

All patients provided oral consent to participate in this study. The local ethics committee authorized the study (No. 2014-11). The inclusion criteria were: native French speakers aged 18 years or older, capable of completing the questionnaire, presenting inflammatory, degenerative, or post-traumatic shoulder pain. Patients who presented instability problems were excluded. All the patients had to complete the French version of the OSS, the Subjective Shoulder Value (SSV), and the surgeon completed the Constant–Murley score. For each patient, gender, age, handedness, duration of symptoms, and diagnosis were noted (Table 1).

2.3. The Oxford Shoulder Score

This functional-pain score was originally developed at the University of Oxford in 1996 [13]. It is a 12-item self-administered questionnaire developed for patients with inflammatory or degenerative shoulder disease (excluding instability). Each question

presents five possible responses corresponding to a score of 0 (worst situation) to 4 (best situation), following recent modifications in the scoring system [14]. The questionnaire's psychometric properties, developed in English, were evaluated [13]. The internal coherence of the English OSS questionnaire was good (Cronbach $\alpha = 0.89$). The questionnaire showed good reproducibility (assessed using the Bland and Altman graphic method) as well as good convergent validity (correlation between the OSS and the Constant score: $r = -0.74$, $P < 0.01$). Sensitivity to change was also studied, showing a difference in the OSS between patients with postsurgical improvement at 6 months and patients with no postsurgical improvement at 6 months for the four items (one for success of the operation and three for symptom progression).

2.4. Comparison scores

2.4.1. The Constant–Murley score

This composite score, developed in 1987 [16] and revisited in 2008 [25], is well known to shoulder surgeons and provides a combined objective and subjective assessment of shoulder function through four broad items (pain scored out of 15 points, daily activities out of 20 points, range of motion out of 40 points, and strength out of 25 points). The total score therefore varies between 0 (the worst possible score) and 100 points (the best possible score).

Even though often used as a reference to elaborate new tools, few studies have examined its metrologic qualities. Livain et al. [4] studied the internal coherence and reproducibility of the French version of the Constant–Murley score. The internal coherence was satisfactory with a Cronbach α of 0.75. Inter- and intraobserver reproducibility were good for the overall score ($r = 0.91$ and 0.96 , respectively).

2.4.2. Subjective Shoulder Value score

The Subjective Shoulder Score (SSV) was initially described by Gilbert and Gerber in 2007 [26]. The SSV score is defined as the subjective evaluation by the patient of shoulder function, expressed as a percentage of a normal shoulder. This score ranges from 0 to 100%.

The psychometric properties of the SSV score, developed in English, were studied in 441 patients who were to undergo rotator cuff repair, arthroplasty for shoulder osteoarthritis, or a Bankart procedure for repeated dislocations of the shoulder [26]. The convergent validity was acceptable (correlation between the SSV score and the Constant score: $r = 0.40$ preoperatively and 0.67 postoperatively). Sensitivity to change was also studied, showing an increase in the postoperative SSV score ($P < 0.05$).

2.5. Statistical analysis

The transcultural adaptation involved a qualitative analysis and the psychometric validity a quantitative analysis. The feasibility and acceptability of the questionnaire were assessed by the rates of refusal to participate and the nonresponse rate. The floor and ceiling effects were calculated and were considered to be present when 20% or more of the patients had the lowest or highest score [27]. The validity of the questionnaire was examined using construct validity (the main criterion of the analysis was to validate the one-dimensional scale), convergent validity (the correlation between the OSS and the Constant score, and the SSV score using the Spearman correlation coefficient). We also analyzed the specific correlation between the pain questions on the OSS (questions 1, 8, and 12) and the pain question on the Constant score (the first item). Similarly, we analyzed the relationship between the OSS questions on daily activities (questions 2–7 and 9–11) and the second item of the Constant score (activity item).

Table 1
Patient demographic and clinical characteristics.

	Number (%), mean (range)
Gender	
Male	73 (51%)
Female	71 (49%)
Age (years)	59.5 (31–83)
Handedness	
Right-handed	126 (87%)
Left-handed	14 (10%)
Ambidextrous	4 (3%)
Duration of symptoms	38 months (5 days to 374 months)
Diagnosis	
Full-thickness tear of the rotator cuff	50 (33%)
Partial-thickness tear of the rotator cuff	51 (34%)
Osteoarthritis	29 (19%)
Post-traumatic sequela	15 (10%)
Calcifying tendinopathy	5 (3%)
Retractile capsulitis	2 (1%)

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