



# A Review of Physical Exam Maneuvers That are Most Effective for Identifying Rotator Cuff Disease

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## INTRODUCTION

- Shoulder pain is one of the most common source of musculoskeletal pain, affecting between 7-26% of adults at any time.<sup>1,2</sup>
- Rotator cuff disease (RCD) is the most common etiology for shoulder pain seen by physicians, leading to around 4.5 million physician visits annually in the USA.<sup>3</sup>
- A 49-year-old female was seen in our outpatient internal medicine clinic with a chief complaint of shoulder pain.
- There are many different physical exam maneuvers that can be done to assess for RCD in patients with shoulder pain.
- Given the limited time for patient encounters in an outpatient setting, it is important to perform physical exam maneuvers that have a high yield for identifying RCD.
- Performing effective physical exam maneuvers leads to accurate diagnoses, more efficient utilization of healthcare resources, and timely implementation of treatments.<sup>4</sup>

## METHODS

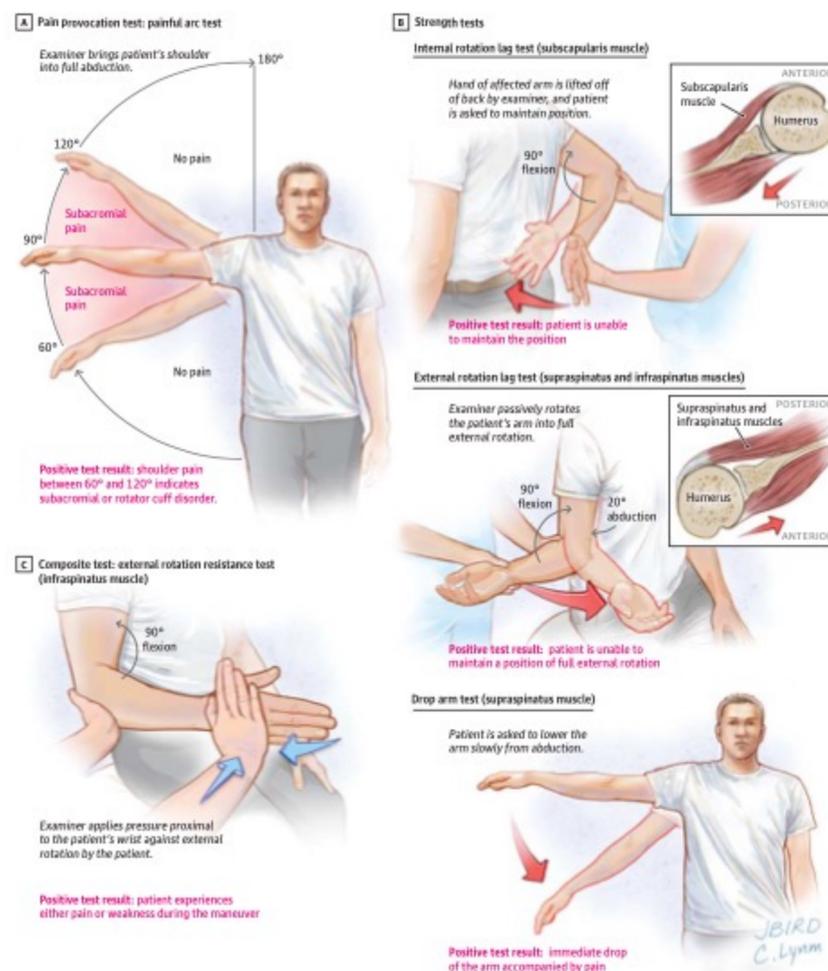
- A systematic review and meta-analysis titled "Does This Patient with Shoulder Pain have Rotator Cuff Disease" published in "The Rational Physical Exam" in JAMA was reviewed.<sup>5</sup>
- The study reviewed only included articles which had sensitivity and specificity analysis and included studies were assigned a level of evidence and a meta analysis was performed on the level I or II studies and a likelihood ratio (LR) was used to determine the effectiveness of each exam maneuver.
- We reviewed this study to identify the most effective physical exam maneuvers that non-orthopaedic physicians should perform when suspecting RCD.

## FIGURES

Table 1. Accuracy of recommended physical exam maneuvers for suspected rotator cuff disease

Physical Exam	Finding	% (95% CI)		LR (95% CI)	
		Sensitivity	Specificity	Positive	Negative
Painful Arc	Disease	71 (60-83)	81 (68-93)	3.7 (1.9-7.0)	0.36 (0.23-0.54)
Internal Rotation Lag	Full-tear	97 (88-100)	83 (70-96)	5.6 (2.6-12)	0.04 (0.00-0.58)
External Rotation Lag	Full-tear	47 (21-71)	94 (85-100)	7.2 (1.7-31)	0.57 (0.35-0.92)
External Rotation Resistance	Disease	63 (49-77)	75 (69-82)	2.6 (1.8-3.6)	0.49 (0.33-0.72)
Drop Arm	Disease	24 (13-34)	93 (85-100)	3.3 (1.0-11)	0.82 (0.07-0.97)

Figure 1. Visualization of recommended physical exam maneuvers



## RESULTS

- A total of 28 studies were included in the reviewed study, of which 23 are level IV and five are level I or II evidence.
- Physical exam maneuvers were recommended if they were reported in a level I or II study and they showed a LR >2.0.
- A total of five tests were recommended: the painful arc test, internal rotation lag test, external rotation lag test, external rotation resistance test, and drop arm test.
- The most commonly investigated tests were the Hawkins test and the empty can test.
- A positive painful arc test plus positive findings on the other recommended exams has a LR of  $\geq 3.7$  and when negative along with negative findings on the other recommended exams has a LR  $\leq 0.36$ .
- Results regarding the statistical analysis on the recommended physical exams are detailed in **Table 1**.
- Visualization of the recommended physical exams are shown in **Figure 1**, borrowed from the reviewed study by Hermans et al.<sup>5</sup>

## CONCLUSIONS

- Our patient with positive findings on 3/5 of these maneuvers was subsequently diagnosed with a partial-thickness subscapularis tear on imaging.
- Using these high-yield physical exam allowed us to have a productive patient visit and move forward with appropriate work-up to confirm our presumed diagnosis.
- Generalist physicians should develop proficiency in physical exam maneuvers with the highest yield.

## REFERENCES

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