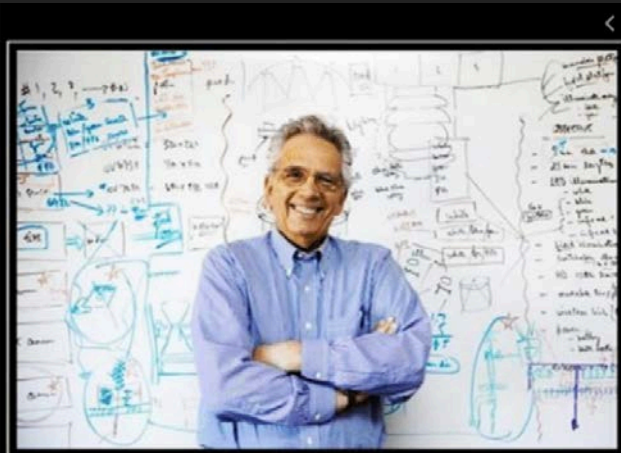


Mastering the Rotator Cuff

Brandon Steele DC, FACO



THERE IS A NEW GURU

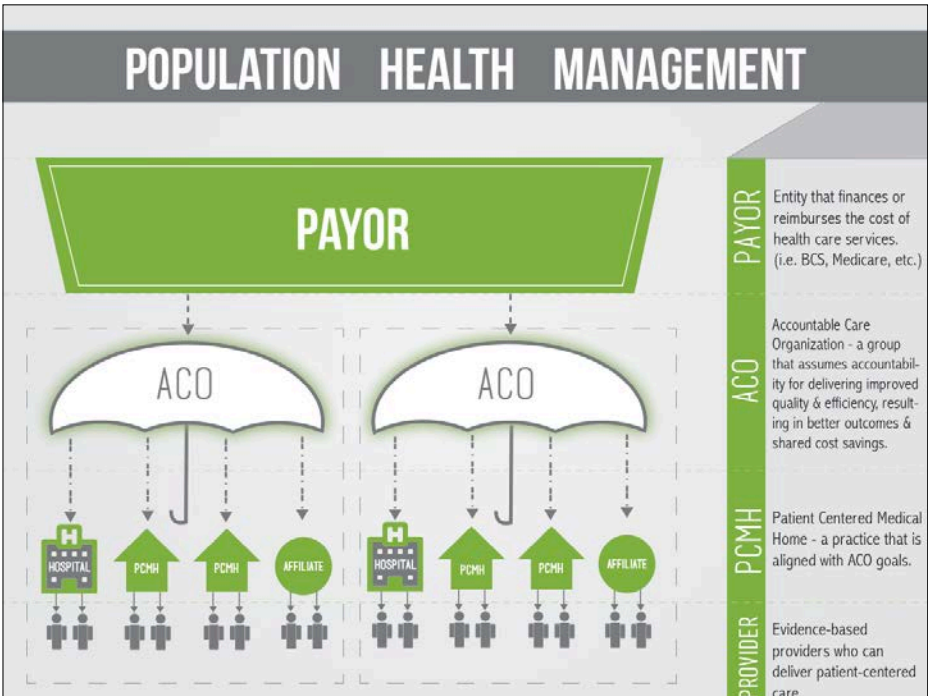
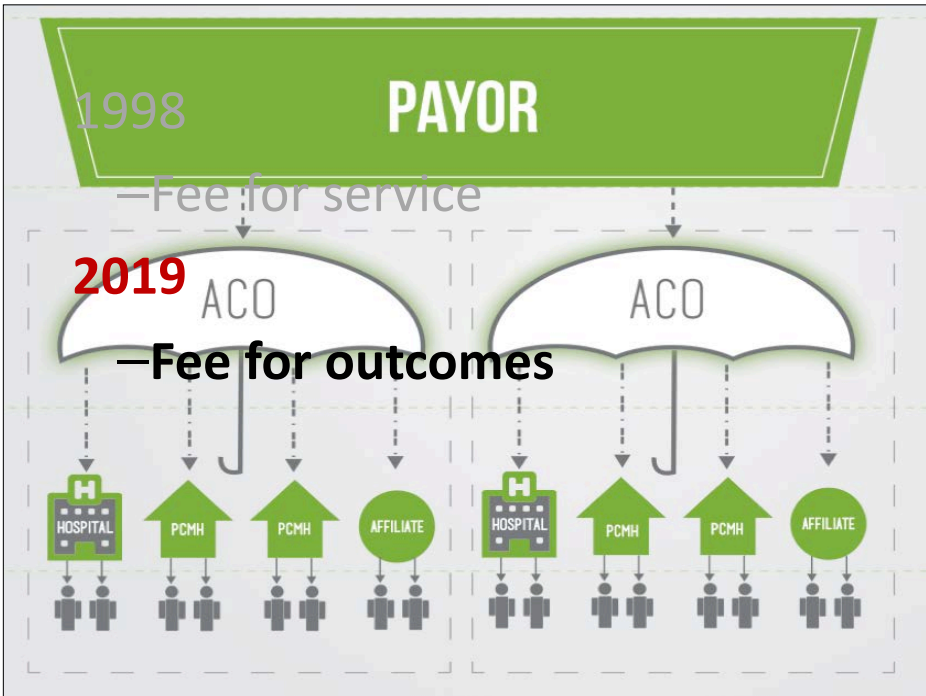
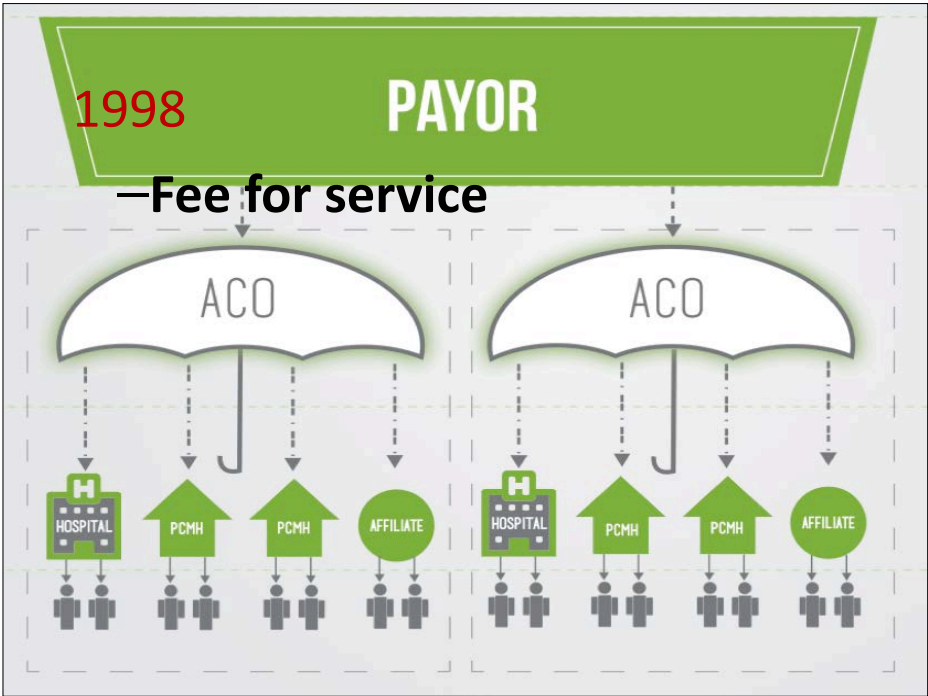


TRUTH

It doesn't care about your opinion

1998

- Do Not get into stranger's cars
- Do Not meet people from the internet



Creating Value in Healthcare

$$V = \frac{\text{Results}}{\text{Price} \times \text{Time}}$$

CMS **FACT SHEET**
SEPTEMBER 2015

COMPUTATION OF THE 2016 VALUE MODIFIER

Overview

The Value-Based Payment Modifier Program adjusts Medicare Physician Fee Schedule (PFS) payments to a physician or group of physicians (as identified by their Taxpayer Identification Number [TIN]), based on the quality and cost of care furnished to their Medicare Fee-for-Service (FFS) beneficiaries.

What is the Value Modifier?

Section 3007 of the 2010 Patient Protection and Affordable Care Act (ACA) directs the Secretary of the U.S. Department of Health and Human Services to establish a budget-neutral Value-Based Payment Modifier (referred to here as the Value Modifier) that provides for differential payment under the Medicare PFS to a physician or group of physicians based upon the quality of care compared to the cost of care furnished to Medicare FFS beneficiaries during a performance period. The Value Modifier is separate from the payment adjustment and incentives under the Physician Quality Reporting System (PQRS). This fact sheet summarizes what the Value Modifier is and how it will be implemented for Medicare PFS payments in 2016. For more detailed information, see the Detailed Methodology for the 2016 Value Modifier and the 2014 Quality and Resource Use Report available at: <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/2014-QRUR.html>.

Who will be subject to the Value Modifier?

Beginning January 1, 2015, the Value Modifier was applied to physician payments under the Medicare PFS for physicians in TINs with 100 or more eligible professionals,¹ provided that at least one physician submitted a Medicare claim during 2013 under the TIN. Calendar year (CY) 2013 was the performance period for the Value Modifier that was applied in 2015.

Beginning January 1, 2016, the Value Modifier will be applied to physician payments under the Medicare PFS for physicians in TINs with 10 or more eligible professionals, provided that at least one physician submitted a Medicare claim during 2014 under the TIN. CY 2014 is the performance period for the Value Modifier that will be applied in 2016.

In 2015 and 2016, CMS will not apply the Value Modifier to TINs in which one or more physicians in the TIN participated in the Medicare Shared Savings Program, the Pioneer Accountable Care

¹ Eligible professionals include physicians, practitioners, physical or occupational therapists, qualified speech-language pathologists, and qualified audiologists. For a list of providers designated as eligible professionals by CMS based on their two-digit CMS specialty codes, see the Detailed Methodology for the 2016 Value Modifier and the 2014 Quality and Resource Use Report, available at: <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/2014-QRUR.html>

September 2015 1 Centers for Medicare & Medicaid Services

*Beginning January 1, 2017,
the Value Modifier was applied to
physician payments under the
Medicare PFS.*

BEHIND THE NUMBERS

Medicare Unmasked

See Medicare's payments to over one million medical providers from 2012 to 2014, and how doctors and other providers compare with peers in their state and nationwide.

Published May 19, 2016

EXPLORE THE DATA

Search doctors and other providers who received Medicare payments.

Physician or Provider

Ex: Smith
Last Name / Company

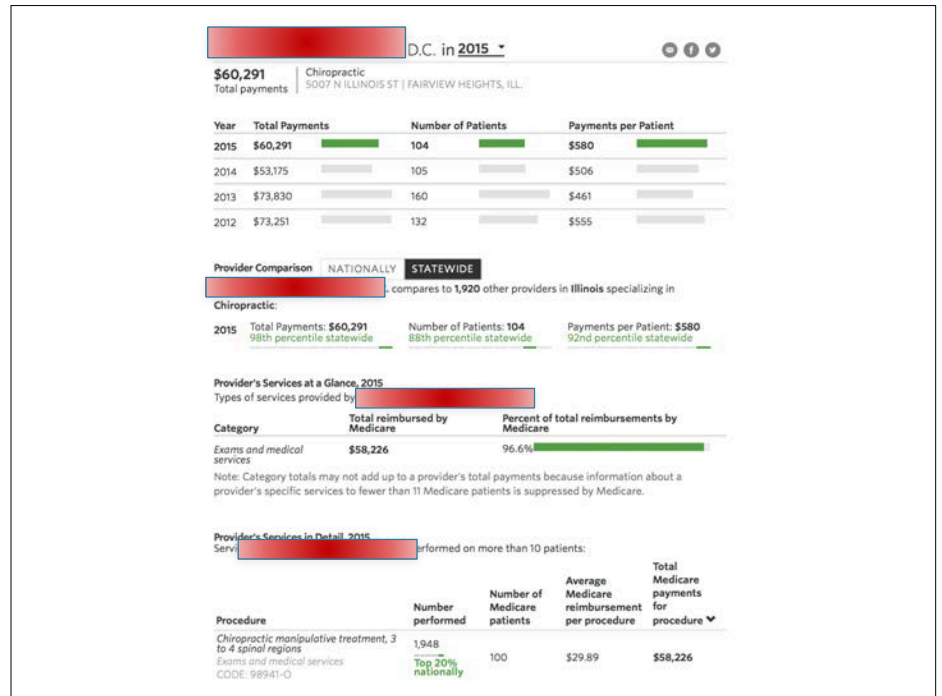
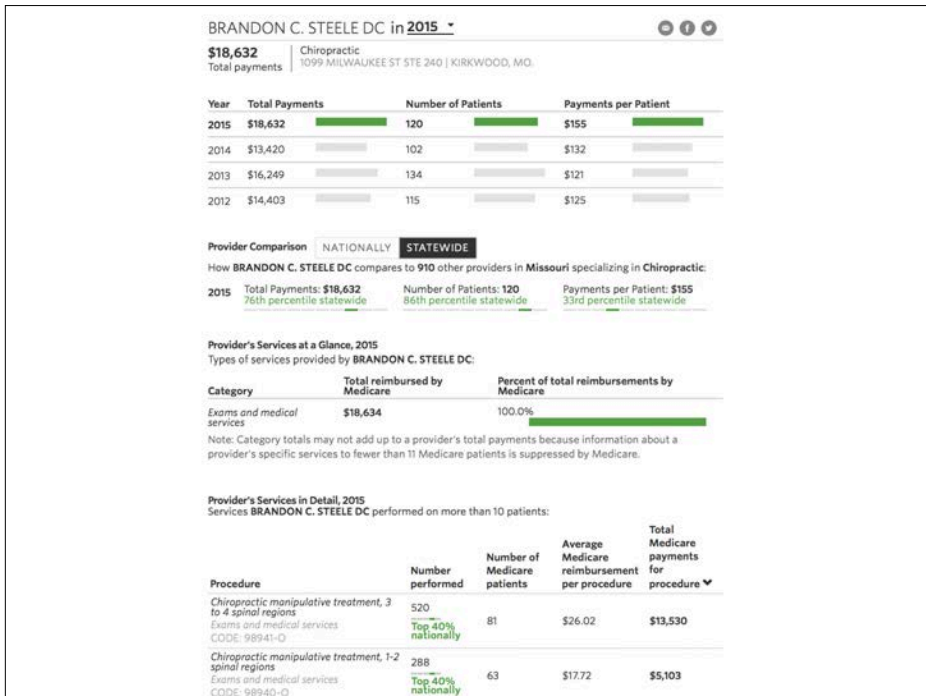
All specialties
Specialty / Facility Type

Location

Ex: Denver
City

All locations
State / Territory

SEARCH



Annals of Internal Medicine

“For most patients with acute or subacute low back pain, clinicians and patients should initially select non-pharmacologic treatment with superficial heat, massage, acupuncture, or spinal manipulation.”

Qaseem A, Wilt TJ, McLean RM, Forciea MA, for the Clinical Guidelines Committee of the American College of Physicians. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. Ann Intern Med. [Epub ahead of print 14 February 2017]

FDA

“Non-pharmacologic therapies, including chiropractic, should be used”

FDA Education Blueprint for Health Care Providers Involved in the Management or Support of Patients with Pain. May 2017. Accessed on May 12, 2017

CDC

“Non-pharmacologic therapy and non-opioid pharmacologic therapy are preferred”

Dowell D, Haegerich TM, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain- United States, 2016. MMWR Recomm Rep 2016;65(No. RR-1): 1–49.

Joint Commission

“Non-pharmacologic strategies, including chiropractic, have a role”

The Official Newsletter of The Joint Commission. Joint Commission Enhances Pain Assessment and Management Requirements for Accredited Hospitals. July 2017 Volume 37 Number 7. Ahead of print in 2018 Comprehensive Accreditation Manual for Hospitals.

Joint Commission Online. Revision to Pain Management Standards. http://www.jointcommission.org/assets/1/23/jconline_november_12_14.pdf

37 State Attorney Generals

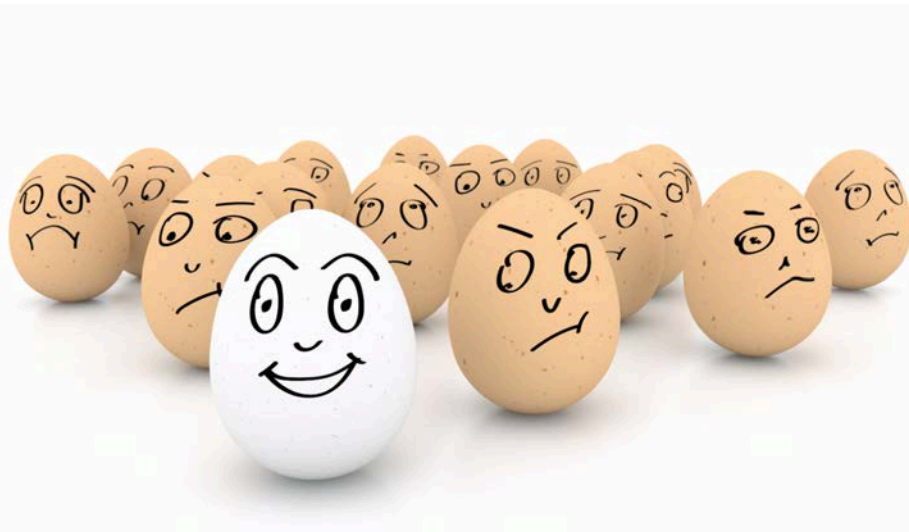
"Prescribe non-opioid alternatives including chiropractic"

Attorney General Janet Mills Joins 37 States, Territories in Fight against Opioid Incentives. Accessed 9/19/17 from <http://www.maine.gov/ag/news/article.shtml?id=766715>

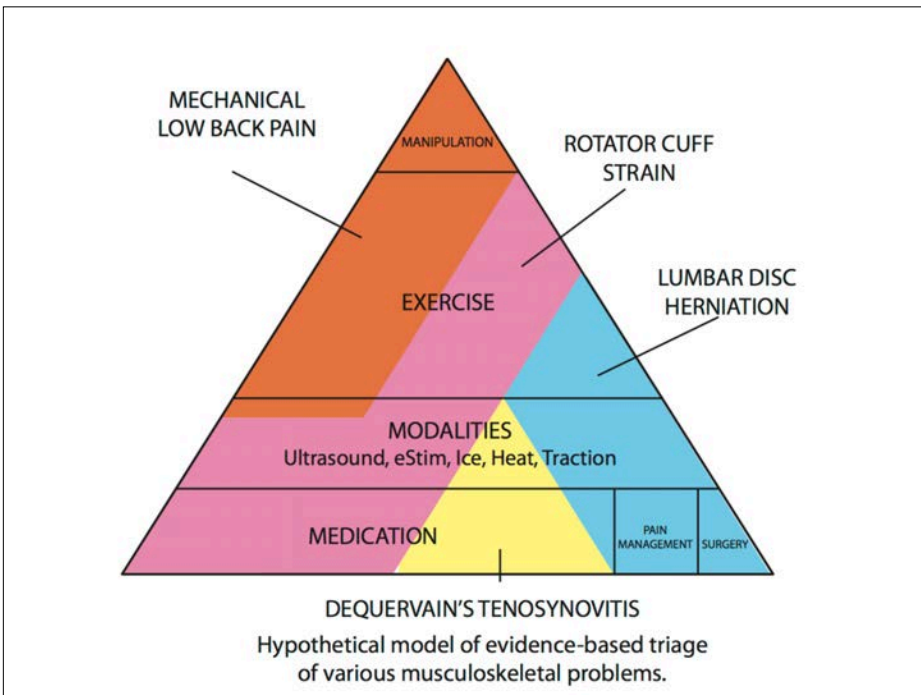
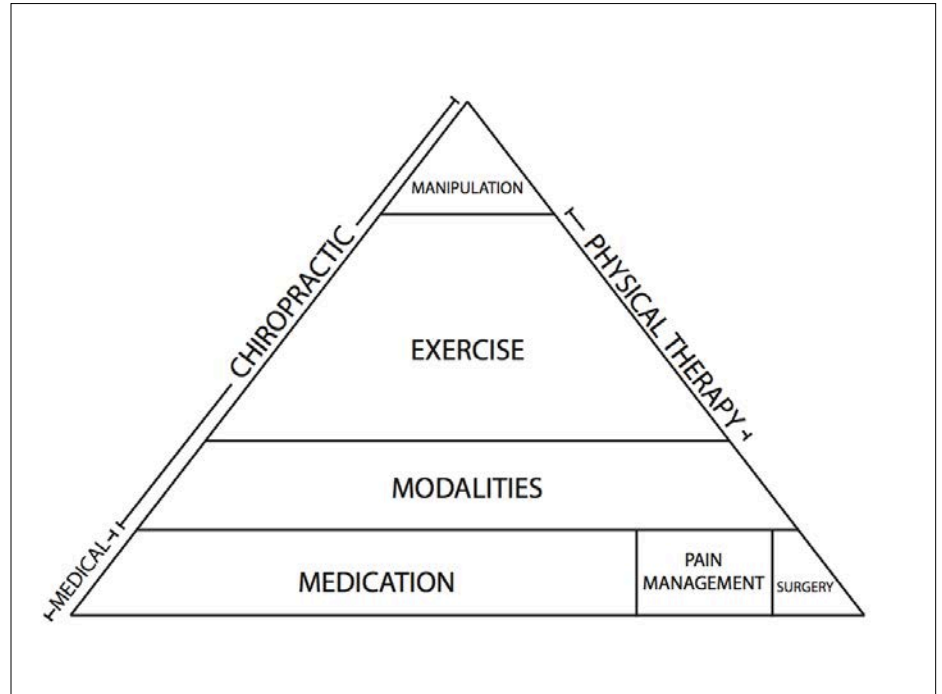
JAMA

"Among patients with acute low back pain, spinal manipulative therapy was associated with improvements in pain and function with only transient minor musculoskeletal harms."

Paige NM, Miske-Lye IM, Booth MS, et al. Association of Spinal Manipulative Therapy With Clinical Benefit and Harm for Acute Low Back Pain; Systematic Review and Meta-analysis. *JAMA*. 2017;317(14):1451-1460.



6-13%

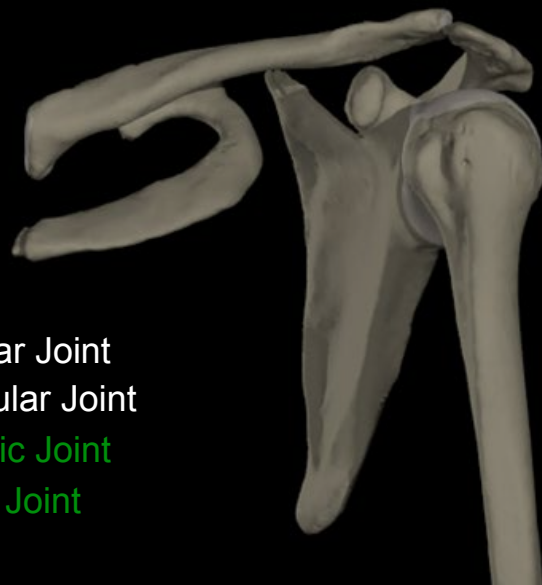




Exceptional Outcomes

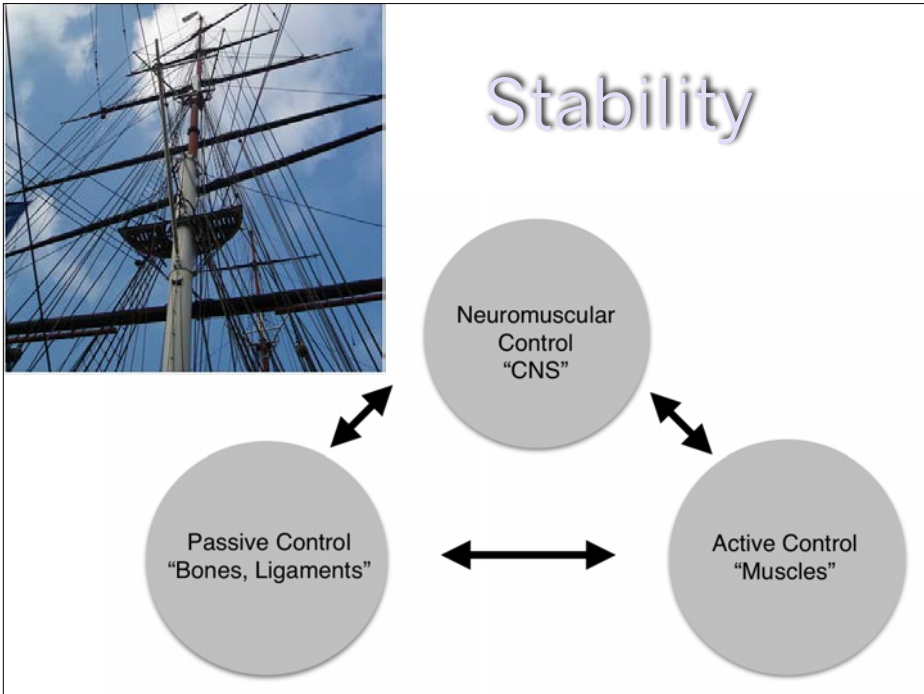
- Accurate Structural Diagnosis
- ID Complicating “Functional” Problems
- Follow “Best Practice” Management
- Active Patient Participation
- Measure and Improve

The Shoulder



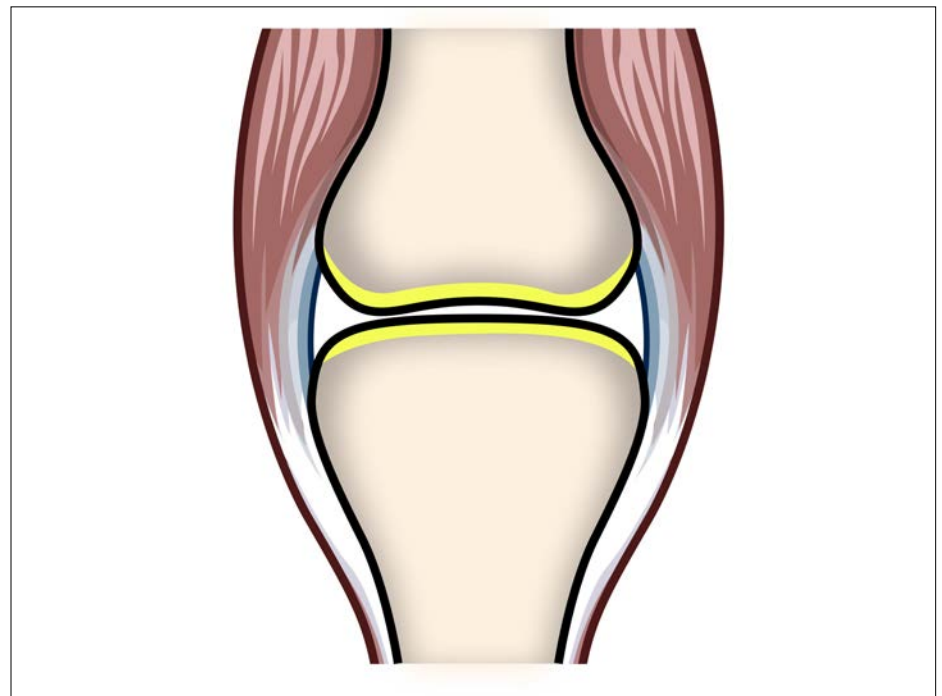
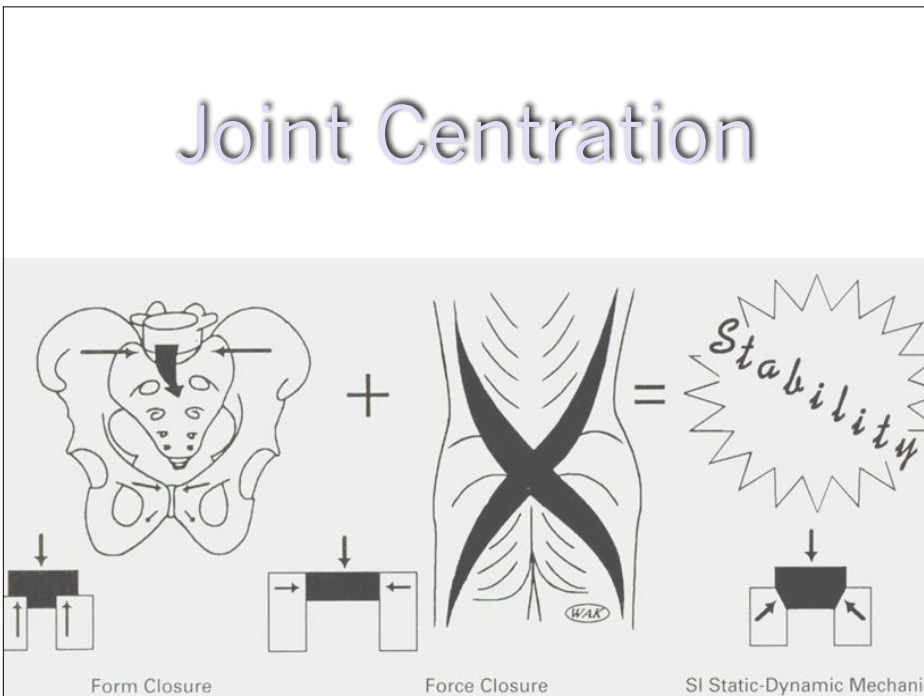
Sternoclavicular Joint
Acromioclavicular Joint
Scapulothoracic Joint
Glenohumeral Joint

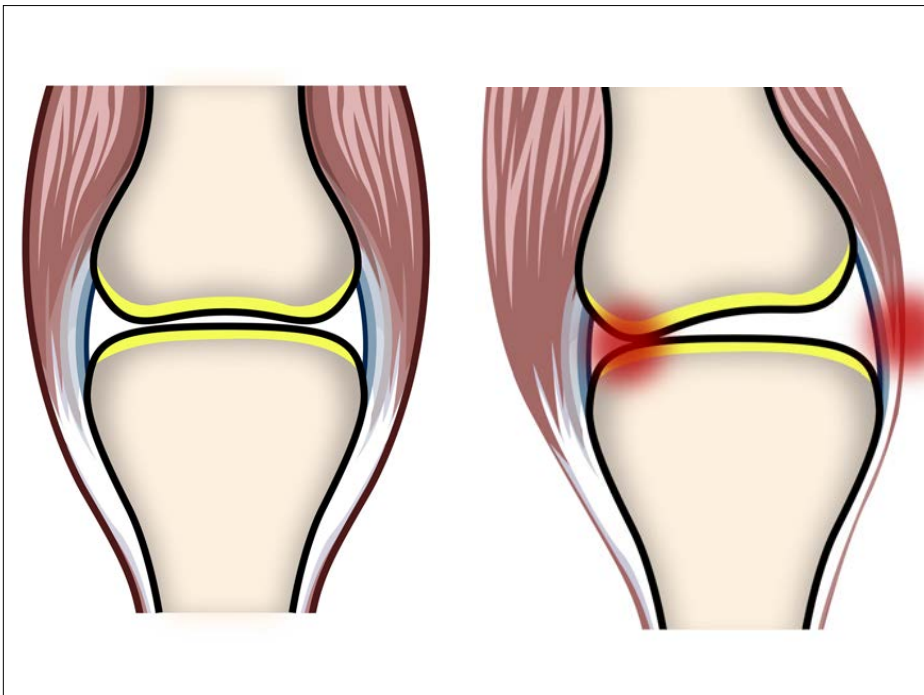
A 34 year old male walks in your office with shoulder pain. It is localized to the lateral and anterior aspect of his right upper arm. It began 1 year ago after starting to play park league softball. Its gotten better and worse with activity. He has a prior history of shoulder pain in college where he was a quarterback at Notre Dame. There is no paresthesia in the arm. It is a 7/10 with a throwing motion, but painless at rest.



DYNAMIC POSITION OF THE SCAPULA

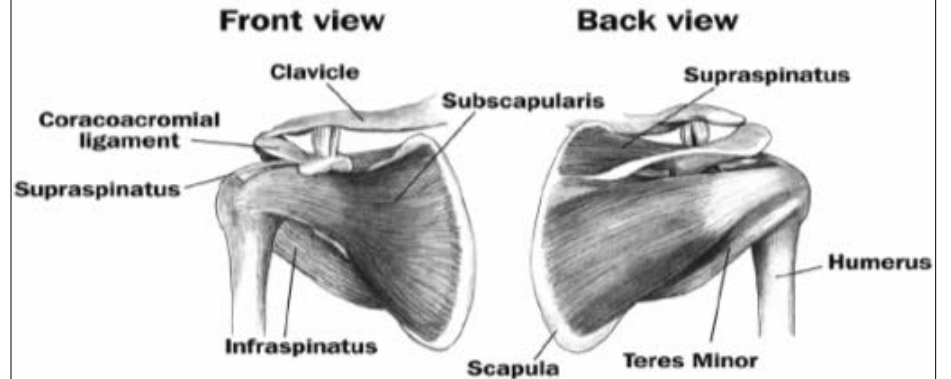
$\frac{1}{2} K x^2$	$\frac{1}{2} K x^2$	$\frac{1}{2} K x^2$	$\frac{1}{2} K x^2$	EQUALS	$\frac{1}{2} K x^2$	$\frac{1}{2} K x^2$	$\frac{1}{2} K x^2$
Pec Major	Pec Minor	Upper Trap	Biceps		Serratus Anterior	Middle Trap	Lower Trap





Muscular Anatomy

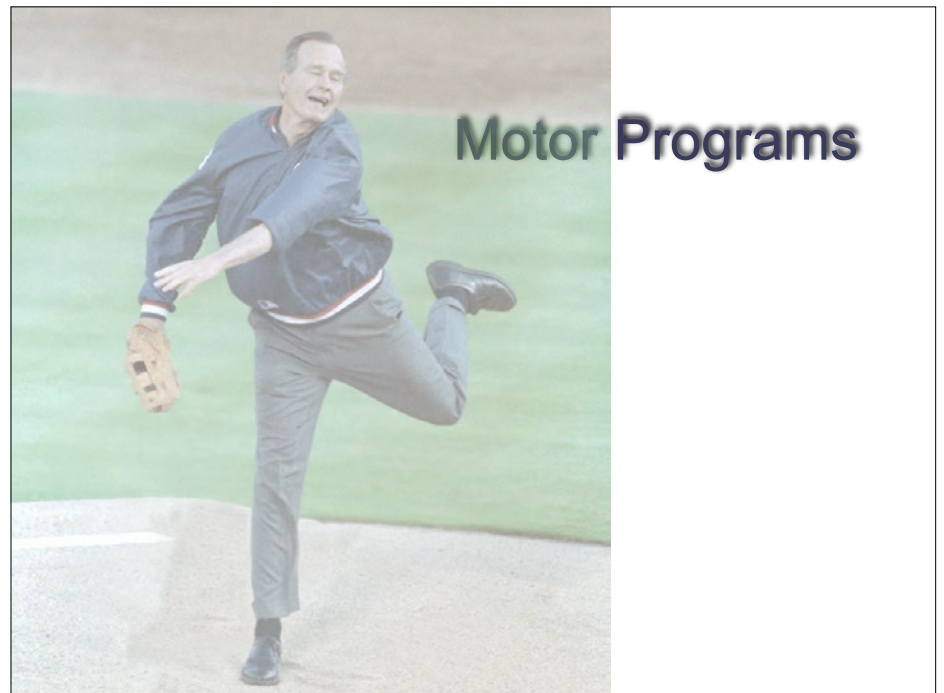
Figure 1: Anatomy of the shoulder and rotator cuff muscles

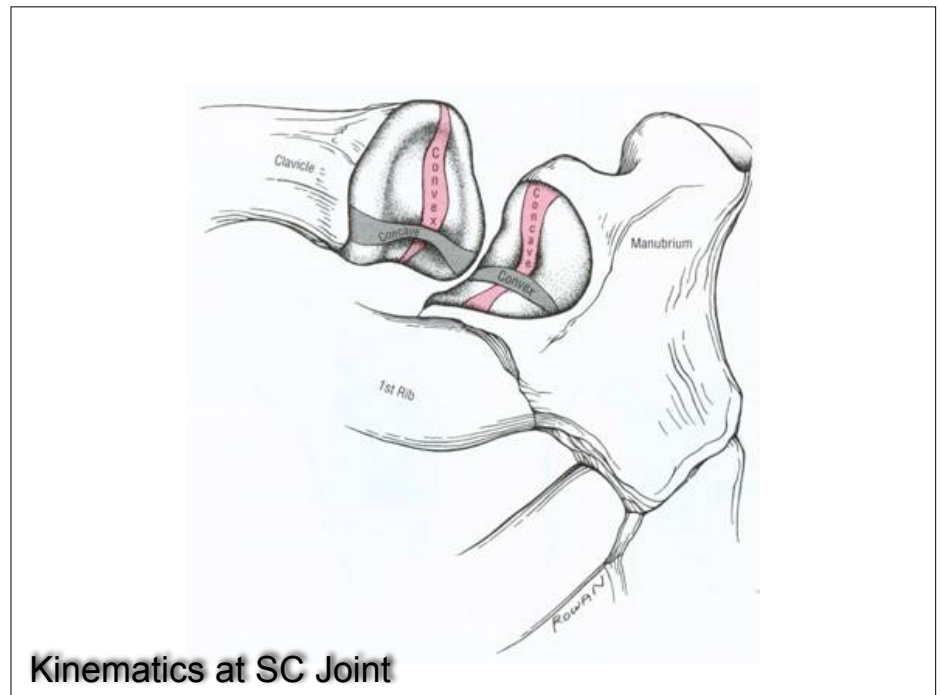
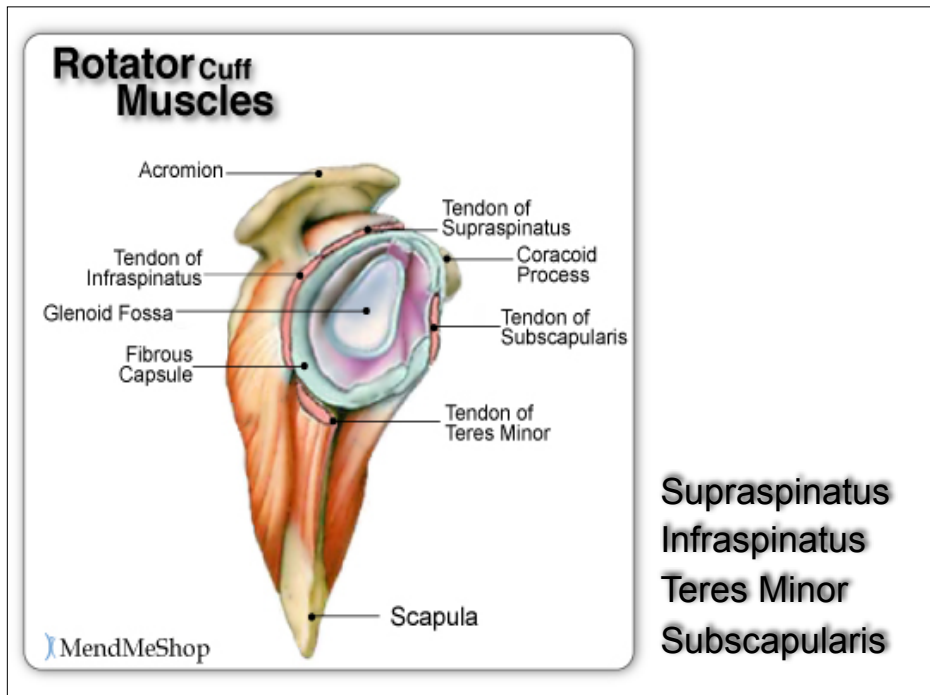
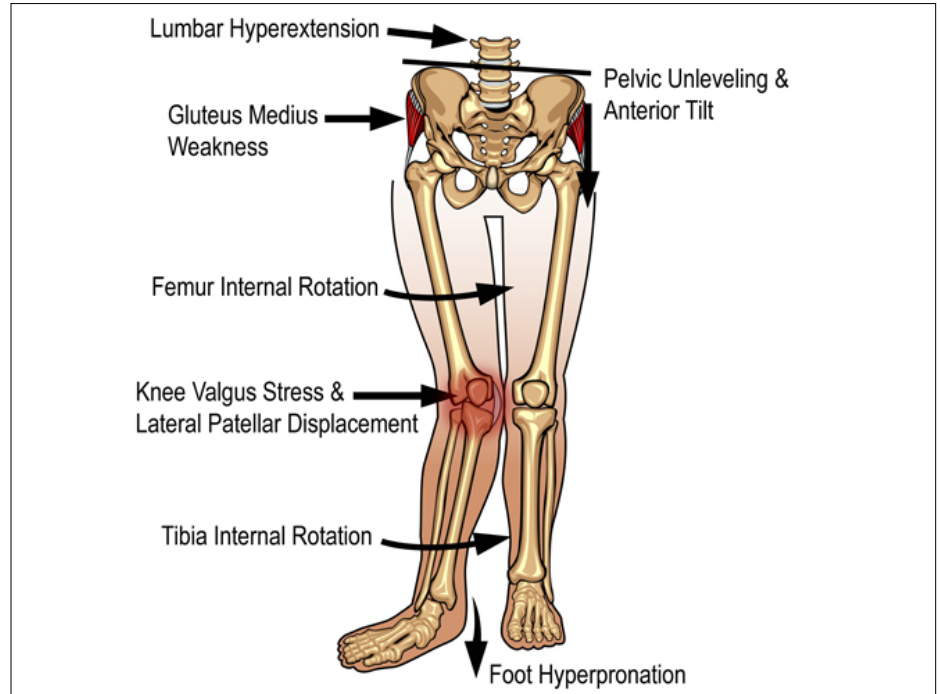


Who do you want Pitching for You in the World Series?

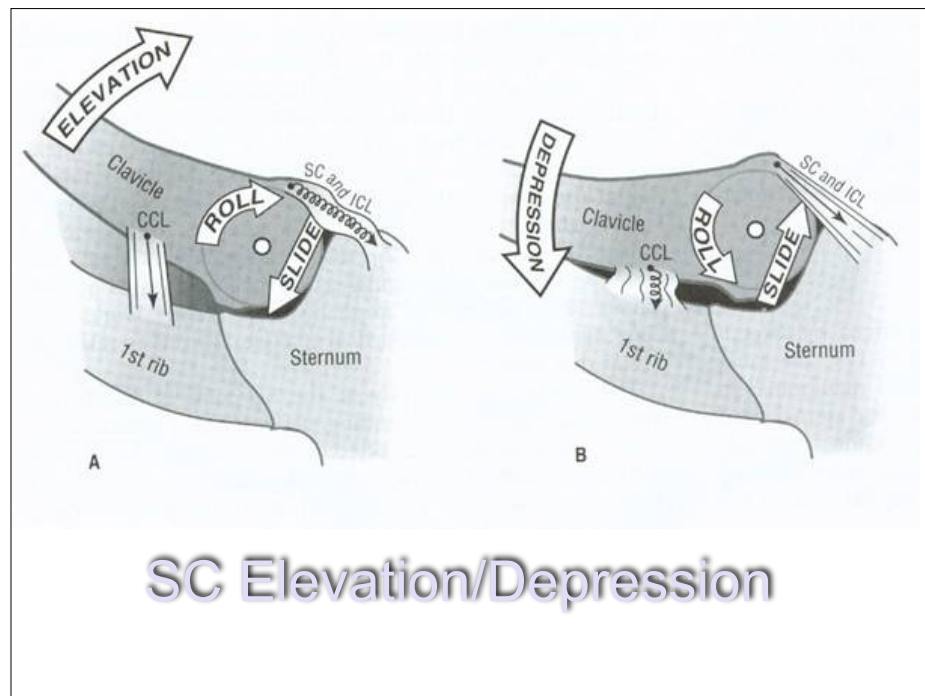
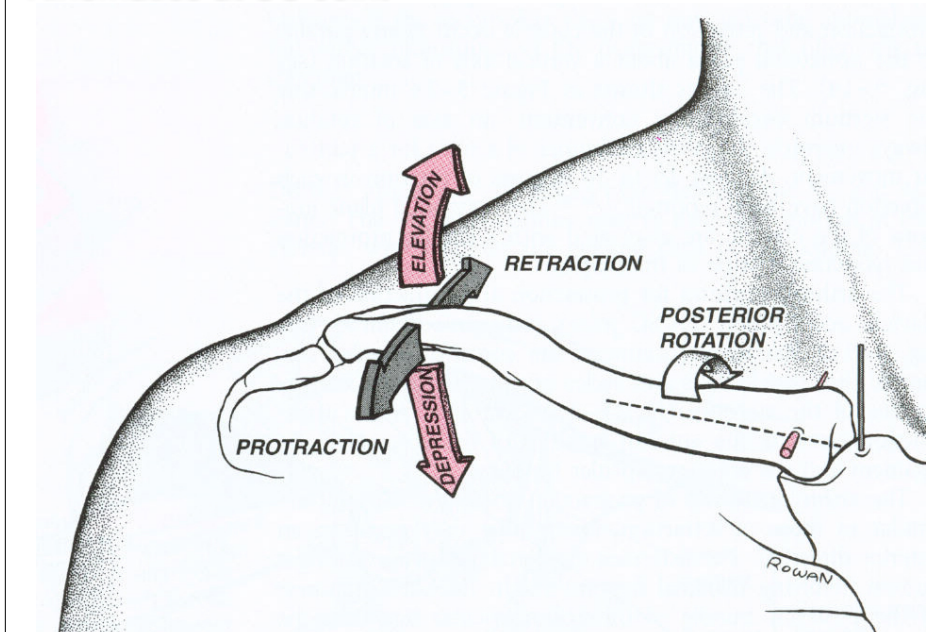


FOR CUBS FANS: The world series is that series you just played in that the Cardinals so graciously allowed you to attend for one year only. Don't get used to it.





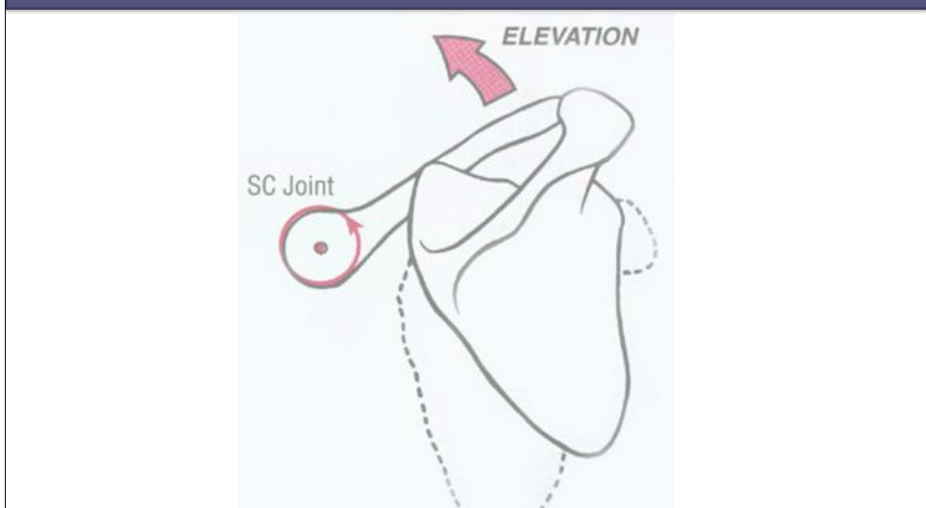
Kinematics at SC Joint



SC Elevation/Depression

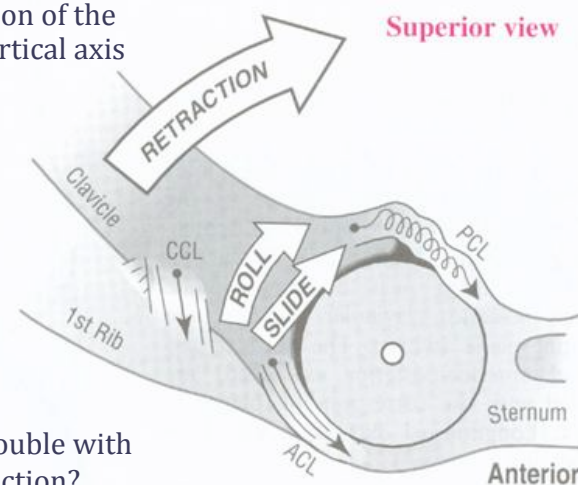
How does SC joint motion affect glenohumeral motion?

What are the effects observed in orthopedic exam?



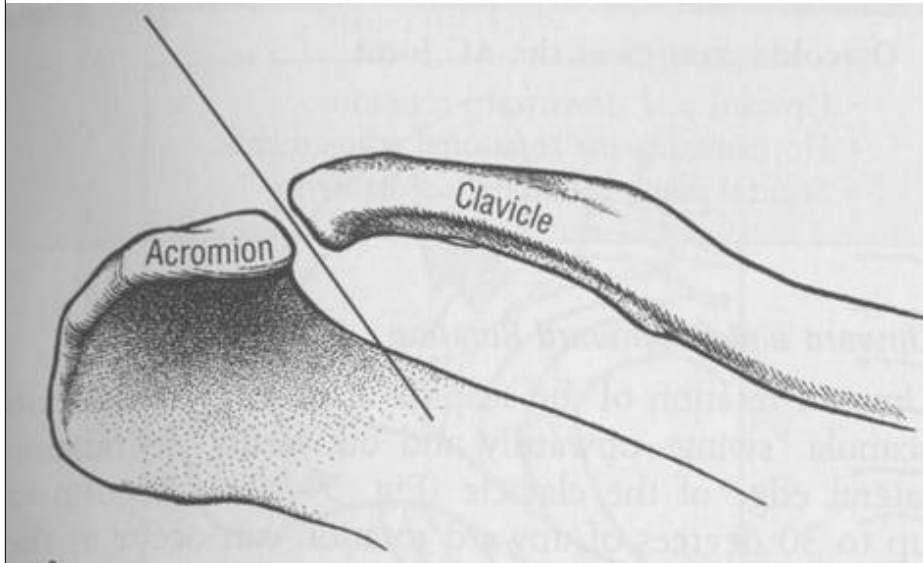
SC Protraction & Retraction

Protraction and retraction of the clavicle occur about a vertical axis of rotation.



Do most patients have trouble with Retraction or Protraction?

Kinematics at AC Joint



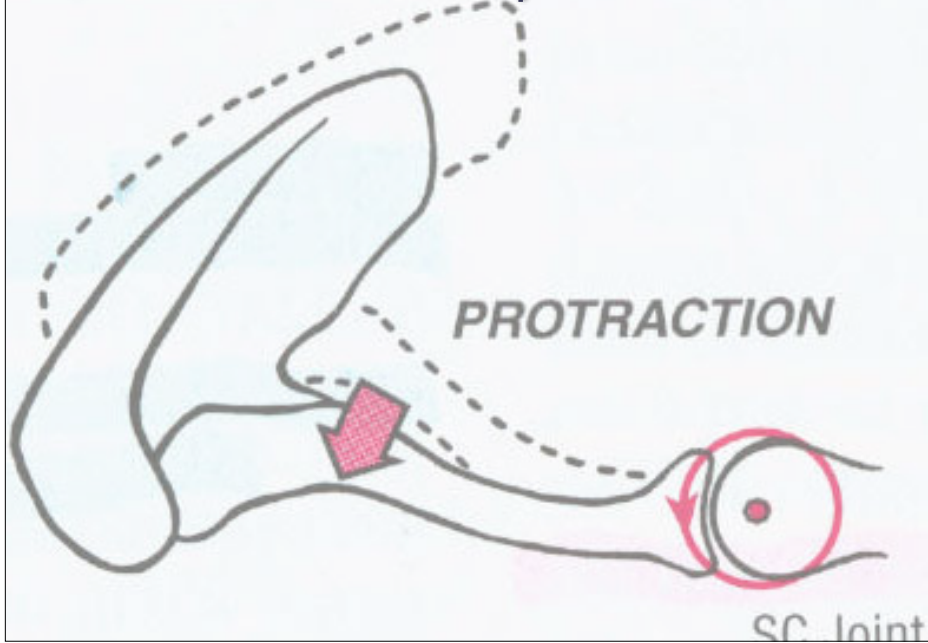
Kinematics at the Scapulothoracic Joint

Elevation/Depression
Protraction/Retraction
Upward Rotation/Downward Rotation

Kinematics at the Scapulothoracic Joint

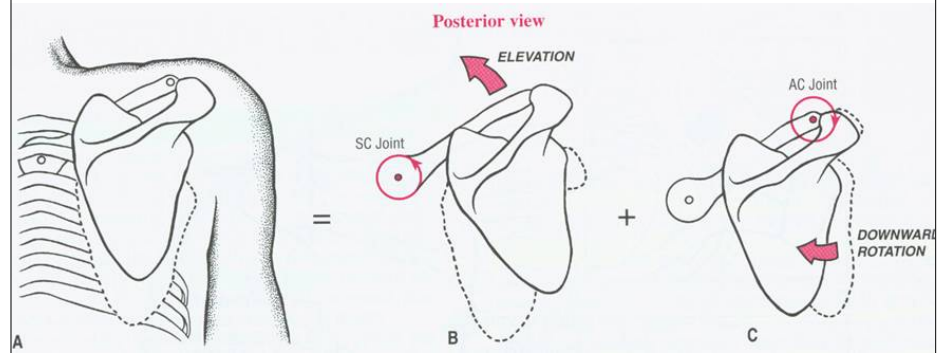
Elevation/Depression
Protraction/Retraction
Upward Rotation/Downward Rotation

Kinematics at the Scapulothoracic Joint



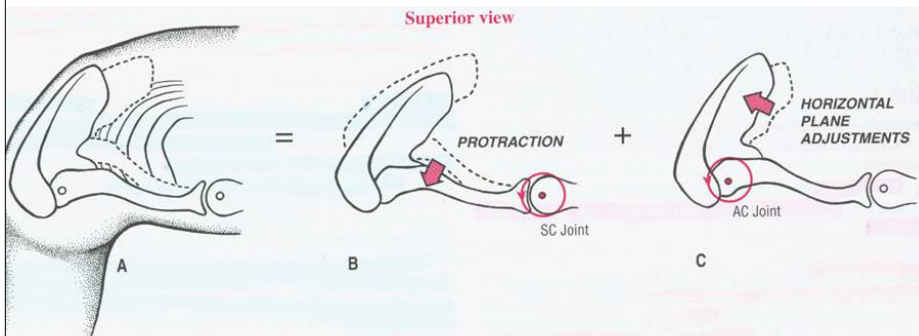
Kinematics at the Scapulothoracic Joint

Elevation/Depression
Protraction/Retraction
Upward Rotation/Downward Rotation



Scapular elevation occurs as a composite of SC and AC joint rotations.

Scapulo-thoracic Rhythm



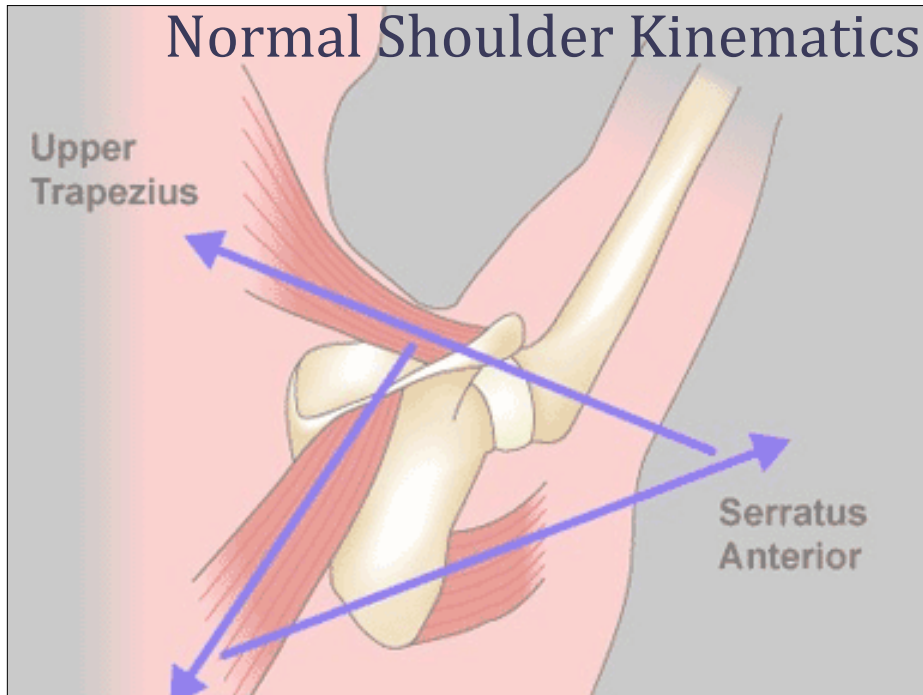


The Shoulder Dysfunction Continuum

Scapular Dyskinesia
Anterior Impingement Syndrome
Rotator Cuff Tear
Rotator Cuff Rupture



Normal Shoulder Kinematics



“SICK” Scapula

Scapular malposition

Inferior angle prominence

Coracoid tenderness/malposition

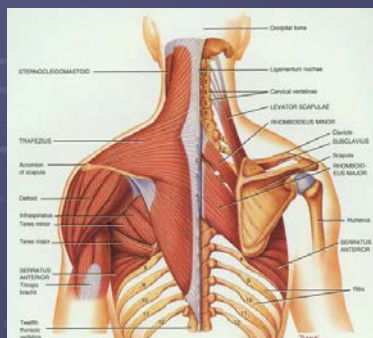
Dyskinesis.



Scapular Dyskinesis (SD)

Tightness:

- Pec
- Biceps (short head)



Weakness:

- Lower trapezius
- Serratus anterior

Alternate Causes of SD

Neurologic

- Cervical radiculopathy
- Peripheral neuropathy
- Injury to the spinal accessory nerve, **long thoracic nerve**, or suprascapular nerve

Joint Pathology

- AC separation
- A/C instability
- A/C arthrosis
- Labral injury
- Glenohumeral internal derangement
- Glenohumeral instability
- Biceps tendinitis
- Prior clavicle or scapula fracture.

SD Symptoms??

1. Pain in the anterior or posterosuperior aspect of the shoulder
2. May radiate inferiorly toward the lateral deltoid or superiorly into the trapezius region
3. Pain over the coracoid (pec minor tightness)

Van Cant, Joachim, Pitance, Laurent, Feipel, Véronique. Hip abductor, trunk extensor and ankle plantar flexor endurance in females with and without patellofemoral pain. **Journal of Back & Musculoskeletal Rehabilitation** 2017, Vol. 30 Issue 2, p299-9p.

Scapular Dyskinesia

Webinar

Evaluation

- Scapulohum
- Quadruped Neck
- Lateral Scapula...
- Scapular Dyskin...
- SCK Scapula

Management

- STM- Upper Trap...
- STM- Pec Minor
- STM- Biceps Bra...
- Mobilization Sc...

Exercises

Current

- Trapezius Stret...
- YTWL Scapular D...

Upcoming

- Low Row
- Brugger with Ba...

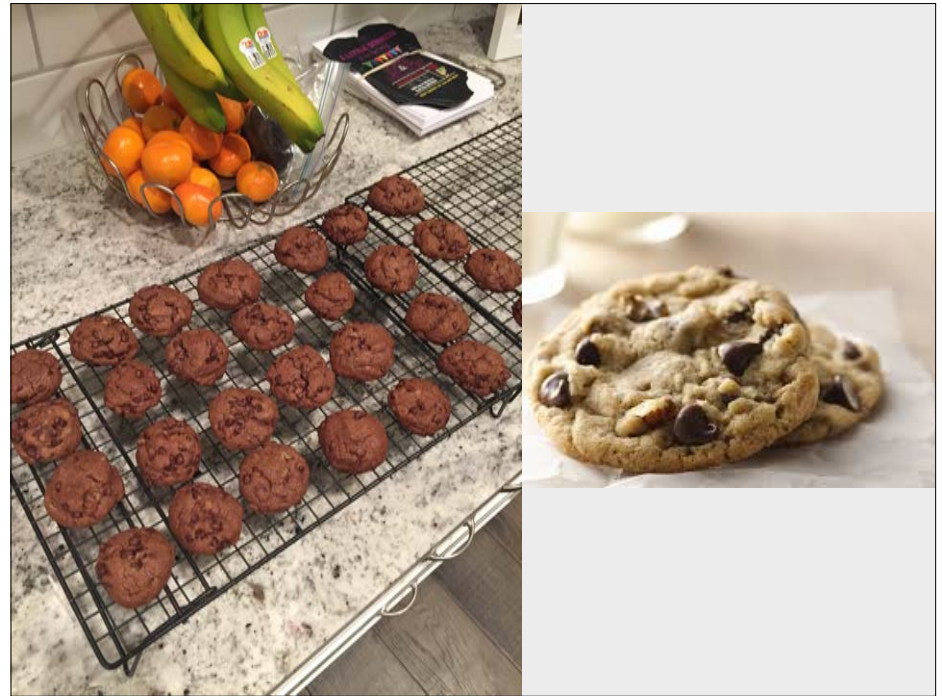
Chocolate Chip Cookies

Here's America's favorite cookie. You'd better bake a double batch because they will disappear in no time. For a wonderfully decadent variation, try the White Chocolate-Macadamia Cookies below.

PREP: 15 MINUTES BAKE: 10 MINUTES PER BATCH
MAKES ABOUT 36 COOKIES

1 1/4 cups all-purpose flour	1/4 cup granulated sugar
1/2 teaspoon baking soda	1 large egg
1/2 teaspoon salt	1 teaspoon vanilla extract
1/2 cup butter or margarine (1 stick), softened	1 package (6 ounces) semisweet chocolate chips (1 cup)
1/2 cup packed light brown sugar	1/2 cup walnuts, chopped (optional)

1. Preheat oven to 375°F. In small bowl, combine flour, baking soda, and salt.
2. In large bowl, with mixer at medium speed, beat butter and brown and granulated sugars until light and fluffy. Beat in egg and vanilla until well combined. Reduce speed to low; beat in flour mixture just until blended. With wooden spoon, stir in chocolate chips and walnuts, if using.
3. Drop dough by rounded tablespoons, 2 inches apart, on two ungreased cookie sheets. Bake until golden around edges, 10 to 12 minutes, rotating cookie sheets halfway through.



Lateral scapular slide test



SD Dynamic Assessment

- Limited IR
- Scapulohumeral rhythm test
- Scapular dyskinesis test.



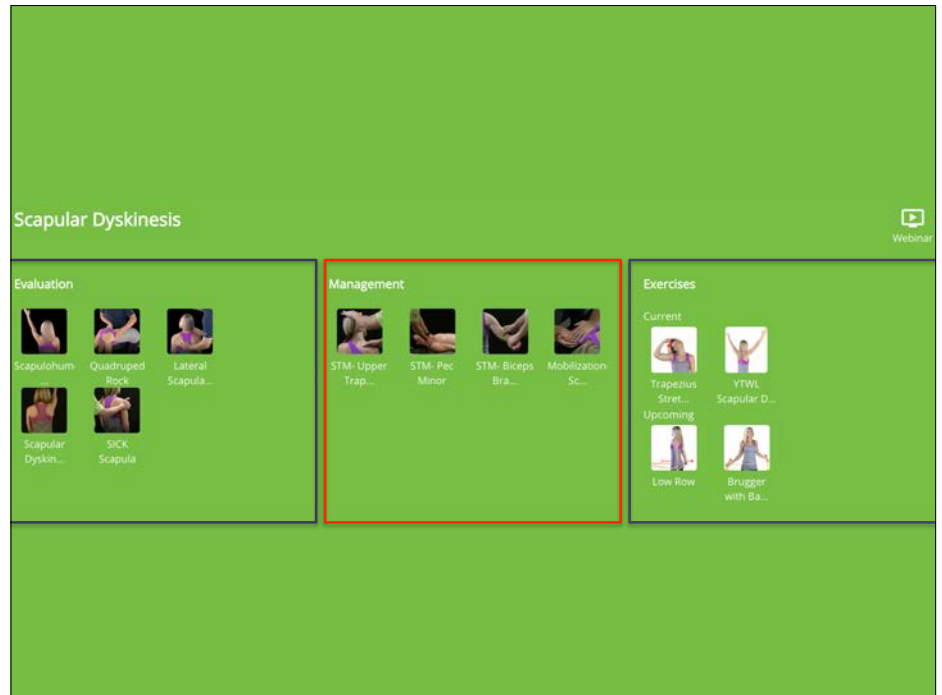
Scapular Dyskinesis Test



Quadruped Rock Test



A 34 year old male walks in your office with shoulder pain. It is localized to the lateral and anterior aspect of his right upper arm. It began 1 year ago after starting to play park league softball. Its gotten better and worse with activity. He has a prior history of shoulder pain in college where he was a quarterback at Notre Dame. There is no paresthesia in the arm. It is a 7/10 with a throwing motion, but painless at rest.



STM- Biceps



STM- Pec Minor



STM- Upper Trapezius
















Scapular Mobilization



Scapular Dyskinesia

Webinar

Evaluation	Management	Exercises
 Scapulothoracic  Quadrupedal Neck  Lateral Scapula  Scapular Dyskinesia  SICK Scapula	 STM- Upper Trap...  STM- Pec Minor  STM- Biceps Bra...  Mobilization Sc...	<p>Current</p>  Trapezius Stret...  YTWL Scapular D... <p>Upcoming</p>  Low Row  Brugger with Ba...

Scapular Dyskinesia Phase 1: YTWL Scapular Depression

Stand with your straight arms raised above your head in a "Y" position. Squeeze your shoulder blades together and downward throughout the following sequence of movements. Lower your straightened arms to shoulder level, into a "T" position. Next bend your elbows so that your fingers are pointing straight up while slightly lowering your elbows to make a "W". Finally, while keeping your elbows bent 90 degrees, lower your arms to your sides so that your elbows are touching your ribs to form an "L" on each side and squeeze. Hold each position for 1-2 seconds and repeat 3 sets of 10 repetitions, twice per day or as directed





Scapular Dyskinesis Phase 1: Trapezius Stretch

Place your right arm behind your back and grasp your right wrist with your left hand. Laterally flex your neck to move your left ear toward your left shoulder as you pull your right arm. Against the resistance of your left hand, attempt to shrug your right shoulder for seven seconds. Relax and stretch your right arm downward as you bend your neck further toward the left. "Lock in" to this new position and perform three contract/relax cycles on each side twice per day or as directed.



Scapular Dyskinesis Phase 1: CornerPec Stretch

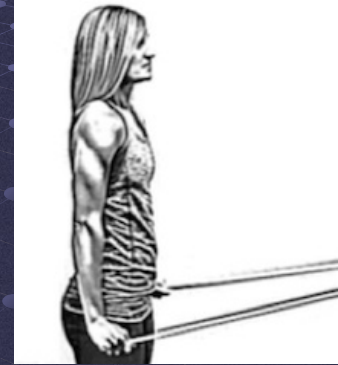
Begin standing, facing a corner with your palms on the walls above head level. Step toward the corner and "lean in" to stretch your chest muscles. Against the resistance of the wall, attempt to push your hands into the wall and toward each other for 7 seconds. Relax and "lean in" to increase the stretch. Lock into this new position and repeat 3 contract/relax cycles, twice per day or as directed.





Scapular Dyskinesis Phase 1: Low Row

Attach the center of an elastic exercise band to a doorknob or other sturdy object in front of you. Grasp one end of the band in each hand and with straight arms at your side, stretch the band backwards. Keep your palms facing backward and arms pointed straight down throughout the exercise. Return to neutral and repeat 3 sets of 10 repetitions daily, or as directed.



Scapular Dyskinesis Phase 1: Brugger with Band

Begin sitting or standing with an elastic exercise band wrapped and secured around your palms. Begin with your arms at your side, elbows bent, forearm's pointing forward. Move your hands apart from each other to maximally stretch the band while simultaneously rotating your palms out, straightening your arms, and pinching your shoulder blades together as your hands move behind your hips. Return to the start position and repeat 3 sets of 10 repetitions daily, or as directed.





Golz A, Mica MC, Salazar D, Pellegrini A, Tonino P. Comparison of Scapular Mechanics After Activity With and Without a Targeted Compression Garment. *J Surg Orthop Adv.* 2019 Spring;28(1):18-23.

Ghaderi, Fariba, Jafarabadi, Mohammad Asghari, Javanshir, Khodabakhsh. The clinical and EMG assessment of the effects of stabilization exercise on nonspecific chronic neck pain: A randomized controlled trial. *Journal of Back & Musculoskeletal Rehabilitation* 2017, Vol. 30 Issue 2, p211-9p.



Analysis of Motor Control in Patients With Low Back Pain: A Key to Personalized Care?

In the treatment of low back pain (LBP), exercise that targets motor control is commonly used, with some success.^{10,42,23} Motor control can be defined as the way in which the nervous system controls posture and movement to perform a given motor task, and includes consideration of all the associated motor, sensory, and integrative processes. Here, we use the term *motor control exercise* (MCE) to refer to exercise that aims to change the way a person controls his or her body (including posture/alignment, have undertaken different comparisons, muscle activation) to modify MCE is better than minimal intervention in reducing pain in the short, intermediate, and long term, and in reducing

disability at long-term follow-up.⁴⁷ The pooled effect size was approximately 14% for pain and approximately 11% for disability when compared to minimal intervention.⁴⁸ Effects were better than those of many other interventions, although they were still modest and only better than other exercise interventions in the short term.⁴⁹

Recent systematic reviews provide contrasting evidence for comparison of effects of MCE and general exercise on disability: one reported better outcomes for MCE,¹⁰ and another concluded that there is low-to-high-quality evidence that MCE is not clinically more effective than other exercises.²³ Of note, most large clinical trials with modest effects investigated the application of MCE in a standardized manner to a heterogeneous group of patients with nonspecific LBP. This contrasts with the prevailing clinical view that treatment effects are larger when treatments are targeted to the right patients, at the right time, and in a tailored, individualized manner. This has been a topic of considerable research and clinical attention.

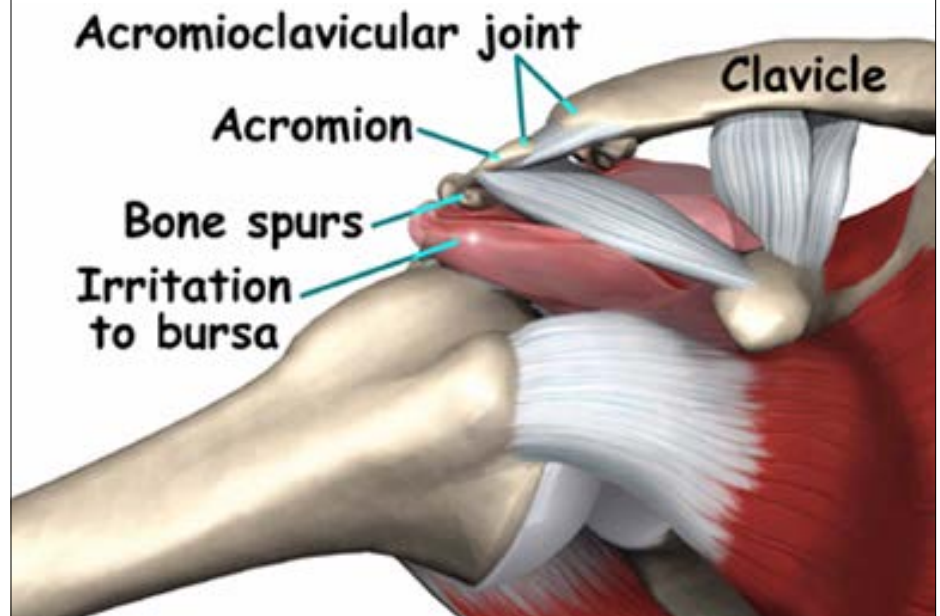
It has been suggested that specific patient characteristics may predict who will

SYNOPSIS: Motor control exercise has been shown to be effective in the management of low back pain (LBP). However, the effect sizes for motor control exercise are modest, possibly because studies have used a one-size-fits-all approach, while the literature suggests that patients may differ in presence or type of motor control issues. In this commentary, we address the question of whether consideration of such variation in motor control issues might contribute to more personalized motor control exercise for patients with LBP. Such an approach is plausible, because motor control changes may play a role in persistence of pain through effects on tissue loading that may cause nociceptive afference, particularly in the case of peripheral sensitization. Subgrouping systems used in clinical practice, which comprise

motor control aspects, allow reliable classification that is, in part, aligned with findings in studies on motor control in patients with LBP. Motor control issues may have heuristic value for treatment allocation, as the different presentations observed suggest different targets for motor control exercise, but this remains to be proven. Finally, clinical assessment of patients with LBP should take into account more aspects than motor control alone, including pain mechanisms, musculoskeletal health, and psychosocial factors, and may need to be embedded in a stratification approach based on prognosis to avoid undue diagnostic procedures. *J Orthop Sports Phys Ther* 2019;49(6):380-388. *Epub* 12 Jun 2018. doi:10.2519/jospt.2019.7916

KEY WORDS: back pain, diagnostics, exercise, postural control, subgrouping

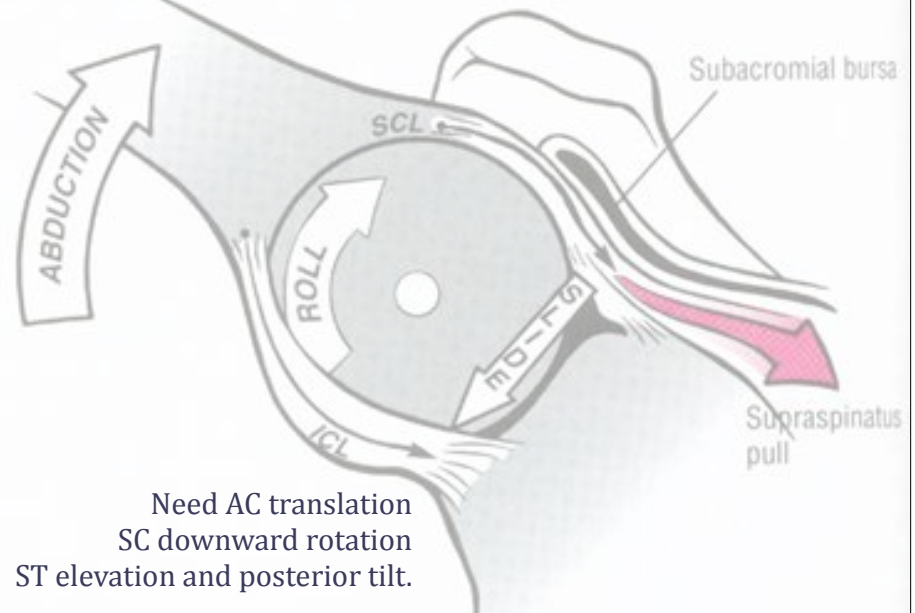
SAIS



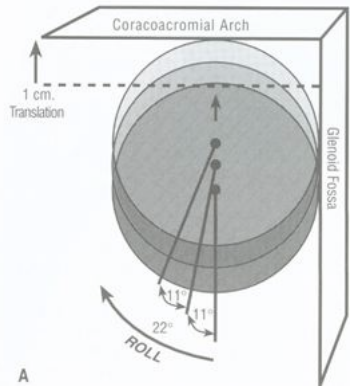
Kinematics at the GH Joint



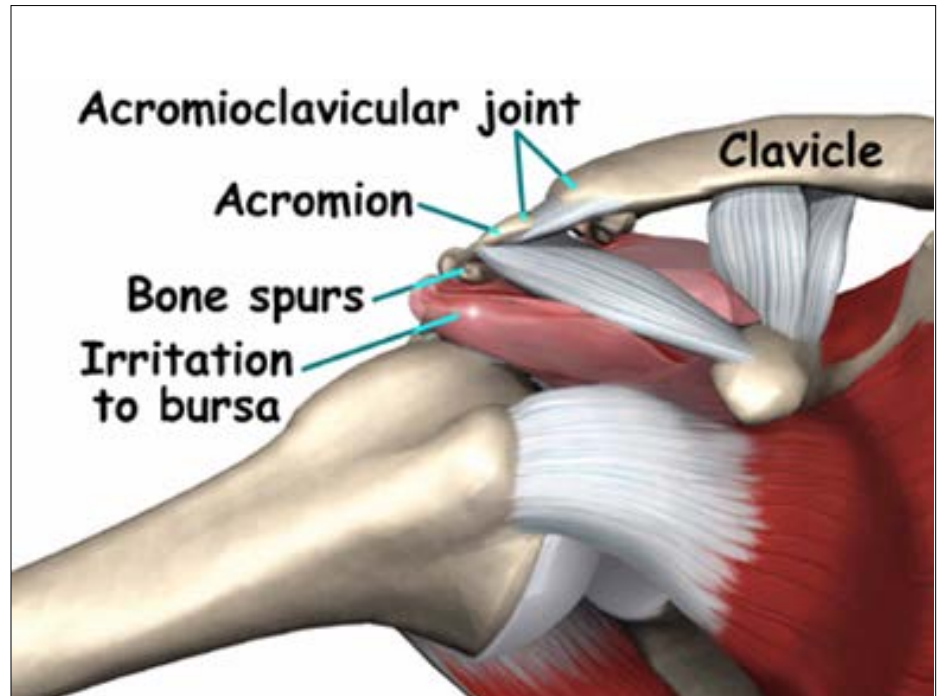
Glenohumeral Abduction-120°



Importance of Roll & Slide Arthokinematics

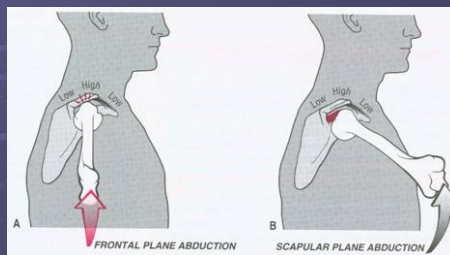


An adult-sized humeral head that is rolling up a glenoid fossa without a concurrent inferior slide would translate through the **10mm** coracoacromial space after only **22°** of abduction.



Scapular vs. Frontal Plane Abduction

● 35° anterior to the frontal plane is generally a more functional and natural movement.



● Internal Rotation of the arm decreases Subacromial space due to the greater tubercle of the humerus.

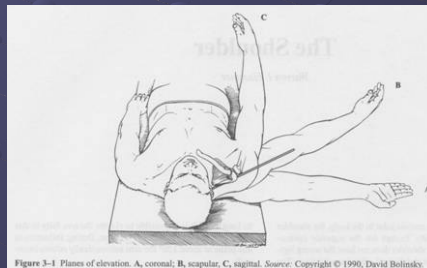
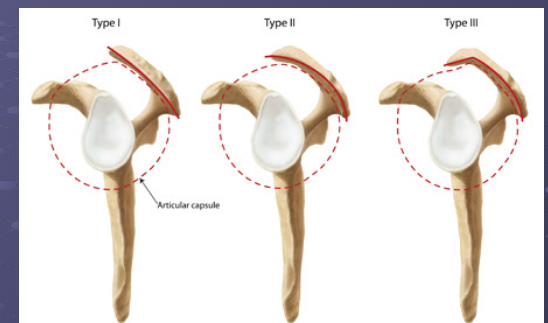


Figure 3-1 Planes of elevation. A, coronal; B, scapular; C, sagittal. Source: Copyright © 1990, David Bolinsky

Acromion Morphology

20% Flat" (type I)
55% "Curved" (type II)
25% "Beaked" (type III)



Thomas R, Berquist H. MRI of the Musculoskeletal System 6th edition 2012, by Lippincott Williams & Wilkins

SAIS Sport/ Occupation Risks

- swimming
- baseball
- volleyball
- weightlifting
- tennis
- rowing
- archery
- carpenters
- electricians
- painters
- wall paper hangers
- cleaning windows
- washing/ waxing cars

Neer Stages

- Stage I
 - younger patients
 - acute but reversible pain, swelling and hemorrhage
- Stage II
 - middle age patients who have suffered with SAIS for months or years
 - tendonitis and permanent fibrosis
- Stage III
 - prolonged irritation that has caused significant tendon degeneration
 - irreversible mechanical disruption of the rotator cuff tendon

SAIS Symptoms

- Sharp pain during overhead activity or while reaching behind the back to fasten a bra or close a zipper.
- May develop a constant ache that is present at rest.
- Nighttime pain is common, often disrupting sleep. Sleeping on the affected side may exacerbate pain



SAIS Clinical Evaluation

SYMPTOMS

Limited & "Painful" ROM

Forced passive horizontal adduction/ Cross body stretch

"Painful Arc" (60-120 abduction)

CLINICAL TESTS

Hawkins-Kennedy test

Neer test

Empty can test

FUNCTIONAL TESTS

Scapular assistance test

Shoulder Anterior Impingement Syndrome

Evaluation

- Neer Test
- Hawkins-Kenned...
- Empty Can Test
- Scapular Assist...
- R/C Isolated St...
- Scapular Retrac...
- Scapular Reposi...

Management

- STM- Supraspina...
- STM- Infraspin...
- STM- Teres Mino...
- STM- Subscapula...
- Mobilization G...

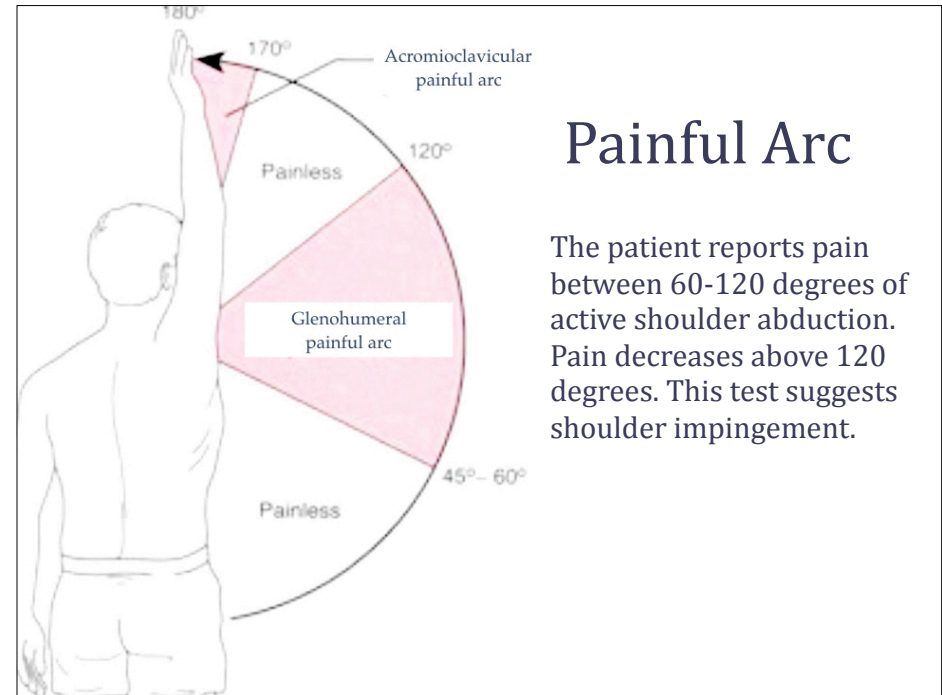
Exercises

Current

- Codman Pendulum
- YTWL Scapular D...
- Glenohumer In...
- Corner Pectoral...

Upcoming

- Low Row
- Brigger with Ba...



Hawkins- Kennedy

Seated patient's arm placed into 90 degrees of forward flexion with 90 degrees of elbow flexion. Clinician stands in front and stabilizes patients scapula with one hand while gradually rotating patients arm downward, into internal rotation. Used to assess for impingement as well as the integrity of the rotator cuff tendons and glenoid labrum.

Neer Test

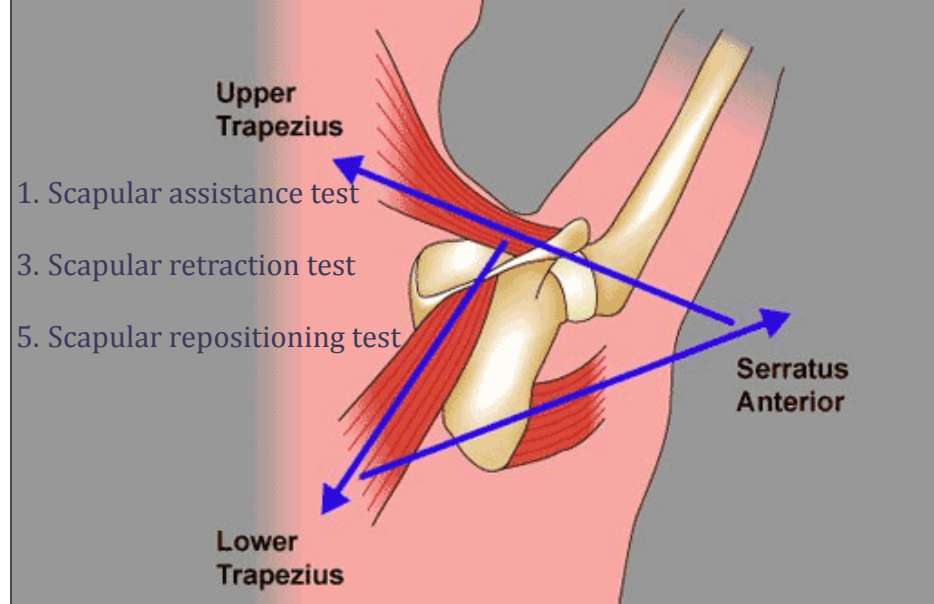
Clinician stands behind patient, stabilizes the scapula with one hand and grasps the patients elbow with the other hand, moving their straightened arm into forward flexion until pain is reported. Used to assess for impingement as well as the integrity of the rotator cuff tendons and glenoid labrum.

Empty Can

Aka Jobe Test Patients straight arm placed at 90 degrees of elevation and 45 degrees anterior to the scapular plane. Patient points thumb down (as to empty a can). Clinician stabilizes scapula and provides downward pressure on the patients outstretched arm. Pain or weakness signifies possible rotator cuff pathology involving the supraspinatus.



SAIS Functional Maneuvers



Scapular Assistance Test

Patient performs active elevation of their straightened arm, in a scapular plane, until pain is felt. This is then compared to discomfort from the same maneuver when the clinician "assists" scapular motion. Assistance for the second part of this assessment is performed by the clinician grasping the patients scapula and rotating the inferior angle upward and laterally during arm elevation. The clinician should also pull posteriorly on the superior scapular border. Impingement related to muscle imbalance will likely improve with "assistance".



Scapular Retraction Test

This test is a comparison between unassisted and assisted movement. First, the patient abducts their arm in a scapular plane and notes symptoms. The patient then repeats this motion while the clinician assists with retraction and posterior tilt of the scapula (pushing the inferior angle of the scapula toward the spine). Relief of impingement symptoms and increased rotator cuff strength is a positive test, suggesting that scapular dyskinesis is contributing to the patient's rotator cuff impingement symptoms.



Scapular Repositioning Test

This test is performed with the patient consciously focusing on holding their scapula in a posterior tilted and depressed position (pushing the inferior angle of the scapula toward the spine) while abducting their arm in a scapular plane. A positive test results in improved rotator cuff strength and decreased impingement symptoms when compared to "natural" motion. A positive test suggests that scapular dyskinesis is contributing to the patient's rotator cuff impingement symptoms.



Shoulder Anterior Impingement Syndrome

Evaluation



Management



Exercises



A 34 year old male walks in your office with shoulder pain. It is localized to the lateral and anterior aspect of his right upper arm. It began 1 year ago after starting to play park league softball. Its gotten better and worse with activity. He has a prior history of shoulder pain in college where he was a quarterback at Notre Dame. There is no paresthesia in the arm. It is a 7/10 with a throwing motion, but painless at rest.



9/22/2017

Dr. Justin Rittenhouse
1 Over There
Highland, IL 62249

RE: Initial visit summary for Jane Sample

Dear Dr. Justin Rittenhouse:

Your patient, Jane Sample, presented to my office on 9/22/2017 with cervical spine related symptoms. Here is a brief summary of their initial visit.

The history & physical revealed findings consistent with a diagnosis of Cervical Segmental Joint Restriction.

My treatment recommendations include joint manipulation, therapy modalities, myofascial release and therapeutic exercise.

The patient will be treated 3 times per week for 2 weeks at which point I would expect in excess of 75% improvement.

I will provide you with updates on the progress of your patient. If you would like any additional information, please do not hesitate to contact my office. Once again, thank you for allowing me to participate in the care of your patient.

Sincerely,

Brandon Steele

STM- Infraspinatus



STM- Subscapularis



STM- Supraspinatus



STM- Teres Minor



STM- Mobilization GH Joint



Shoulder Anterior Impingement Syndrome

Evaluation	Management	Exercises
Neer Test Hawkins-Kenned... Empty Can Test Scapular Assist... R/C Isolated St... Scapular Retrac... Scapular Reposi...	STM-Supraspina... STM-Infraspin... STM-Teres Mino... STM-Subscapula... Mobilization G...	Current Codman Pendulum YTWL Scapular D... Glenohumer In... Corner Pectoral... Upcoming Low Row Brigger with Ba...

Anterior Impingement Phase 1: YTWL Scapular Depression

Stand with your straight arms raised above your head in a "Y" position. Squeeze your shoulder blades together and downward throughout the following sequence of movements. Lower your straightened arms to shoulder level, into a "T" position. Next bend your elbows so that your fingers are pointing straight up while slightly lowering your elbows to make a "W". Finally, while keeping your elbows bent 90 degrees, lower your arms to your sides so that your elbows are touching your ribs to form an "L" on each side and squeeze. Hold each position for 1-2 seconds and repeat 3 sets of 10 repetitions, twice per day or as directed



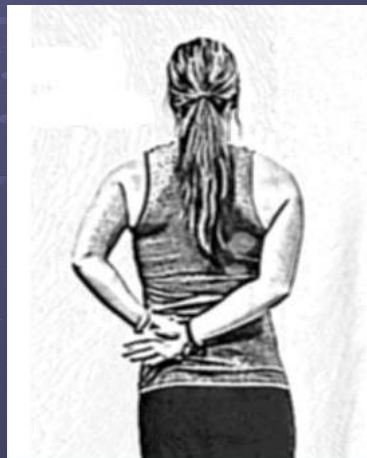
Anterior Impingement Phase 1: CornerPec Stretch

Begin standing, facing a corner with your palms on the walls above head level. Step toward the corner and "lean in" to stretch your chest muscles. Against the resistance of the wall, attempt to push your hands into the wall and toward each other for 7 seconds. Relax and "lean in" to increase the stretch. Lock into this new position and repeat 3 contract/ relax cycles, twice per day or as directed.



Anterior Impingement Phase 1: Glenohumeral Internal Rotation

Begin sitting with good posture. Place the affected arm behind your back and reach towards your opposite hip. Using the unaffected arm, gently pull the wrist of your affected arm further toward your opposite hip. A stretch should be felt in the affected shoulder. Pull gently to the point of tightness ten times. Each pull should be slow and stopped if you feel a sharp pain. This stretch should be performed for ten repetitions, once per hour or as directed.



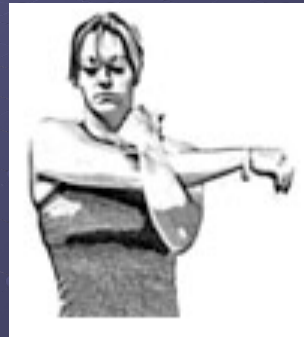
Anterior Impingement Phase 1: Codman Pendulum

Lean over a table using the uninvolved arm for support as shown. Allow the involved arm to hang freely. Use your torso to swing your involved arm in a clock-wise circle for 50 repetitions. Repeat in a counter-clockwise circle for 50 repetitions. Perform 50 repetitions in each direction twice per day or as directed.



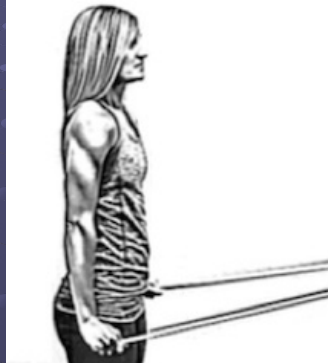
Anterior Impingement Phase 1: Cross Body Stretch

While sitting or standing, bring your involved arm across the front of your upper chest as shown in the picture. Hold the affected elbow with your uninvolved arm and gently pull across your chest until a stretch is felt in the back of your shoulder. Relax and stretch the arm further across your body. Repeat three stretches, twice per day or as directed.



Anterior Impingement Phase 1: Low Row

Attach the center of an elastic exercise band to a doorknob or other sturdy object in front of you. Grasp one end of the band in each hand and with straight arms at your side, stretch the band backwards. Keep your palms facing backward and arms pointed straight down throughout the exercise. Return to neutral and repeat 3 sets of 10 repetitions daily, or as directed.



Anterior Impingement Phase 1: Brugger with Band

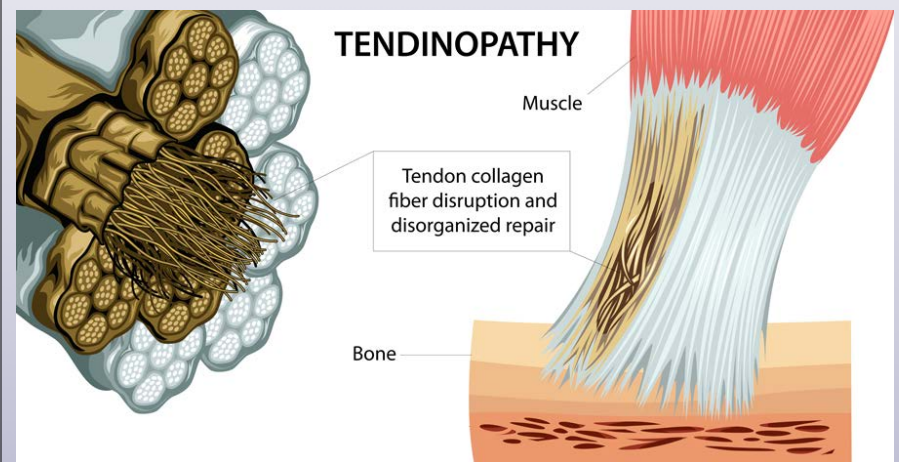
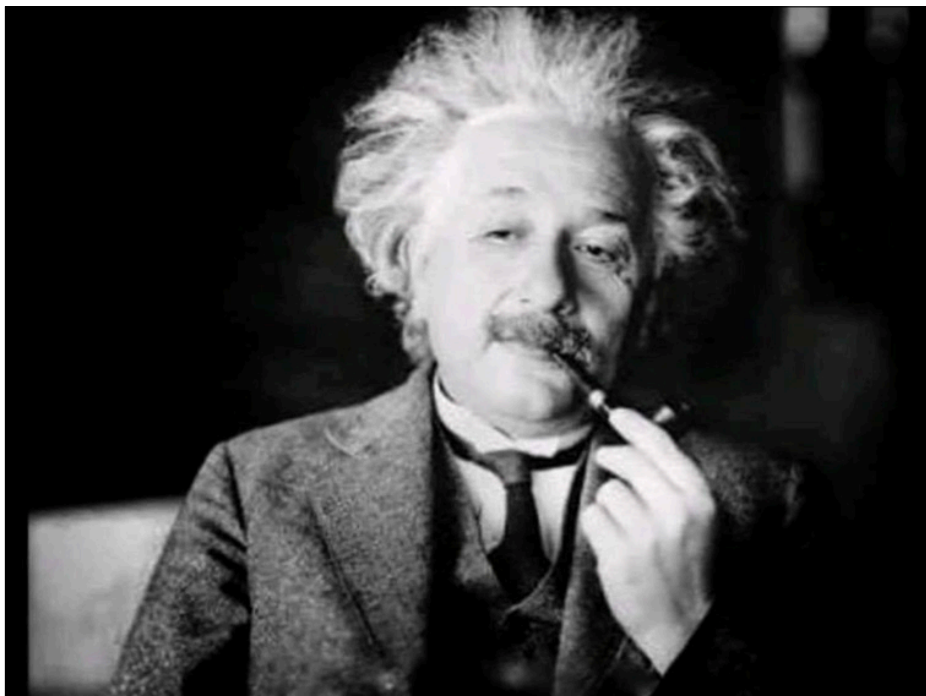
Begin sitting or standing with an elastic exercise band wrapped and secured around your palms. Begin with your arms at your side, elbows bent, forearm's pointing forward. Move your hands apart from each other to maximally stretch the band while simultaneously rotating your palms out, straightening your arms, and pinching your shoulder blades together as your hands move behind your hips. Return to the start position and repeat 3 sets of 10 repetitions daily, or as directed.



Rotator Cuff Pathology



"IT'S A TORN ROTATOR CUFF-- YOU CAN FORGET ABOUT THROWING THUNDERBOLTS FOR AWHILE..."



Hypertrophic effects of concentric versus eccentric muscle actions: A systematic review and meta-analysis.

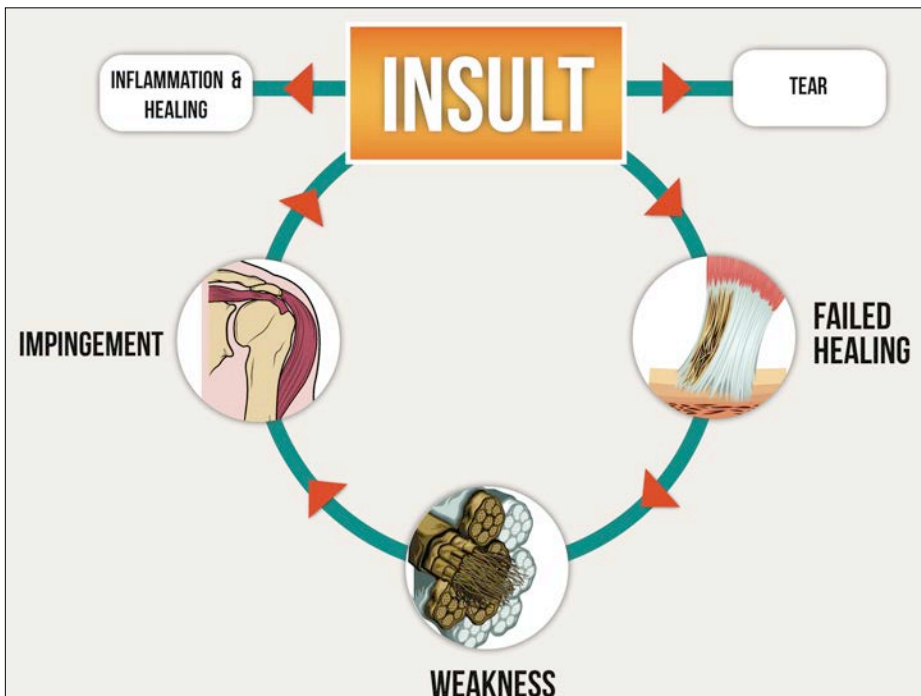
J Strength Cond Res. 2017 May 5

Schoenfeld BJ1, Ogborn D, Vigotsky AD, Franchi M, Krieger JW.

J Back Musculoskelet Rehabil. 2017 Apr 14. doi: 10.3233/BMR-150337. [Epub ahead of print]

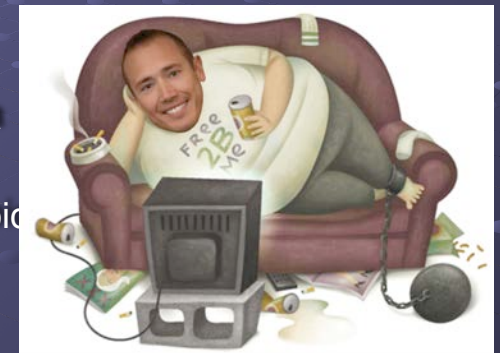
Muscle function and size in the lumbar spine before and after a four week exercise intervention.

Fulford J1, Juroskova V2, Meakin JR3, Barker AR

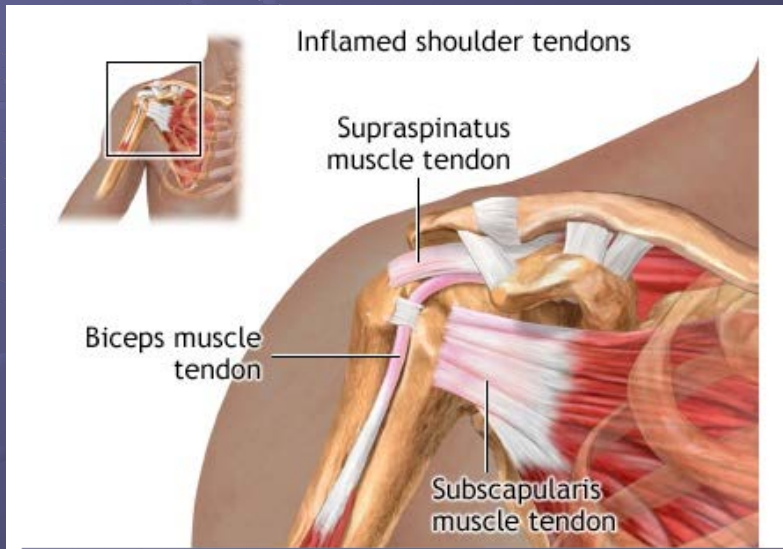


RC Predisposing Factors

- Dyskinesia/ Impingement
- obesity
- hypercholesterolemia
- genetics
- history of corticosteroid injection
- smoking
- hypovascularity



Codman's Critical Zone



RC Tear Presentation

Acute

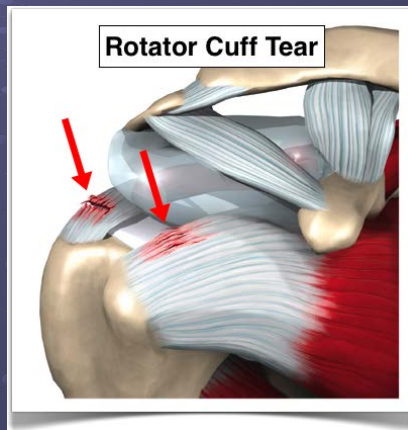
- “Tearing” or “snapping” feeling
- Severe pain and weakness

Chronic

- Older patient
- Silent/ slow onset pain and weakness
- Variable symptoms
- Crepitus

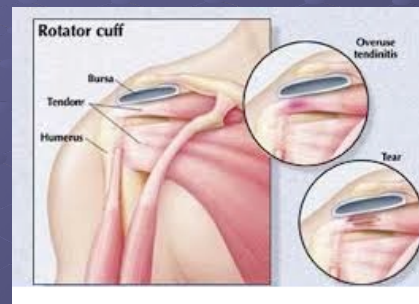
RC Tear Presentation

- Anterolateral shoulder pain
- Provoked by overhead activity
- Worse at night

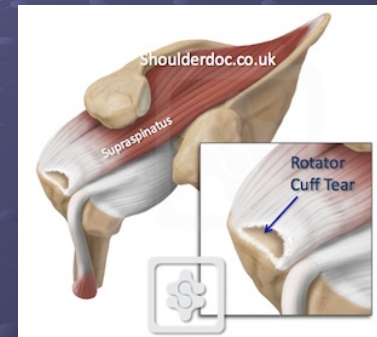


Partial vs Full Thickness

Partial Tear



Full Thickness Tear



Procedure: 03/15/17 07:16 MRI SHOULDER W/O CONTRAST LFT

MRI OF THE LEFT SHOULDER WITHOUT CONTRAST:

Chief complaint/Indication: Left shoulder pain for 6-months. Decreased range of motion.

COMPARISON: No comparison x-rays.

TECHNIQUE: Multisequence and multiplanar imaging performed.

FINDINGS: No fracture or bone contusion. Arthritic changes acromioclavicular joint. No medial arch encroachment. There are some arthritic changes in the humeral head. Long head of the biceps tendon is intact. Glenoid labrum is intact. Partial thickness tear of the supraspinatus tendon. Moderate cuff tendinitis and peritendinitis. Joint effusion. No muscle tear.

IMPRESSION:

1. UNDERSURFACE PARTIAL THICKNESS TEAR OF THE SUPRASPINATUS TENDON.
2. MODERATE CUFF TENDINITIS AND PERITENDINITIS.
3. MILD ARTHRITIS LEFT SHOULDER.

READ BY: HOLDENER, GREGORY

INTERPRETER: HOLDENER, GREGORY

Rotator Cuff Strain/ Tendinopathy
Evaluation
<ul style="list-style-type: none"> * Drop Arm Sign * Empty Can Test * R/C Isolated Strength Test
Cluster
<ul style="list-style-type: none"> * R/C Tear Diagnostic Cluster * Rent Sign
Management
Soft Tissue
<ul style="list-style-type: none"> * STM- Infrapinatus * STM- Subscapularis * STM- Supraspinatus * STM- Teres Minor
Manipulation/Mobilization
<ul style="list-style-type: none"> * Manipulation-Cervical and Thoracic * Mobilization- GH Joint
Phase I exercises
<ul style="list-style-type: none"> * YTWL Scapular Depression * Corner Pectoral Stretch * Glenohumeral Internal Rotation * Codman Pendulum * Low Row * Brugger with Band
Phase II exercises
<ul style="list-style-type: none"> * Eccentric Supraspinatus * Eccentric Scapular Stabilizers * Eccentric Shoulder ER's

Hawkins- Kennedy

- Seated patient's arm placed into 90 degrees of forward flexion with 90 degrees of elbow flexion. Clinician stands in front and stabilizes patients scapula with one hand while gradually rotating patients arm downward, into internal rotation. Used to assess for impingement as well as the integrity of the rotator cuff tendons and glenoid labrum.



Neer Test

- The clinician stands behind patient, stabilizes the scapula with one hand and grasps the patients elbow with the other hand, moving their straightened arm into forward flexion until pain is reported. Used to assess for impingement as well as the integrity of the rotator cuff tendons and glenoid labrum.



RC Isolated Strength Assessment

- **Supraspinatus (Elevation)**
 - Empty can/ Jobe test
 - Full can
- **Infraspinatus & Teres Minor (ER)**
 - Hornblower's Sign/ Patte Test
- **Subscapularis (IR)**
 - Lift off test
 - Bear Hug test
 - Belly Press test

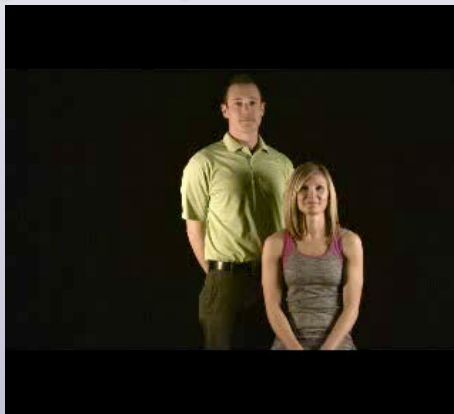
Empty Can (Supraspinatus)

- Aka Jobe Test Patients straight arm placed at 90 degrees of elevation and 45 degrees anterior to the scapular plane. Patient points thumb down (as to empty a can). Clinician stabilizes scapula and provides downward pressure on the patients outstretched arm. Pain or weakness signifies possible rotator cuff pathology involving the supraspinatus.



Full Can (Supraspinatus)

- The patient is seated or standing with the arm outstretched in the scapular plane, thumb up. The clinician applies a downward force to the patients arm. Pain or weakness signifies possible rotator cuff pathology involving the supraspinatus.



Horn Blowers Sign (Infraspinatus/ Teres Minor)

- Aka Patte Test. The patient's elbow is bent to 90 degrees so that their forearm is pointing upward, as though they are holding a horn. The clinician stabilizes the elbow with one hand and attempts to rotate the patient's arm internally while the patient resists with an external rotation counterforce. Pain or weakness is suggestive of teres minor involvement.



Belly Press Test (Subscapularis)

- Aka Napoleon test. The standing patient places their hand on their abdomen and aligns their forearm on a frontal plane (i.e. Napoleon style). The clinician attempts to lift the patient's hand/arm away from their abdomen while the patient resists. Pain or weakness suggests subscapularis involvement.



Bear Hug Test (Subscapularis)

- The patient places the affected hand, palm down on the unaffected shoulder. The clinician attempts to lift the patient's hand upward, off of their shoulder while the patient resists. Pain or weakness is suggestive of subscapularis muscle involvement.



Lift Off Test (Subscapularis)

- The patient is seated or standing and places their hand behind their back, palm facing outward. The clinician applies resistance as the patient attempts to press their hand away from their back against that resistance. Pain or weakness suggests involvement of the subscapularis muscle.



Rent Sign

- Palpation reveals atrophy or retraction of a muscle/ tendon, indicating possible rupture or pathology. May be seen in the supraspinatus in cases of rotator cuff rupture.

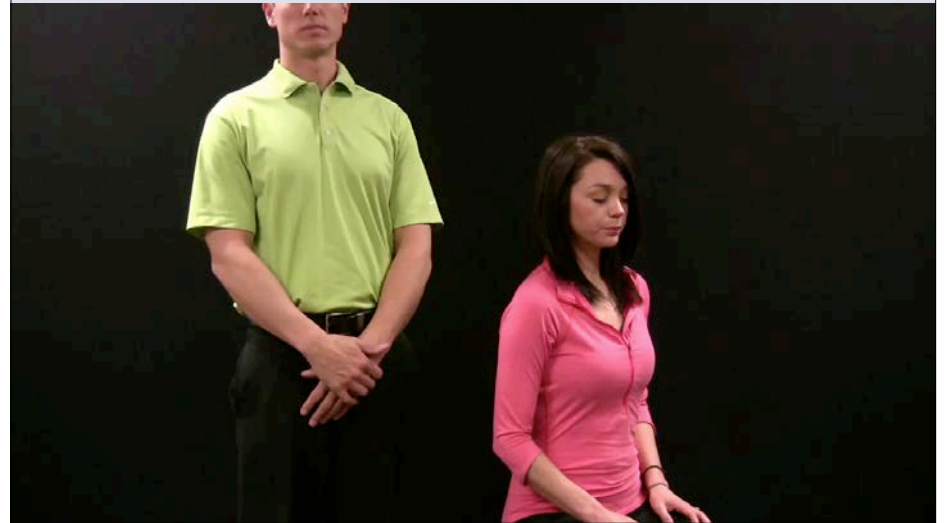


Drop Arm Test

- The clinician abducts the patient's straightened arm to 90 degrees and asks the patient to hold that position as the clinician removes their support. A positive is noted when the arm can be passively abducted by the clinician without pain, but when support of the arm is removed and the deltoid contracts suddenly, pain causes the patient to hunch the shoulder and quickly lower the arm. The drop arm sign is seen when there is pathology or a full-thickness tear of the supraspinatus tendon.



External Rotation Lag Sign



R/C Tear Diagnostic Cluster

Murel and Walton demonstrated a 98% probability of full thickness rotator cuff tear in patients exhibiting at least three of the following four findings:

- Age over 60
- Supraspinatus weakness (Empty Can Test)
- Weakness in resisted external rotation
- Positive signs of impingement (Neer, Hawkins)

A 34 year old male walks in your office with shoulder pain. It is localized to the lateral and anterior aspect of his right upper arm. It began 1 year ago after starting to play park league softball. It's gotten better and worse with activity. He has a prior history of shoulder pain in college where he was a quarterback at Notre Dame. There is no paresthesia in the arm. It is a 7/10 with a throwing motion, but painless at rest.

Rotator Cuff Strain/ Tendinopathy

Evaluation

- [Drop Arm Sign](#)
 - [Empty Can Test](#)
 - [R/C Isolated Strength Test](#)
- Cluster
- [R/C Tear Diagnostic Cluster](#)
 - [Rent Sign](#)

Management

Soft Tissue

- [STM- Infraspinatus](#)
- [STM- Subscapularis](#)
- [STM- Supraspinatus](#)
- [STM- Teres Minor](#)

Manipulation/Mobilization

- [Manipulation-Cervical and Thoracic](#)
- [Mobilization-GH Joint](#)

Phase I exercises

- [YTWL Scapular Depression](#)
- [Corner Pectoral Stretch](#)
- [Glenohumeral Internal Rotation](#)
- [Codman Pendulum](#)
- [Low Row](#)
- [Brugger with Band](#)

Phase II exercises

- [Eccentric Supraspinatus](#)
- [Eccentric Scapular Stabilizers](#)
- [Eccentric Shoulder ER's](#)

STM- Infraspinatus



STM- Subscapularis



STM- Supraspinatus



STM- Teres Minor



Mobilization GH Joint



Rotator Cuff Strain/ Tendinopathy

Evaluation

- * [Drop Arm Sign](#)
- * [Empty Can Test](#)
- * [R/C Isolated Strength Test Cluster](#)
- * [R/C Tear Diagnostic Cluster](#)
- * [Rent Sign](#)

Management

Soft Tissue

- * [STM- Infraspinatus](#)
- * [STM- Subscapularis](#)
- * [STM- Supraspinatus](#)
- * [STM- Teres Minor](#)

Manipulation/Mobilization

- * [Manipulation-Cervical and Thoracic](#)
- * [Mobilization- GH Joint](#)

Phase I exercises

- * [YTWL Scapular Depression](#)
- * [Corner Pectoral Stretch](#)
- * [Glenohumeral Internal Rotation](#)
- * [Codman Pendulum](#)
- * [Low Row](#)
- * [Brugger with Band](#)

Phase II exercises

- * [Eccentric Supraspinatus](#)
- * [Eccentric Scapular Stabilizers](#)
- * [Eccentric Shoulder ER's](#)

RC Tendinopathy Phase 1: YTWL Scapular Depression

Stand with your straight arms raised above your head in a "Y" position. Squeeze your shoulder blades together and downward throughout the following sequence of movements. Lower your straightened arms to shoulder level, into a "T" position. Next bend your elbows so that your fingers are pointing straight up while slightly lowering your elbows to make a "W". Finally, while keeping your elbows bent 90 degrees, lower your arms to your sides so that your elbows are touching your ribs to form an "L" on each side and squeeze. Hold each position for 1-2 seconds and repeat 3 sets of 10 repetitions, twice per day or as directed





RC Tendinopathy Phase 1: CornerPec Stretch

Begin standing, facing a corner with your palms on the walls above head level. Step toward the corner and "lean in" to stretch your chest muscles. Against the resistance of the wall, attempt to push your hands into the wall and toward each other for 7 seconds. Relax and "lean in" to increase the stretch. Lock into this new position and repeat 3 contract/relax cycles, twice per day or as directed.



RC Tendinopathy Phase 1: Unilateral Pec Stretch

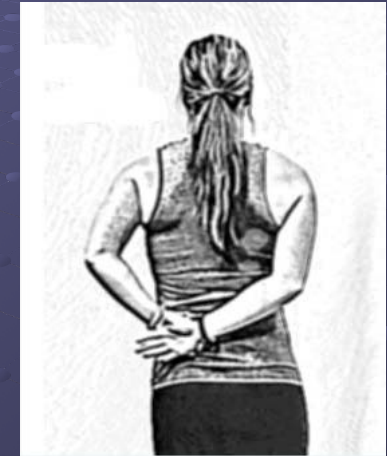
Stand with your arm straight out at shoulder level reaching backwards, thumb up. Position yourself so that your hand is against a door frame or post. Gently turn your body away from the post, until you feel a gentle stretch in your chest and shoulder. Against the resistance of the post or door frame, attempt to rotate your arm forward in front of your body for seven seconds. Relax and rotate your body away from the door frame or post to increase the stretch on your shoulder. "Lock in" to this new position and repeat three contract/relax cycles on each side twice per day or as directed.





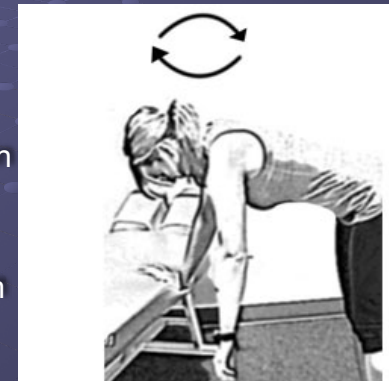
RC Tendinopathy Phase 1: Glenohumeral Internal Rotation

Begin sitting with good posture. Place the affected arm behind your back and reach towards your opposite hip. Using the unaffected arm, gently pull the wrist of your affected arm further toward your opposite hip. A stretch should be felt in the affected shoulder. Pull gently to the point of tightness ten times. Each pull should be slow and stopped if you feel a sharp pain. This stretch should be performed for ten repetitions, once per hour or as directed.



RC Tendinopathy Phase 1: Codman Pendulum

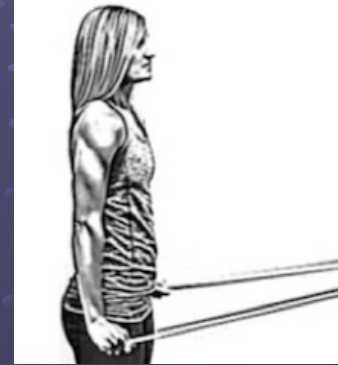
Lean over a table using the uninvolved arm for support as shown. Allow the involved arm to hang freely. Use your torso to swing your involved arm in a clock-wise circle for 50 repetitions. Repeat in a counter-clockwise circle for 50 repetitions. Perform 50 repetitions in each direction twice per day or as directed.





RC Tendinopathy Phase 1: Low Row

Attach the center of an elastic exercise band to a doorknob or other sturdy object in front of you. Grasp one end of the band in each hand and with straight arms at your side, stretch the band backwards. Keep your palms facing backward and arms pointed straight down throughout the exercise. Return to neutral and repeat 3 sets of 10 repetitions daily, or as directed.



RC Tendinopathy Phase1: Brugger with Band

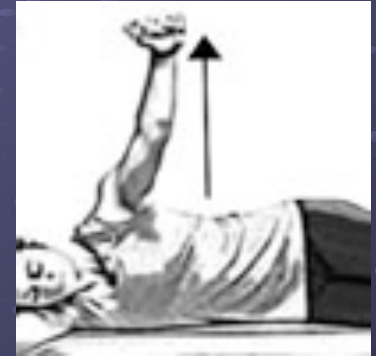
Begin sitting or standing with an elastic exercise band wrapped and secured around your palms. Begin with your arms at your side, elbows bent, forearm's pointing forward. Move your hands apart from each other to maximally stretch the band while simultaneously rotating your palms out, straightening your arms, and pinching your shoulder blades together as your hands move behind your hips. Return to the start position and repeat 3 sets of 10 repetitions daily, or as directed.





Rotator Cuff Syndrome Phase 2: Eccentric Strengthening of the Scapular Stabilizers

- Begin in a side lying position holding a weight, with your arm outstretched toward the ceiling. Slowly lower the weight to the floor at a count of 4 seconds. Carefully return your arm to the starting position by keeping it close to your body. Repeat 3 sets of 10 repetitions daily, or as directed.



Rotator Cuff Syndrome Phase 2: Eccentric Strengthening of the Teres Minor and Infraspinatus

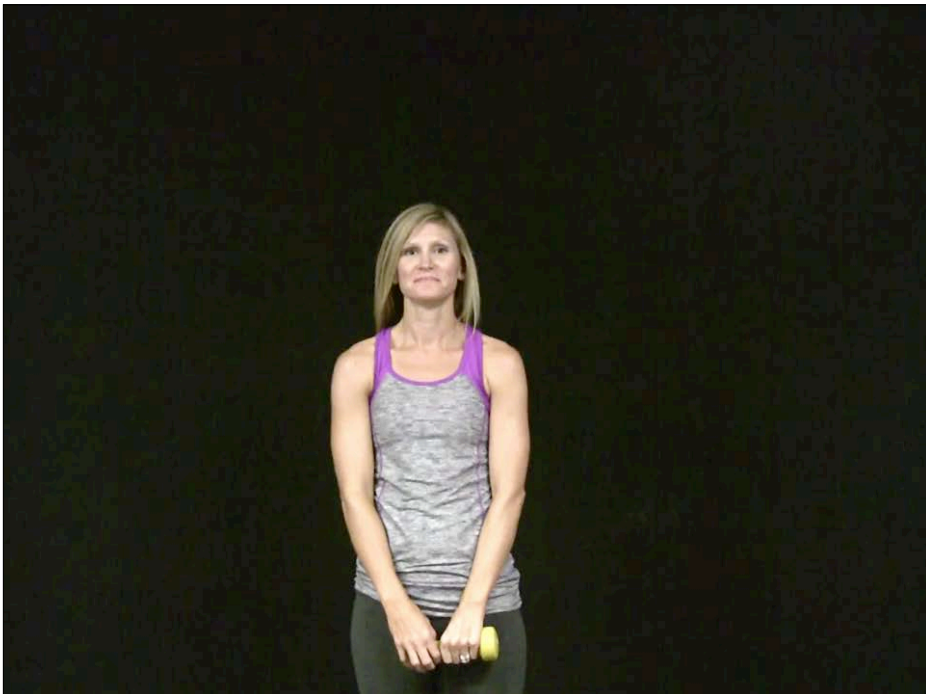
- Begin in a side lying position holding a weight with your arm on your rib cage, elbow bent to 90 degrees, forearm pointing straight up. While keeping your arm on your ribs, slowly lower the weight toward the floor at a count of 4 seconds. Use your "good" arm to remove the weight from your hand and return the weight back to your "affected" hand in the starting position. Repeat 3 sets of 10 repetitions daily, or as directed.





Rotator Cuff Syndrome Phase 2: Eccentric Strengthening of the Supraspinatus

- Begin standing, holding a weight with your arm outstretched at a 45 degree angle in front of you at shoulder level. Your thumb should be pointing down. Slowly lower the weight to your thigh at a count of 4 seconds. Use your “good” arm to remove the weight from your hand and return the weight back to your “affected” hand in the starting position. Repeat 3 sets of 10 repetitions daily, or as directed.



The Effect of Rotator Cuff Repair on Natural History: A Systematic Review of Intermediate to Long-Term Outcomes.

Chalmers PM¹, Ross H¹, Granger E¹, Presson AP¹, Zhang C¹, Tashjian RZ¹.

Author information

Abstract

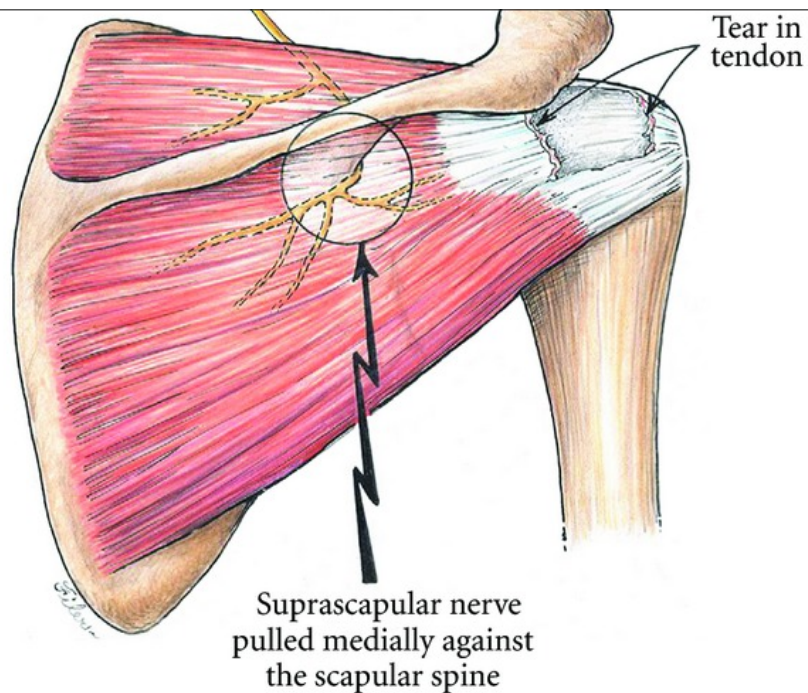
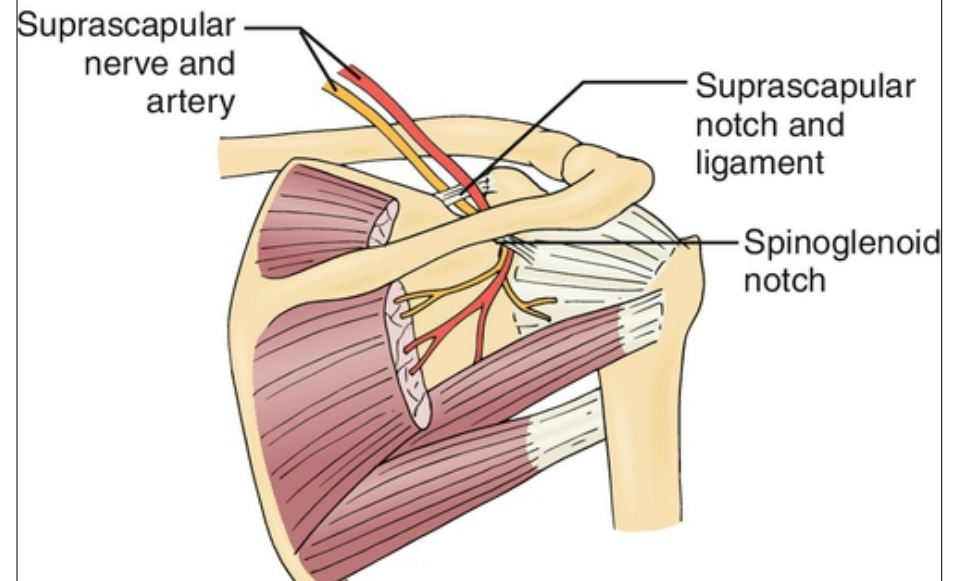
BACKGROUND: Rotator cuff disease can have a progressive natural history of increasing tear size and worsening function. It remains unknown whether rotator cuff repair alters this natural history.

METHODS: A systematic review of the intermediate to long-term (minimum 5-year) results of operative rotator cuff repair and no repair of rotator cuff injuries was performed to compare (1) patient-based outcomes, (2) future surgical intervention, (3) future tear progression or recurrence, and (4) tear size. The no-repair group included both conservative treatment and surgical treatment without repair. After the application of selection criteria, 29 studies with 1,583 patients remained. Meta-regression was conducted to adjust for baseline age, sex, tear size, and duration of follow-up.

RESULTS: Comparison of the repair and no-repair groups revealed no significant differences in terms of age ($p = 0.36$), sex ($p = 0.88$), study level of evidence ($p = 0.86$), or Coleman methodology score ($p = 0.8$). The duration of follow-up was significantly longer for the no-repair group ($p = 0.004$), whereas baseline tear size was significantly larger in the repair group ($p = 0.014$). The percentage of patients requiring additional surgery was significantly higher in the no-repair group after adjustment for age, sex, duration of follow-up, and tear size (9.5% higher in estimated means between groups [95% confidence interval, 2.1% to 17%]; $p = 0.012$). The likelihood of a recurrent defect (repair group) or extension of the prior tear (no-repair group) was not different between groups after adjustment for age, sex, duration of follow-up, and tear size ($p = 0.4$). There were no differences between the repair and no-repair groups in terms of the Constant score after adjustment for age, sex, duration of follow-up, and tear size ($p = 0.31$). The final tear size was significantly larger in the no-repair group than the repair group (967 mm² higher in estimated means between groups [95% confidence interval, 771 to 1,164 mm²]; $p < 0.001$).

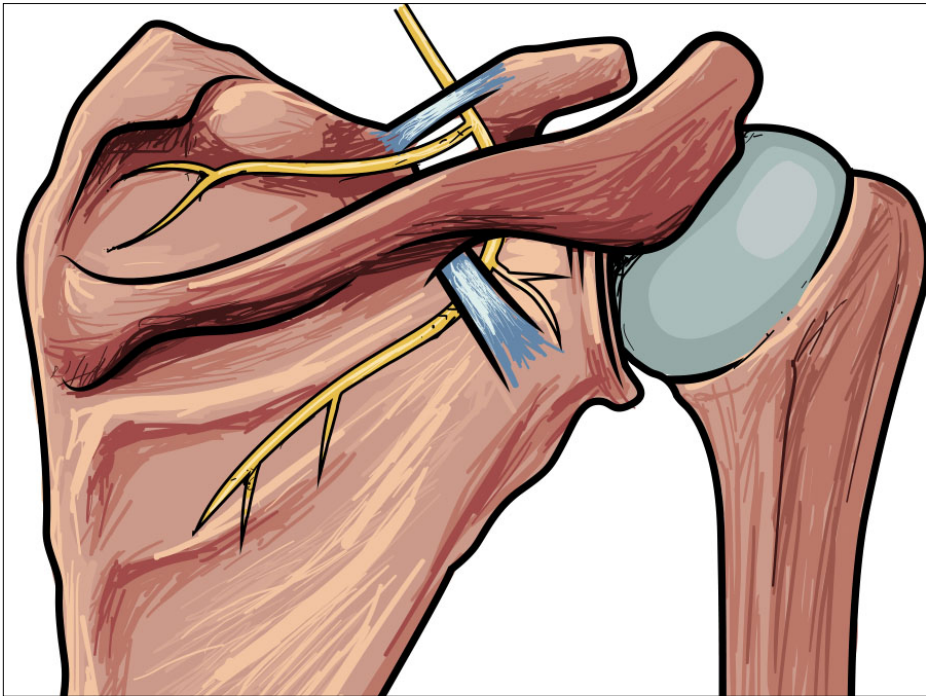
CONCLUSIONS: At intermediate to long-term follow-up, rotator cuff repair was associated with decreased final tear size and decreased need for future surgery after adjusting for age, sex, duration of follow-up, and tear size. The likelihood of a recurrent defect after rotator cuff repair did

Suprascapular Neuropathy



Presentation

- Typically unilateral
- Affects the dominant side more frequently
- Posterior superior shoulder pain and weakness
- Increased symptoms upon cross body adduction or internal rotation
- Overhead motions may exacerbate symptoms



Evaluation

Tenderness to palpation over the suprascapular notch- deep and posterior to the AC joint, between the spine of the scapula and clavicle



Evaluation

Weakness upon resisted shoulder abduction (supraspinatus) and/or external rotation (infraspinatus)

Palpable atrophy of the supraspinatus or infraspinatus muscles (chronic)



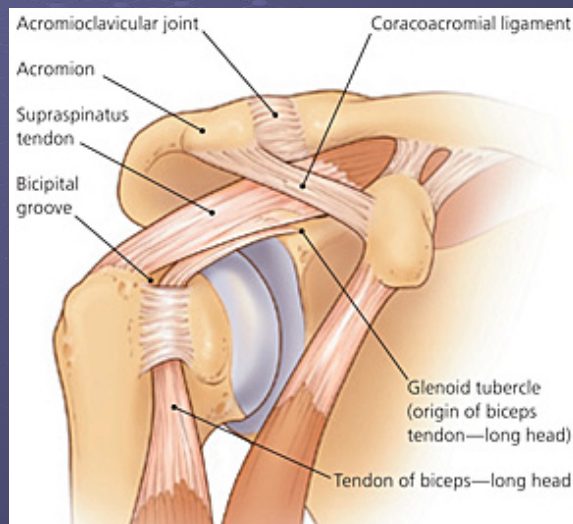
Differential Diagnosis

- Rotator cuff pathology
- Cervical radiculopathy
- Parsonage Turner Syndrome (acute brachial neuritis)
- Upper thoracic or costovertebral dysfunction
- Neoplasm
- Myofascial pain

Management

- Rest with avoidance of activities that place sustained or repetitive stress on the nerve
- Exercises that cause sustained stretch of the suprascapular nerve are contraindicated
- Avoid excessive scapular protraction, cross body adduction and overhead movements
- Physiotherapy modalities
- **Oral anti-inflammatories, steroid injections**
- **Surgical Decompression**

Biceps Tendinopathy



Biceps Tendinopathy Presentation

- Deep throbbing ache over the anterior shoulder or bicipital groove
- Pain may refer to the deltoid insertion
- Provoked by repetitive overhead activity and forearm supination, shoulder flexion, or elbow flexion
- Symptoms increase when initiating activity
- Nocturnal symptoms are common

Biceps Tendinopathy- Proximal

Evaluation

- * [Bear Hug Test](#)
- * [Belly Press Test](#)
- * [Lippman test](#)
- * [Speed's Test](#)
- * [Upper Cut Test](#)

Management

Soft Tissue

- * [IASTM/TFM- Long Head of the Biceps Tendon](#)
- * [STM- Biceps Brachii](#)

Manipulation/Mobilization

- * [Manipulation-Cervical and Thoracic](#)
- * [Mobilization- GH Joint](#)

Phase I exercises

- * [YTWL Scapular Depression](#)
- * [Biceps Stretch](#)
- * [Codman Pendulum](#)

Phase II exercises

- * [Eccentric Biceps Strengthening](#)
- * [Low Row](#)
- * [Bear Hug](#)

Lippman Test

- The patient is seated with their arm at their side, elbow flexed to 90 degrees, forearm pointing forward. The clinician moves the patient's forearm through internal and external rotation while palpating the biceps tendon in the bicipital groove. Pain suggests biceps tendon involvement while displacement suggests instability.



Upper Cut Test

- The patient is seated with their arm at their side, elbow flexed to 90 degrees, forearm supinated, fist closed and pointing forward. The clinician places their hand over the patient's fist and applies resistance as the patient attempts to "quickly make an uppercut motion toward chin level". Pain or popping suggests biceps tendon involvement.



Speeds Test

The patient is standing with their arm at 90 degrees of forward flexion in a sagittal plane, forearm supinated (arm straight forward, palm up). The clinician applies a downward pressure as the patient resists with eccentric biceps contraction. The test is repeated with the patient's forearm in pronation. Pain over the bicipital groove when performing the test in supination and decreased discomfort in pronation suggests biceps tendon irritation.



Yergason's Test

The patient is seated with their arm at their side, elbow flexed to 90 degrees, forearm pointing forward, thumb up. The clinician grasps the patient's hand and applies resistance as the patient attempts to bring their palm toward their face (forearm supination, elbow flexion and shoulder internal rotation). Reproduction of pain suggests biceps tendon or transverse ligament involvement.



Belly Press Test

Aka Napoleon test. The standing patient places their hand on their abdomen and aligns their forearm on a frontal plane (i.e. Napoleon style). The clinician attempts to lift the patient's hand/arm away from their abdomen while the patient resists. Pain or weakness suggests subscapularis involvement.



Bear Hug Test

The patient places the affected hand, palm down on the unaffected shoulder. The clinician attempts to lift the patient's hand upward, off of their shoulder while the patient resists. Pain or weakness is suggestive of subscapularis muscle involvement.



Sensitivity & Specificity

Sensitivity

- Bear Hug (0.79)
- Upper Cut (0.73)*
(*Most accurate overall)

Specificity

- Belly Press (0.85)
- Speed's (0.81)

Kibler BW, Sciascia AD, Hester P, Dome D, Jacobs C. Clinical utility of traditional and new tests in the diagnosis of biceps tendon injuries and superior labrum anterior and posterior lesions in the shoulder. Am J Sports Med. 2009 Sep;37(9):1840-7.

Biceps Tendinopathy- Proximal

Evaluation

- * [Bear Hug Test](#)
- * [Belly Press Test](#)
- * [Lippman test](#)
- * [Speed's Test](#)
- * [Upper Cut Test](#)

Management

Soft Tissue

- * [IASTM/TFM- Long Head of the Biceps Tendon](#)
- * [STM- Biceps Brachii](#)

Manipulation/Mobilization

- * [Manipulation-Cervical and Thoracic](#)
- * [Mobilization- GH Joint](#)

Phase I exercises

- * [YTWL Scapular Depression](#)
- * [Biceps Stretch](#)
- * [Codman Pendulum](#)

Phase II exercises

- * [Eccentric Biceps Strengthening](#)
- * [Low Row](#)
- * [Bear Hug](#)

STM- Biceps



IASTM- Long Head of the Biceps



Mobilization GH Joint



Biceps Tendinopathy- Proximal

Evaluation

- * [Bear Hug Test](#)
- * [Belly Press Test](#)
- * [Lippman test](#)
- * [Speed's Test](#)
- * [Upper Cut Test](#)

Management

Soft Tissue

- * [IASTM/TFM- Long Head of the Biceps Tendon](#)
- * [STM- Biceps Brachii](#)

Manipulation/Mobilization

- * [Manipulation-Cervical and Thoracic](#)
- * [Mobilization- GH Joint](#)

Phase I exercises

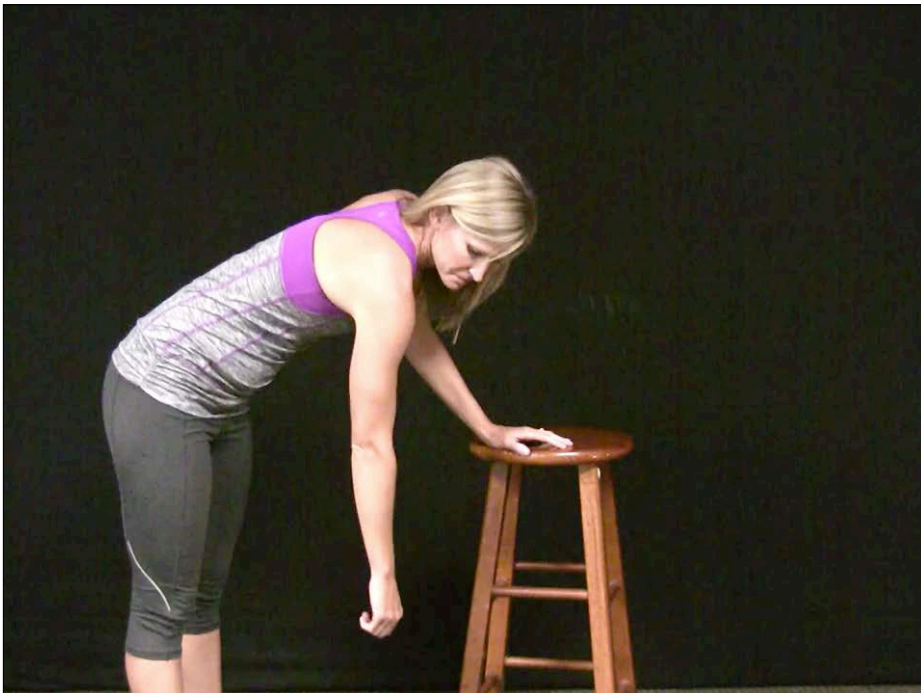
- * [YTWL Scapular Depression](#)
- * [Biceps Stretch](#)
- * [Codman Pendulum](#)

Phase II exercises

- * [Eccentric Biceps Strengthening](#)
- * [Low Row](#)
- * [Bear Hug](#)

Biceps Tendinopathy Phase 1: Codman Pendulum

Lean over a table using the unininvolved arm for support as shown. Allow the involved arm to hang freely. Use your torso to swing your involved arm in a clock-wise circle for 50 repetitions. Repeat in a counter-clockwise circle for 50 repetitions. Perform 50 repetitions in each direction twice per day or as directed.



Biceps Tendinopathy Phase 1: Biceps Stretch

- Begin in a standing position with your arm fully extended away from your side and your thumb pointing down. Move into a position so that the back of your wrist is against a sturdy object, like a doorframe or a post. Gently turn your body away from your extended arm until a stretch is felt. Against the resistance of the doorframe, attempt to push your arm forward in front of your body for seven seconds. Relax and gently rotate your body away from the door frame to increase the stretch. Perform one set of three repetitions twice per day or as directed..





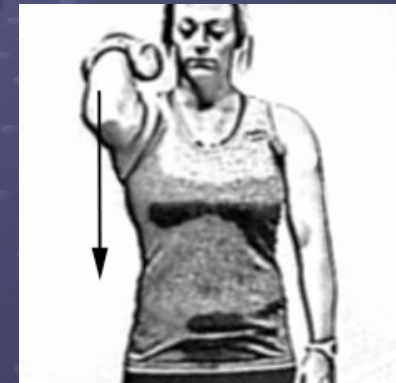
Biceps Tendinopathy Phase 1: YTWL Scapular Depression

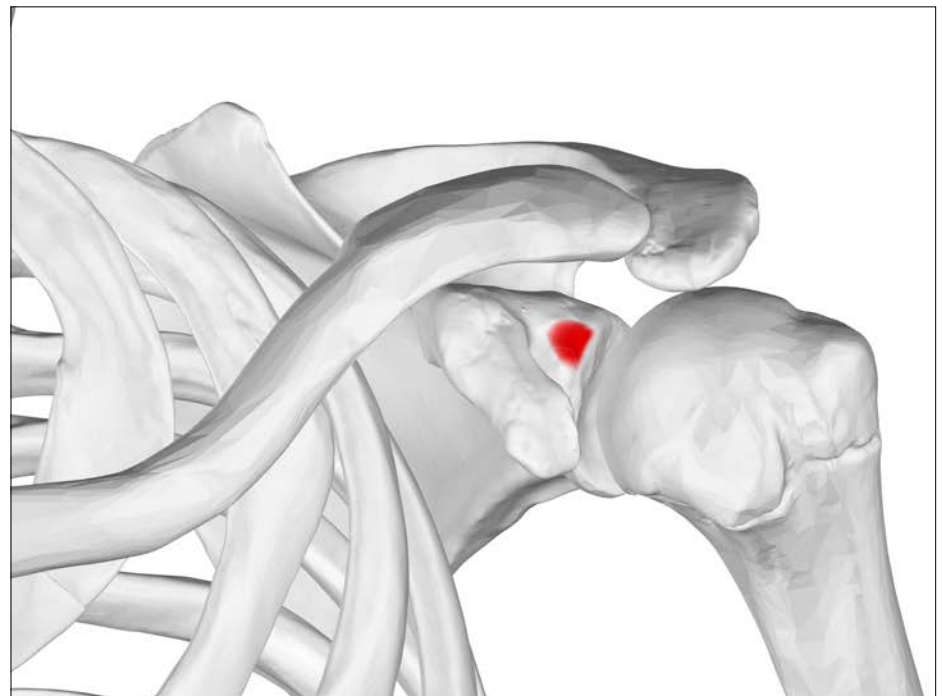
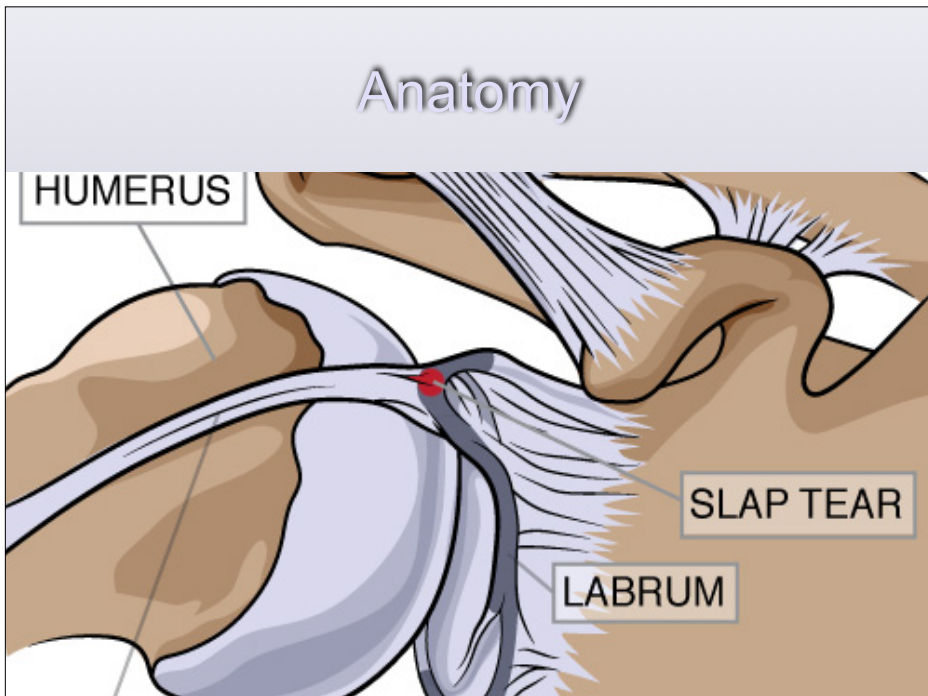
Stand with your straight arms raised above your head in a "Y" position. Squeeze your shoulder blades together and downward throughout the following sequence of movements. Lower your straightened arms to shoulder level, into a "T" position. Next bend your elbows so that your fingers are pointing straight up while slightly lowering your elbows to make a "W". Finally, while keeping your elbows bent 90 degrees, lower your arms to your sides so that your elbows are touching your ribs to form an "L" on each side and squeeze. Hold each position for 1-2 seconds and repeat 3 sets of 10 repetitions, twice per day or as directed



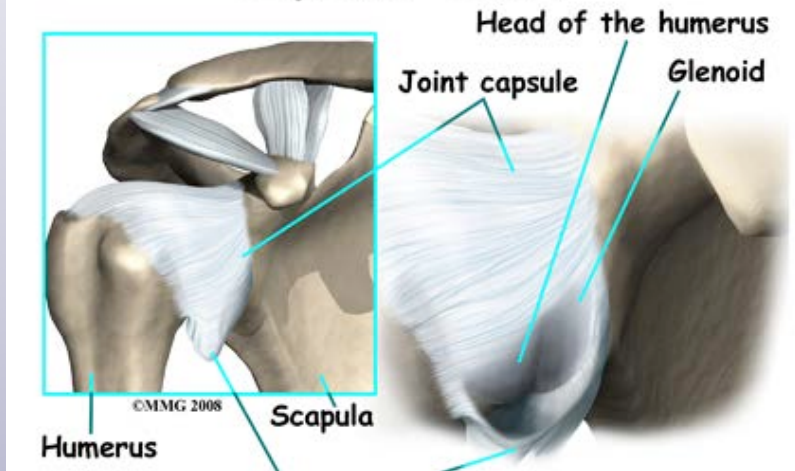
Biceps Tendinopathy Phase 2: Eccentric Strengthening of the Biceps

- Begin standing holding a weight with your palm facing in at shoulder level. Slowly lower the weight until your elbow is straight over a four-second count. Use your uninvolved arm to return the weight to the starting position, and repeat three sets of 10 repetitions twice per day or as directed.

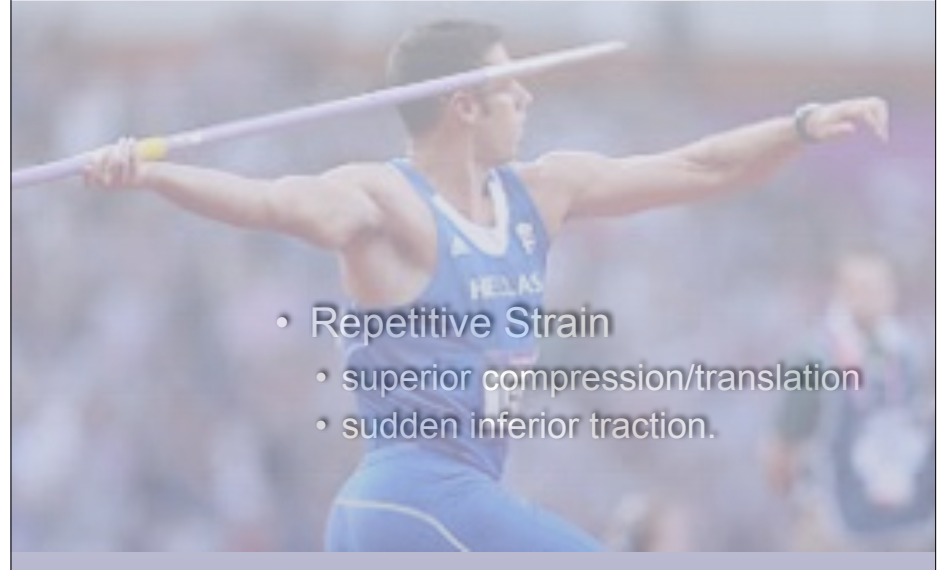




Capsular Shift



Etiology



Etiology

- Traumatic

Fall onto an outstretched arm with the shoulder abducted and/or flexed forward.



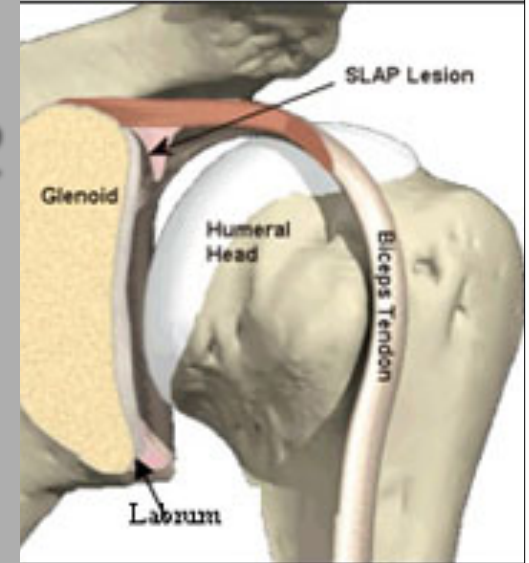
Symptoms

- Symptomatic patients often describe a deep, vague, non-specific shoulder pain that is provoked by overhead and cross-body activity.
- Weakness and stiffness often accompany the disorder. Discomfort may limit athletic performance, particularly in overhead athletes who may complain of a “dead arm.”
- Complaints of popping, clicking, grinding or catching are common.
- Patients with more advanced lesions are likely to report symptoms associated with instability; i.e. (pinching, slipping, apprehension or “looseness”- especially during overhead activity)



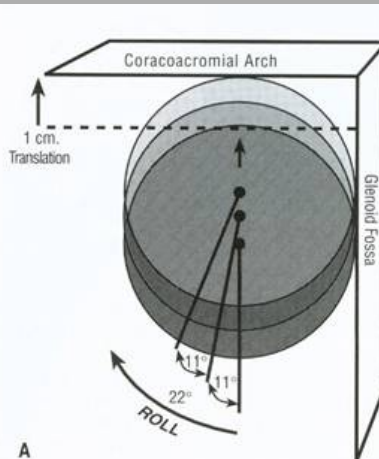
Function of the Biceps Tendon

Compressive force to stabilize the shoulder

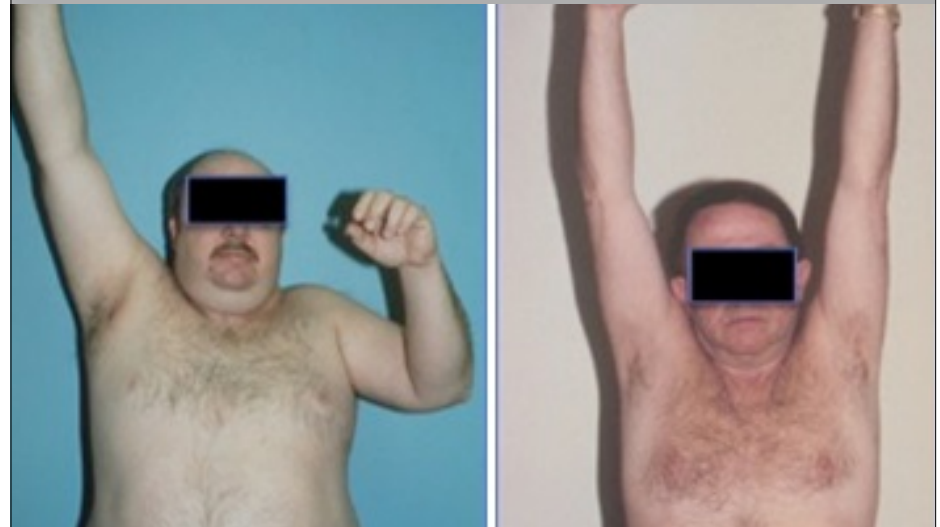


Function of Biceps Tendon

Depresses the humeral head



28% Of SLAP Tears Are Isolated Problems



Snyder Classification Type 1

Type 1 injuries involve fraying or degeneration of the margins of the glenoid labrum without detachment or biceps tendon avulsion.

Snyder Classification Type 2

Type 2 injuries progress to involve detachment of the glenoid labrum from the bony rim, creating a less stable biceps anchor that may be lifted during muscular contraction.

Snyder Classification Type 3

Type 3 lesions have progressed to allow a “bucket handle” displacement of the superior labrum into the glenohumeral joint. The labrum maintains its attachment to the glenoid rim and biceps tendon.

Snyder Classification Type 4

Type 4 lesions include the aforementioned dysfunction plus at least partial rupture of the long head of the biceps tendon.

SLAP Lesion

Evaluation

- [Biceps Load Test II](#)
- [Compression Rotation Test](#)
- [Crank Test](#)
- [O'Brien's Test](#)
- [Pronated Load Test](#)
- [Resisted Supination External Rotation Test](#)

IMAGING RECOMMENDATIONS

Management

Soft Tissue

- [STM- Biceps Brachii](#)
- [STM- Pec Major](#)
- [STM- Upper Trapezius](#)

Manipulation/Mobilization

- [Manipulation-Cervical and Thoracic](#)

Phase I exercises

- [Cane- Flexion](#)
- [Codman Pendulum](#)
- [Cane- Flexion](#)
- [Scapular Clocks](#)
- [Posterior Capsule Stretch- Side Lying](#)


Phase II exercises

- [YTWL Scapular Depression](#)
- [Low Row](#)
- [Brugger with Band](#)
- [Brugger with Band](#)

Evaluation


Biceps Load Test II

The patient's shoulder is abducted to 120 degrees and externally rotated. The clinician stabilizes the patient's arm while passively externally rotating until end range or patient apprehension. The patient then attempts to flex their elbow against the clinician's resistance. An increase in pain suggests a SLAP lesion, while a decrease in apprehension or pain makes a SLAP lesion unlikely.




Compression Rotation Test

The test is performed on a supine patient with their shoulder in 90 degrees abduction and 90 degrees elbow flexion while the examiner grasps the elbow and applies a compressive force into the glenohumeral joint as the shoulder is rotated internally and externally in an attempt to trap the labrum within the joint. The presence of an uncomfortable "clunk" suggests labral tear.



Crank Test

The seated or supine patient elevates their arm to 160 degrees in a scapular plane. The clinician stabilizes the shoulder with one hand and grasps the patient's flexed elbow with the other. The clinician compresses the patient's elbow to apply an axial load to the shoulder while performing passive internal and external rotation. Pain or catching suggests glenoid labrum involvement (tear). (The Compression Rotation Test is similar except it is performed at 90 degrees of elevation.)



SLAP Lesion

Evaluation

- [Biceps Load Test II](#)
- [Compression Rotation Test](#)
- [Crank Test](#)
- [O'Brien's Test](#)
- [Pronated Load Test](#)
- [Resisted Supination External Rotation Test](#)

IMAGING RECOMMENDATIONS

Management

Soft Tissue

- [STM- Biceps Brachii](#)
- [STM- Pec Major](#)
- [STM- Upper Trapezius](#)

Manipulation/Mobilization

- [Manipulation-Cervical and Thoracic](#)

Phase I exercises

- [Cane- Flexion](#)
- [Codman Pendulum](#)
- [Cane- Flexion](#)
- [Scapular Clocks](#)
- [Posterior Capsule Stretch- Side Lying](#)

Phase II exercises

- [YTWL Scapular Depression](#)
- [Low Row](#)
- [Brugger with Band](#)
- [Brugger with Band](#)

Imaging

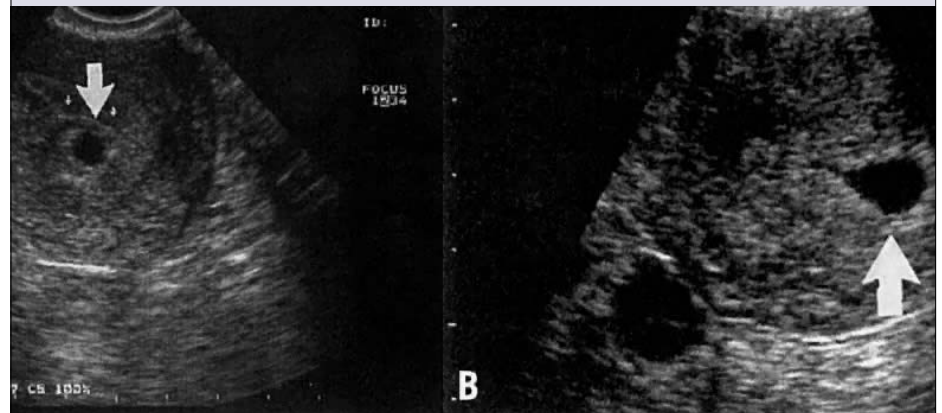
Potential differential diagnostic considerations include A/C joint degeneration, strain or pathology, biceps tendinopathy, cervical radiculopathy, brachial plexus injury, fracture, Bankart lesion, dislocation, glenohumeral degeneration, instability, and most commonly, rotator cuff pathology.

DIFFERENTIAL DX

Radiography



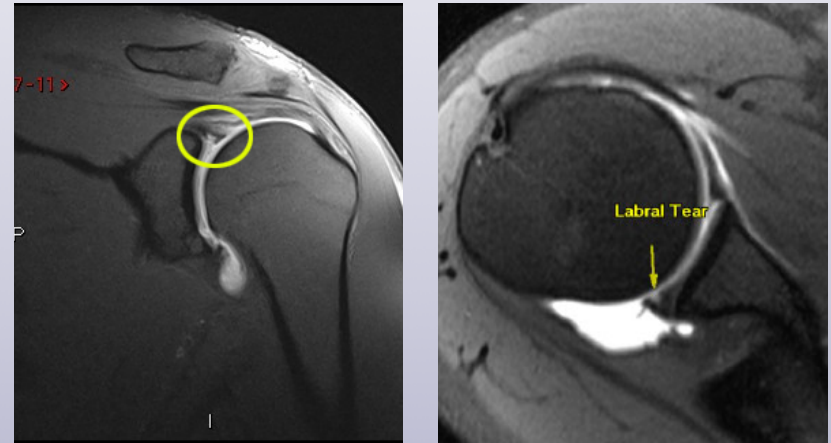
Diagnostic Ultrasound



Diagnostic Ultrasound



MRI



Do the results really matter?



SLAP Lesion	
Evaluation	<ul style="list-style-type: none"> • Biceps Load Test II • Compression Rotation Test • Crank Test • O'Brien's Test • Pronated Load Test • Resisted Supination External Rotation Test
IMAGING RECOMMENDATIONS	
Management	<p>Soft Tissue</p> <ul style="list-style-type: none"> • STM- Biceps Brachii • STM- Pec Major • STM- Upper Trapezius <p>Manipulation/Mobilization</p> <ul style="list-style-type: none"> • Manipulation-Cervical and Thoracic <p>Phase I exercises</p> <ul style="list-style-type: none"> • Cane- Flexion • Codman Pendulum • Cane- Flexion • Scapular Clocks • Posterior Capsule Stretch- Side Lying <p>Phase II exercises</p> <ul style="list-style-type: none"> • YTWL Scapular Depression • Low Row • Brugger with Band • Brugger with Band

Management

STM- Biceps

The biceps brachii muscle originates on the coracoid process (medial short head) and humeral head (lateral long head) and attaches to the radial tuberosity. The actions of the muscle include elbow flexion, forearm supination and shoulder flexion (long head only). Trigger points commonly develop in distal muscle bellies. Soft tissue manipulation includes ischemic compression of trigger points and myofascial stripping parallel to the muscle fibers. IASTM is an alternate means of stripping the muscle. Movement stripping may be performed by contacting the muscle trigger points and applying pressure while passively moving the muscle from a shortened to lengthened state. Contract/ relax stretching is performed by tensioning the muscle, then asking the patient to horizontally abduct and supinate their arm against resistance, followed by increased stretch.



STM Pec Minor

The pectoralis minor muscle originates on ribs 3-5 and attaches to the coracoid process. The actions of the muscle include scapular depression and rotation. Trigger points commonly develop in the muscle belly. Soft tissue manipulation includes ischemic compression of trigger points and myofascial stripping parallel to the muscle fibers. Movement stripping may be performed by contacting the trigger points and applying pressure while passively moving the muscle from a shortened to lengthened state.



STM- Upper Traps

The upper trapezius muscle originates on the external occipital protuberance and medial nuchal ligament of the cervical and thoracic spinous processes and inserts on the spine of the scapula and lateral 1/3rd of the clavicle. The action of the muscle includes elevation and retraction of the scapula. Trigger points commonly develop near the scapular insertion. Soft tissue manipulation includes ischemic compression of trigger points and myofascial stripping parallel to the muscle fibers. IASTM is an alternate means of stripping the muscle. Movement stripping may be performed by contacting the trigger point and applying pressure while passively moving the muscle from a shortened to lengthened state. Contract/ relax stretching is performed by tensioning the muscle, then asking the patient to laterally flex their head against resistance, followed by increased stretch.



SLAP Lesion
Evaluation
<ul style="list-style-type: none"> • Biceps Load Test II • Compression Rotation Test • Crank Test • O'Brien's Test • Pronated Load Test • Resisted Supination External Rotation Test
IMAGING RECOMMENDATIONS
Management
Soft Tissue
<ul style="list-style-type: none"> • STM- Biceps Brachii • STM- Pec Major • STM- Upper Trapezius
Manipulation/Mobilization
<ul style="list-style-type: none"> • Manipulation-Cervical and Thoracic
Phase I exercises
<ul style="list-style-type: none"> • Cane- Flexion • Codman Pendulum • Cane- Flexion • Scapular Clocks • Posterior Capsule Stretch- Side Lying
Phase II exercises
<ul style="list-style-type: none"> • YTWL Scapular Depression • Low Row • Brugger with Band • Brugger with Band

Exercises

Cane Flexion

Stand holding a cane in both hands with your arms hanging down in front of your thighs, palms facing your thighs. While keeping your elbows straight, slowly raise your arms in front of your body, overhead in a pain-free range of motion. Your "good arm" may need to help the involved side. Return to the start position and repeat three sets of 10 repetitions twice per day or as directed.



Codman Pendulum

Lean over a table using the uninvolved arm for support as shown. If directed, you may hold a light weight in your hand to increase traction. Allow the involved arm to hang freely. Use your torso to swing your involved arm in a clock-wise circle for 50 repetitions. Repeat in a counter-clockwise circle for 50 repetitions. Perform 50 repetitions in each direction twice per day or as directed.



Scapular Clock

Place your unaffected palm behind your head. Extend your affected arm directly sideways and place your palm on the wall at shoulder level. Begin with your fingers pointing upward, unless otherwise directed. Imagine that your shoulder blade is a clock and rhythmically elevate and depress your shoulder blade between 12 and 6 o'clock. Repeat 10 times. Next, move between 3 & 9 o'clock by rhythmically pinching your shoulder blade toward your spine, then moving it away. Repeat 10 times. Next, combine these movements to move your shoulder blade in a clockwise fashion, then counterclockwise 10 times each. Repeat twice per day or as directed.



Posterior Capsule Stretch Side Lying

Begin lying on your affected side with your elbow bent at 90 degrees. Stabilize your wrist on the affected side with your opposite hand. Attempt to gently push your wrist into the stabilizing hand for 7 seconds. Do not let the arm move during contraction. Relax and slowly let the affected arm drop towards the table until it cannot go any further. Repeat contract and relax stretching for 10 repetitions twice per day or as directed.



Surgery

Immediate surgical consultation is warranted in cases of suprascapular nerve compression from an associated paralabral cyst.

Cost-Benefit

- The literature fails to demonstrate success for surgically repairing type 2 SLAP lesions with co-existent rotator cuff tears in older patients (greater than 50).
- Surgeons may elect to perform debridement, suturing, or excision based upon the type of lesion.
- Surgical intervention should address concurrent shoulder pathology; i.e. rotator cuff lesions, degeneration, instability, etc.
- 4-6 month post-operative rehab.

Post Surgical Rehab

Dodson CC, Altchek DW. SLAP Lesions: An Update on Recognition and Treatment. JOSPT February 2009, Volume 39 Number 2

Thoracic Outlet Syndrome

- Evaluation
- [Adson's Test](#)
 - [Brachial Plexus Compression Test](#)
 - [Costoclavicular Test](#)
 - [Roos Test](#)
 - [Wrights Hyperabduction Test](#)

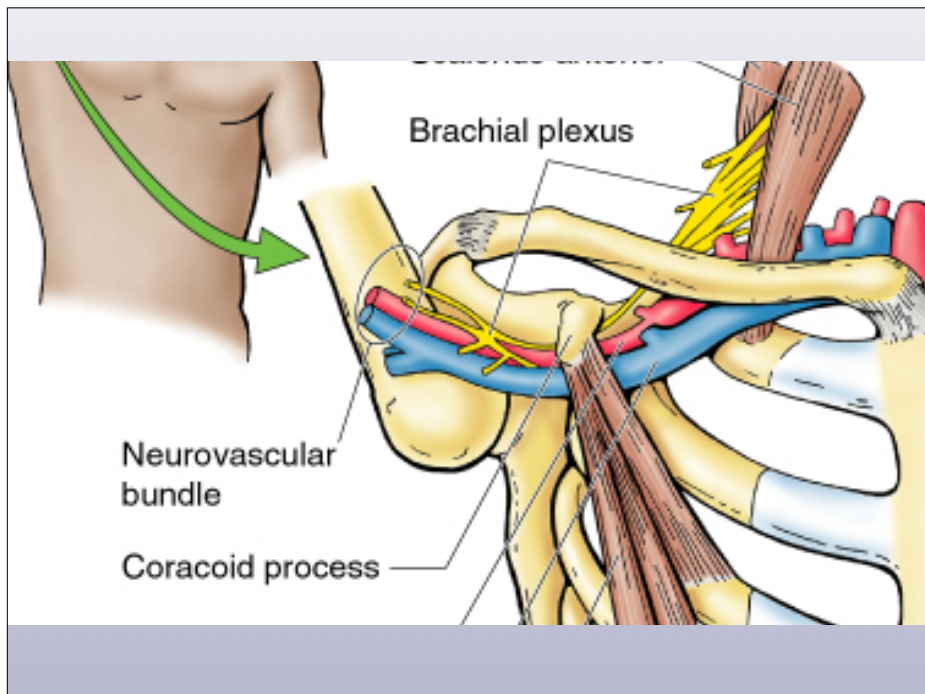
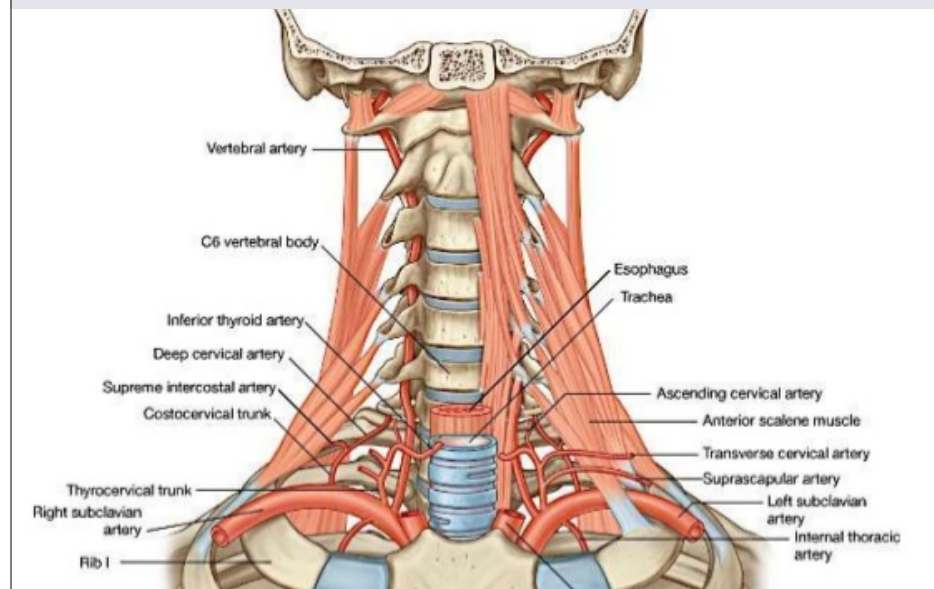
- Management
- Soft Tissue
- [Nerve Floss- Ulnar](#)
 - [STM- Pec Minor](#)
 - [STM- Scalenes](#)

- Manipulation/Mobilization
- [Manipulation-Cervical and Thoracic](#)
 - [Manipulation-First Rib](#)

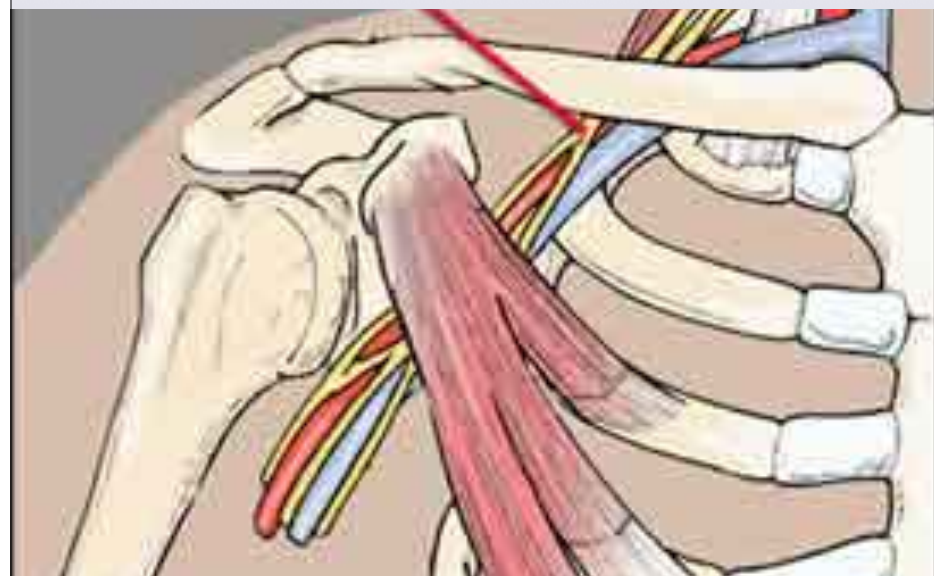
- Phase I exercises
- [Cervical Retractions](#)
 - [Cervical Retractions](#)
 - [Ulnar Nerve Floss](#)
 - [Scalene Stretch](#)
 - [Corner Pectoral Stretch](#)
 - [Corner Pectoral Stretch](#)

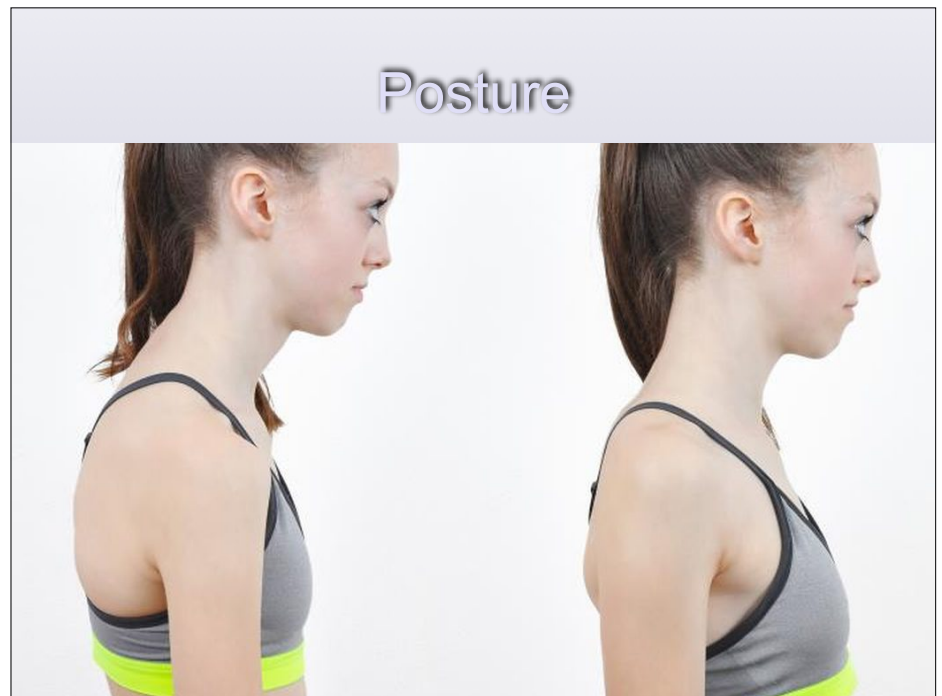
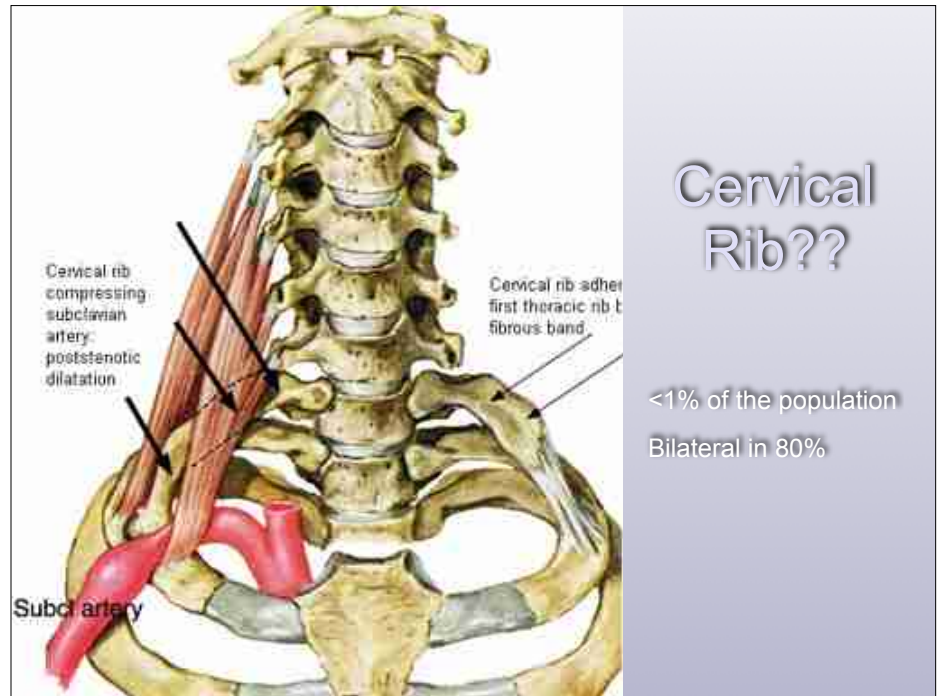
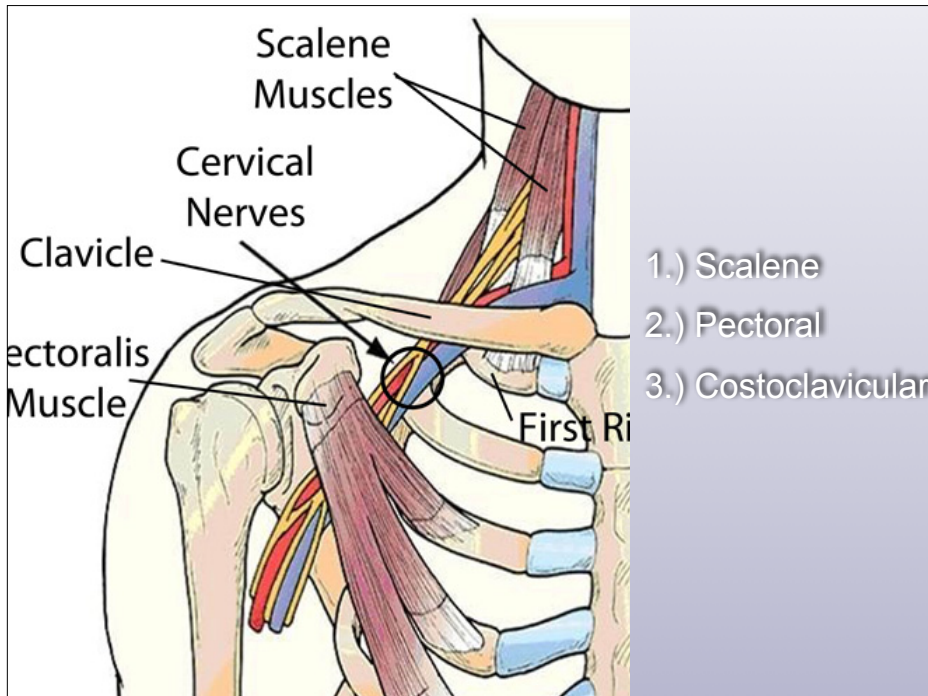
- Phase II exercises
- [Resisted Shoulder Retraction](#)

Arterial TOS



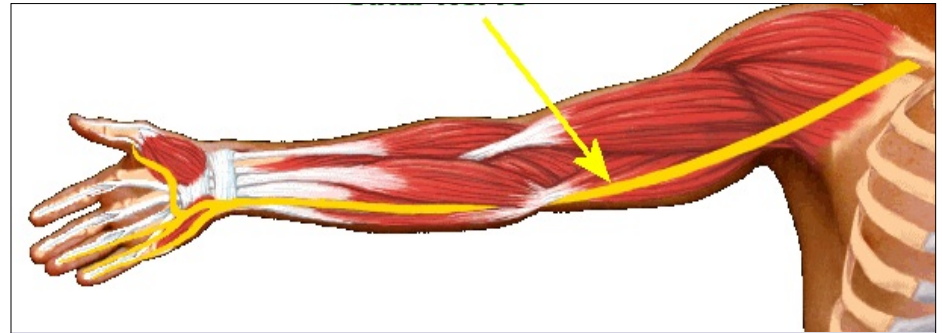
The other 95%



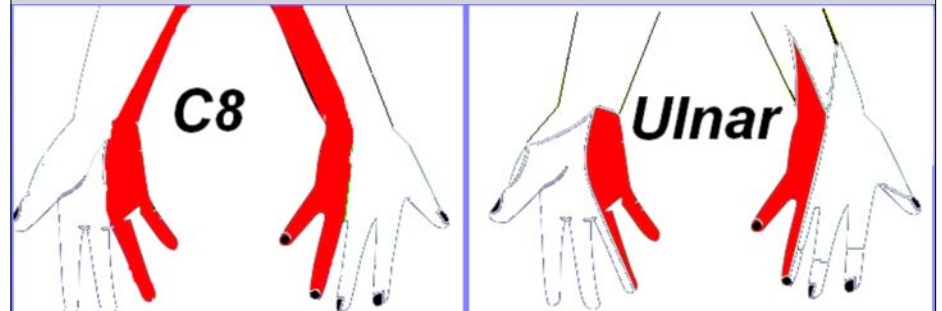


Etiology

- Ages of 20-60, with a peak incidence in the fourth decade
- More common in women with some estimates as high as 9:1.
- The shape of the chest, including traction from pendulous breasts is thought to promote “shoulder drooping” and ongoing downward pressure on the shoulder which further close the thoracic outlet.



Pain / Paresthesia / Motor Weakness C8/T1



Evaluation

Evaluation

- * [Adson's Test](#)
- * [Brachial Plexus Compression Test](#)
- * [Costoclavicular Test](#)
- * [Roos Test](#)
- * [Wrights Hyperabduction Test](#)

Management

Soft Tissue

- * [Nerve Floss- Ulnar](#)
- * [STM- Pec Minor](#)
- * [STM- Scalenes](#)

Manipulation/Mobilization

- * [Manipulation-Cervical and Thoracic](#)
- * [Manipulation-First Rib](#)

Phase I exercises

- * [Cervical Retractions](#)
- * [Ulnar Nerve Floss](#)
- * [Scalene Stretch](#)
- * [Corner Pectoral Stretch](#)

Phase II exercises

- * [Resisted Shoulder Retraction](#)



Medicine (Baltimore). 2019 Mar;98(11):e14778. doi: 10.1097/MD.00000000000014778.

Arterial thoracic outlet syndrome caused by cervical ribs-an unusual case report.

Jiang S¹, Shen H¹, Tan WQ², Lu H¹.

[+ Author information](#)

Abstract

RATIONALE: Cervical ribs are rare conditions, occurring in 0.05% to 3.0% of the population. This manuscript reports a case of arterial thoracic outlet syndrome (ATOS) associated with this congenital anomaly.

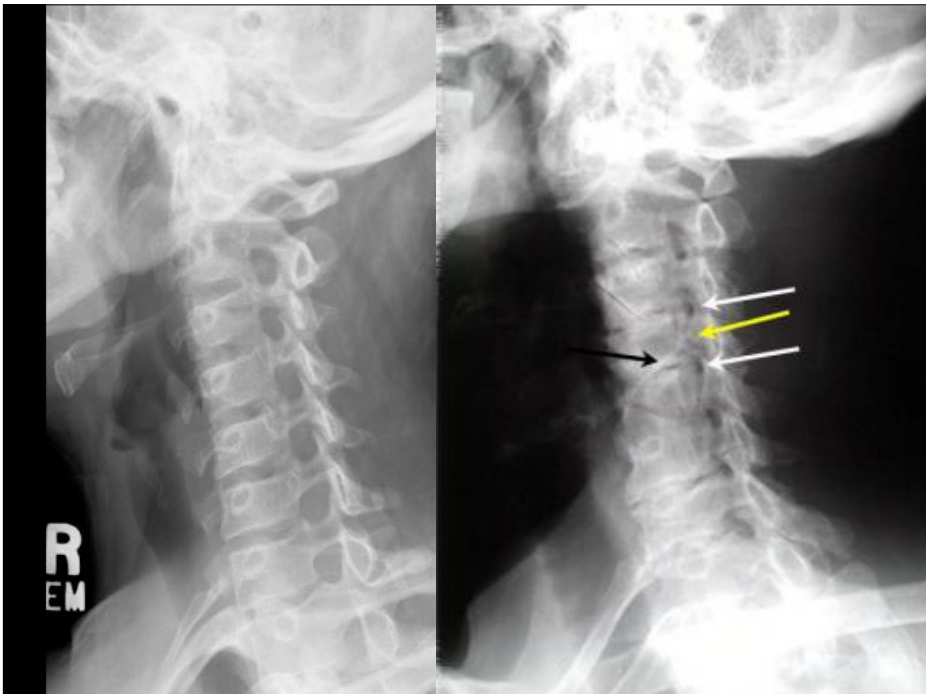
PATIENT CONCERNS: We report a 32-year-old female worker presenting pain in her left upper-extremity for 7 months. Her left hand became paler and cold when the temperature decreased, and the symptoms could not be eased through rest, physiotherapy and drugs medication.

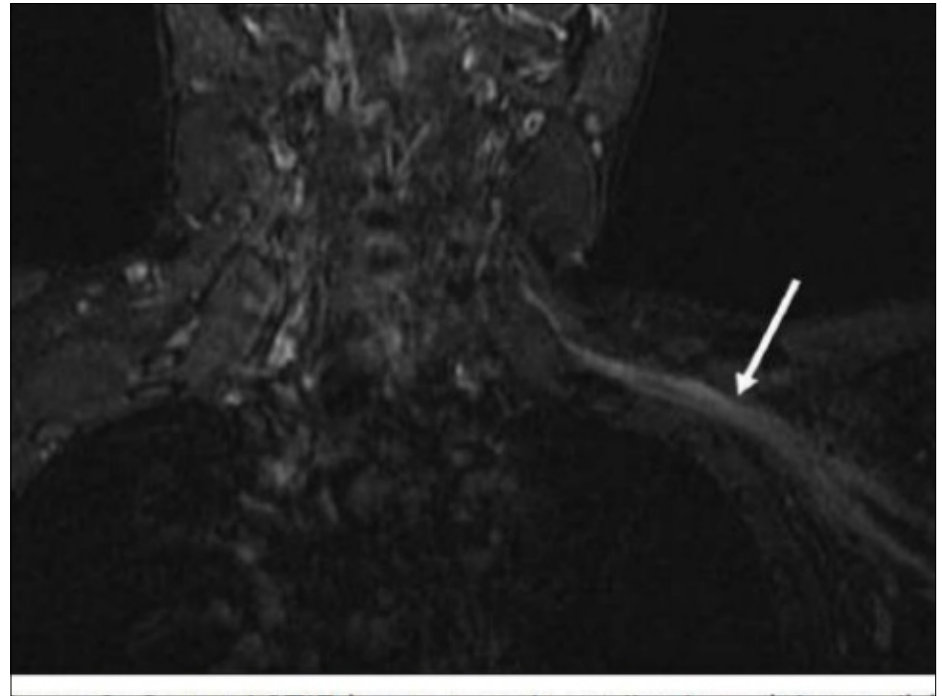
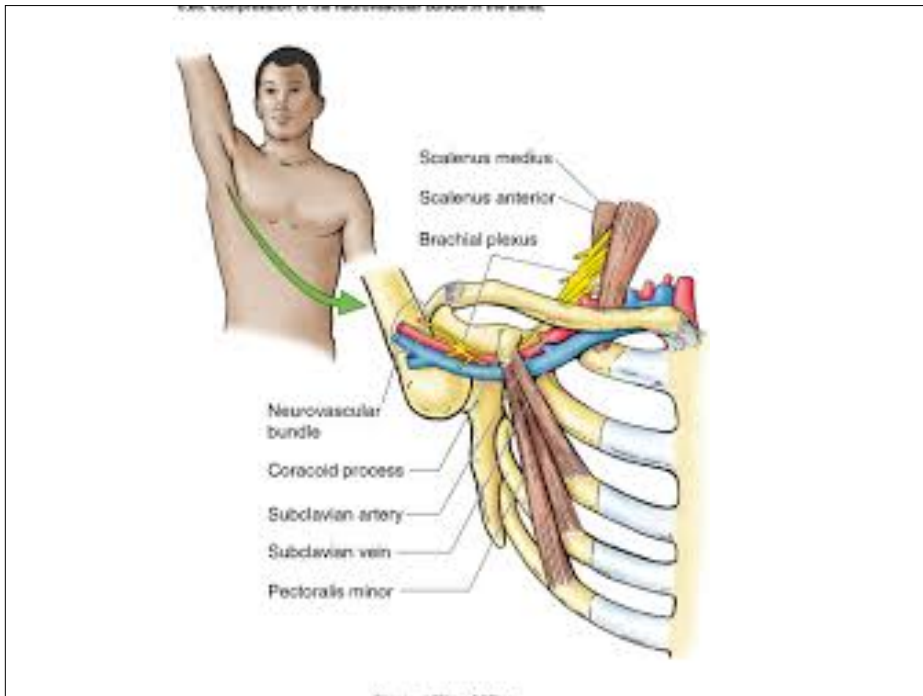
DIAGNOSES: Compression of left subclavian artery with axillary and brachial arteries thrombosis was confirmed by duplex ultrasound and computed tomography angiography. ATOS caused by cervical ribs was confirmed by medical history, physical examination, and imaging.

INTERVENTIONS: The patients underwent acute thrombolysis and balloon angioplasty.

OUTCOMES: Symptoms of pain and weakness disappeared after surgery. The patient had not experienced any apparent symptom recurrence at 1-year follow-up.

LESSONS: Successful treatment of ATOS depends upon urgent assessment, accurate identification of causative factors and compression site and early diagnosis before the event of arterial thrombosis. The surgery combined with anticoagulation treatment can improve the treatment outcome of ATOS.





Brachial Plexus Compression Test

Positive when deeper palpation of the supraclavicular fossa elicits distal symptoms. Positive in up to 68% of TOS patients. aka Morley test



Roos (EAST) Test

From a seated, "hands up" position, the patient repeatedly open and close hands with arms up. Test is positive for any form of TOS when symptoms are reproduced or the patient is unable to maintain this action for 3 minutes. aka Elevated Abduction Stress Test (EAST).



Wright's Test

The clinician monitors the patient's radial pulse while the seated patient's arm is taken into hyperabduction and external rotation. A positive test results in diminution of pulse intensity and reproduction of distal symptoms. Reproduction of TOS complaints implicates pectoral involvement. aka stress hyperabduction test.



Adson's Test

The clinician monitors the patient's radial pulse while the seated patient rotates their head toward the side to be tested, and performs cervical extension and shoulder external rotation with extension while the patient takes a deep breath. A positive test results in diminution of pulse intensity and reproduction of distal symptoms. A positive test is suggestive of TOS from scalene involvement.



Costoclavicular Test

- Clinician monitors radial pulse while the patient is seated with shoulder in extension, chest in exaggerated military posture. This maneuver is believed to compress the costoclavicular space. A positive test results in diminution of pulse intensity and reproduction of distal symptoms.



Ulnar Nerve Tension Test

The patient begins in a supine position with their arm at their side. The clinician flexes the patient's elbow to 90 degrees and extends their wrist. The clinician then pronates the patient's extended wrist and further flexes the elbow so that the patient's finger tips are touching their shoulder. Next, the clinician (may need to switch hands) stabilizes the top of the supine patient's shoulder and fingers with one hand, while the other hand externally rotates the patient's arm (wrist crease moves from pointing up, to pointing sideways). Finally the patient's shoulder is abducted. If complaints are reproduced, the clinician may have the patient ipsilaterally flex their neck to remove nerve tension (helping to differentiate between nerve irritation vs (non-neural) irritation of neighboring soft tissues).



Differential

In addition to the aforementioned vascular pathology, considerations for the differential diagnosis of TOS include: cervical radiculopathy, peripheral nerve entrapment, carpal tunnel syndrome, cubital tunnel syndrome, lateral or medial epicondylitis, complex regional pain syndrome, pancoast tumor with possible Horners syndrome (ptosis, miosis, anhidrosis), Raynauds disease, brachial plexus trauma, subclavian steal (brain ischemia post arm use), and somatovisceral referral from esophageal or cardiac pathology.

Management

Evaluation

- * [Adson's Test](#)
- * [Brachial Plexus Compression Test](#)
- * [Costoclavicular Test](#)
- * [Roos Test](#)
- * [Wrights Hyperabduction Test](#)

Management

Soft Tissue

- * [Nerve Floss- Ulnar](#)
- * [STM- Pec Minor](#)
- * [STM- Scalenes](#)

Manipulation/Mobilization

- * [Manipulation-Cervical and Thoracic](#)
- * [Manipulation-First Rib](#)

Phase I exercises

- * [Cervical Retractions](#)
- * [Ulnar Nerve Floss](#)
- * [Scalene Stretch](#)
- * [Corner Pectoral Stretch](#)

Phase II exercises

- * [Resisted Shoulder Retraction](#)

Ulnar Nerve Floss

The ulnar nerve provides sensation to the medial forearm and 4th/5th digits. Adhesions along the course of the nerve may develop secondary to any traumatic or inflammatory process. "Nerve flossing" may help release adhesions and restore normal neurodynamics. Ulnar nerve flossing is performed by laying supine with the shoulder elevated and elbow extended. The patient is asked to slowly depress the shoulder and internally rotate their arm with fingers and wrist in extension. The arm is externally rotated and passively stretched into elbow flexion. The shoulder is then abducted and flexed. Flossing motions should not create or intensify any radicular complaints. The flossing pattern should be repeated 10 times, from the starting position to the end position. The patients may benefit by continuing self-flossing exercises at home.



STM- Pec Minor

The pectoralis minor muscle originates on ribs 3-5 and attaches to the coracoid process. The actions of the muscle include scapular depression and rotation. Trigger points commonly develop in the muscle belly. Soft tissue manipulation includes ischemic compression of trigger points and myofascial stripping parallel to the muscle fibers. Movement stripping may be performed by contacting the trigger points and applying pressure while passively moving the muscle from a shortened to lengthened state.



STM- Scalenes

The scalene muscles (anterior, middle and posterior) originate on the transverse processes of C2-7 and attach to the first and second rib. The actions of the muscle include lateral flexion of the cervical spine and assistance with inspiration. Trigger points commonly develop in the inferior muscle bellies. Soft tissue manipulation includes ischemic compression of trigger points and myofascial stripping parallel to the muscle fibers. Clinicians should recognize the presence of the Carotid artery in this region and be judicious when performing STM. Care should be taken to avoid carotid sinus stimulation. Movement stripping may be performed by contacting the trigger points and applying pressure while passively moving the muscle from a shortened to lengthened state. Contract/ relax stretching is performed by tensioning the muscle, then asking the patient to laterally flex their head against resistance, followed by increased stretch.



Rehabilitation

Evaluation

- * [Adson's Test](#)
- * [Brachial Plexus Compression Test](#)
- * [Costoclavicular Test](#)
- * [Roos Test](#)
- * [Wrights Hyperabduction Test](#)

Management

Soft Tissue

- * [Nerve Floss- Ulnar](#)
- * [STM- Pec Minor](#)
- * [STM- Scalenes](#)

Manipulation/Mobilization

- * [Manipulation-Cervical and Thoracic](#)
- * [Manipulation-First Rib](#)

Phase I exercises

- * [Cervical Retractions](#)
- * [Ulnar Nerve Floss](#)
- * [Scalene Stretch](#)
- * [Corner Pectoral Stretch](#)

Phase II exercises

- * [Resisted Shoulder Retraction](#)

Cervical Retractions

Sit or stand looking forward with good posture. Tuck your chin to create a double chin. Hold this position for 3-5 seconds. Return to the starting position. Focus your vision on a spot on the wall to avoid neck flexion or extension. To progress, place a finger on your chin, and apply backwards pressure at end range. Imagine that your head is on drawer slides. Keep your mouth closed. Perform 1 set of 10 repetitions 3-10 times per day. Alternately, this exercise may be performed standing with your back against a wall. Your buttocks and shoulder blades should be in contact with the wall. Tuck your chin to make a "double chin" until the base of your skull contacts the wall, relax and repeat as directed.



Ulnar Nerve Floss

Hold your arm in front of you with your elbow, wrist, and fingers straight as though you are getting ready to shake hands. Touch the tips of your thumb and first finger together to make a ring. Slowly flex your elbow until your hand reaches your face. The ring position should be maintained and your forefinger should be just beneath your eye socket. Slowly raise your elbow to flip the ring up into a "monacle" around your eye. Lower your arm back to the starting position and repeat 10 repetitions three times per day or as directed.



Scalene Stretch

While sitting or standing, reach down with your right arm, grasping your thigh or the bottom of a chair for stability. While looking straight ahead, place your left hand on top of your head, and gently pull your head sideways toward the left. Against the resistance of your hand, attempt to laterally flex your right ear toward your right shoulder for seven seconds. Relax and stretch further toward the left. "Lock in" to each new position, and do not allow any slack. Repeat three contract/relax cycles on each side twice per day or as directed.

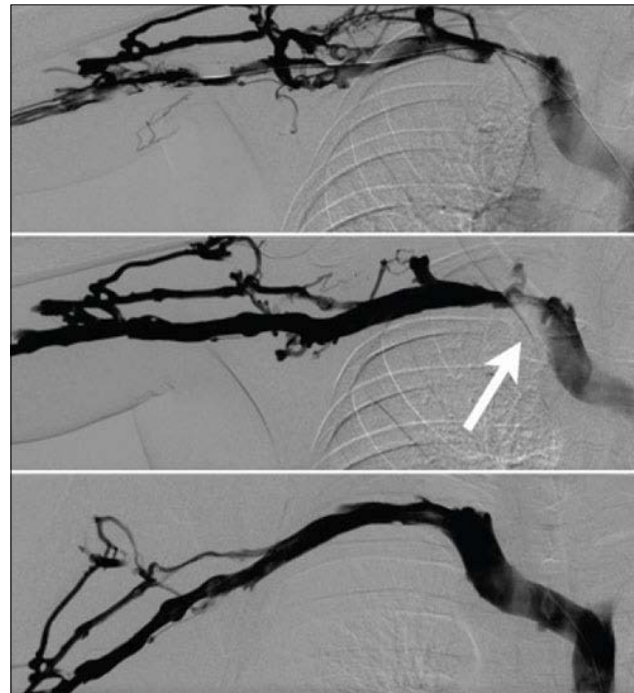


Corner Pectoral Stretch

Begin standing, facing a corner with your palms on the walls above head level. Step toward the corner and "lean in" to stretch your chest muscles. Against the resistance of the wall, attempt to push your hands into the wall and toward each other for 7 seconds. Relax and "lean in" to increase the stretch. Lock into this new position and repeat 3 contract/relax cycles, twice per day or as directed.



Are you attacking all possible causes of compression on the brachial plexus.



Surgery

~90%

J Vasc Surg. 2019 Mar 6. pii: S0741-5214(19)30169-7. doi: 10.1016/j.jvs.2018.12.027. [Epub ahead of print]

Physical therapy management, surgical treatment, and patient-reported outcomes measures in a prospective observational cohort of patients with neurogenic thoracic outlet syndrome.

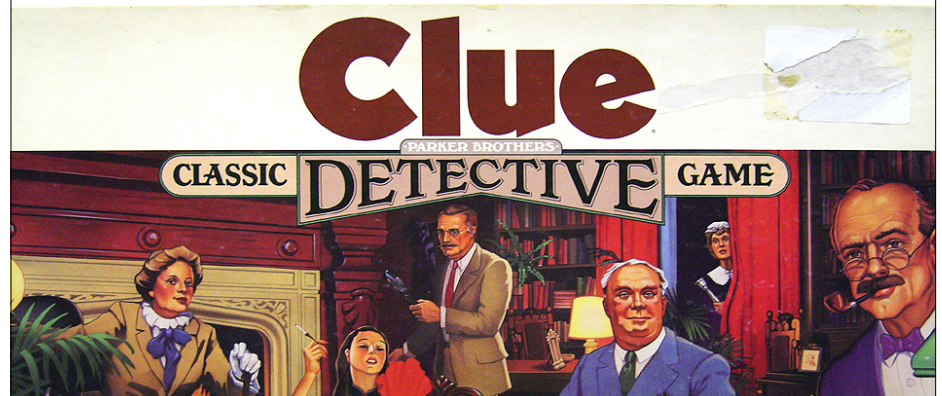
Balderman J¹, Abuirqeba AA¹, Eichaker L², Pate C², Earley JA², Bottros MM³, Jayarajan SN¹, Thompson RW⁴.



Adhesive Capsulitis

Primary Adhesive Capsulitis

Patients with “primary” adhesive capsulitis are unable to identify the genesis of their condition.



Secondary Adhesive Capsulitis

Follows a period of restricted shoulder motion

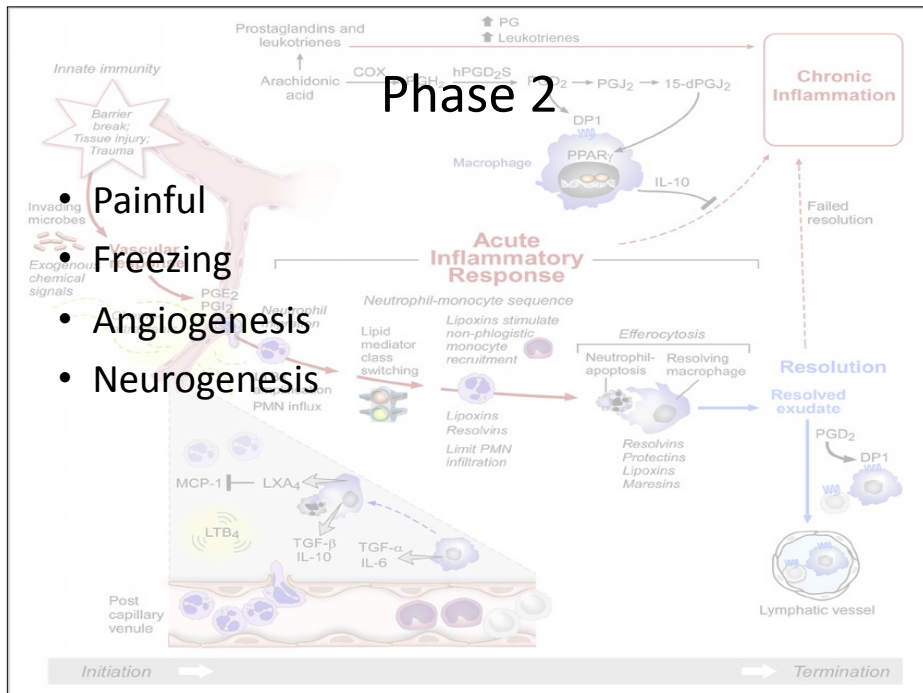
- Rotator cuff pathology
- Trauma
- Surgery



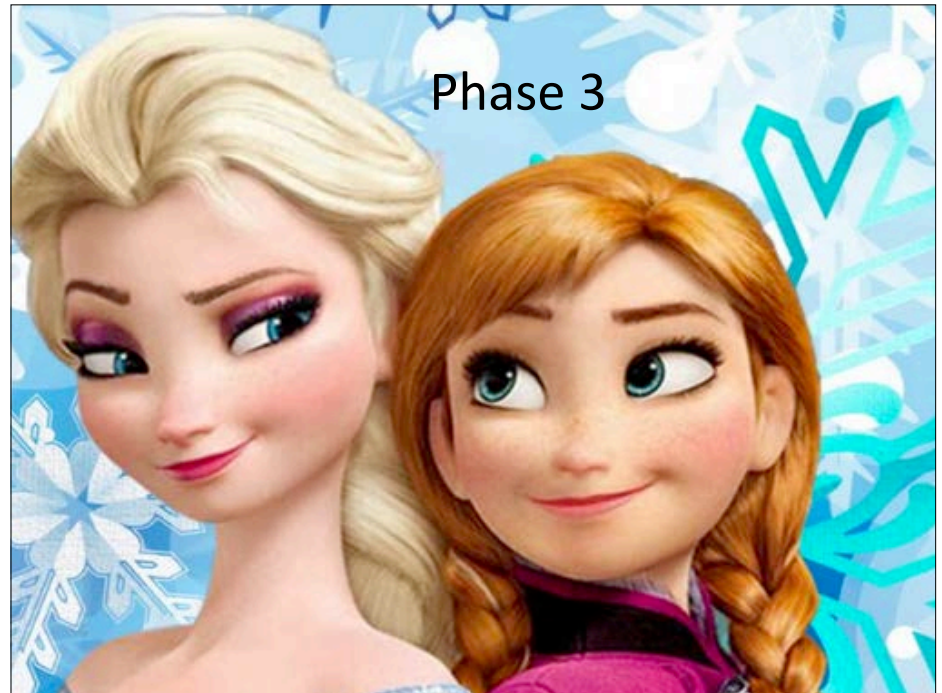
Phase 1

Pre-Cursor Phase

- Internal Rotation—SAIS, Supra, TM, Infra
- External Rotation—Capsule and Subscapularis
 - At 0 degrees: subscapularis
 - >45 degrees: capsule



Phase 3



Phase 4

“Thawing”

Associated with progressively decreasing pain and stiffness.



Incidence

2-5% population

10-20% Type 1 Diabetes

36% Type 2 Diabetes

Thyroid Disease

Incidence

Peak Incidence 40-65 yro

Females

Greater risk if prior episode in contralateral arm

Symptoms

- Sleep disturbances are common.
- Functional range of motion deficits limit reaching overhead, behind the back, or to the side.
- Difficulty grooming and dressing.
- Symptoms have generally progressed or plateaued for at least one month prior to presentation.

Evaluation

- Evaluation
- [Hawkins- Kennedy Test](#)
 - [Neer Test](#)
 - [Shoulder ROM](#)

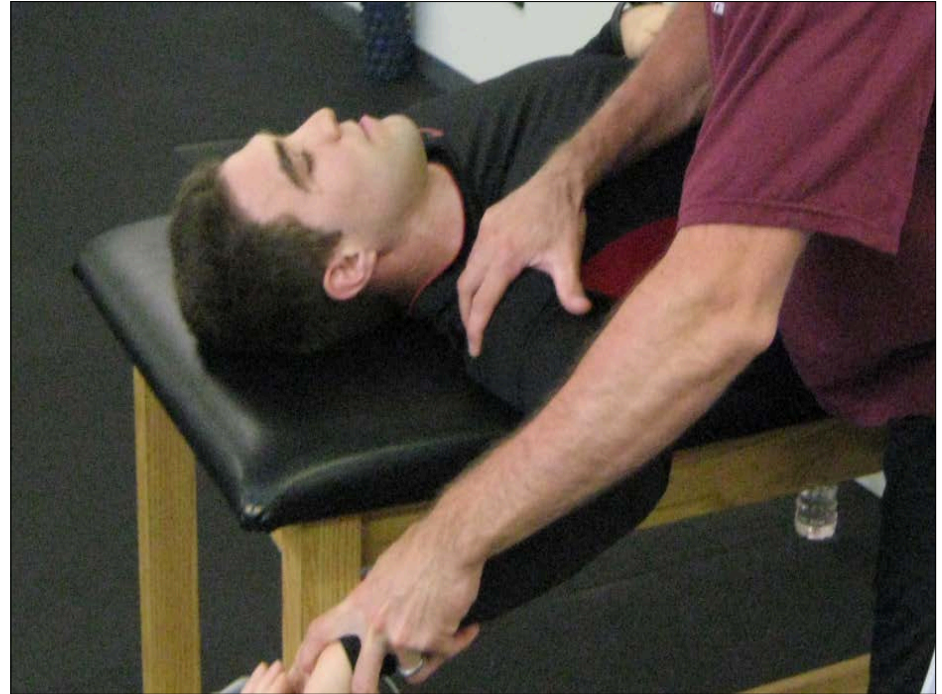
IMAGING RECOMMENDATIONS

- Management
- Soft Tissue
- [IASTM/TFM- Glenohumeral Capsule](#)
 - [STM- Pec Major](#)
 - [STM- Subscapularis](#)
 - [STM- Supraspinatus](#)

- Manipulation/Mobilization
- [Manipulation-Cervical and Thoracic](#)
 - [Mobilization- GH Joint](#)
 - [Mobilization-Scapula](#)

- Phase I exercises
- [Ext Rot Doorway Stretch](#)
 - [Cane- Abduction](#)
 - [Cane- Flexion](#)
 - [Codman Pendulum](#)
 - [Shoulder Internal Rotation- Towel](#)
 - [Cross Body Stretch](#)

- Phase II exercises
- [Resisted Shoulder Extension Prone](#)
 - [Resisted Shoulder Flexion](#)
 - [Side Lying Horizontal Abduction](#)



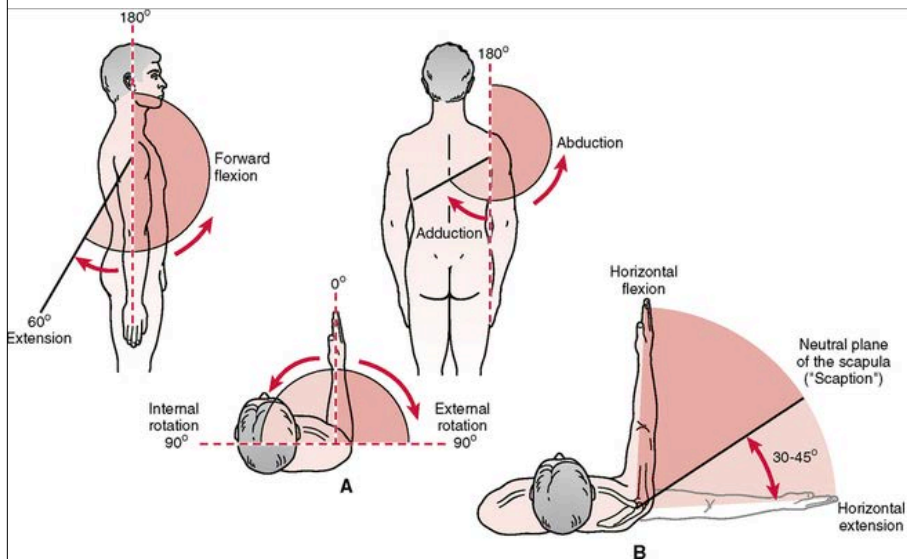
Hawkin's Kennedy



Neer's



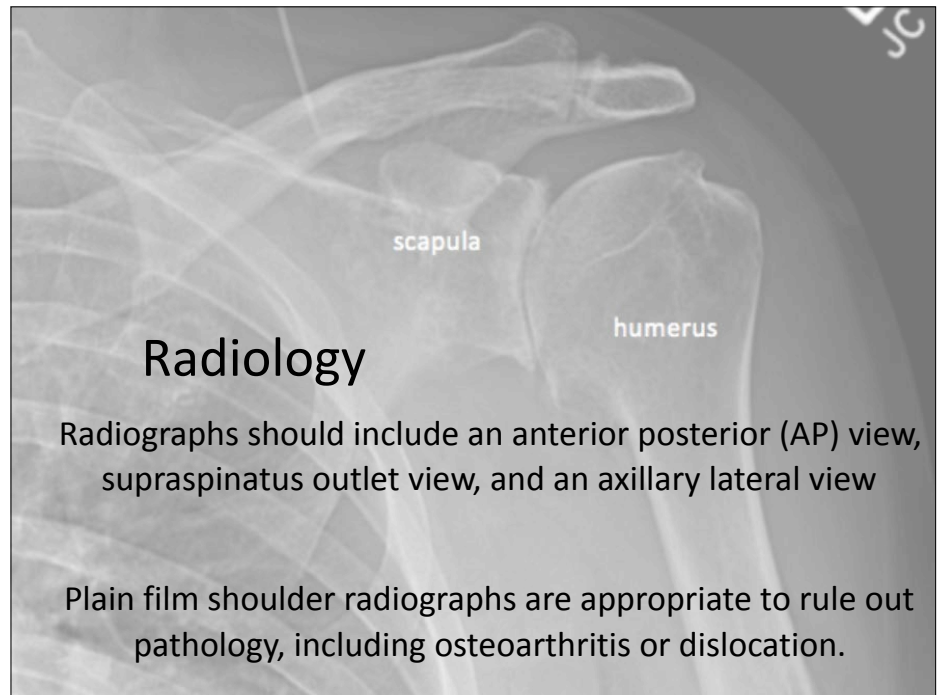
Shoulder ROM

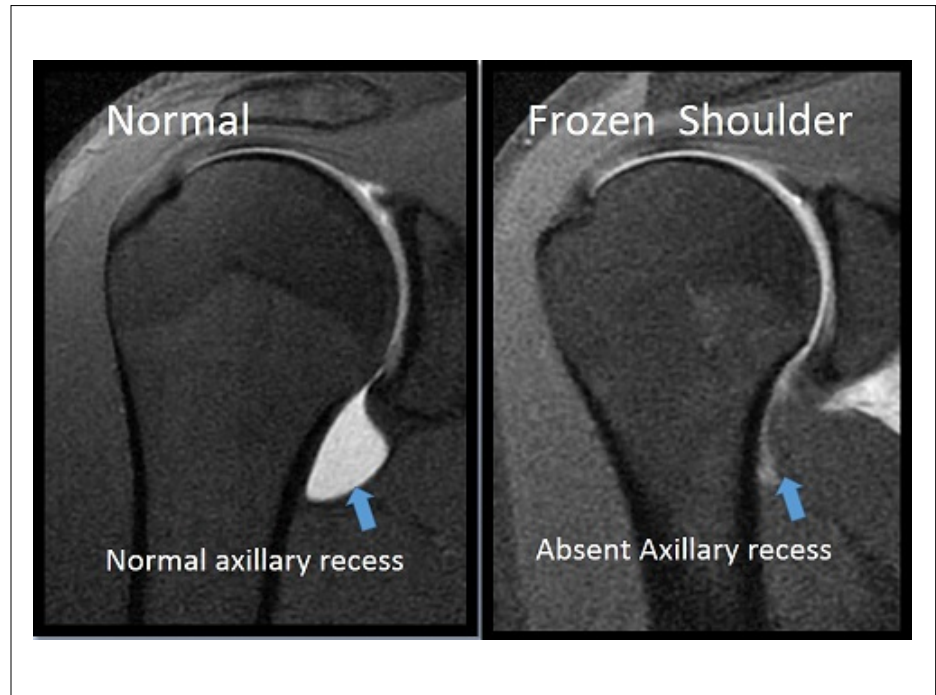
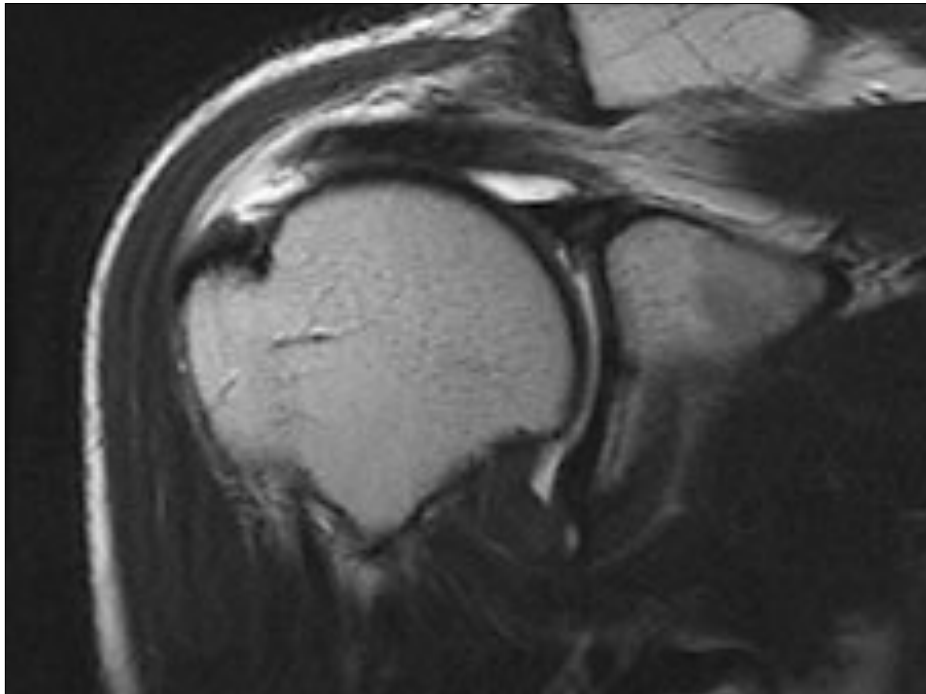


Radiology

Radiographs should include an anterior posterior (AP) view, supraspinatus outlet view, and an axillary lateral view

Plain film shoulder radiographs are appropriate to rule out pathology, including osteoarthritis or dislocation.





What Else Can Cause Shoulder Pain and Restriction to ROM

fracture, infection, neoplasm, calcific tendinitis, bursitis, ***cervical radiculopathy***, fibromyalgia, shoulder impingement, rotator cuff pathology, osteoarthritis, systemic arthropathy, sprain/strain, and referred scleratogenous pain-particularly from the cardiac or digestive systems.

Management

Evaluation
<ul style="list-style-type: none"> Hawkins- Kennedy Test Neer Test Shoulder ROM
IMAGING RECOMMENDATIONS
Management
Soft Tissue
<ul style="list-style-type: none"> IASTM/ TFM- Glenohumeral Capsule STM- Pec Major STM- Subscapularis STM- Supraspinatus
Manipulation/Mobilization
<ul style="list-style-type: none"> Manipulation-Cervical and Thoracic Mobilization- GH Joint Mobilization-Scapula
Phase I exercises
<ul style="list-style-type: none"> Ext Rot Doorway Stretch Cane- Abduction Cane- Flexion Codman Pendulum Shoulder Internal Rotation- Towel Cross Body Stretch
Phase II exercises
<ul style="list-style-type: none"> Resisted Shoulder Extension
Prone
<ul style="list-style-type: none"> Resisted Shoulder Flexion Side Lying Horizontal Abduction



IASTM- GlenoHumeral Capsule

The glenohumeral capsule and ligaments connect the humeral head to the scapular glenoid. IASTM/TFM may be utilized over the ligaments as a means of releasing adhesions and improving blood flow. Position the patient to best expose the affected ligament. The ligament may be worked along the orientation of the fibers and in a cross friction (strumming) fashion to stimulate a healing response of injured or disorganized tissue. Areas of scar tissue or abnormal tissue density should be worked for 1-3 minutes.



STM- Pec Major

The pectoralis minor muscle originates on ribs 3-5 and attaches to the coracoid process. The actions of the muscle include scapular depression and rotation. Trigger points commonly develop in the muscle belly. Soft tissue manipulation includes ischemic compression of trigger points and myofascial stripping parallel to the muscle fibers. Movement stripping may be performed by contacting the trigger points and applying pressure while passively moving the muscle from a shortened to lengthened state.



STM- Subscapularis

The subscapularis muscle originates on the undersurface of the scapula and attaches to the lesser tubercle of the humerus. The actions of the muscle include shoulder internal rotation and glenohumeral stabilization. Trigger points commonly develop in muscle belly. Soft tissue manipulation includes ischemic compression of trigger points and myofascial stripping parallel to the muscle fibers. Movement stripping may be performed by contacting the muscle trigger points and applying pressure while passively abducting the humerus. Clinicians should recognize the presence of sensitive neurovascular structures in this region and be judicious when performing STM.



STM- Supraspinatus

The supraspinatus muscle originates on the supraspinous process of the scapula and attaches to the greater tubercle of the humerus. The actions of the muscle include shoulder abduction and glenohumeral stabilization. Trigger points commonly develop in muscle belly. Soft tissue manipulation includes ischemic compression of trigger points and myofascial stripping parallel to the muscle fibers. IASTM is an alternate means of stripping the muscle. Movement stripping may be performed by contacting the muscle distally and applying pressure while passively moving the muscle from a shortened to lengthened state by having the patient reach behind their back.



GH Mobilization

Anterior, posterior, and inferior glide mobilizations performed at the end range of abduction



Mobilization Scapula

The patient is prone. The clinician supports the patients abducted and relaxed arm and stabilizes the shoulder. Scapular mobilization is performed by grasping the patient's scapula and progressively moving it superiorly, inferiorly, and laterally, to include movements of rotation and distraction from the thorax.



Management

Evaluation
<ul style="list-style-type: none">Hawkins- Kennedy TestNeer TestShoulder ROM
IMAGING RECOMMENDATIONS
Management
Soft Tissue
<ul style="list-style-type: none">IASTM/TFM- Glenohumeral CapsuleSTM- Pec MajorSTM- SubscapularisSTM- Supraspinatus
Manipulation/Mobilization
<ul style="list-style-type: none">Manipulation-Cervical and ThoracicMobilization- GH JointMobilization-Scapula
Phase I exercises
<ul style="list-style-type: none">Ext Rot Doorway StretchCane- AbductionCane- FlexionCodman PendulumShoulder Internal Rotation- TowelCross Body Stretch
Phase II exercises
<ul style="list-style-type: none">Resisted Shoulder Extension ProneResisted Shoulder FlexionSide Lying Horizontal Abduction

External Rotation Stretch

Stand at the edge of a doorway or near a wall. Begin with your arms at your side and your elbows bent at 90 degrees. Place the affected hand/wrist on the doorframe or wall and slowly turn away until you feel a gentle stretch. Against the resistance of the doorframe, rotate your arm towards your body for seven seconds. Relax and slowly rotate your body away from the doorframe to increase the stretch. Keep your elbow tucked into your side throughout this exercise. Perform three contract/relax cycles on each side twice per day or as directed.



Abduction w/ Cane

Begin standing holding a cane in front of your hips with your arms at your sides. Your involved arm should be grasping the cane palm out, and the uninvolved arm grasping the cane palm facing your thigh. Keeping your elbows straight, use the uninvolved arm to slowly push the involved side away from your body and upward as far as is comfortable. Return to the starting position and perform three sets of 10 repetitions twice per day or as directed.



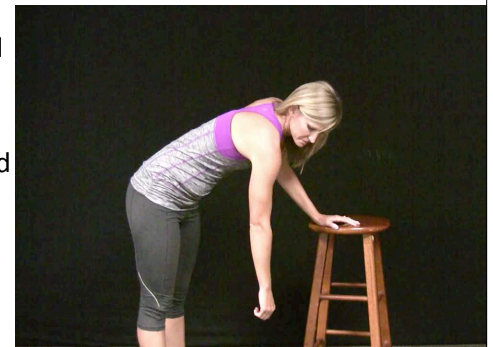
Flexion w/ Cane

Stand holding a cane in both hands with your arms hanging down in front of your thighs, palms facing your thighs. While keeping your elbows straight, slowly raise your arms in front of your body, overhead in a pain-free range of motion. Your "good arm" may need to help the involved side. Return to the start position and repeat three sets of 10 repetitions twice per day or as directed.



Codman Pendulum

Lean over a table using the uninvolved arm for support as shown. If directed, you may hold a light weight in your hand to increase traction. Allow the involved arm to hang freely. Use your torso to swing your involved arm in a clock-wise circle for 50 repetitions. Repeat in a counter-clockwise circle for 50 repetitions. Perform 50 repetitions in each direction twice per day or as directed.



Shoulder Internal Rotation

While standing, place your involved arm behind your back at waist level. Place your uninvolved hand behind your head and grasp a towel between your hands. Leading with your top arm, pull the towel up until you feel a stretch in your involved shoulder. Gradually increase the stretch over the period of one minute. Perform this stretch twice per day. *This stretch may alternately be performed as a contract/relax stretch by gently pulling downward on the towel with your involved arm against the steady resistance of your other arm for seven seconds. Relax and gently pull the towel upward with your top arm to increase the stretch in your shoulder. "Lock in" to each new position and repeat three contract/relax cycles twice per day or as directed.



Cross Body Stretch

While sitting or standing, bring your involved arm across the front of your upper chest as shown in the picture. Hold the affected elbow with your uninvolved arm and gently pull across your chest until a stretch is felt in the back of your shoulder. Relax and stretch the arm further across your body. Repeat three stretches, twice per day or as directed.



Shoulder Evaluation

The Shoulder Evaluation: Patient History

1. What is the patient's age
2. How does the patient support the arm?
3. What was the mechanism of injury, if any?
4. Are there any movements that cause the patient pain or problems?



Rotator Cuff Differential Dx

● A/C joint injury, A/C or glenohumeral osteoarthritis, adhesive capsulitis, biceps tendinopathy/rupture, labral injury, calcific tendonitis, cervical radiculopathy/ referral, inflammatory arthropathy, avascular necrosis, neoplasm, suprascapular nerve entrapment, instability, fibromyalgia, acute bursitis, myofascial pain syndrome, thoracic outlet syndrome, fracture, infection, and somatovisceral referral- particularly cardiac.

	NO DIFFICULTY	MILD DIFFICULTY	MODERATE DIFFICULTY	SEVERE DIFFICULTY	UNABLE
1. Open a tight or new jar.	1	2	3	4	5
2. Do heavy household chores (e.g., wash walls, floors).	1	2	3	4	5
3. Carry a shopping bag or briefcase.	1	2	3	4	5
4. Wash your back.	1	2	3	4	5
5. Use a knife to cut food.	1	2	3	4	5
6. Recreational activities in which you take some force or impact through your arm, shoulder or hand (e.g., golf, hammering, tennis, etc.).	1	2	3	4	5

	NOT AT ALL	SLIGHTLY	MODERATELY	QUITE A BIT	EXTREMELY
7. During the past week, to what extent has your arm, shoulder or hand problem interfered with your normal social activities with family, friends, neighbours or groups?	1	2	3	4	5

	NOT LIMITED AT ALL	SLIGHTLY LIMITED	MODERATELY LIMITED	VERY LIMITED	UNABLE
8. During the past week, were you limited in your work or other regular daily activities as a result of your arm, shoulder or hand problem?	1	2	3	4	5

Please rate the severity of the following symptoms in the last week. (Circle number)

	NONE	MILD	MODERATE	SEVERE	EXTREME
9. Arm, shoulder or hand pain.	1	2	3	4	5
10. Tingling (pins and needles) in your arm, shoulder or hand.	1	2	3	4	5

	NO DIFFICULTY	MILD DIFFICULTY	MODERATE DIFFICULTY	SEVERE DIFFICULTY	SO MUCH DIFFICULTY THAT I CAN'T SLEEP
11. During the past week, how much difficulty have you had sleeping because of the pain in your arm, shoulder or hand? (circle number)	1	2	3	4	5

QuickDASH

WORK MODULE (OPTIONAL)

The following questions ask about the impact of your arm, shoulder or hand problem on your ability to work (including homeworking if that is your main work role). Please indicate what your job/work is: _____

⚠ I do not work. (You may skip this section.)
Please circle the number that best describes your physical ability in the past week.

Did you have any difficulty:	NO DIFFICULTY	MILD DIFFICULTY	MODERATE DIFFICULTY	SEVERE DIFFICULTY	UNABLE
1. using your usual technique for your work?	1	2	3	4	5
2. doing your usual work because of arm, shoulder or hand pain?	1	2	3	4	5
3. doing your work as well as you would like?	1	2	3	4	5
4. spending your usual amount of time doing your work?	1	2	3	4	5

SPORTS/PERFORMING ARTS MODULE (OPTIONAL)

The following questions relate to the impact of your arm, shoulder or hand problem on playing your musical instrument or sport or both. If you play more than one sport or instrument (or play both), please answer with respect to that activity which is most important to you.

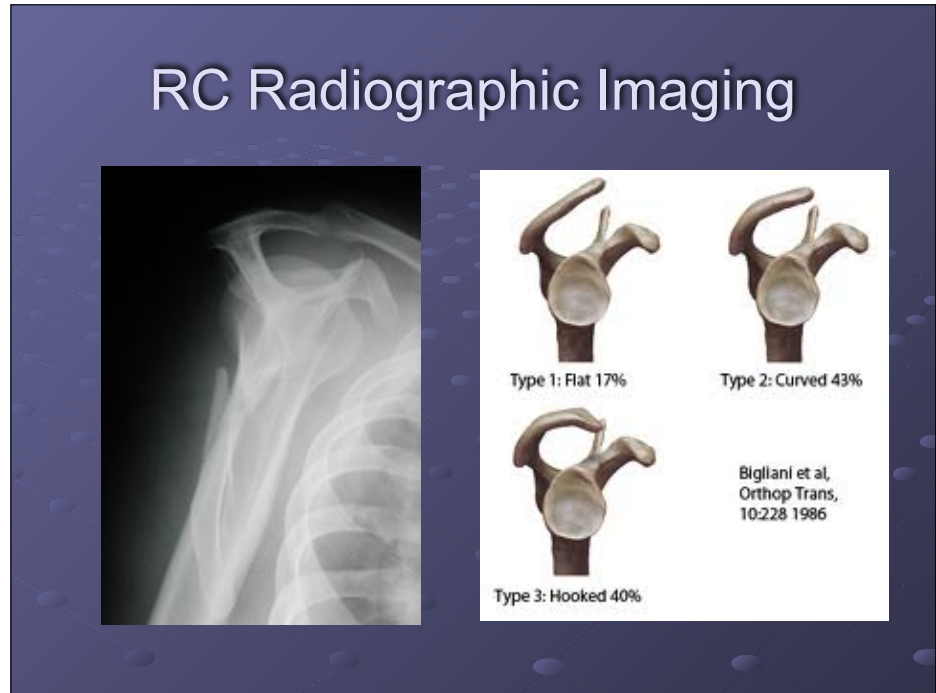
Please indicate the sport or instrument which is most important to you: _____

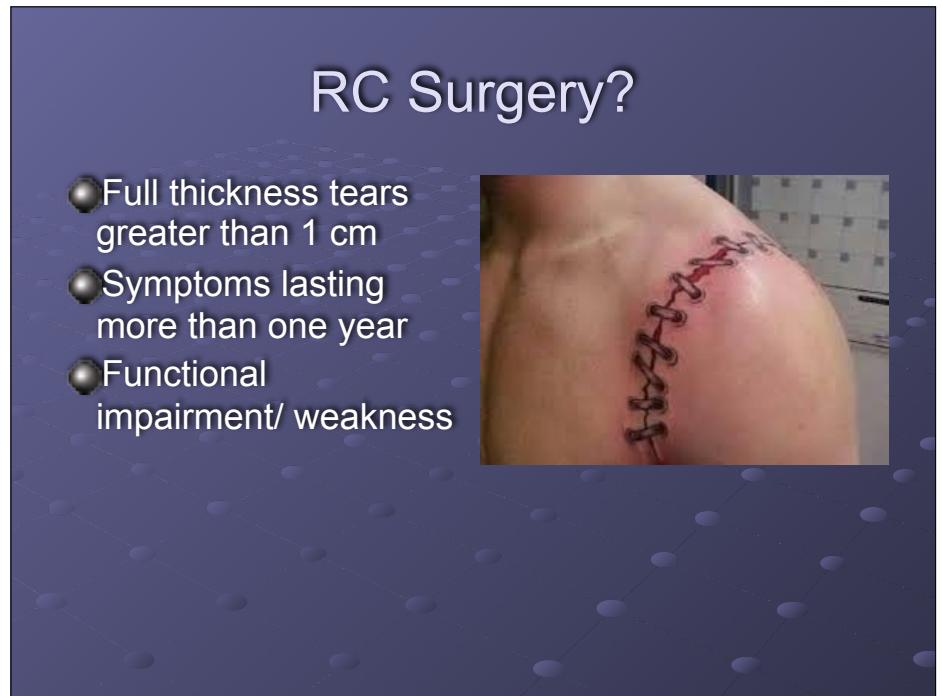
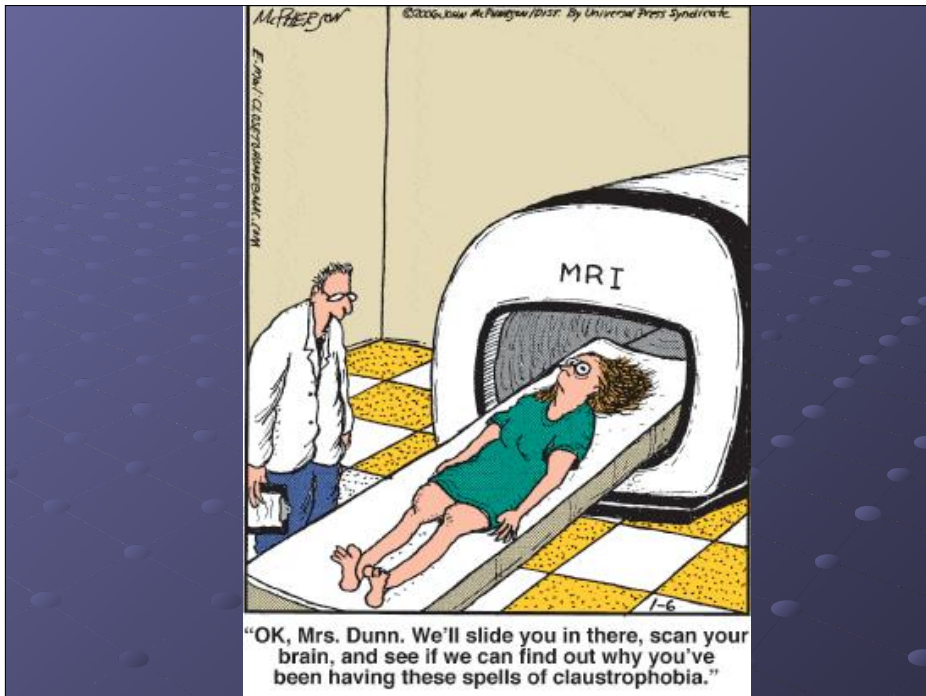
⚠ I do not play a sport or an instrument. (You may skip this section.)
Please circle the number that best describes your physical ability in the past week.

Did you have any difficulty:	NO DIFFICULTY	MILD DIFFICULTY	MODERATE DIFFICULTY	SEVERE DIFFICULTY	UNABLE
1. using your usual technique for playing your instrument or sport?	1	2	3	4	5
2. playing your musical instrument or sport because of arm, shoulder or hand pain?	1	2	3	4	5
3. playing your musical instrument or sport as well as you would like?	1	2	3	4	5
4. spending your usual amount of time practicing or playing your instrument or sport?	1	2	3	4	5

SCORING THE OPTIONAL MODULES: Add up assigned values for each response, divide by 4 (number of items), subtract 1, multiply by 20.
An optional module score may not be calculated if there are any missing items.

Problem #	Shoulder R L	Initial Eval	Re-Exam 1	Re-Exam 2	Re-Exam 3
	Date				
	UAS				
	QAS/DASH				
	% Subjective Improvement				
	Subjective Complaints				
	ROM				
	Flexion / Abduction / 150				
	Elevated Flex / 180				
	External Rotation / 90				
	Internal Rotation / 90				
	Extension / 90				
	Adduction / 0				
	Horizontal Abduct				
	Isolated strength				
	Supraspinatus (MAG/1H)				
Infraspinatus (H)					
Subscapularis (H/1H)					
Biceps (Supr / 1H/1)					
Orthopedic					
Impingement Assistance					
Scapular Retraction					
Scapular Protraction					
Scapular Flexion/Extension					
Scapular Clock					
Hawkins Kennedy					
Yocum					
Yocum Inferior					
Cross Arm					
A/C Diagnostic Cluster					
Hangman's					
Over the Top					
Special					
Spencer's					
Cross Body Abduction					
Padua Test					
A/C Differential					
Phalen Lead Test					
Crack Test					
TOB Cluster					
Neurologic					
Demastriotes					
Maignant					
Rulick					
Palpation					
Trigger points & Tenderness					
Joint Restriction					
Posture & Function					
Scapular Dyskinesis					
Upper Crossed					
Reaching Evaluation					
Plan					
Treatment	/	/	/	/	
Time Frame	weeks	weeks	weeks	weeks	
Treatment Outcome Goal					





ADL advice

Avoid:

- Painful overhead activity
- Carrying heavy objects
- Sleeping on the affected side

Try:

- Ice
- Home rehab exercises
- Aerobic exercise/ weight loss
- Smoking cessation

Active Rehab

Initial Goals:

1. Achieve Full Range of motion through all joints of the shoulder girdle.

- Manipulation
- Mobilization
- Stretching

2. Achieve Conscious activation of the scapular stabilizers.

- Rehabilitation



Strengthening

1. Can only occur after scapular stabilization.

- Holmgren T, Bjornsson Hallgren H, Oberg B et al. Effect of specific exercise strategy on need for surgery in patients with subacromial impingement syndrome: randomised controlled study. *BMJ*. 2012 Feb 20;344:e787.
- Hsu Y, Chen W, et al. The effects of taping on scapular kinematics and muscle performance in baseball players with shoulder impingement syndrome. *Journal of Electromyography and Kinesiology* 2009;19:1092-1099
- Kaya E, Zinnuroglu M, Tugcu I. Kinesio taping compared to physical therapy modalities for the treatment of shoulder impingement syndrome. *Clinical Rheumatology* 2010;30(2):201-207
- Thelen M, Dauber J, Stoneman P. The Clinical Efficacy of Kinesio Tape for shoulder Pain: A Randomized Double-blinded, Clinical Trial. *Journal of Orthopaedic & Sports Physical Therapy* 2008;38(7):389-395
- Bartolozzi A, Andreychik D, Ahmad S. Determinants of outcome in the treatment of rotator cuff disease. *Clin Orthop Relat Res* 1994, 308:90-97.
- Ainsworth R, Lewis JS. Exercise therapy for the conservative management of full thickness tears of the rotator cuff: clinical practice a systematic review. *Br J Sports Med* 2007;41:200-10

2. Focus should remain on eccentric strengthening

- Litchfield R, et al. Progressive strengthening exercises for subacromial impingement syndrome. *Clin J Sport Med*. 2013
- Bernhardsson S, Klintberg IH, Wendt GK. Evaluation of an exercise concept focusing on eccentric strength training of the rotator cuff for patients with subacromial impingement syndrome. *Clin Rehabil*. Jan 2011;25(1):69-78.
- Jonsson P, Wahlstrom P, Ohberg L, Alfredson H. Eccentric training in chronic painful impingement syndrome of the shoulder: results of a pilot study. *Knee Surg Sports Traumatol Arthrosc*. Jan 2006;14(1):76-81.



9/22/2017

Dr. Justin Rittenhouse
1 Over There
Highland, IL 62249

RE: Release summary for Joe Sample

Dear Dr. Justin Rittenhouse:

This is a letter to update you on the status of your patient Joe Sample, who was most recently evaluated in my office on 9/22/2017. This patient initially presented to my office on 1/1/17 with Shoulder related symptoms. My initial diagnosis was Rotator Cuff Strain/Tendinopathy. Treatment included Therapy Modalities, Myofascial Release and Therapeutic Exercise.

The patient was treated a total of 8 times and has responded favorably. Currently, the patient reports approximately 95% overall subjective improvement. Objective findings have improved proportionately.

At this time, I feel that the patient has reached maximum therapeutic benefit and will be released to an as needed basis per your discretion. If I may provide any additional information, please call. Once again, thank you for allowing me to participate in the care of your patient.

Sincerely,

Brandon Steele

