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# Diagnostic value of clinical tests for degenerative rotator cuff disease in medical practice

## *Valeur diagnostique des tests cliniques pour tendinopathies dégénératives de la coiffe des rotateurs en pratique médicale*

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**Abstract**

*Objectives.* – To assess the diagnostic value of clinical tests for degenerative rotator cuff disease (DRCD) in medical practice.
*Methods.* – Patients with DRCD were prospectively included. Eleven clinical tests of the rotator cuff have been done. One radiologist performed ultrasonography (US) of the shoulder. Results of US were expressed as normal tendon, tendinopathy or full-thickness tear (the reference). For each clinical test and each US criteria, sensitivity, specificity, negative predictive value and positive predictive value, accuracy, negative likelihood ratio (NLR) and positive likelihood ratio (PLR) were calculated. Clinical relevance was defined as PLR $\geq$2 and NLR $\leq$0.5.
*Results.* – For 35 patients (39 shoulders), Jobe (PLR: 2.08, NLR: 0.31) and full-can (2, 0.5) test results were relevant for diagnosis of supraspinatus tears and resisted lateral rotation (2.42, 0.5) for infraspinatus tears, with weakness as response criteria. The lift-off test (8.50, 0.27) was relevant for subscapularis tears with lag sign as response criteria. Yergason's test (3.7, 0.41) was relevant for tendinopathy of the long head of the biceps with pain as a response criterion. There was no relevant clinical test for diagnosis of tendinopathy of supraspinatus, infraspinatus or subscapularis.
*Conclusions.* – Five of 11 clinical tests were relevant for degenerative rotator cuff disease.
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*Keywords:* Clinical tests; Shoulder; Rotator cuff; Tendinopathy; Full-thickness tear; Diagnostic value

**Résumé**

*Objectif.* – Évaluer la valeur diagnostique des tests cliniques pour tendinopathies dégénératives de la coiffe des rotateurs (TDCR) en pratique médicale.
*Méthodes.* – Des patients avec TDCR ont été inclus de façon prospective. Onze tests cliniques de la coiffe des rotateurs ont été pratiqués. Un échographiste réalisait les échographies d'épaule en insu. Les résultats échographiques étaient exprimés en tendon normal, tendinopathie et rupture transfixiante. Sensibilité, spécificité, valeurs prédictives positive et négative, exactitude, ratio de vraisemblance (RV) positif et négatif ont été calculés pour chaque test et chaque diagnostic échographique. La valeur diagnostique a été admise à partir d'un RV positif et négatif, $\geq$ 2 et $\leq$ 0,5.
*Résultats.* – Trente-cinq patients et 39 épaules ont été inclus. Le test de Jobe (RV positif: 2,08, RV négatif: 0,31) et le *full-can test* (2, 0,5), avec pour réponse la faiblesse, atteignaient le seuil de valeur diagnostique pour la rupture du supra-épineux, la rotation latérale en position 1 (2,42, 0,5) pour celle de l'intra-épineux et le *lift-off test* (8,50, 0,27) pour celle du subscapulaire. Le test de Yergason (3,7, 0,41) atteignait ce seuil pour la

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tendinopathie du long biceps. Aucun test clinique n'atteignait ce seuil pour les tendinopathies des supra-épineux, infra-épineux et subscapulaire. *Conclusions.* – Ce travail montre la valeur diagnostique de 5 des 11 tests cliniques de la coiffe évalués.
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*Mots clés :* Tests cliniques ; Épaule ; Coiffe des rotateurs ; Tendinopathie ; Rupture transfixiante ; Valeur diagnostique

## 1. English version

### 1.1. Introduction

Shoulder pain is common in adults and the frequency increases with age [28]. In primary care, shoulder disorders are the third most common reason for consultation for musculoskeletal complaints [8,5,26]. Degenerative rotator cuff disease is the main shoulder condition [37,25]. It includes tendinopathy, partial- and full-thickness tendon tear of the supraspinatus, infraspinatus or suscapularis tendon and can be associated with tendinopathy of the long head of the biceps tendon.

Clinical history and careful physical examination are essential to ensure accurate diagnosis and choose the appropriate therapy [13,29]. Many clinical tests have been used to explore the rotator cuff. A rigorous description of clinical tests is therefore crucial. Each test has its own initial description and interpretation [36,38]. However, the description of several tests are close and may be confused with each other. All the tests cannot reasonably be performed at each clinical examination. Therefore, clinical tests of the rotator cuff should be selected on the basis of their diagnostic performance. However, few studies have investigated their performance with sound methodology and their results are partly controversial [3]. Such discrepancies can be explained by differences in methods and study populations. Most patients in these studies were from surgical departments, and their characteristics should not be representative of the population seen in general or in medical practice.

Therefore, to select the most relevant tests, we evaluated 11 clinical tests with ultrasonography (US) findings as a reference in patients with degenerative rotator cuff disease from a rehabilitation unit of a rheumatology department.

### 1.2. Methods

This was a cross-sectional descriptive study. Response criteria for clinical tests, diagnostic references and data collection were planned before the study start. The study was carried out under conditions of usual care in our unit. Participants gave their written informed consent to be in the study.

### 1.3. Patients

Patients attending the unit for ambulatory physiotherapy treatment for degenerative rotator cuff disease were considered for inclusion. They were prospectively recruited from consultation in a rehabilitation unit from single rheumatology clinic in an urban university hospital in France. Inclusion criteria were age >40 years, shoulder pain duration of at least 1 month, and diagnosis of degenerative rotator cuff disease. We excluded patients with limited passive range of motion, tendon calcification on radiographs, previous surgery, shoulder instability, humeral fracture, local steroid injections in the preceding 30 days, inflammatory joint disease and neoplastic disorders. Other exclusion criteria were evidence of neurological or cervical disease on physical examination, not signing a written consent and not undergoing US examination.

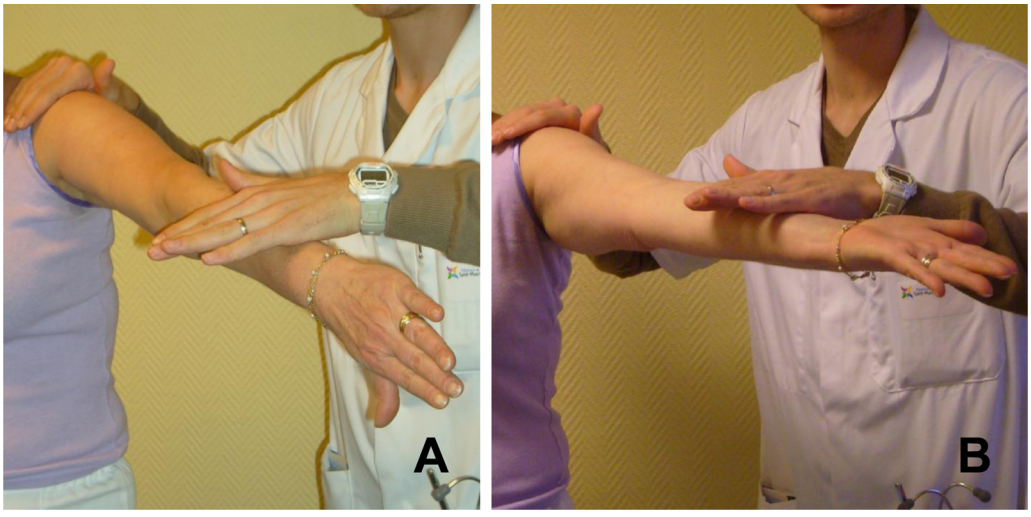


Fig. 1. Clinical tests for supraspinatus tendon. A. Job test. B. Full-can test. The physician pulled down on the arm.

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