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Therapeutic Rehab Specialists

Shoulder / Knee Injuries & Surgical Intervention

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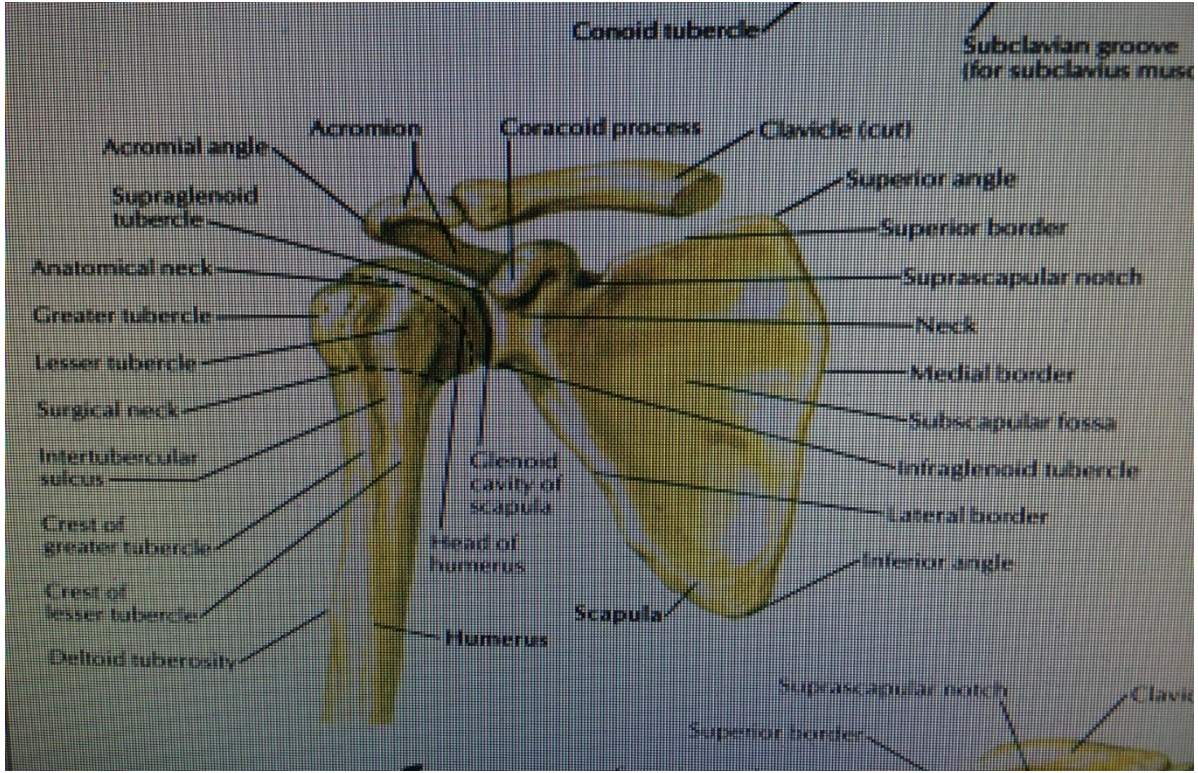
Who am I & what will we be learning?

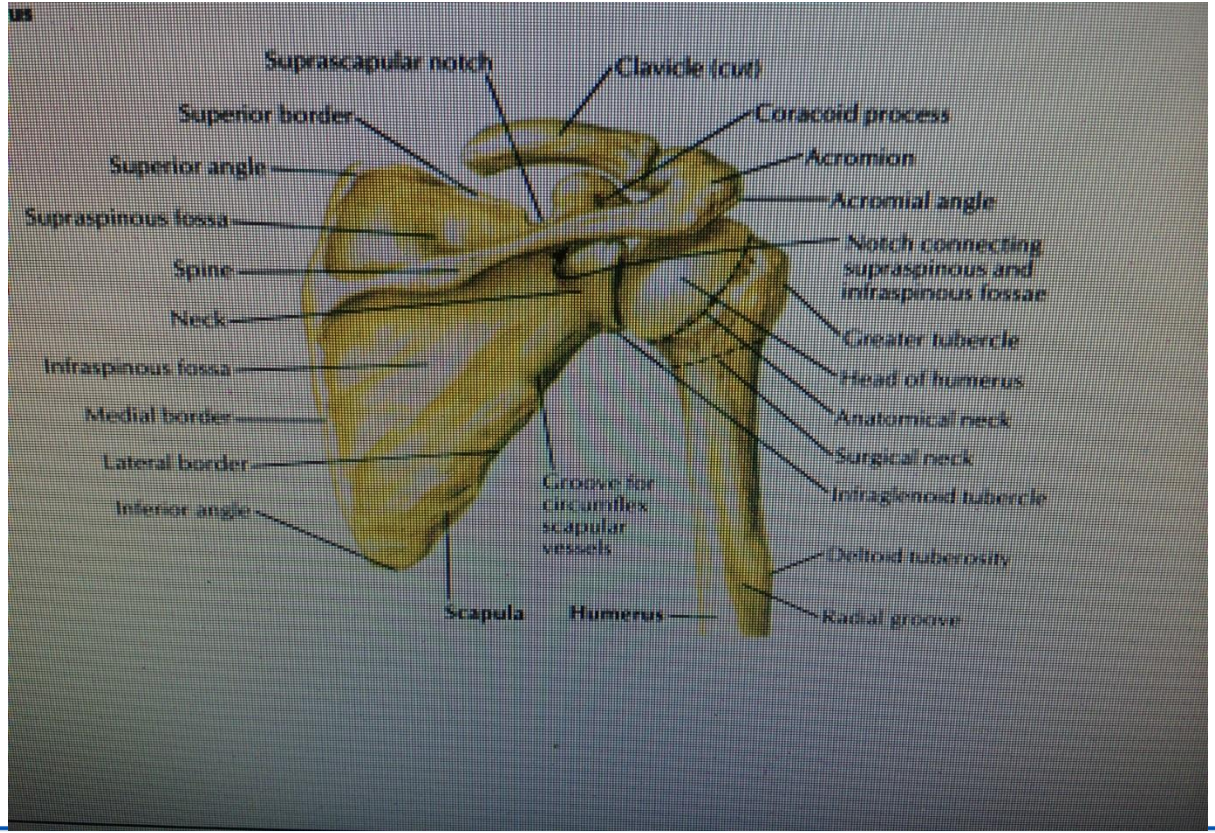
Objectives

- Anatomy and physiology.
- Apply biomechanical knowledge of joints to examine and diagnose/hypothesize the movement dysfunction at the joint.
- Recognize the clinical presentation of the movement dysfunctions.
- Become aware of some of the most common surgical approaches for injuries.
- Proper indications and contraindications post op.

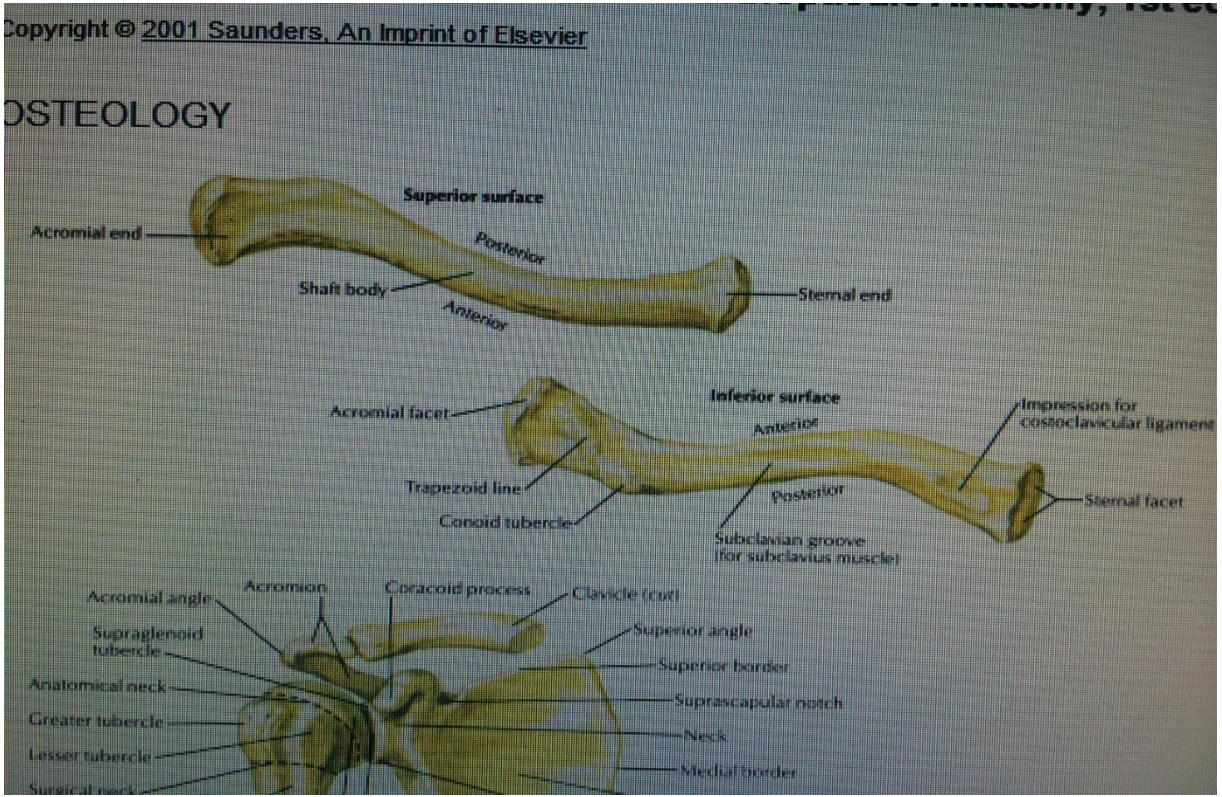
Shoulder Anatomy- Bones (ant.)



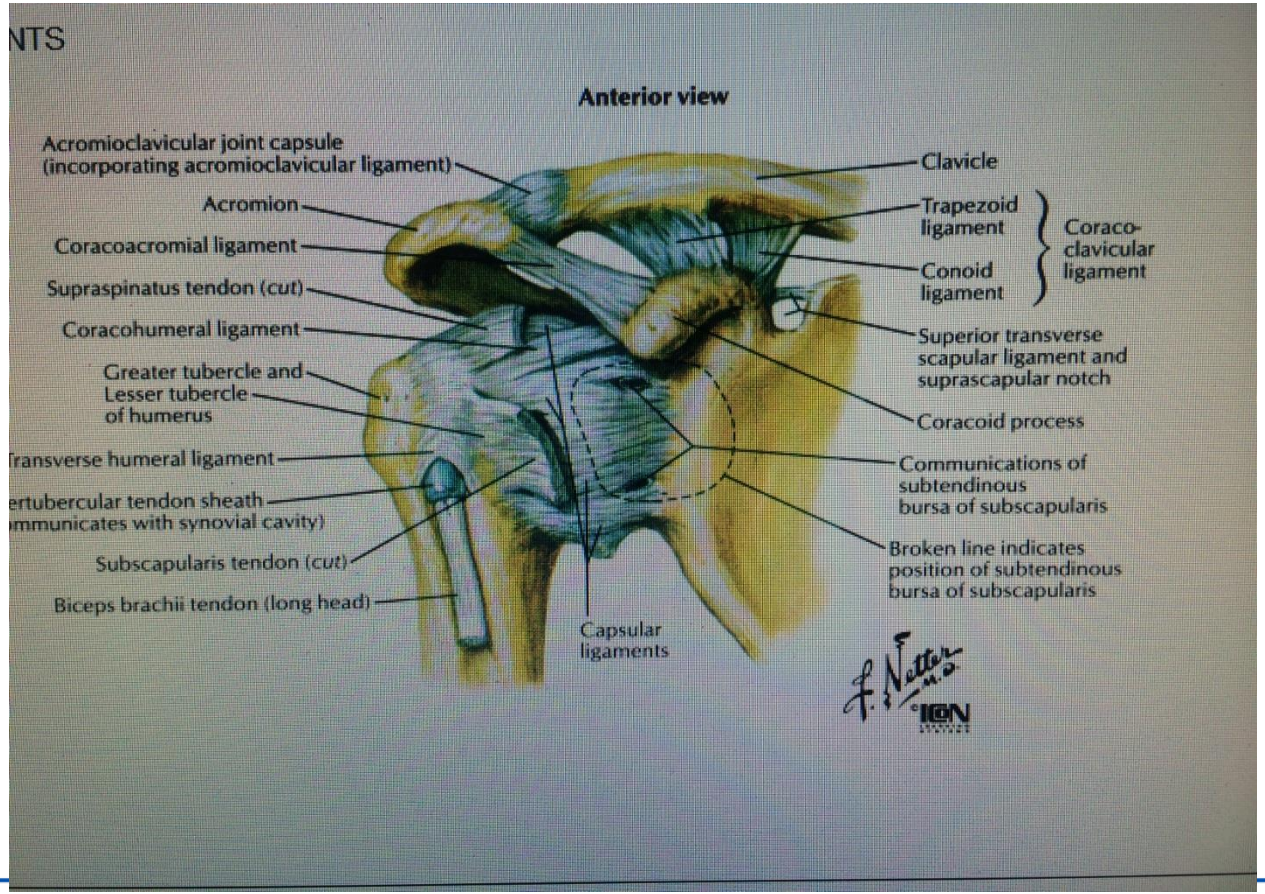
Shoulder Anatomy-Bones (post.)



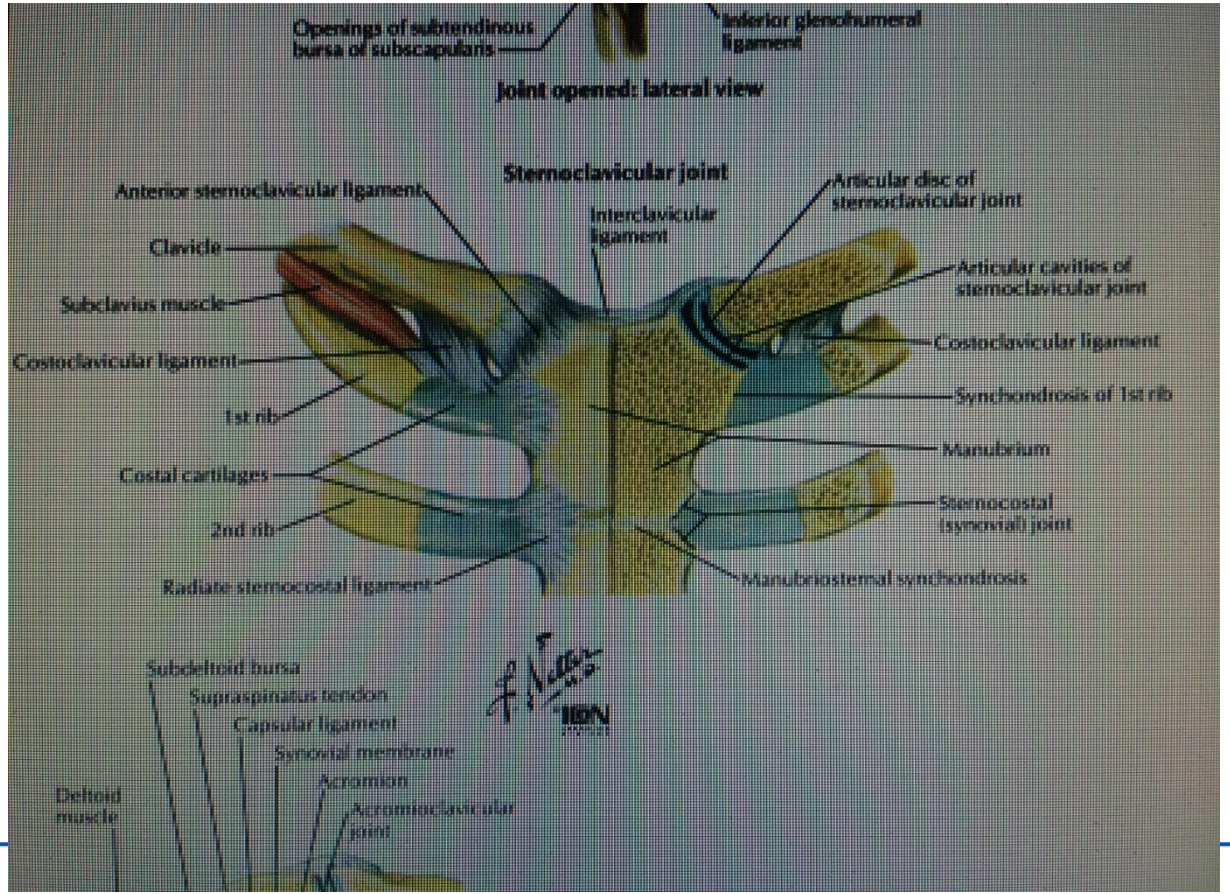
Shoulder Anatomy-Bones (clavicle)



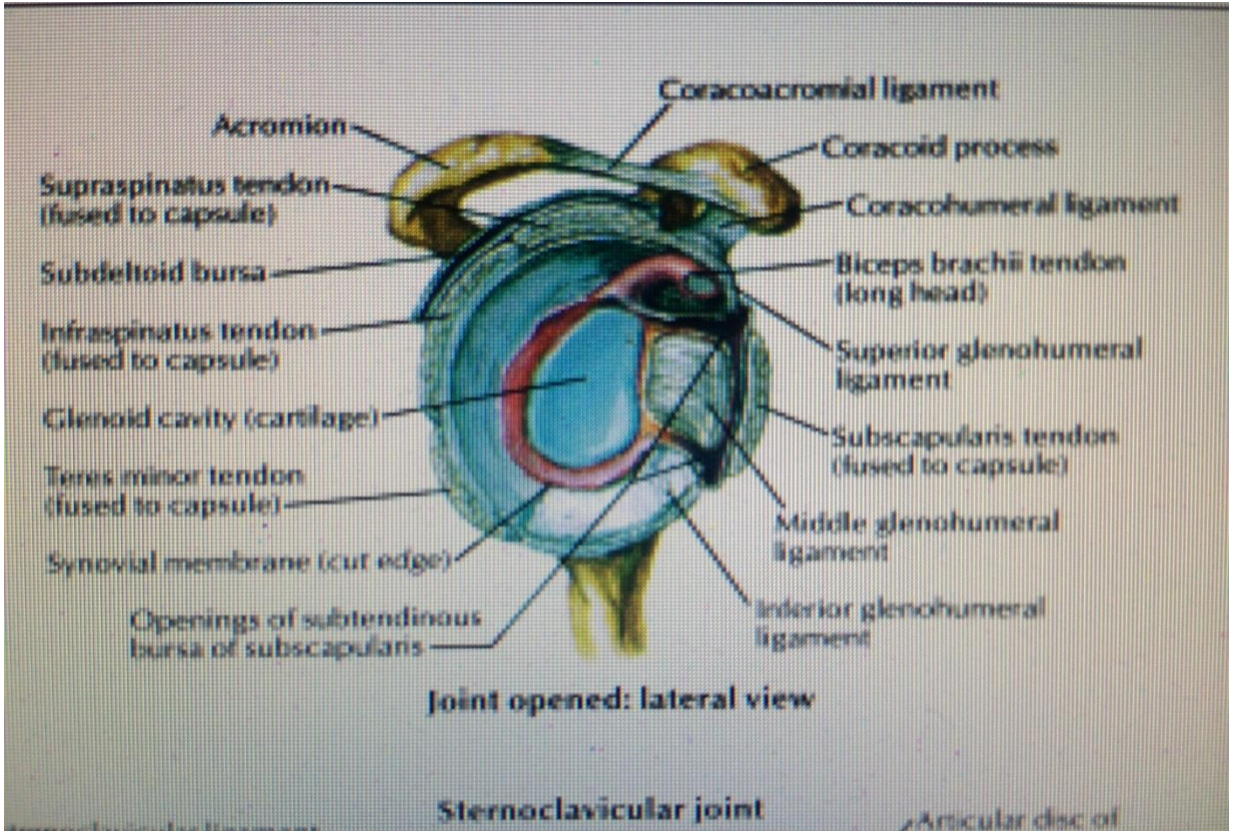
Shoulder Anatomy-Joints (ant.)



Shoulder Anatomy-Joints (ant.)

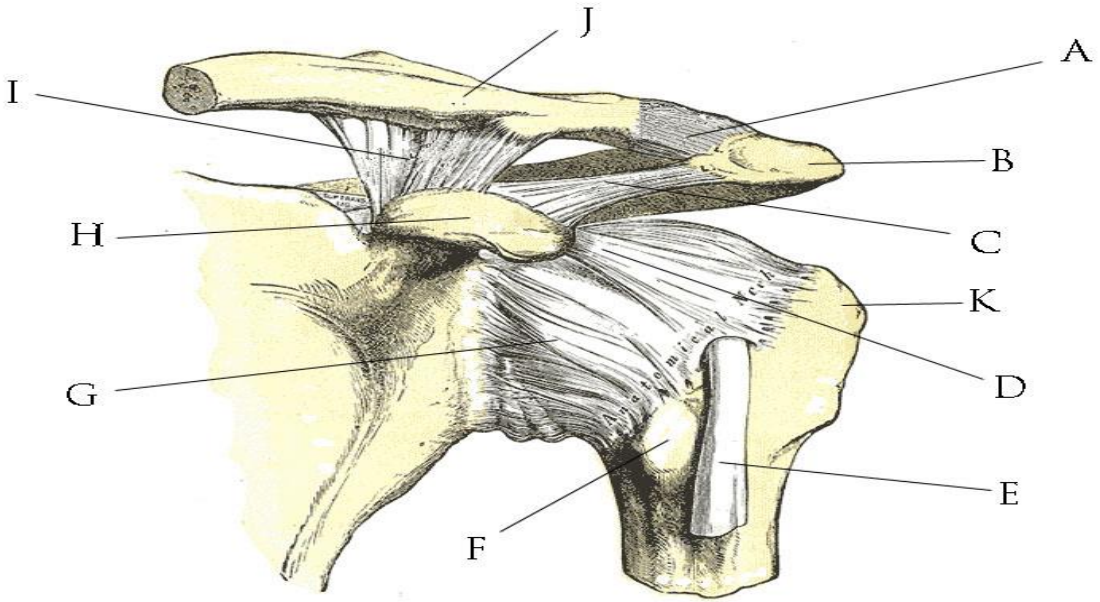


Shoulder Anatomy-Articulations (lat.)

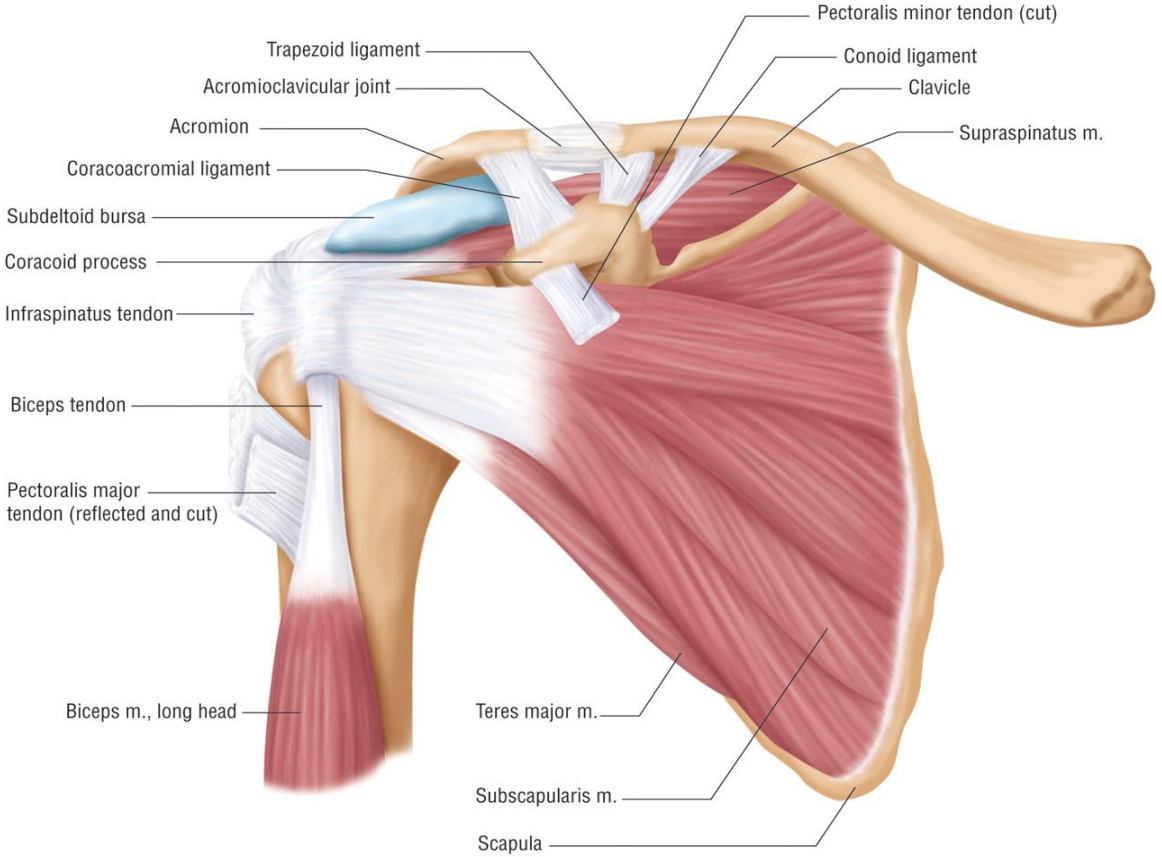


Shoulder Girdle Bones & Ligaments

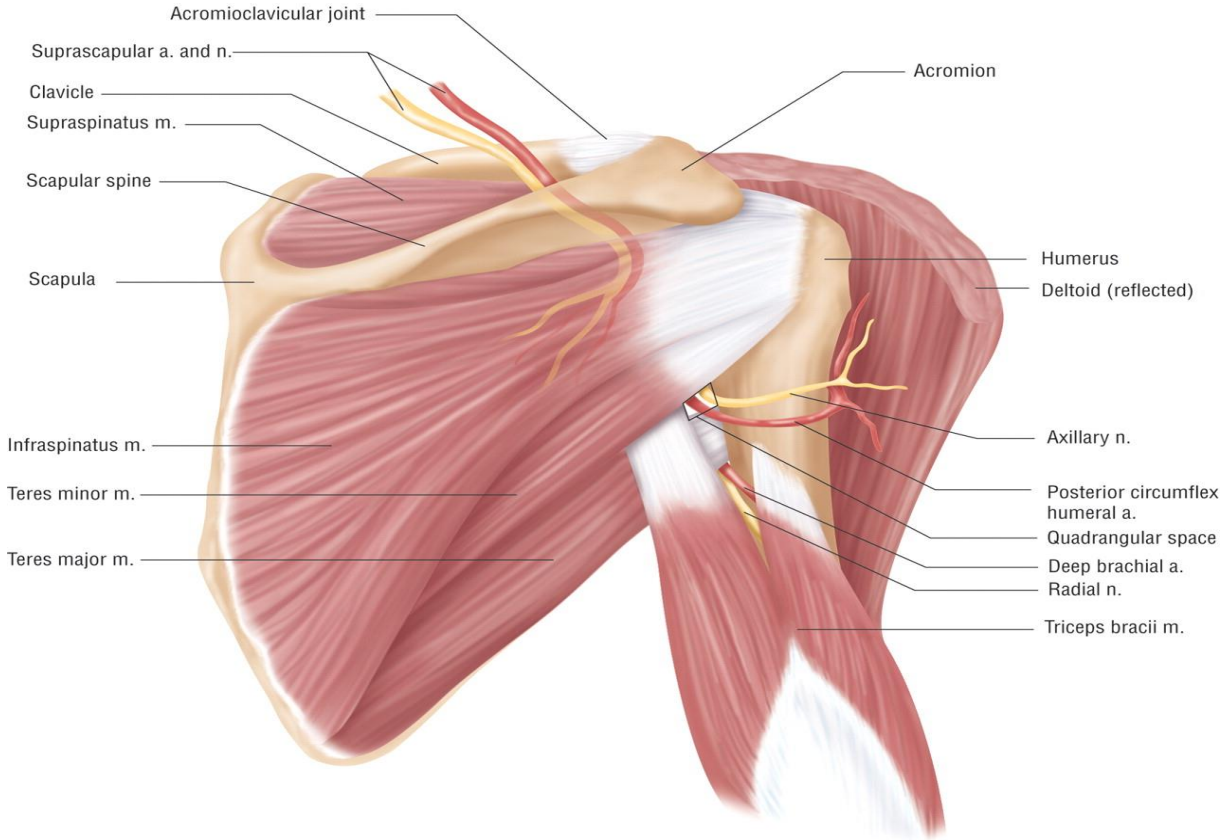
› Can you Identify these bones & ligaments?



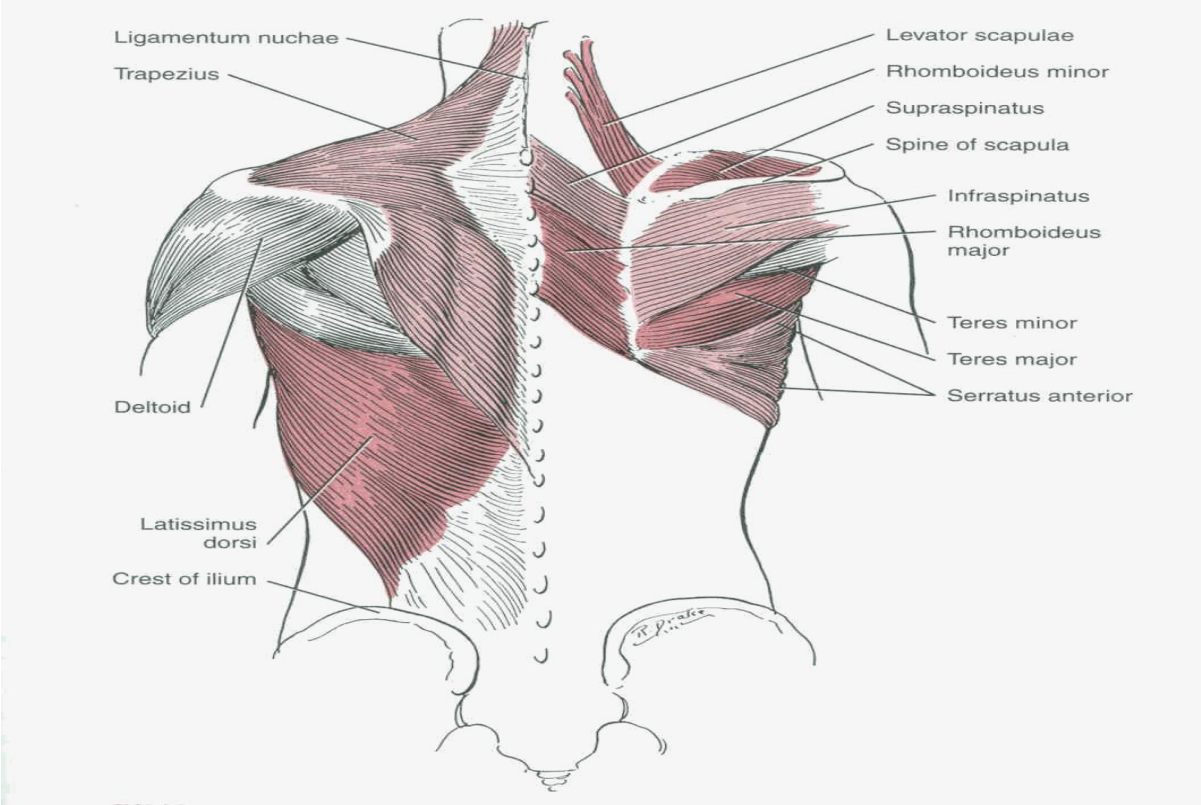
Shoulder Anatomy-Muscles (ant.)



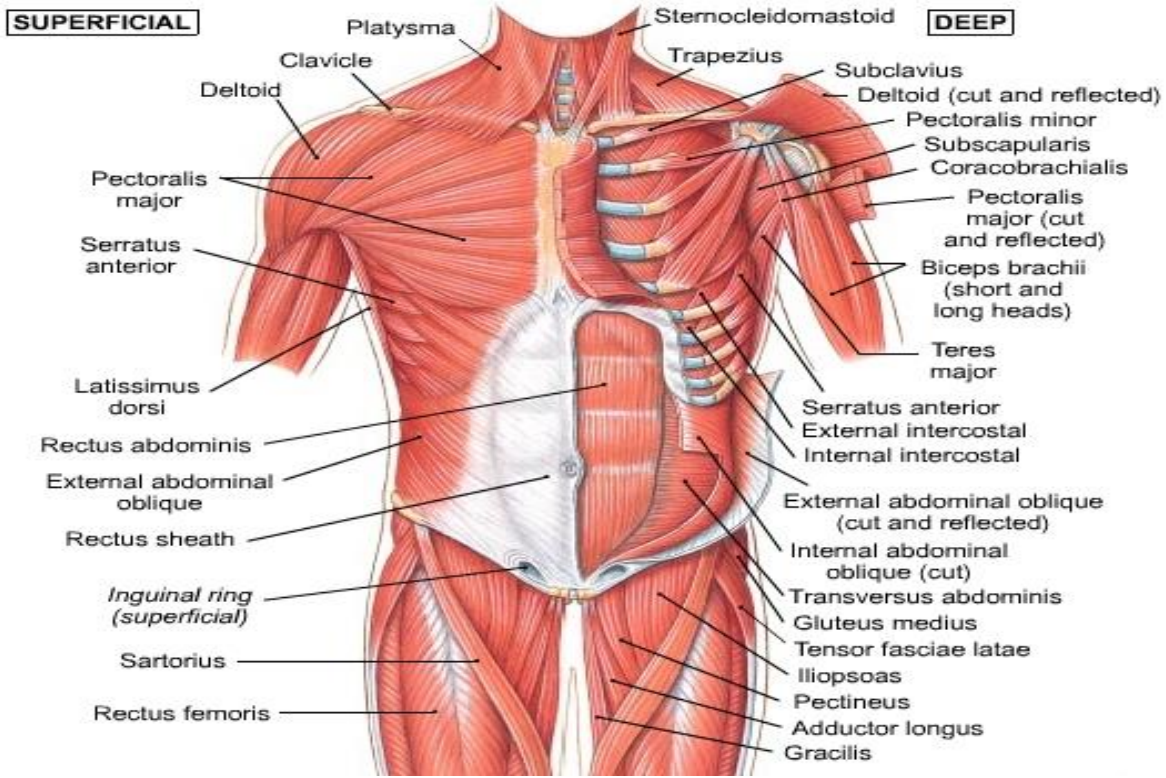
Shoulder Anatomy-Muscles (post.)



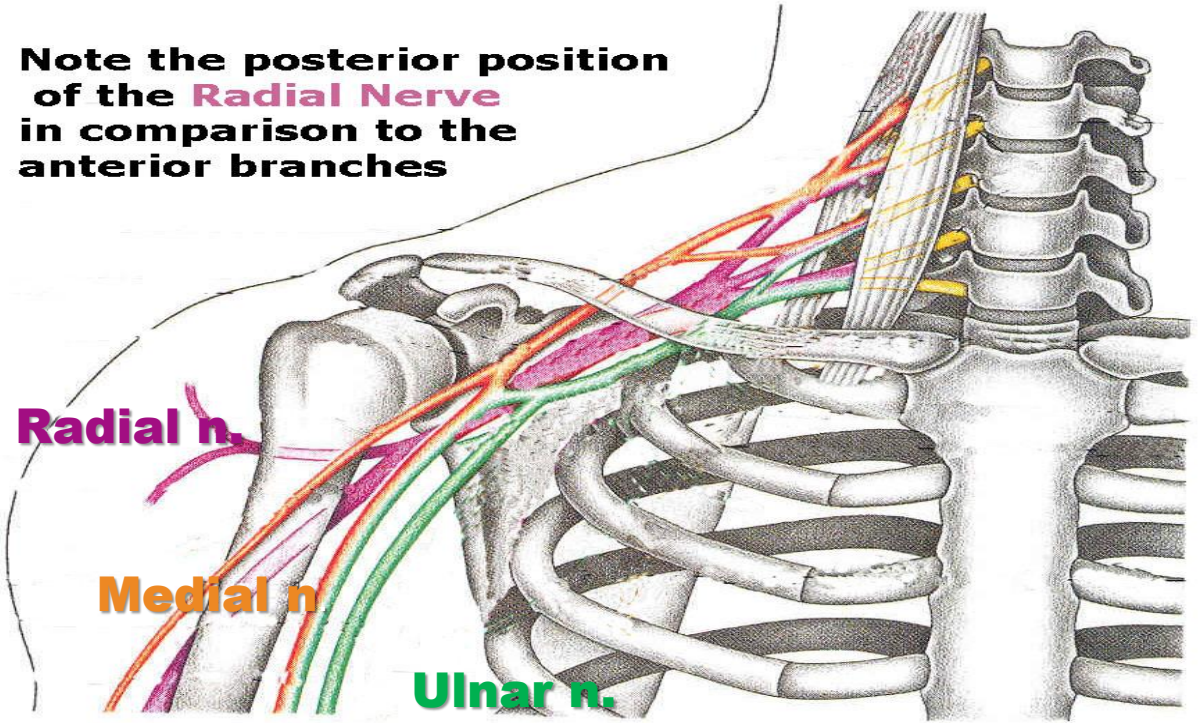
Shoulder Anatomy-Accessory Muscles (post.)



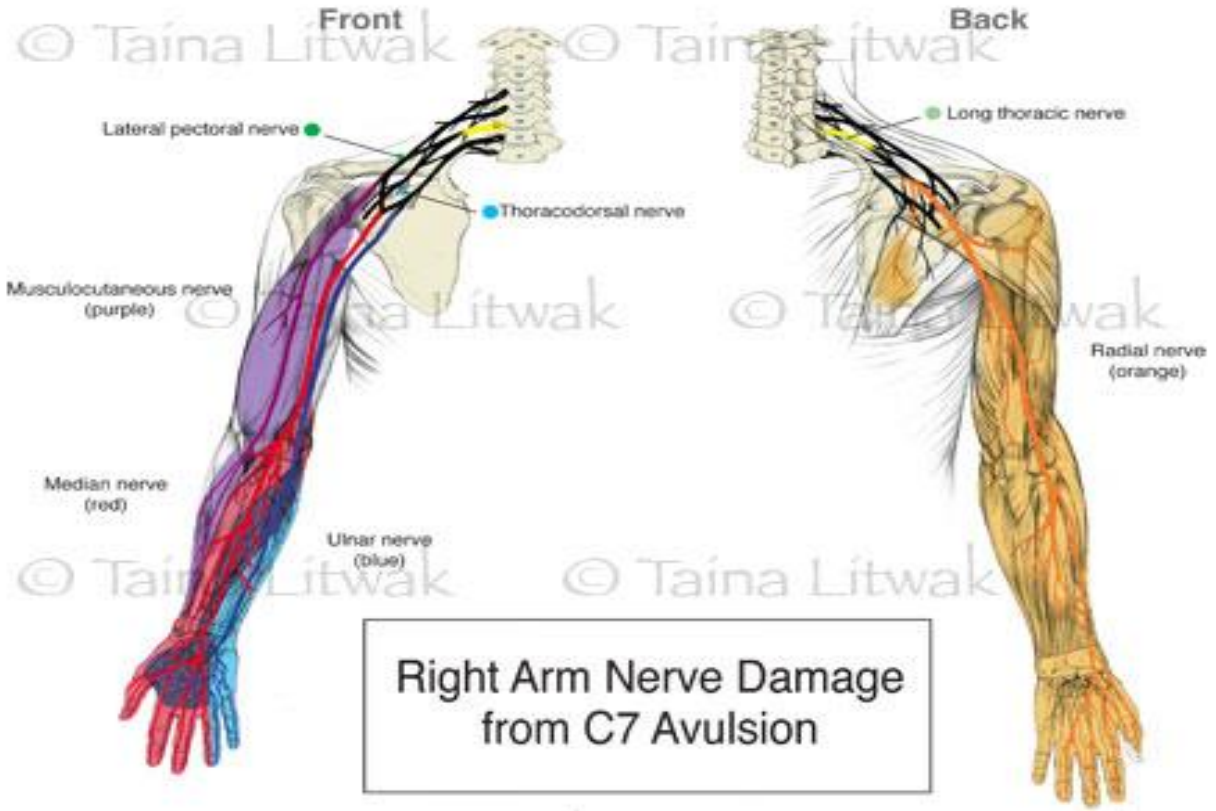
Shoulder Anatomy-Accessory Muscles (ant.)



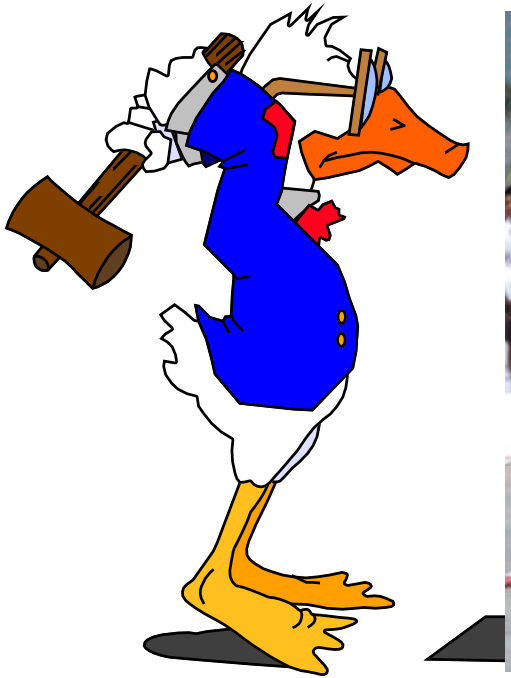
Shoulder Anatomy-Nerves



Shoulder Anatomy-Nerves



How do tissues get DAMAGED?



Causes of tissue damage

- 1) Direct physical trauma
- 2) Overuse syndrome
- 3) Exhausted adaptive potential (EAP)
- 4) Repetitive stress syndrome

1) Direct physical trauma

- Obvious recollection of trauma
- Immediate or rapid onset of symptoms or dysfunction

2) Overuse syndrome

- No previous trauma or weakness necessary
- Must involve a SUDDEN CHANGE of routine, involving repetitive activity e.g, footwear, activity level, repetitive high reaching, posture
- Symptoms/dysfunction occur at the time of, or rapidly following suddenly changed environment with repetitive activity.

3) Exhausted adaptive potential

- No recent history of direct trauma or overuse to explain current S+S
- Most often has a past history of trauma (may be postural) – “the longer the worser”
- Symptoms very often a distance from the original “culprit” i.e, almost never obvious!
- Often have had exhaustive medical investigations/treatments

4) Repetitive stress syndrome

- Patient often free of trauma history
- Reports specific repetitive activity that has gradually or insidiously brought on the signs and/or symptoms
- Patient reports gradually increasing fatigue or symptoms with repetitive activity over increasing time

Poll Question

True or False?

Overuse syndrome is a cause of tissue damage?

Treatment / management strategies for tissue damage

1) DIRECT TRAUMA

- If damage is amenable to physiotherapy the R.I.C.E. concept is adopted initially
- Unless contra-indicated (by obvious instability or serious pathology e.g, a “dislocation”) treatment requires EARLY ACTIVATION
- The discovery of serious pathology may require immobilization e.g, bed rest; sling

Treatment / management strategies for tissue damage

2) OVERUSE SYNDROMES

- Although the R.I.C.E. concept and even immobilization may be necessary…
- A ban on the activity that is the obvious cause of the problem is essential
- Graduated strengthening or re-education on how to graduate return to activity

Treatment / management strategies for tissue damage

3) EXHAUSTED ADAPTIVE POTENTIAL

- Find the real “culprit” and any other “accessories” and treat them
- THEN treat any local pathology

Treatment / management strategies for tissue damage

4) Repetitive strain syndrome

- Analyze the patient's job or sport
- Determine any underlying CAUSE of the patient's lack of strength or fitness
- Specifically improve strength and/or fitness
- Treat any localized tissue damage

Concepts and Definitions Related to Mechanical Loads

- Compressive force (compression) - Force that tends to shorten or squeeze something, decreasing its volume.
- Tensile force (tension)- A force which tends to stretch or elongate something.
- Shear force - Force acting on a substance in a direction perpendicular to the extension of the substance.

Shoulder Evaluation

- History / Mech. Of Injury /Precautions
- Posture and Observation
- Palpation (soft tissue palp., sensation)
- ROM
- Strength
- Biomechanics and joint eval
- Spine and accessory eval
- Special testing
- Neurological (balance/coord.)eval

SCAPULAR MOTION DYSFUNCTIONS

- Basic anatomy – axis of motion?
- Osteokinetics – how does it move?
- Myokynetics – which muscles are involved?
- Pathokinetics – who's the 'culprit'?

Osteokinetics

- X-ray studies
- Visualize *
- Palpate *
- Theorize *

Therefore……

During scapular motion the scapular muscles must be contracting either:

- Concentrically
- Eccentrically or
- Isometrically

During elevation through flexion

- Upper and lower trapezius contract isometrically
- Lower serratus anterior contracts isometrically
- Levator scapulae contracts eccentrically
- Rhomboids contract eccentrically

In summary between 0° and 150°

- Upper and lower trapezius contract concentrically
- Middle and lower serratus anterior contract concentrically
- Levator scapulae contracts eccentrically
- Rhomboids contract eccentrically

Between 150° and 200°

- Lower serratus contracts isometrically and changes the axis of shoulder girdle motion
- Lower trapezius is the only scapular muscle capable of contracting concentrically at this point
- Upper serratus anterior contracts eccentrically
- Pectoralis minor contracts eccentrically

- How do I apply all of this magnificent knowledge?

Poll Question

During scapular motion the scapular muscles must be contracting either:

- Concentrically
- Eccentrically
- Isometrically
- All of the above

What can adversely affect the STRENGTH (concentric)?

- Palsy - nerve root (C6 lower serratus)
  - peripheral (long thoracic)
- Posture - inhibits lower trapezius
- Spinal segmental instability – ‘universal pattern’ of weakness – inhibits trapezius

What can affect the LENGTH (eccentric)?

- Post-traumatic scarring - ?surgery; ?ms. tear
- Posture – adaptive shortening – levator scapulae; pec minor
- ‘Facilitated segment’ – potentially any scapular muscle due to segmental innervation

Segmental innervation of shoulder/arm muscles

- Spinal Accessory Nerve Cr. n. 11- Trapezius
- C3 and C4 – levator scapulae, SCM
- C5 – Deltoid, Infraspinatus, Teres Minor,
- C 6- Teres Major, Pec Major, Subscapularis, Biceps, Supinator, ECRB
- C7- Triceps, FPL, PL, ECU
- C8- EPL, ED, EDI
- T 1- Hand- Dorsal Interossi

Segmental innervation of scapular muscles

- C3 and C4 – levator scapulae
- C5 and C6 – rhomboids
  - latissimus dorsi
  - serratus anterior
- C7 and C8 - pectoralis minor
  - serratus anterior

Peripheral Nerve Innervation

- Dorsal Scapular- Rhomboids, Levator Scap.
- Axillary- Deltoid, Teres Minor
- Long Thoracic- Serratus Ant.
- Medial Pectoral- Pec Minor
- Medial & Lat. Pectoral- Pec Major

Peripheral Nerve Innervation

- Thoracodorsal- Lats
- Suprascapular- Supraspinatus, Infraspinatus
- Lower Subscapular- Teres Major, Subscapularis (+ Upper)
- Musculocutaneous- Biceps, Brachialis, Coracobrachialis

Peripheral Nerve Innervation

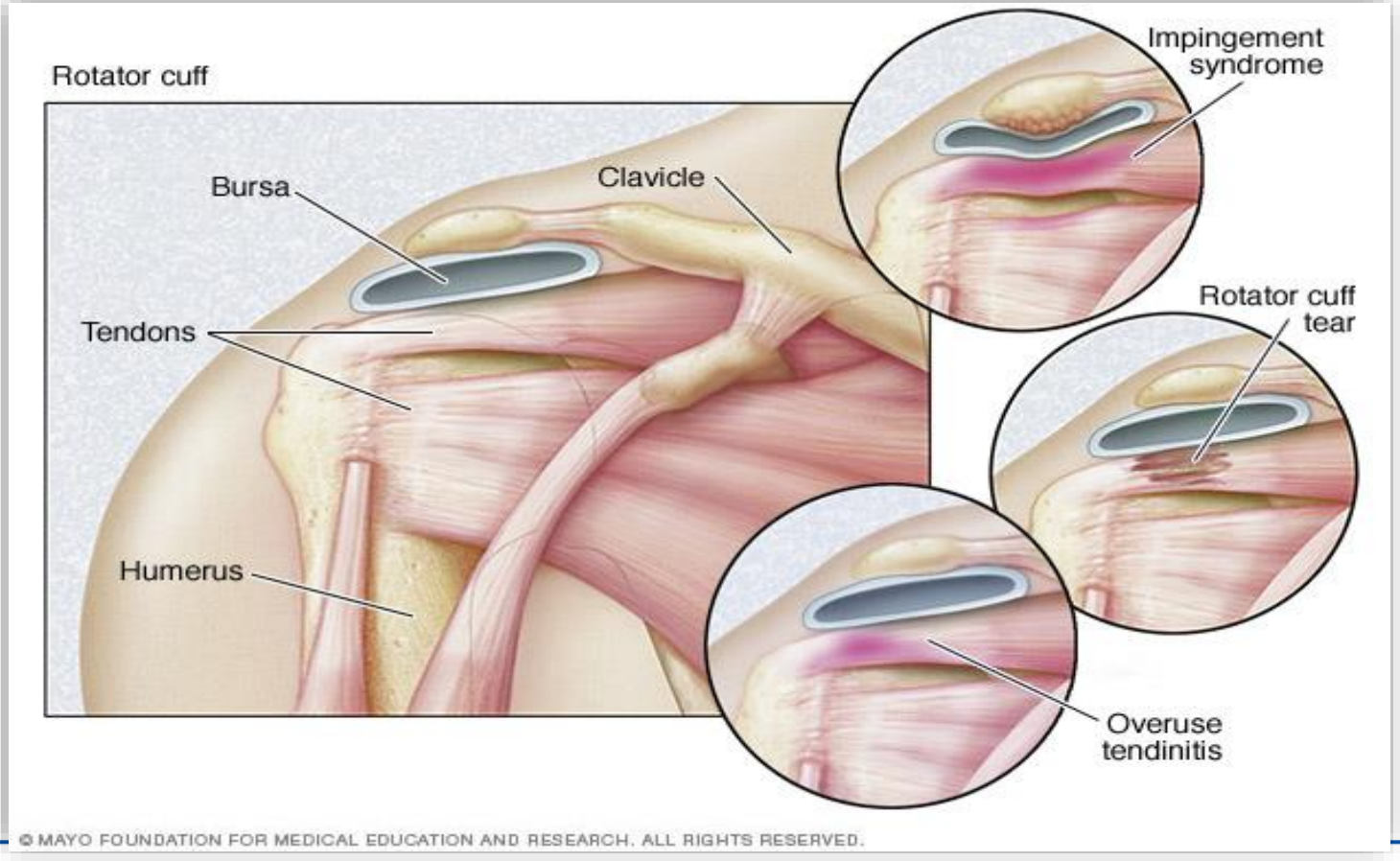
- Radial- Triceps, Brachioradialis, ECRL, ECRB, (Deep)-ECU, Supinator, EDM, ED.
- Medial- Pro-Teres, FCR, PL, FCU, FDS, PQ.
- Deep Ulnar- Add. Pol., Abd-Digiti minimi, Flex. Digiti minimi, Opp. Digiti minimi, lumbricals, Abd. Pol Brev.

Consider…..

- Post-traumatic hypomobility left C2/3 joint
- Secondary hypermobility right C2/3 joint
- Hypertonus of right levator scapulae
- Impingement syndrome e.g, of right biceps tendon within glenohumeral joint (and/or)
- Hypermobility/instability right glenohumeral joint

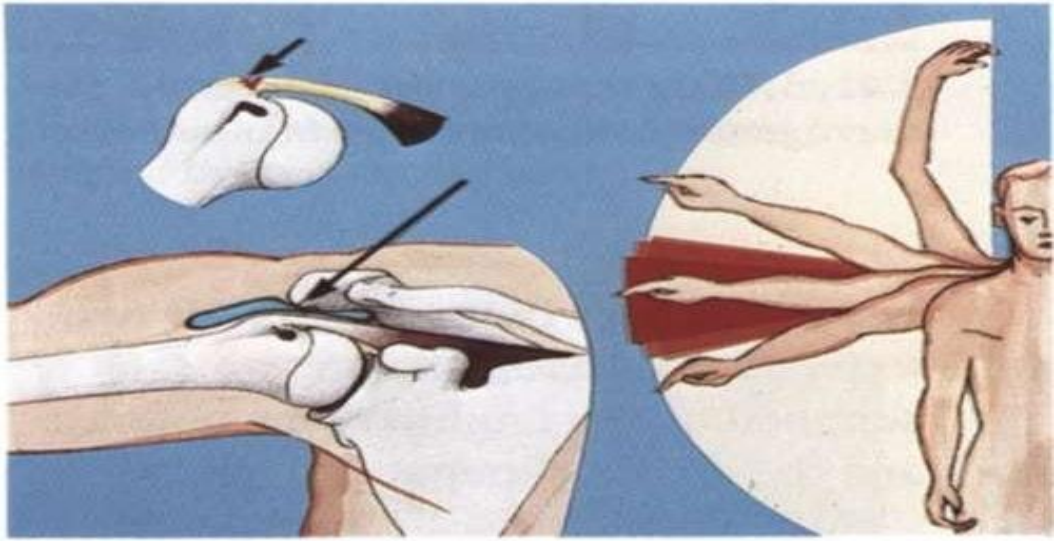
Which structure do **you** think will get treated?

Most Common Shoulder Injuries



Common Dysfunctions

Impingement/ Bursitis



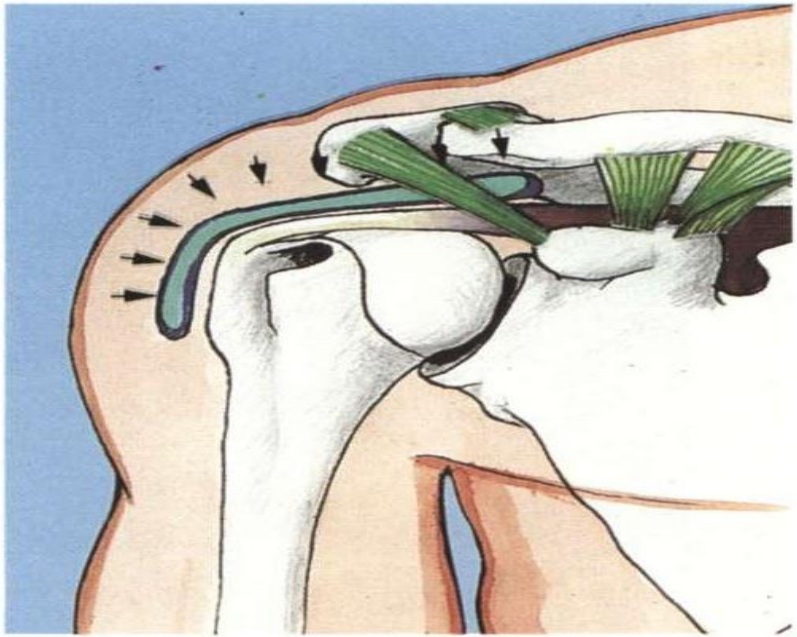
3.37 *The tenoperiosteal site (arrowed) gives rise to a painful arc. After the arm attains the horizontal, the head of the humerus starts to drop slightly in the glenoid cavity and gains additional clearance.*

Common Dysfunctions

SHOULDER A/C Dysfunction

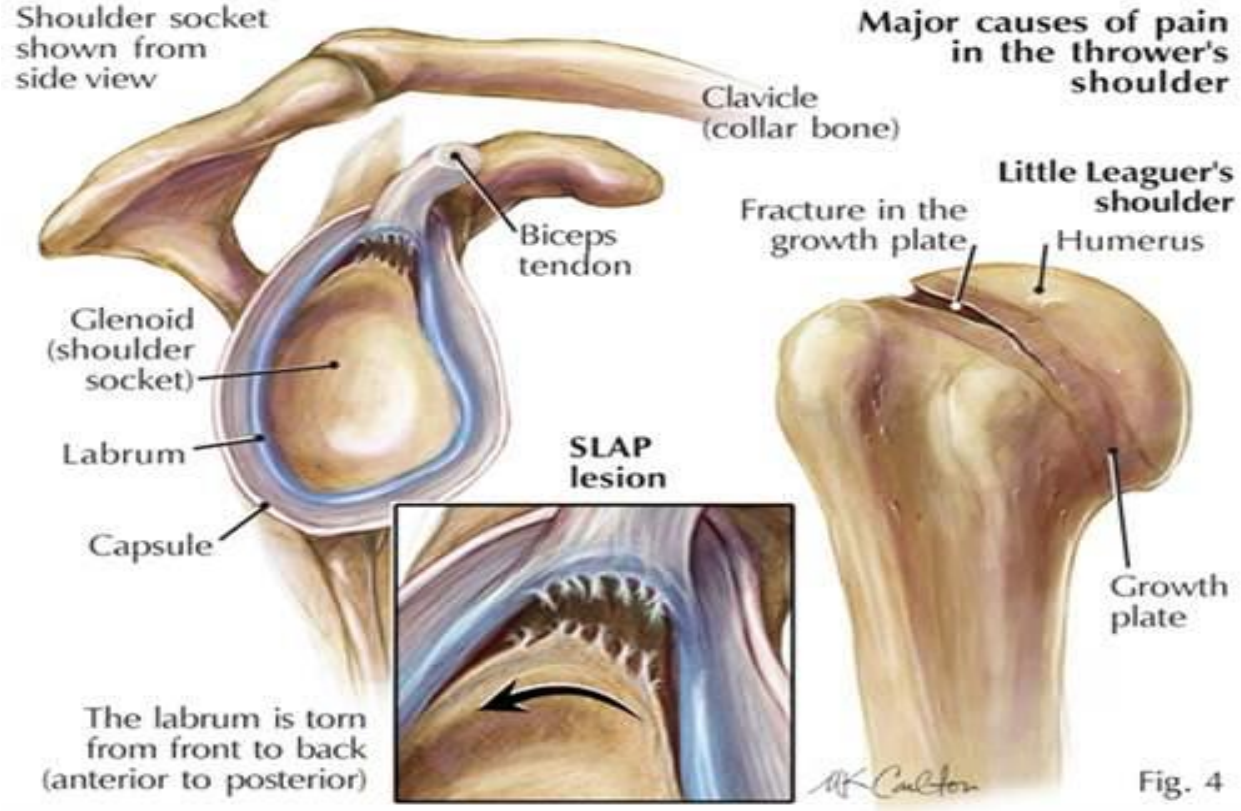
- a.) Upper Trap hypertonus, lower inhibition
- b.) A/C elevation and protraction
- c.) GH ant. Positioning
- d.) Pec Hypertonus, Rhomboid inhibition

A/C Dysfunction/ Bursitis



3.29 *The whole extent of the bursa is extremely tender and often thickened. A large portion of the lesion may lie in the restricted space under the acromial arch.*

Slap Lesion/ Little Leaguer's Shoulder



Evaluation Classification Treatment Clavicle Fracture

- Most common fracture
- Fall on shoulder or direct blow.
- Rare neurovascular damage (subclavians)
- Pain & Gross deformity at fracture site with ttp.
  - I. Middle 1/3: 80%
  - II Distal 1/3: 15%

Evaluation Classification Treatment Clavicle Fracture

- Type I: minimally displaced; between ligaments.
- Type II: Displaced, fracture medial to CC ligament.
- Type IIA: CC ligaments both attached to distal fragment
- Type IIB: Conoid ruptured Trapezoid ligament attached.
- Type III: Fracture through AC joint. Ligaments intact.

Evaluation Classification Treatment Clavicle Fracture

- Closed treatment (no reduction) with figure of eight brace or sling for mid/ proximal 1/3, distal 1/3 (Types I and III) (3-4 weeks; ROM)
- Open treatment for Type II to prevent nonunion. (also open fracture, vascular injury)
- COMPLICATIONS: Nonunion: esp. with distal 1/3: type II injury; Brachial plexus (medial cord/ulnar nerve) or subclavian injury; Pneumothorax.

Evaluation Classification Treatment Scapula Fracture

- Relatively uncommon
- Males-young • High-energy trauma
- >85% w/associated injuries (including severe)
- Dx often delayed due to associated injuries (esp pulmonary & great vessels).
- Pain in back and/or shoulder.

Evaluation Classification Treatment Scapula Fracture

- PE: Swelling and tenderness to palpation
- XRay: AP/Axillary lateral/ scapular Y; CXR CT: intraarticular glenoid
- Anatomic classification:
- Type I: Anterior avulsion fracture
- Type II: Tranverse/oblique fracture thru glenoid; exits inferiorly
- Type III: Oblique fracture through glenoid, exits superiorly
- Type IV: Transverse fracture exits through the scapula body

Evaluation Classification Treatment Scapula Fracture

- Types II + IV Closed treatment with a sling for 2 weeks for most fractures. Then early ROM.
- ORIF for intraarticular fx and/or large displaced (>25%) fragments COMPLICATIONS: Associated injuries: Rib fracture #1, pneumothorax, pulmonary contusion, vascular injury, brachial plexus injury

Acromioclavicular (AC) Separation

- Separation is subluxation or dislocation of AC joint
- Fall onto acromion
- Contact sports: hockey football, wrestling
- Grades: I: normal, II: minimal separation,
- III and up: clavicle displaced.
- 6 Grades: (based on ligament tear & clavicle position)

Acromioclavicular (AC) Separation

- Grade I: Sprain, AC ligament intact
- Grade II: AC tear, CC sprain
- Grade III: AC/CC (both) torn AC joint is dislocated.
- Grade IV: III with clavicle posterior into/thru trapezius muscle
- Grade V: III with clavicle elevated >100% superiorly
- Grade VI: III with clavicle inferior

Acromioclavicular (AC) Separation Treatment

- Grade I, II: sling until pain subsides (+/- injection/pain medication) for 1-2 wks, then increase ROM
- Grade III: nonoperative for most; operative for laborers/athletes
- Grade IV-VI: Open reduction and repair. COMPLICATIONS: Permanent deformity; Stiffness, early OA; Distal clavicle osteolysis (pain); Associated injuries: Fracture, pneumothorax.

Ant. Glenohumeral Dislocatio

- Abd/ER injury 2 mechanisms
- 1. TUBS [Traumatic Unilateral, Bankart lesion, Surgery]
- 2. AMBRI [Atraumatic Multi-directional, Bilat- eral, responds to Rehab, Inferior capsule repair) <20 yo: >80% recur Hill Sachs & Bankart lesions predisposed to recurrence

Post. Glenohumeral Dislocation

- After seizure often missed
- HX: Trauma or hx of shoulder slipping out. Intense pain.
- PE: Deformity, flattened shoulder silhouette. Exquisitely tender. Do full neurovascular & XRayExam:
- Anterior: Hill Sachs Lesion
- Posterior: Rev Hill Sachs, “empty glenoid”

Glenohumeral Dislocation

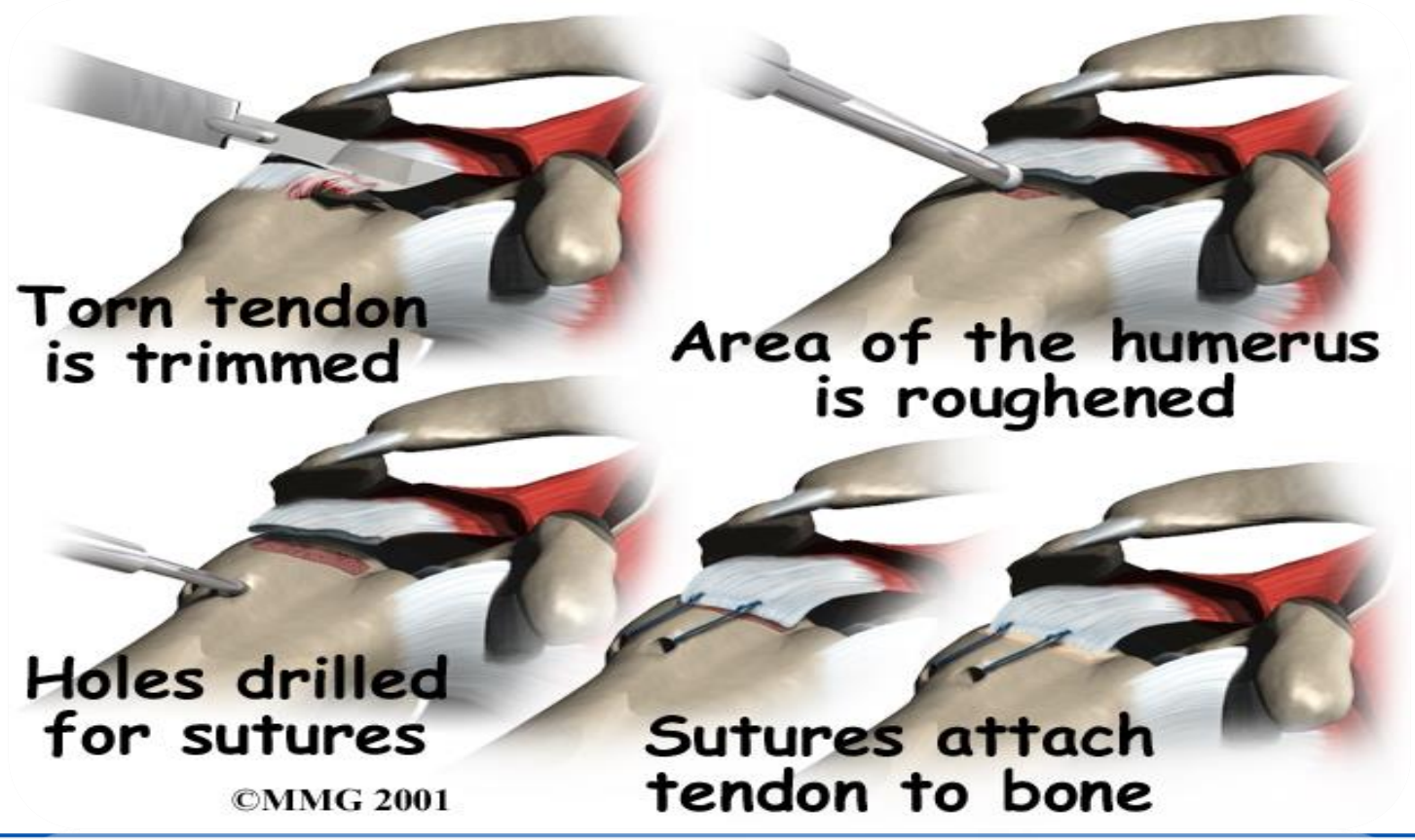
- MRI: Bankart lesion (anterior/inferior labral tear) Reduce dislocation: Pre and Post neurological exam
- COMPLICATIONS: Recurrence rate (young age predicts it, decreases w/increased age); Axillary nerve injury; Rotator cuff tear; Glenoid/Greater tuberosity fracture; Dead arm syndrome

Arthroscopic Repair

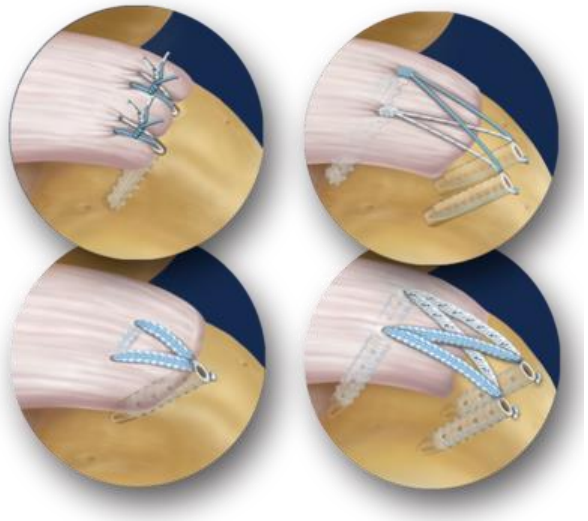
Goals of Rotator Cuff Repair

- Restoration of anatomy
- Restoration of biomechanics
- Strong fixation
- Promote healing
- Improve shoulder function
- Sharpy fibers develop 10-12 weeks of post op.

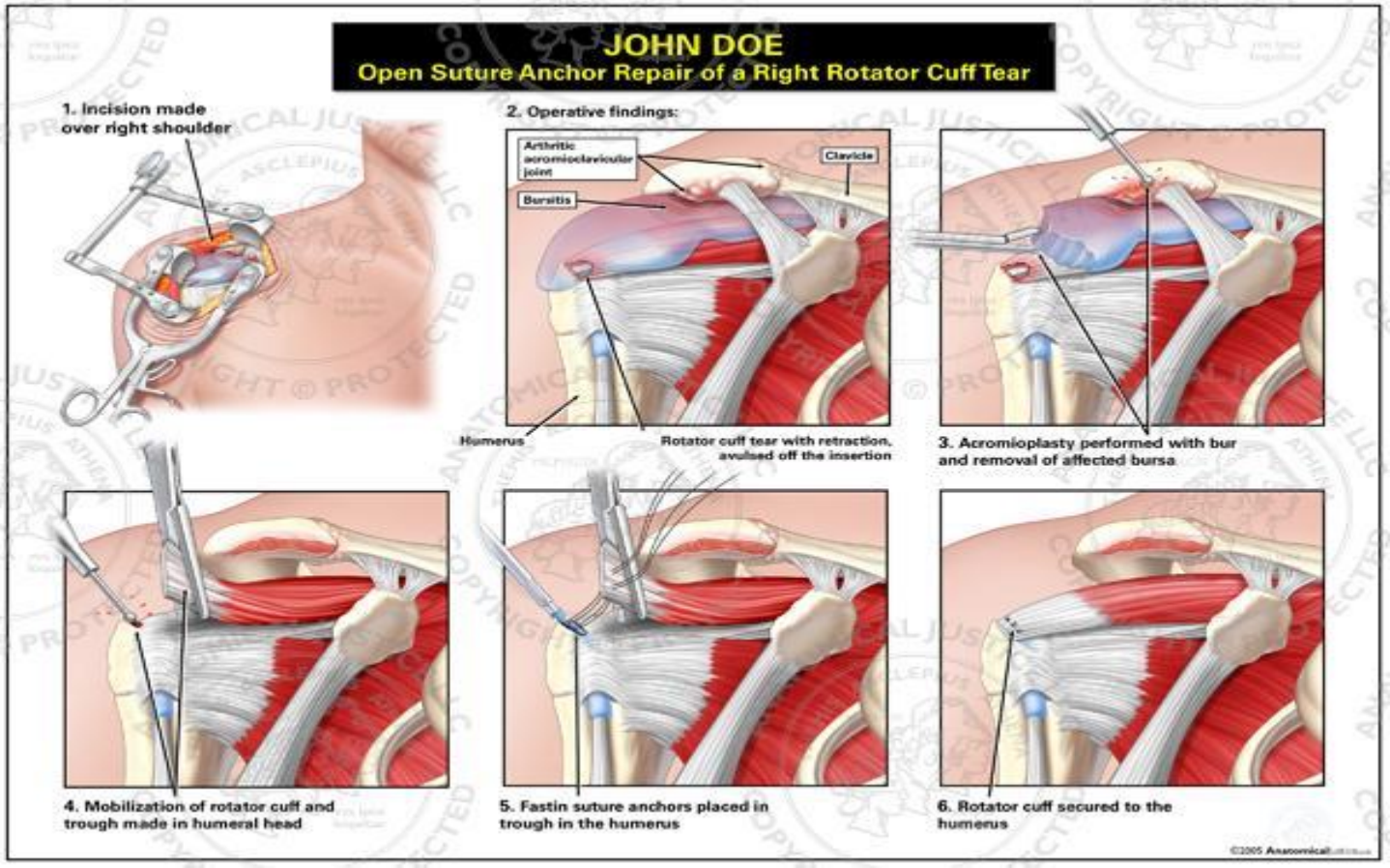
Arthroscopic, or mini RTC repair



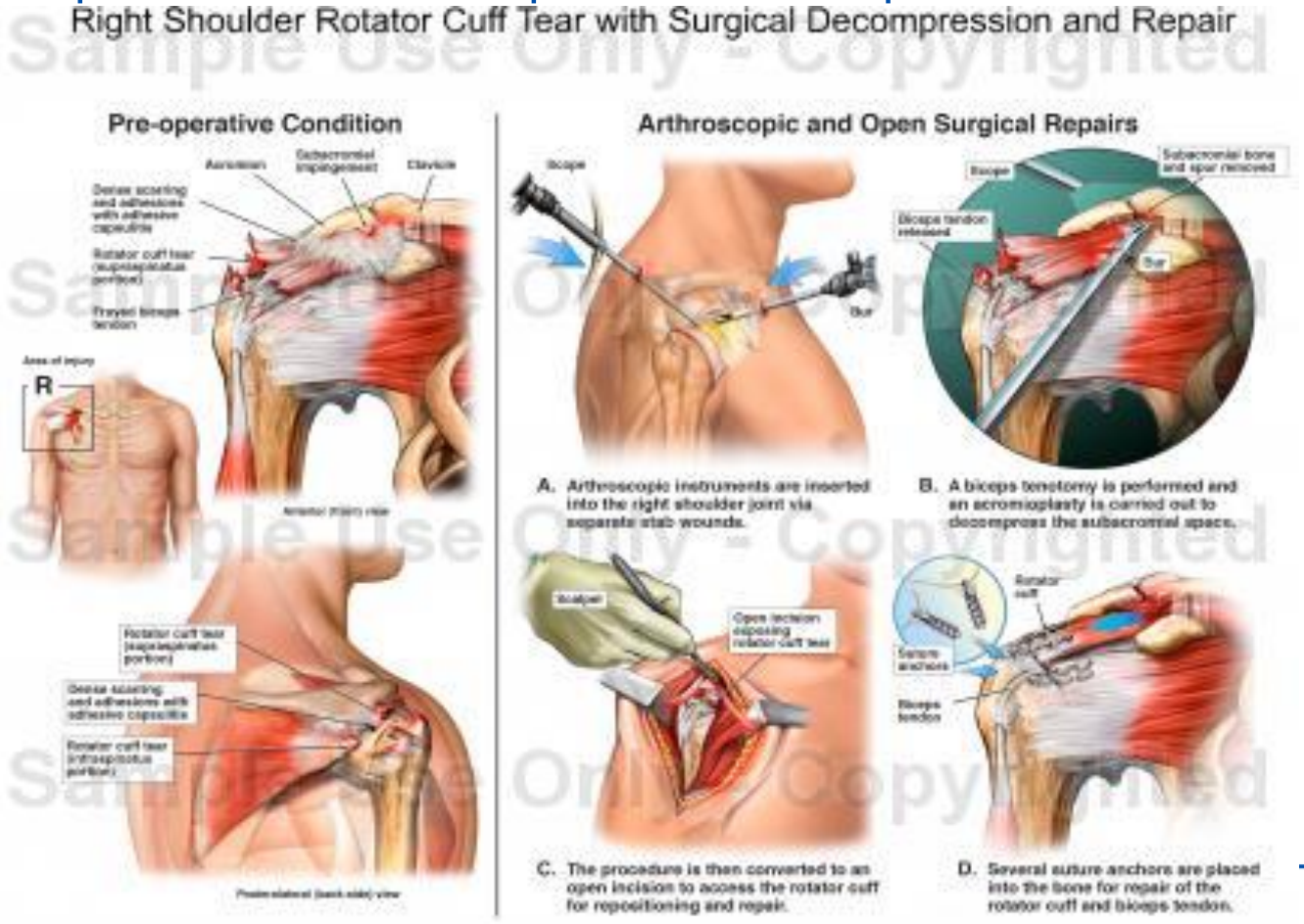
Rotator Cuff Repair



Open Rotator Cuff Repair



Arthroscopic Rotator Cuff Repair w/ Decompression



TOTAL SHOULDER REPLACEMENT

REVERSE SHOULDER REPLACEMENT

Knee Injuries and Surgical Intervention

Pathophysiology and Treatment of Knee Dysfunction

- In order to completely understand and manage patients with knee dysfunction it is important to understand the anatomy of the knee and the clinical testing used to determine the integrity of the knee joint.

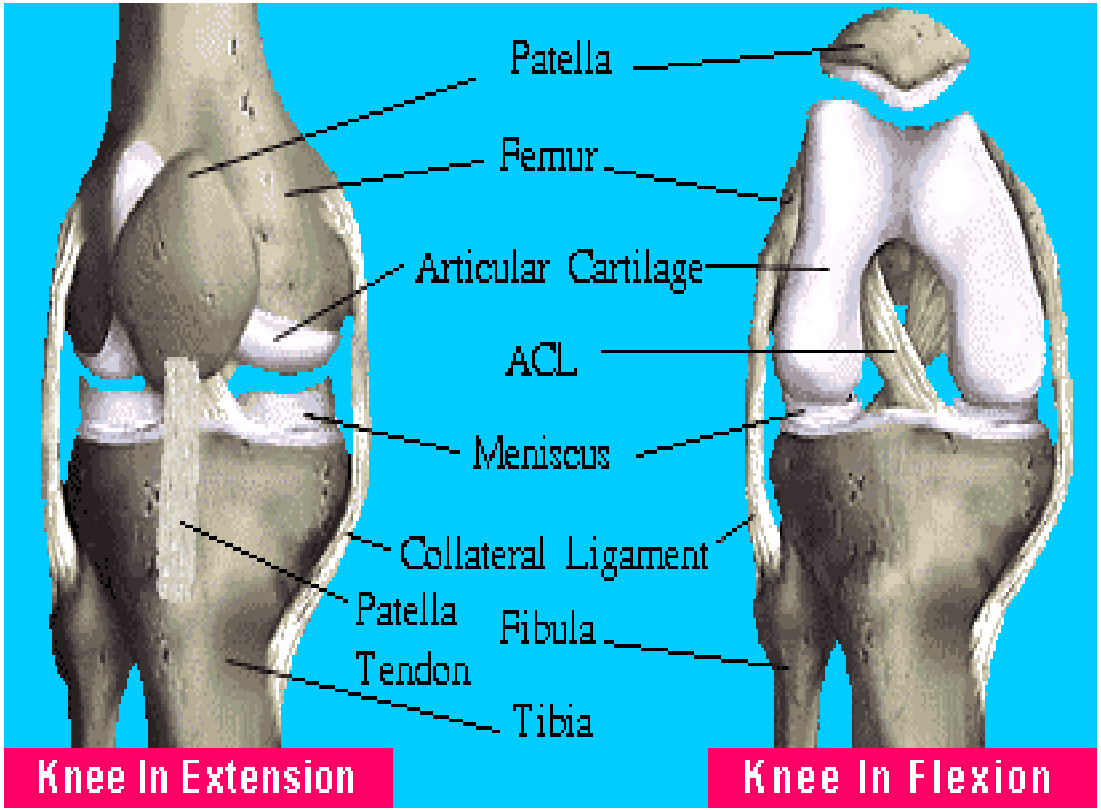
Risk factors for knee pain

- Occupation/Sports activities
- Genetic/body weight/height
- Age/Gender (>60+ ♀= 2/3 of 20 y/o ♂)
- Nutritional factors
- Smoking
- Depression/psychosocial
- Posture, foot and knee alignment/position
- No evidence of knee pain and (+) radiographic findings

Anatomy of the Knee

- The knee is made up of four bones: tibia, fibula, femur and patella.
- Three of these bones are enclosed in the joint capsule lined with special tissue called synovium which produces synovial fluid.
- Synovial fluid is a thick liquid that provides lubrication, protection and nourishment to the joint.

Anatomy of the Knee



Anatomy of the Knee

- The knee is kept in alignment by ligaments and tendons.
- The two major ligaments are the ACL and PCL.
- ACL/PCL: (AMB) anteriomedial band and (PMB) posteriomedial band from tibia.
- These ligaments cross each other in the center of the knee and prevent the tibia from moving forward or backward and restricts some IR and ER as well.

Anatomy of the Knee

- The knee is composed of two distinct articulations located within a single joint capsule:
- The tibiofemoral joint=distal femur and proximal tibia (double condyloid jt.)
- The patellofemoral joint= the articulation between patella and femur (sesamoid jt.)

Anatomy of the Knee

- The knees major muscles which go across the knee joint are the quadriceps and the hamstrings.
- The knee joint also has a structure made of cartilage, which is called the meniscus or meniscal cartilage.
- The meniscus is a C-shaped piece of tissue which fits into the joint between the tibia and the femur.

Anatomy of the Knee

- The knee has two additional stabilizing ligaments called the collateral ligaments.
- LCL-Lat. Fem. condyle to post. Head of fibula.
- MCL- Med. Fem. condyle to medial prox. Tib. (post. medial fibers blend into the joint capsule and medial meniscus.)
- These ligaments supply stability when your knee moves from side to side or when you make any sharp cutting moves.

Anatomy of the Knee

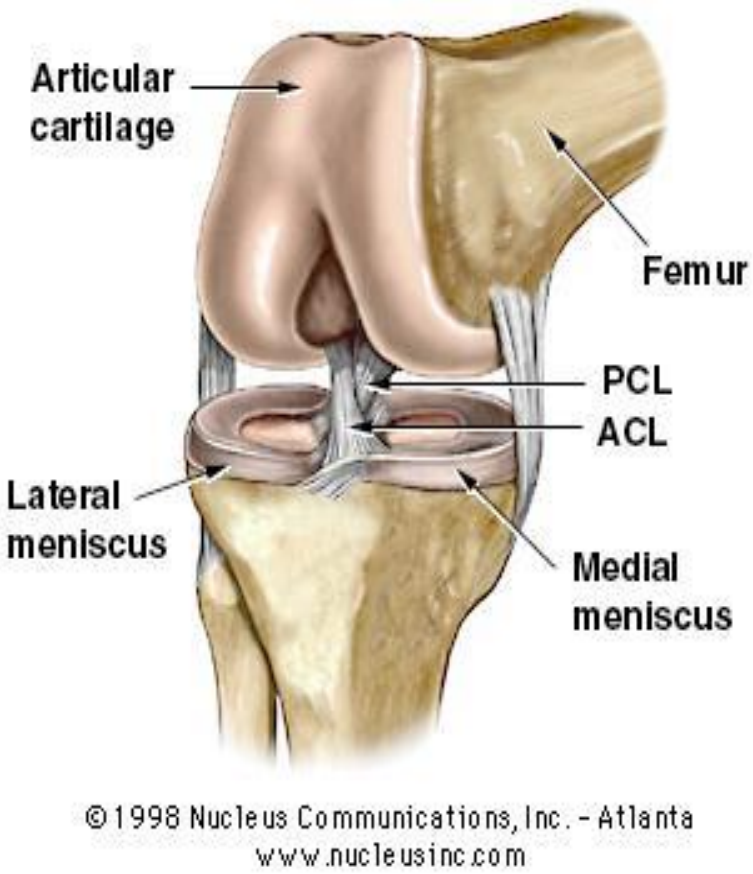
- The knee has bursae to reduce frictional forces between muscular, ligamentous, and bony structures.
- Suprapatellar bursa: Between Quad tendon and ant. femur
- Subpopiteal bursa: Between Popliteus muscle and lat. Femoral condyle
- Gastrocnemius bursa: Between the semimembranosus muscle & med. femoral condyle.

Poll Question

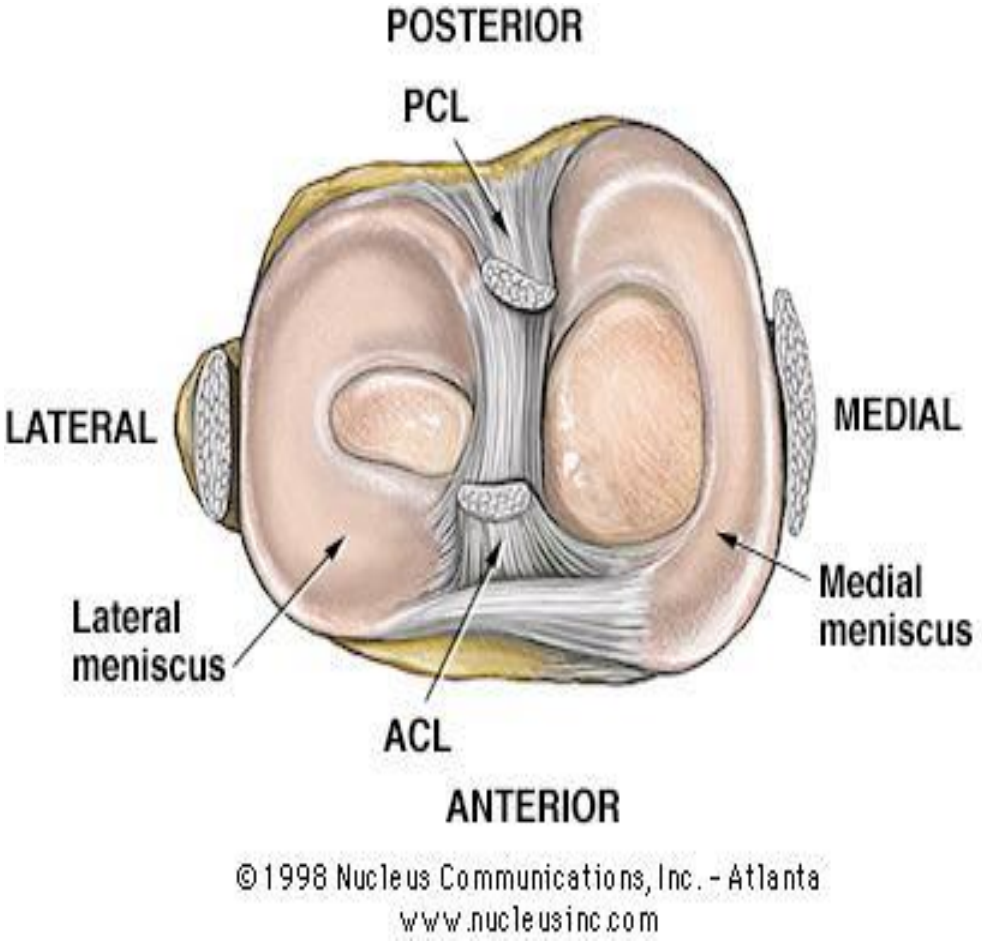
TRUE OR FALSE?

The tibia is one of 4 bones in the knee.

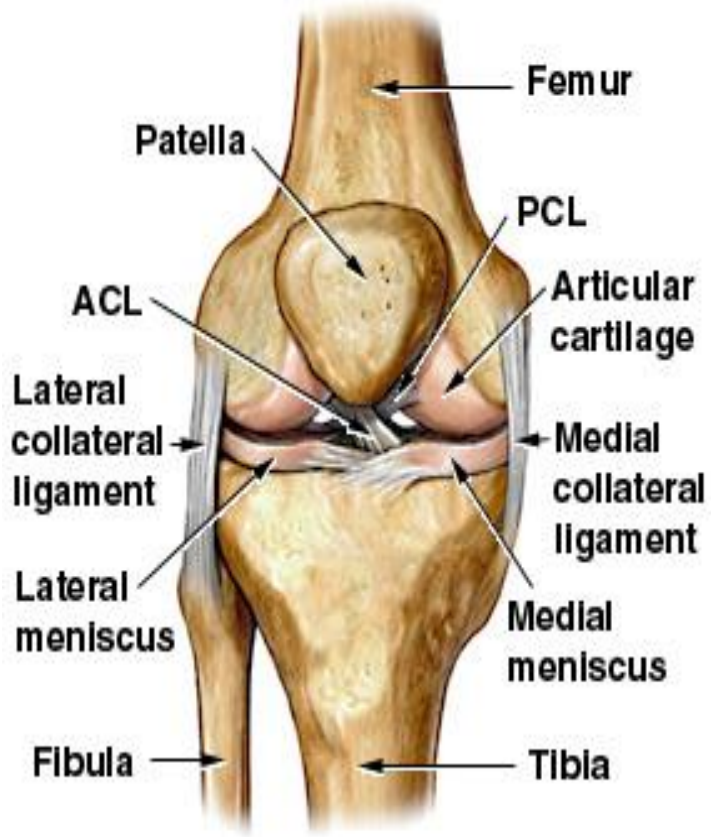
Anatomy of the Knee



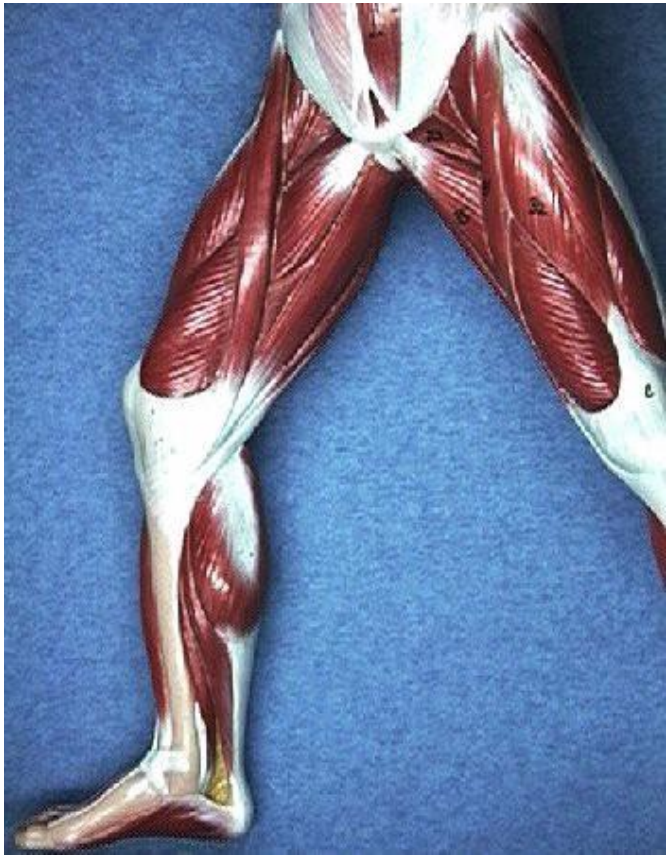
Anatomy of the Knee



Functional Anatomy of the Knee



Muscular Anatomy of the Knee



Functional Anatomy of the Knee

- Muscular components of the quadriceps : VM, VL, VI and RF, and the hamstrings, SM, ST, BF
- The quads are a stabilizer for the joint capsules and the ligaments
- Medial quad contraction decreases strain on the medial collateral ligament
- Quads prevent posterior tibial replacement
- The VMO resists lateral forces on the patella in a closed chain position

Functional Anatomy of the Knee

- The hamstrings are the primary flexors of the knee (Semimembranosis, Semitendinosis and biceps femoris)
- They assist the ACL in restraining anterior displacement of the tibia on the femur
- The hamstrings “reign in” the rotation of the tibia on the femur
- The popliteus stabilizes the lateral compartment of the knee and aids in terminal knee ext.

Functional Anatomy of the Knee

- The gastrocs assist in flexing the knee and prevent posterior translation of the tibia
- The hamstrings, sartorius, gracilis, IT band and rectus femoris muscles cross the hip and knee
- Sartorius is a tibial flexor and med. Rotator but also a hip flexor.
- TFL > IT band is a hip flexor and abductor
- Gracilis is a primary hip adductor and secondary knee flexor and internal rotator.
- These muscles balance each other and control the length tension relationships of each other in gait.

Common Clinical Conditions- Patellofemoral Instability

- Patellofemoral instability - normal path of the patella in the trochlear groove is altered resulting in altered patellar tracking.
- History - gradual onset
- Tests: patellar grind, compression, Clarkes, apprehension test, Q-angle
- Symptoms - peripatellar pain, edema, pain with prolonged sitting, stair climbing squatting, running
- Treatment - anti-inflammatory drugs, immobilization, physical therapy focused on improving: patellar tracking, active stability and accessory muscle integration

Common Clinical Problems - Meniscal Tears

- Large meniscal tears - meniscal repair is the treatment of choice
- History - Patient reports non contact stresses to the knee. Mechanism of injury involves a sudden change of direction.
- Symptoms - Joint pain, joint locking, buckling in the weight bearing position, inability to fully straighten the knee, edema and edema
- Treatment - Partial removal, repair of meniscus or non-surgical intervention

Common Clinical Problems - Meniscal Tears

PT Intervention at TRS clinics include:

- Pt. education
- Edema reduction (cryotherapy, interferential stimulation)
- Open to closed kinematics chain exercises
- SFMA
- Aquatics
- Proprioceptive exercises
- Work simulation activities

Manual Techniques- Traction, Squish technique, post or medial or lateral glide or rotational mobilization squat or lunge or open chain flex/ext.

Common Clinical Problems - ACL Tears

- Non-operative and operative treatment options
- Non-operative complications include ACL insufficiency, chronic synovitis, recurrent meniscal tears, progressive joint laxity, and joint surface erosion
- Terrible triad: ACL tear, medial meniscus injury and MCL tear
- Conservative treatment is not an option for patients whose functional goal is to continue a stressful sports or work environment

Common Clinical Problems - ACL Tears

- History is characterized by a snap or pop at the time of injury with rapid onset of effusion and hemarthrosis
- As a result of a quick deceleration, hyperextension or rotational injury that usually does not involve contact with another individual. This injury often occurs following a sudden change of direction.
- Patient unable to weight bear on the LE
- Patient may report that his knee “gives away” accompanied by effusion and pain

Common Clinical Problems - ACL Tears

Common Clinical Problems - ACL Tears

- Symptoms - pain, swelling, and limited weight bearing
- Positional or activity related apprehension of instability in weight bearing
- Positive Lachman's test and anterior drawer test
- Decreased proprioception
- Altered gait pattern

Common Clinical Problems - ACL Tears

- Surgical treatment most commonly includes intra-articular reconstruction utilizing an arthroscope to assist
- Protocols vary according to physicians throughout the country
- General rehabilitation guidelines are outlined as “general philosophies” only

ACL repair rehab protocol

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ACL repair rehab protocol

- Controlled Ambulation Phase (Weeks 6-9) - Knee brace is discontinued for ambulation and gait training is emphasized.
- Core stabilization program, squats, side and forward step-downs Knee exts 90°-45° (prox wt.).
- Moderate Protection Phase (Weeks 9-14) - Continued activity modification to protect the knee. Strengthening exercises are progressed, isokinetic testing, aquatics
- Light Activity Phase (Weeks 12-16) - Running, cutting, and agility drills , unilateral balance and continued strengthening, Squats to 90^0

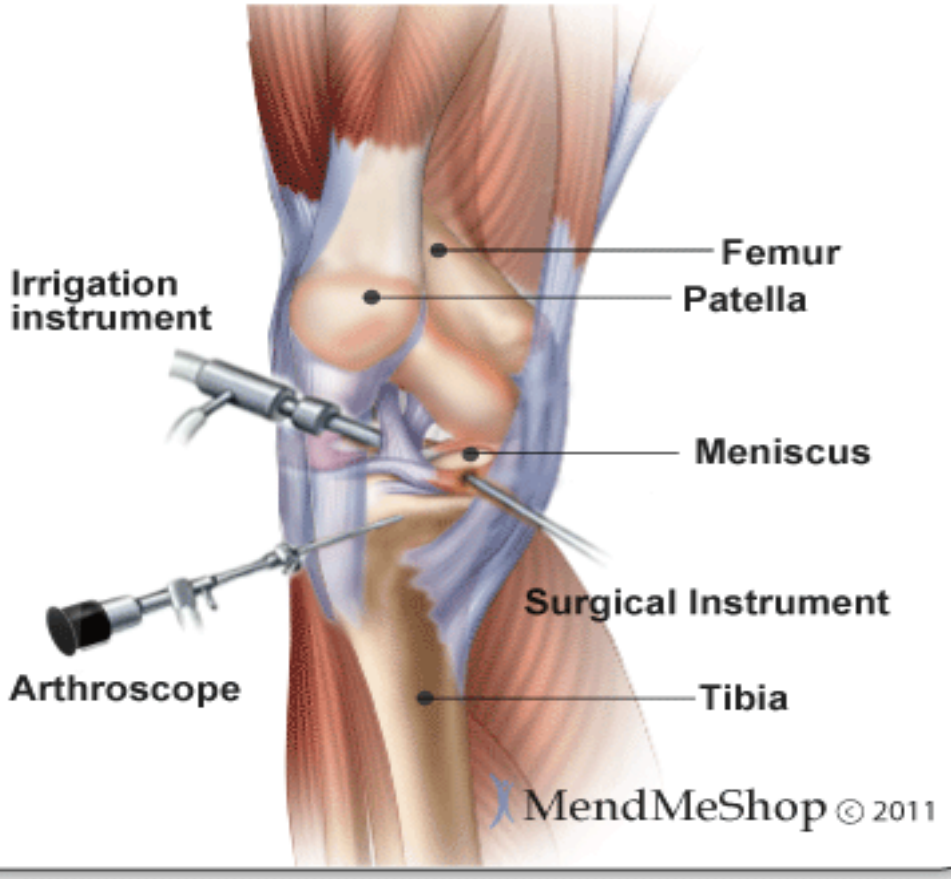
ACL repair rehab protocol

- Return to Activity Phase (5-6 months) - Progression through a gradual return to normal vigorous activities. Functional strengthening and proprioception should continue.
- Closed chain activities are essential throughout rehab to decrease the stress on the graft.

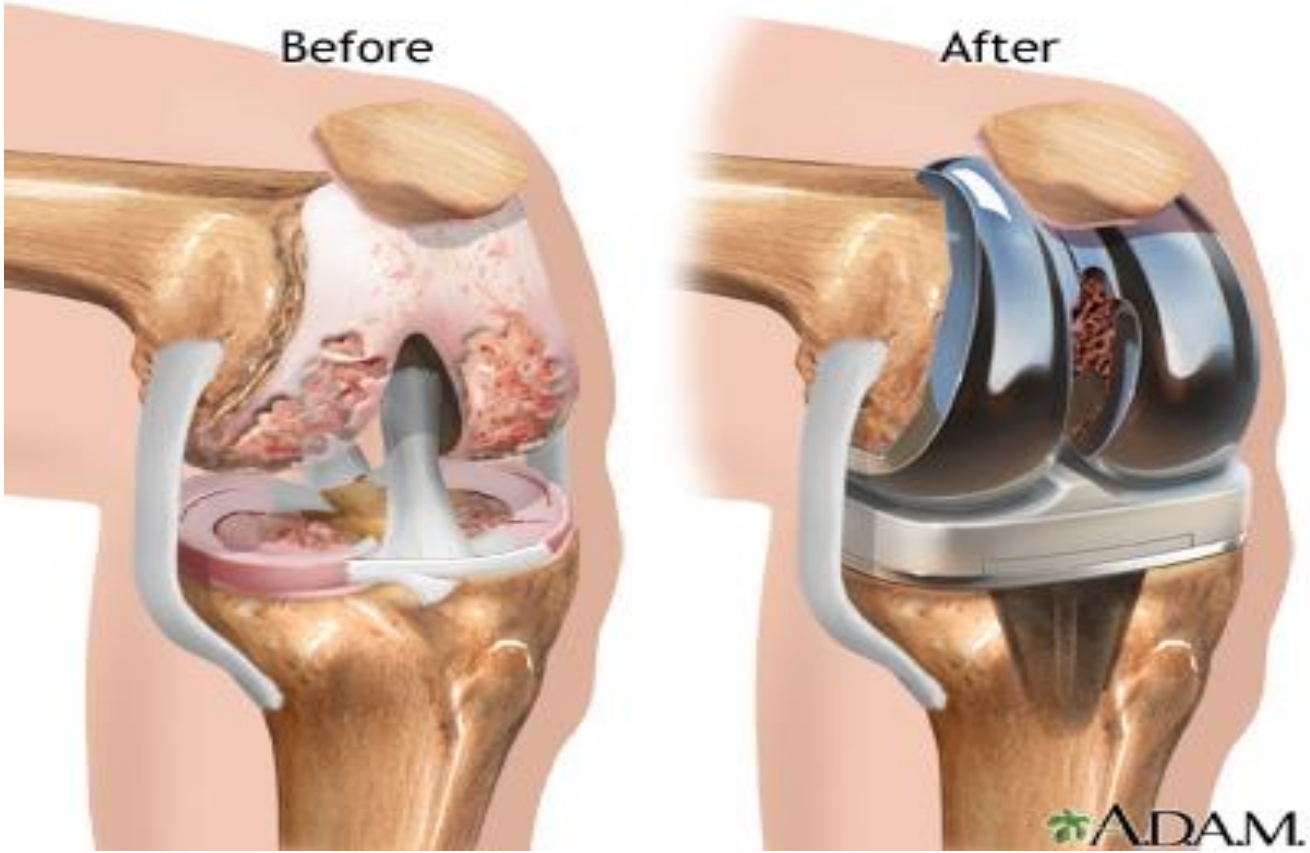
Arthritic pain treatment

- Anti-inflammatory meds/oral steroids, ice to decrease inflammation
- Muscle relaxants reduce spasm
- Steroid injections to the knee joint
- Traction, mobilization and passive ROM
- Retrain motor control and strengthening deficiencies in local muscle strength and movement patterns

Arthroscopic Knee Surgery



Total Knee Replacement



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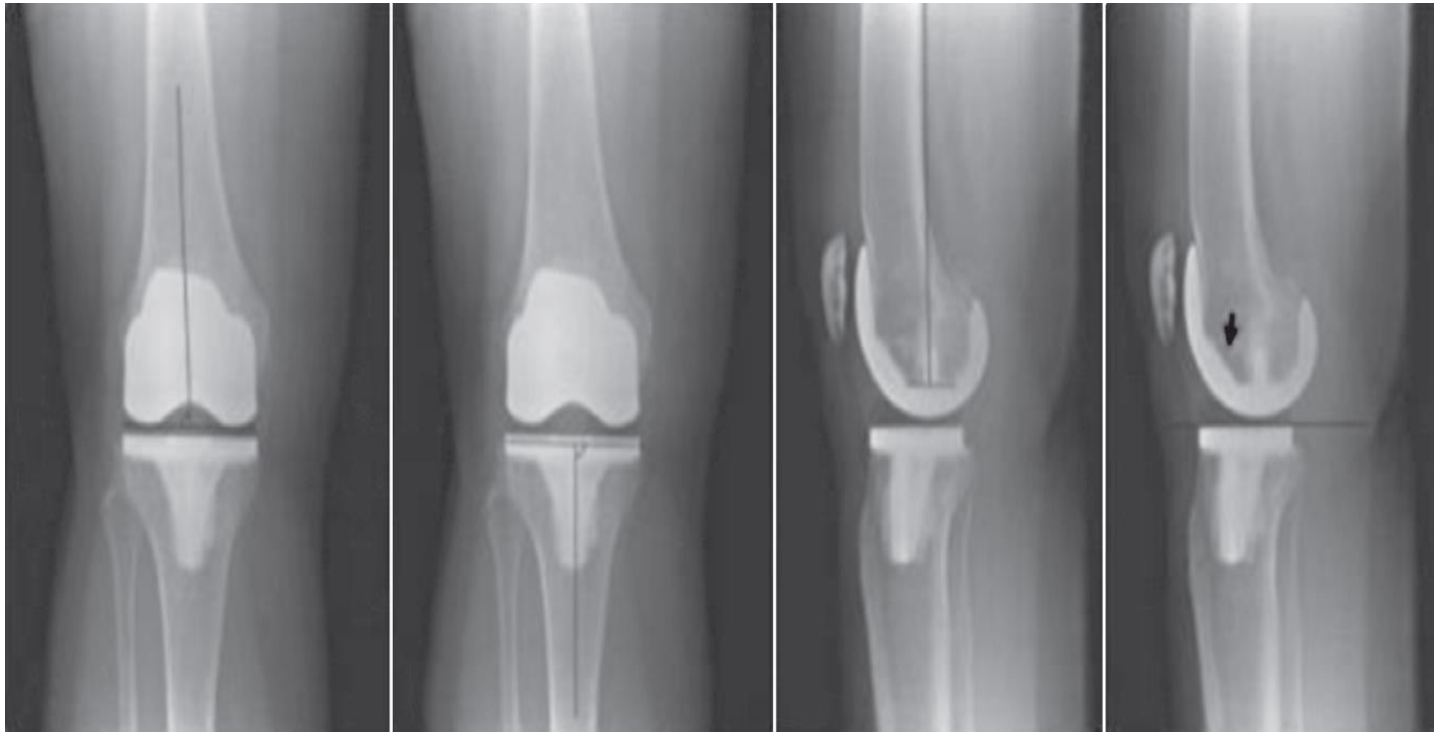

Lower Extremity Muscular Strain

- Presents as a more localized and at times slightly referred pain to the knee and present in a variety of positions and may be referred to the buttocks, thigh, shin or calf.
- Decreased ability to lengthen rapidly leads to eccentric activity muscle tears.
- Hypotonicity- Failure to recruit or incomplete recruitment.

Knee Muscular Strain

- Phase one: Rest, ice, activity modification
- Medications may be provided such as anti-inflammatory medications, non-steroidal anti-inflammatory medications (NSAIDS), oral steroids, or muscle relaxants
- Trigger point injections and therapy maximize steroid effects

Lower Extremity Strain

- Phase Two: Exercise, massage, stretching, manual therapy, modalities
- Phase Three – Settled stage
- Manual therapy – Being phase out, mostly hands off approach
- Exercise – Improving motor control with exercises including trunk and knee stabilization, HEP
- Work or sport re-conditioning – Job specific training and conditioning

What's New in Treatment?

- PROLOTHERAPY and PRP
- Proliferation or hyperplasia of connective tissue through chemical or platelet rich plasma injection of a mild irritant or biologic healing properties at the site of pain or injury to stimulate healing.
- Connective tissue hypertrophy
- Being used to promote healing and stability.

Advances in ACL repair

- Surgical repair of anterior cruciate ligament (ACL) tears has a high rate of poor outcomes and failures—with a nonunion rate of 90 percent. For this reason, ACL reconstruction, using a patellar tendon or hamstring graft, is the standard treatment.

Extra vs. Intra-articular ligament healing

- In a torn MCL, a blood clot forms at the tear site, leading to a proliferation phase of collagen production that results in remodeling and restoration of strength and function. In a torn ACL, clot formation never initiates, and subsequent healing does not occur, so that repair procedures are ineffective.

Murray's Scaffolding Technique

- This is performed by combining the patient's blood with a collagen scaffold. The fibrin in the blood plasma and the added collagen could form a copolymer that cannot be broken down quickly by the normal enzymes in the synovial fluid. Collagen also activates platelets, which early in wound healing release growth factors that engage the healing process, allowing for mending of both torn ends.

It’s all about the options!

- Posture and biomechanics correction
- Heat / Ice
- Ultrasound
- Dry Needling
- Accupuncture
- Massage
- Myofascial Release
- Medication / Diet
- Electric Stimulation
- (TENS) (Interferential)
- (Microcurrent)
- Manipulation
- Mobilization
- Exercise (stretching / strengthening / stabilizing)
- Non specific Manual / mechanical traction

It’s all about the options!

- Treatment approach is determined through a thorough examination
- Treatment can be in any combination best suited for the individual
- A collaboration of medical colleagues may prove beneficial
- The presence of hypermobility or instability may present challenges…

Work Site or Training Modification

- New ex's, job or sport based on things we can't change
- Allow for active rest and healing with meds
- Work on core strengthening and address footwear
- Bracing or taping
- Allow for adequate warm up, and stretching of restricted areas prior to strengthening exercise

Job or exercise program re-Design

- Job enlargement and rotation should be considered
- Modify height of work stations
- Perform all work as close to the body as possible
- Provide adequate space for activities
- Provide proper exercise routines with active rest
- Work on regaining mobility before stability
- Allow or provide knee pads for frequent static or dynamic kneeling

Physical Fitness

- Encourage employees and clients to maintain an acceptable level of physical fitness
- Encourage stretching and change of position throughout the work day
- Fit individuals recover faster
- Emphasize stability and endurance for some and strength and flexibility for others depending on the job or sport

Employer and Employee Communication

- Educate employees about prevention of knee injuries
- Establish company policy regarding safe body mechanics
- Supervise employees for correct body mechanics
- Encourage teamwork

Doctor, PT, case worker and Client Communication

- Require the use of proper equipment and clothing
- Design all workouts and exercises with safety in mind
- Attempt to keep employees at some form of work while undergoing treatment
- Communication among all as to what activities should be modified or eliminated

Questions

Clinic Locations

Lakeland, FL 33801

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