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Evidence-Based Practice

Subscapularis Tendon Integrity: An Examination of Shoulder Index Tests

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Abstract

Reference: Hegedus EJ, Goode A, Campbell S, et al. Physical examination tests of the shoulder: a systematic review with meta-analysis of individual tests. *Br J Sports Med*. 2008;42(2):80–92.

Clinical Question: The systematic review focused on various index tests for the shoulder. We concentrated on the subscapularis tendon results to determine the accuracy of reported index tests for clinically diagnosing subscapularis integrity.

Data Sources: Studies were identified by an OVID search using MEDLINE, SPORTDiscus, and CINHAI databases (1966–2006) and a hand search by 2 authors (E.J.H. and S.C.). Primary search terms were *shoulder*, *examination*, and *diagnosis*. In addition to the database searches, personal files were hand searched by one of the authors (E.J.H.) for publications, posters, and abstracts. The reference lists in review articles were cross-checked, and all individual names of each special test were queried using MEDLINE and PubMed.

Study Selection: The search was limited to English-language journals. Studies were eligible for inclusion if the criterion standard was surgery, magnetic resonance imaging, or injection (subacromial or acromioclavicular joint); at least 1 physical examination test or special test was studied; and one of the paired statistics of sensitivity and specificity was reported or could be determined. Excluded were studies in which the index test was performed under anesthesia or in cadavers, studies in which the index test was assigned the status of composite physical examination, and review articles. Studies were grouped according to the subscapularis index test assessed: lift off, internal-rotation lag sign, Napoleon sign, bear hug, belly off, and belly press.

Data Extraction: Studies were selected in a 2-stage process. First, all abstracts and articles found through the search process were independently reviewed by 2 authors (E.J.H. and S.C.). Disagreement on inclusion of an article was resolved by consensus. Second, each selected study was assessed by each reviewer independently. A third reviewer made the final decision on any disagreements for the selected studies. The primary outcome measures were sensitivity and specificity and positive and negative likelihood ratios. The quality of a study was

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determined by assessing its internal and external validity. Validity was determined by the primary author (E.J.H.) using the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) statement. Our work required data extraction from the original articles, which we used to generate 2 × 2 contingency tables for each index test. Pooled indices of clinical usefulness were then determined for each index test.

Main Results: The specific search criteria identified 922 articles for review. Of these, 4 met the inclusion and exclusion criteria for subscapularis tendon tears, resulting in the number of studies assessing each index test as follows: 4 for lift off, 2 for internal-rotation lag sign, 2 for Napoleon sign, 1 for bear hug, 1 for belly off, and 1 for belly press. Subscapularis tears were identified by the criterion standard of surgery to visually assess the torn fibers. Across all 4 studies, a total of 304 shoulders were examined, 95 of which had a subscapularis tear (45 full thickness, 50 partial thickness), and 106 were injury free. Indices of clinical usefulness for full-thickness and partial-thickness subscapularis tears are reported in [Tables 1](#) and [2](#), respectively.

Keywords: [upper extremity](#), [diagnosis](#), [assessment](#)

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