



Chronic Shoulder Pain

Shoulder pain is responsible for approximately 16 percent of all musculoskeletal complaints, with a yearly incidence of 15 new episodes per 1,000 patients seen in the primary care setting

Urwin M, Symmons D, Alison T, et al. Estimating the burden of musculoskeletal disorders in the community: the comparative prevalence of symptoms at different anatomical sites, and the relation to social deprivation. *Ann Rheum Dis*. 1998;57(11):649-655.

Van der Windt DA, Koes BW, de Jong BA, Bouter LM. Shoulder disorders in general practice: incidence, patient characteristics, and management. *Ann Rheum Dis*. 1995;54(12):959-964.

An estimated 20 percent of the population will suffer shoulder pain during their lifetime

Pope DP, Croft PR, Pritchard CM, Silman AJ. Prevalence of shoulder pain in the community: the influence of case definition. *Ann Rheum Dis.* 1997;56(5):308-312.

Shoulder pain is second only to low back pain in patients seeking care for musculoskeletal ailments in the primary care setting

Steinfeld R, Valente RM, Stuart MJ. A common sense approach to shoulder problems. *Mayo Clin Proc.* 1999;74(8):785-794.

Shoulder pain is defined as chronic when it has been present for longer than six months, regardless of whether the patient has previously sought treatment

It can be divided into **six** diagnostic categories:

- (1) rotator cuff disorders, including tendinosis, full or partial thickness tears, or calcific tendinitis
- (2) adhesive capsulitis
- (3) glenohumeral osteoarthritis
- (4) Glenohumeral instability
- (5) acromioclavicular joint pathology
- (6) other chronic pain, including less common shoulder problems and non-shoulder problems

Figure 14-1: Anterior View Scapula and Proximal Humerus

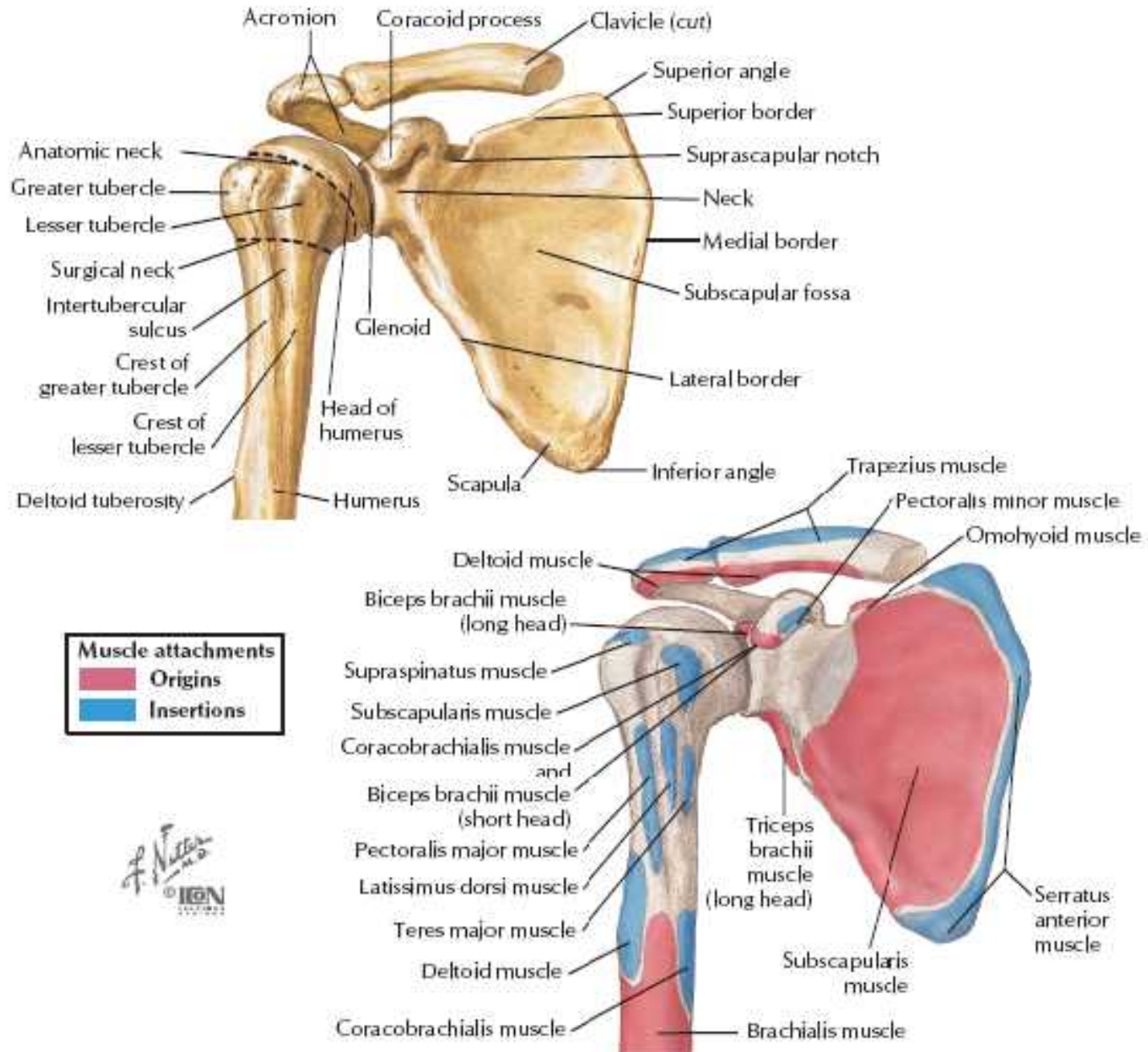
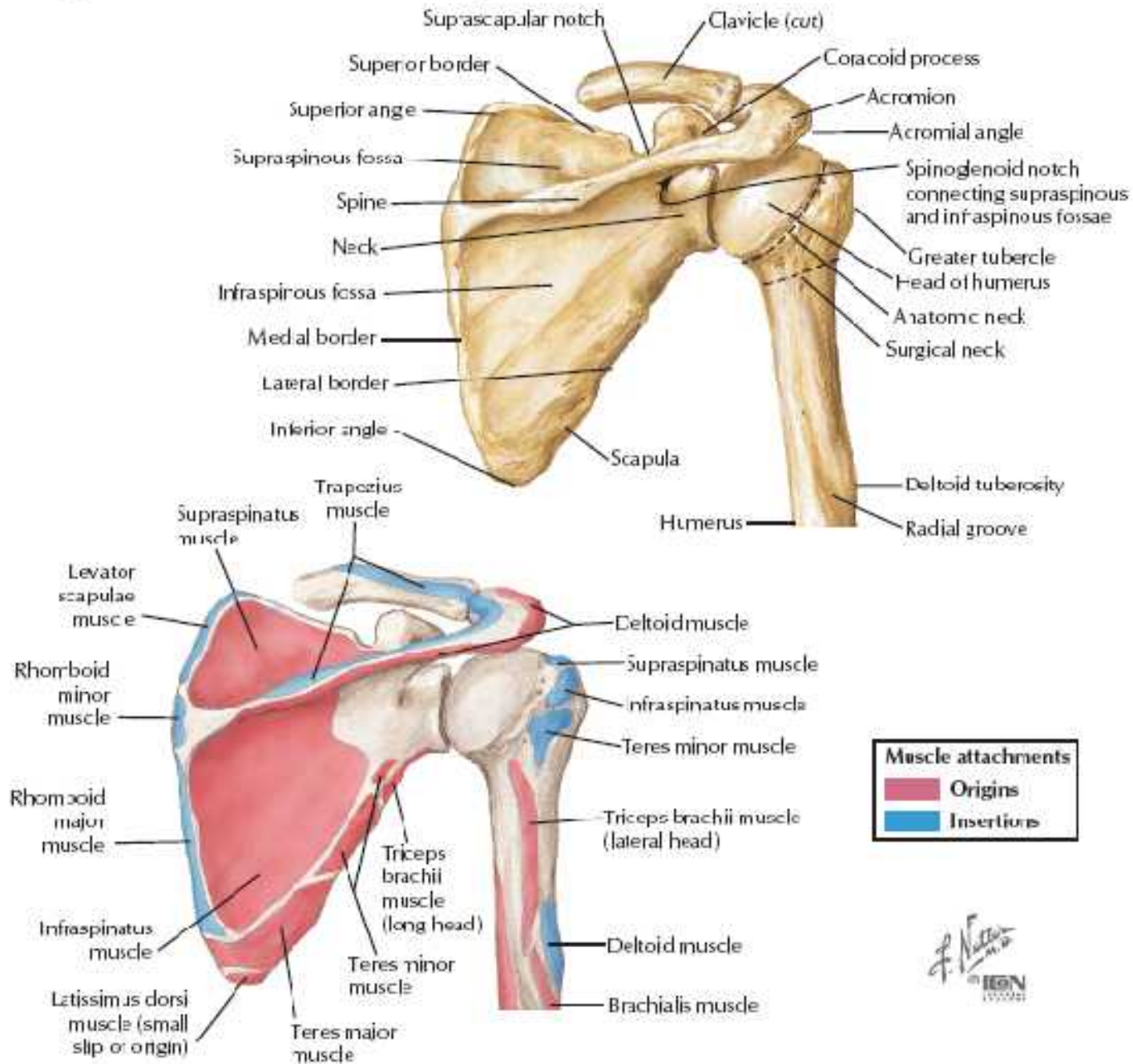


Figure 14-2: Posterior View Scapula and Proximal Humerus



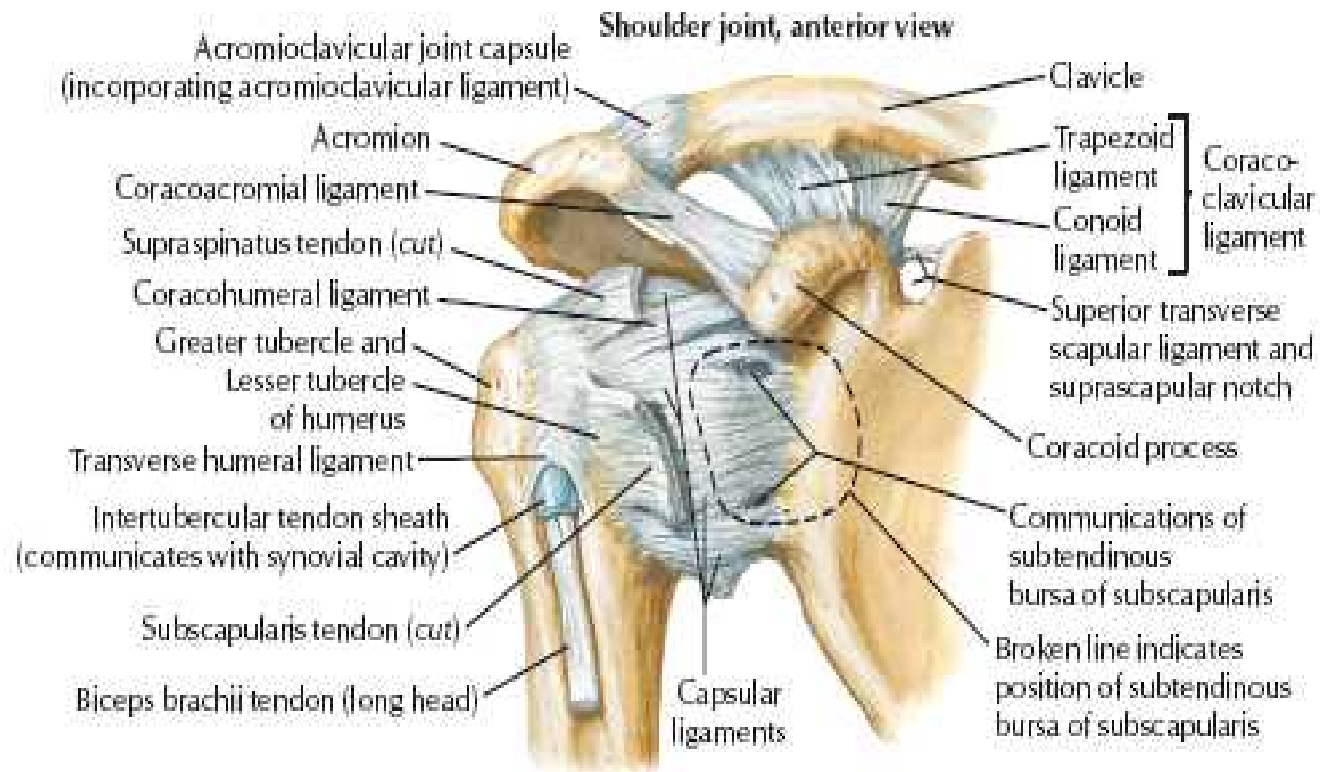


Figure 14-3: Shoulder Joint Opened (lateral view)

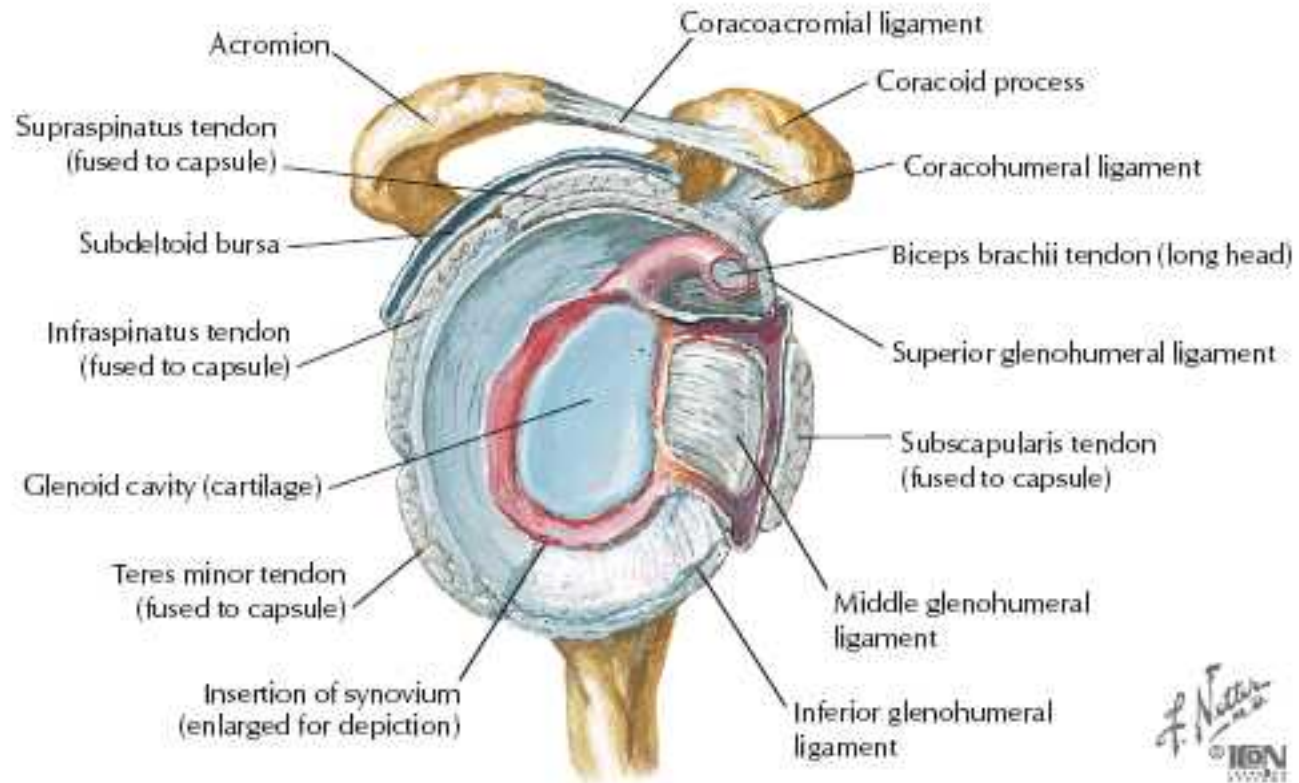


Table 1. History Findings and Associated Shoulder Disorders

<i>History</i>	<i>Associated condition</i>
Age ^{5,6,7}	If younger than 40 years: instability, rotator cuff tendinopathy If older than 40 years: rotator cuff tears, adhesive capsulitis, glenohumeral osteoarthritis
Diabetes or thyroid disorders ^{8,9}	Adhesive capsulitis
History of trauma ¹⁰	If younger than 40 years: shoulder dislocation/subluxation If older than 40 years: rotator cuff tears
Loss of range of motion	Adhesive capsulitis, glenohumeral osteoarthritis
Night pain ¹¹	Rotator cuff disorders, adhesive capsulitis
Numbness, tingling, pain radiating past elbow	Cervical etiology

Pain that radiates past the elbow to the hand is usually not related to shoulder pathology.

Murrell GA, Walton JR. Diagnosis of rotator cuff tears [published correction appears in *Lancet*. 2001;357(9266):1452]. *Lancet*. 2001; 357(9258):769-770.

Neer CS II. Anterior acromioplasty for chronic impingement syndrome in the shoulder: a preliminary report. *J Bone Joint Surg Am*. 1972;54(1):41-50.

Yamaguchi K, Ditsios K, Middleton WD, Hildebolt CF, Galatz LM, Teefey SA. The demographic and morphological features of rotator cuff disease.

A comparison of asymptomatic and symptomatic shoulders. *J Bone Joint Surg Am*. 2006;88(8):1699-1704.

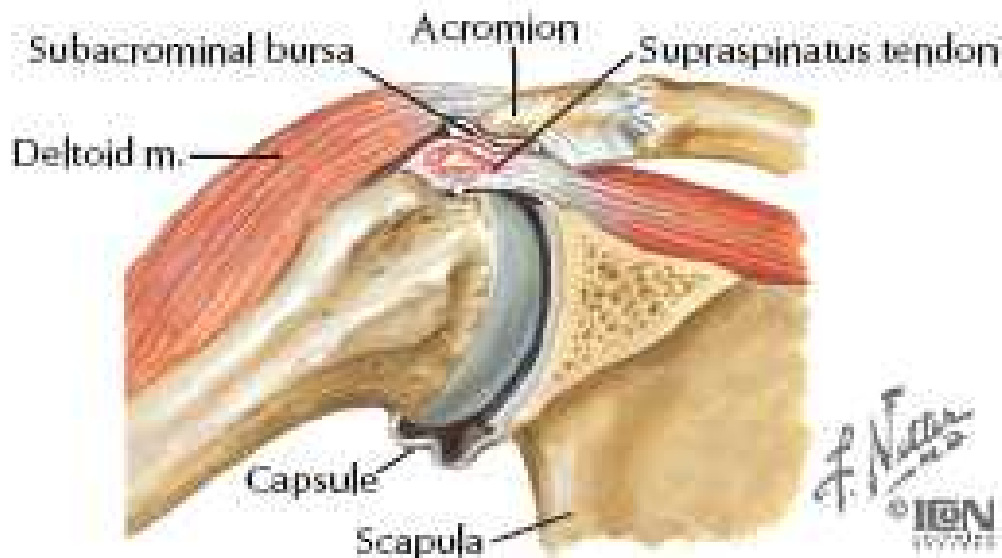
Cakir M, Samanci N, Balci N, Balci MK. Musculoskeletal manifestations in patients with thyroid disease. *Clin Endocrinol (Oxf)*. 2003;59(2):162-167.

Smith LL, Burnet SP, McNeil JD. Musculoskeletal manifestations of diabetes mellitus. *Br J Sports Med*. 2003;37(1):30-35.

Pain location	Anterior-superior shoulder pain associated with acromioclavicular joint pathology Diffuse shoulder pain in deltoid region associated with rotator cuff disorders, adhesive capsulitis, or glenohumeral osteoarthritis
Pain with overhead activity ¹⁰	Rotator cuff disorders
Sports participation ¹¹	Shoulder instability associated with overhead sports (e.g., baseball, softball, tennis), and collision sports (e.g., football, hockey) Acromioclavicular joint pathology associated with weight lifting
Weakness	Rotator cuff disorders, glenohumeral osteoarthritis

Litaker D, Piro M, El Bilbeisi H, Brems J. Returning to the bedside:using the history and physical exam to identify rotator cuff tears. *J Am Geriatr Soc.* 2000;48(12):1633-1637.

Figure 14-7: Rotator Cuff Disease



Abduction of arm causes repeated impingement of greater tubercle of humerus on acromion, leading to degeneration and inflammation of supraspinatus tendon, secondary inflammation of bursa, and pain on abduction of arm. Calcific deposits in the supraspinatus tendon may progress to acute calcific tendinitis and sudden onset of severe pain.

Table 2. Selected Tests of the Shoulder

<i>Examination maneuver</i>	<i>Associated condition</i>	<i>Sensitivity (%)</i>	<i>Specificity (%)</i>	<i>LR+</i>	<i>LR-</i>
Inspection					
Supraspinatus or infraspinatus atrophy ¹⁰	Chronic rotator cuff tear	56	73	2.07	0.60
Palpation					
Acromioclavicular tenderness ¹⁶	Acromioclavicular joint OA or chronic sprain	96	10	1.07	0.4
Range of motion					
Restrictive active ¹⁰	Rotator cuff disorder	30	78	1.36	0.90
Provocative tests					
Hawkins' impingement ²	Impingement/rotator cuff disorder	72	56	2.1	0.42
Drop-arm ¹⁵	Large rotator cuff tear	27	88	2.25	0.83
Empty-can supraspinatus ¹⁵	Rotator cuff disorder involving supraspinatus	44	90	4.4	0.62
Lift-off subscapularis ¹⁷	Rotator cuff disorder involving subscapularis	62	100	> 25	0.38
External rotation/infraspinatus strength ¹⁵	Rotator cuff disorder involving infraspinatus	42	90	4.2	0.64
Cross-body adduction ¹⁸	Acromioclavicular joint OA or chronic sprain	77	79	3.50	0.29
Apprehension ¹⁹	Glenohumeral instability	72	96	20.22	0.29
Relocation ¹⁹	Glenohumeral instability	81	92	10.35	0.2

LR+ = positive likelihood ratio; LR- = negative likelihood ratio; OA = osteoarthritis.

NOTE: The recommended progression of shoulder examination maneuvers is inspection, palpation, range of motion and strength tests, and provocative tests.

Information from references 10 and 15 through 19.



Figures 1a and 1b. Hawkins' Impingement Test. Forward flex the arm to 90 degrees with the elbow bent to 90 degrees. The arm is then internally rotated. A positive test, noted by pain on internal rotation, may signify subacromial impingement including rotator cuff tendinopathy or tear.



Figures 2a and 2b. Drop-Arm Rotator Cuff Test. The arm is passively raised to 160 degrees. The patient is then asked to slowly lower the arm to the side. A positive test, noted by an inability to control the lowering phase and a dropping or giving way of the arm, may indicate a large rotator cuff tear.



Figure 3. Empty-Can Supraspinatus Test. The arms are abducted to 90 degrees and forward flexed 30 degrees. With the thumbs turned downward, the patient actively resists a downward force applied by the examiner. A positive test is indicated by weakness compared with the contralateral side and may indicate rotator cuff pathology, including supraspinatus tendinopathy or tear.



Figure 5. External Rotation/Infraspinatus Strength Test. The patient's arms are held at their sides with the elbows flexed to 90 degrees. The patient actively externally rotates against resistance. A positive test is indicated by weakness compared with the contralateral side and may be associated with infraspinatus or teres minor tendinopathy or tear.



Figure 4. Lift-Off Subscapularis Test. With the arm internally rotated behind the patient's lower back, the patient internally rotates against the examiner's hand. A positive test is indicated by the inability to lift the hand off of the back and may indicate subscapularis tendinopathy or tear.



Figure 6. Cross-Body Adduction Test. The arm is passively adducted across the patient's body toward the contralateral shoulder. Pain may indicate acromioclavicular joint pathology, including chronic sprain or osteoarthritis.



Figure 7. Apprehension and Relocation Tests. With the patient supine, the patient's arm is abducted to 90 degrees and the elbow is flexed to 90 degrees. Pain and a sense of instability with further external rotation may indicate shoulder instability. Relief of these symptoms with a posteriorly directed force on the proximal humerus is a positive relocation test and further supports diagnosis of shoulder instability.

Table 3. Imaging Tests for Rotator Cuff Tears

<i>Imaging test</i>	<i>Finding</i>	<i>Sensitivity (%)</i>	<i>Specificity (%)</i>	<i>LR+</i>	<i>LR-</i>
MRI	Any rotator cuff tear	83	86	4.85	0.22
	Partial thickness rotator cuff tear	44	90	3.99	0.66
	Full thickness rotator cuff tear	89	93	10.63	0.16
Ultrasonography	Any rotator cuff tear	80	85	5.09	0.27
	Partial thickness rotator cuff tear	67	94	8.90	0.36
	Full thickness rotator cuff tear	97	96	13.16	0.16

LR+ = positive likelihood ratio; *LR-* = negative likelihood ratio; *MRI* = magnetic resonance imaging.

Information from reference 23.



Table 4. Diagnosing Causes of Chronic Shoulder Pain

<i>Diagnosis</i>	<i>Findings consistent with diagnosis</i>	<i>Findings inconsistent with diagnosis</i>	<i>Imaging</i>
Acromioclavicular joint osteoarthritis	Pain at acromioclavicular joint; positive cross-body adduction test; may have history of trauma	No pain with palpation at acromioclavicular joint; negative cross-body adduction	Radiography shows osteoarthritis at acromioclavicular joint, some evidence of acromioclavicular separation
Adhesive capsulitis	Age older than 40 years; decreased active and passive range of motion; history of diabetes or thyroid disease	Full passive range of motion; no pain with movements	Radiography usually normal
Glenohumeral instability	Age usually younger than 40 years; history of subluxation or dislocation, or generalized ligamentous laxity; positive apprehension test	Negative apprehension test	Radiography usually normal
Glenohumeral osteoarthritis	Age older than 50 years; progressive pain; crepitus with range of motion	Age younger than 50 years; normal radiography	Radiography shows narrowing of joint space, spurring, and osteophytes
Rotator cuff pathology	Age usually older than 40 years; pain with overhead activity; night pain; weakness; positive Hawkins' impingement test; and rotator cuff weakness	No pain with overhead activities; no arm pain; no weakness with lift-off, external rotation, or empty-can tests	Radiography may show humeral head sclerosis or cyst, loss of acromial-humeral interval; acromial spur

Shoulder pain

- Rotator cuff tendinitis ("impingement") or tear
- Subacromial bursitis
- Biceps tendinitis
- Osteoarthritis (acromioclavicular joint; rare in glenohumeral joint)
- Frozen shoulder (adhesive capsulitis)
- Acromioclavicular (AC) separation
- Neck disorder, eg, osteoarthritis, herniated disk, tumor
- Rheumatoid or septic arthritis
- Calcific tendinitis
- Shoulder dislocation or fracture
- Avascular necrosis
- Polymyalgia rheumatica
- Fibromyalgia
- Thoracic outlet syndrome
- Brachial plexus neuropathy
- Referred pain from gallbladder, heart, diaphragm, Pancoast tumor
- Metastatic or primary tumor

A recent Cochrane review showed little evidence for or against the most common treatments of these chronic shoulder disorders; this is mainly because of a lack of well-designed clinical trials

Most patients with a chronic shoulder disorder can initially be treated conservatively with a multimodal approach

Green S, Buchbinder R, Glazier R, Forbes A. Systemic review of randomised controlled trials of interventions for painful shoulder: selection criteria, outcome assessment, and efficacy. *BMJ*. 1998;316(7128):354-360.

Table 1. Management of Chronic Shoulder Pain

<i>Cause</i>	<i>Initial management</i>	<i>Further treatment options if no improvement with initial management</i>
Acromioclavicular joint osteoarthritis	Activity modification; acetaminophen or NSAIDs	Corticosteroid/local anesthetic injection into the acromioclavicular joint; surgery
Adhesive capsulitis	Activity modification; physical therapy; acetaminophen or NSAIDs; intra-articular corticosteroid injection	Corticosteroid injection, possible surgery
Glenohumeral instability	Activity modification; physical therapy	Surgery
Glenohumeral osteoarthritis	Activity modification; physical therapy; acetaminophen or NSAIDs; treat comorbidities	Corticosteroid injection, possible surgery
Rotator cuff pathology	If small rotator cuff tear: activity modification; physical therapy; acetaminophen or NSAIDs If large rotator cuff tear: may either try conservative therapy, as listed above, or go directly to surgery	Corticosteroid injection, possible surgery

NSAIDs = nonsteroidal anti-inflammatory drugs.

Information from references 6 through 8.

Chronic Shoulder Pain: Part I. Evaluation and Diagnosis

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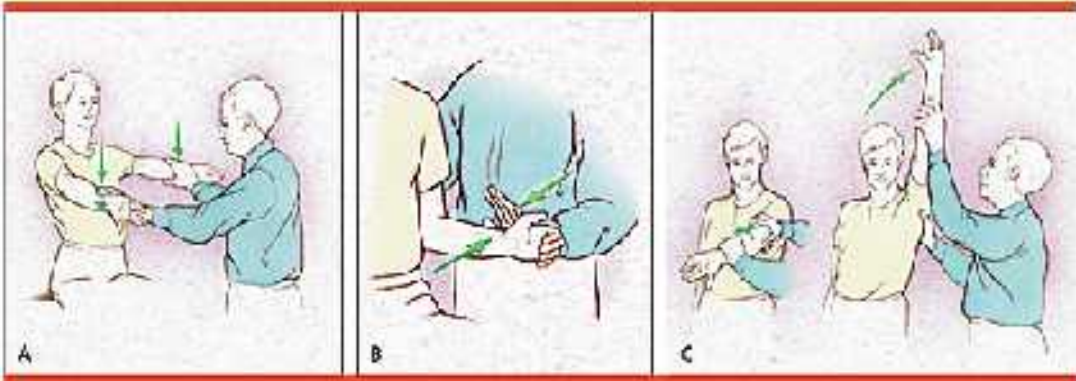
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Am Fam Physician. 2008;77(4):453-460. Copyright © 2008
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