

WEEKEND 2 – Shoulder

Shoulder Active Range of Motion Assessment

- **Patient Positioning:** Standing, appropriately undressed so that the entire shoulder girdle and thoracic spine can be viewed
- **Therapist Positioning:** Observation from the front, side, and back to help identify compensations in all planes
- **Indications:** Completed as part of the shoulder exam.
- **Clinical Pearls:**
 - Assess quality and quantity of motion and look for asymmetries
 - AROM assesses willingness to move and may determine whether overpressure is appropriate
 - Utilize overpressure when appropriate to get a sense of end feel and to provoke symptoms
 - Painful arc of motion for sub-acromial impingement is typically between 70-90 deg of elevation
 - Painful arc of motion for AC joint impingement is typically >110 deg of elevation

Shoulder Passive Range of Motion Assessment

- **Patient Positioning:** Supine towards the edge
- **Therapist Positioning:** Close to the edge of the bed, using one hand to move the upper extremity and the other to stabilize the scapula when necessary
- **Indications:** Completed as part of the shoulder exam, helping to determine how much motion is available at the GH joint.
- **Clinical Pearls:**
 - Utilize your body and arms to passively range the shoulder. The more points of contact you have the more likely they are to relax and the better assessment you will get
 - Monitor for compensation strategies: flexion and abduction (shoulder hiking), shoulder IR (scapular protraction/IR), shoulder ER (scapular retraction/ER)
 - Shoulder flexion and abduction passive GH motion should be at least 90 degrees prior to scapular motion
 - 60 deg GH ER required to clear greater tuberosity from sub-acromial arch during elevation

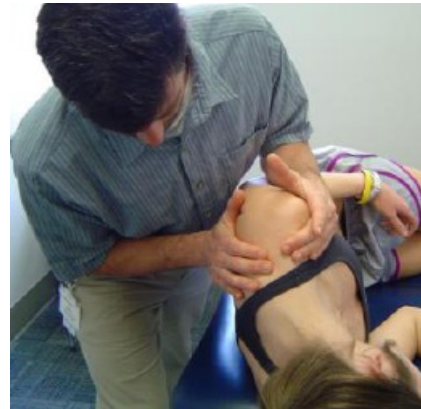
Scapular-Thoracic Motion Assessment

- **Patient Positioning:** Side lying towards the back edge of the bed
- **Therapist Positioning:** Standing behind the patient with both hands on the scapula (one hand anterior, one hand posterior)
- **Indications:** Completed as part of shoulder exam particularly when scapular mechanical asymmetries are identified with active elevation.
- **Clinical Pearls:**
 - Observe both quality and quantity, are there differences compared to the other side?
 - Avoid thoracic rotation compensation especially with protraction/retraction and IR/ER assessment
 - Retraction, ER and posterior tilt often limited with upper crossed syndrome

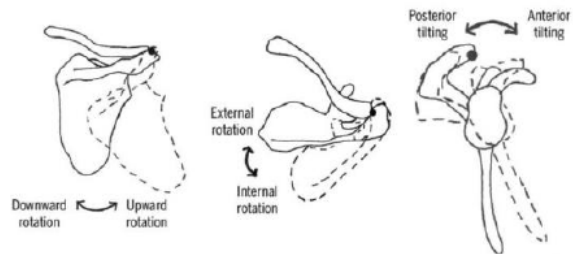
Protraction/Retraction



Elevation/Depression



ER/IR, Ant/Post Tilt, Downward/Upward Rotation



Glenohumeral Anterior Arthrokinematic Assessment

- **Patient Positioning:** Prone, arm off the edge of the bed, humeral head off the edge as well (or wedge under coracoid) appropriately undressed
- **Therapist Positioning:** Standing on the side of the bed, facing the head of the bed, between the bed and the patient's UE. Lateral hand supporting the patient's UE, medial hand over the posterior aspect of the humeral head. Table height should allow for mobilizing arm to be locked in extension. Therapist applies an anterior glide to the humerus.
- **Indications:** To determine GH joint capsular mobility particularly when there is a loss of ER ROM. Assess uninvolved side first. Begin in loose pack position and progress to closed pack position. Slowly work towards end range.
- **Contraindications:** Fracture, anterior GH ligamentous compromise
- **Clinical Pearls:**
 - Slow assessment observing amount of motion, neutral zone (movement prior to resistance), end feel, tissue response, pain provocation.
 - For a more effective assessment, stay in the plane of the joint which is anteromedial/posterolateral
 - Technique can be done at multiple angles to assess different parts of the capsule; anterior capsule (below 90 deg) and anteroinferior capsule (above 90 deg)



Glenohumeral Posterior Arthrokinematic Assessment

- **Patient Positioning:** Supine, arm off the edge of the bed, humeral head off the edge as well (or wedge under scapula) appropriately undressed
- **Therapist Positioning:** Standing on the side of the bed, facing the bed or the foot of the bed (depending on technique), outside the patient's UE. Lateral hand supporting the patient's UE, medial hand over the anterior aspect of the humeral head. Table height should allow for mobilizing arm to be locked in extension. Therapist applies a posterior glide to the humerus.
- **Indications:** To determine GH joint capsular mobility particularly when there is a loss of IR ROM. Assess uninvolved side first. Begin in loose pack position and progress to closed pack position. Slowly work towards end range.
- **Contraindications:** Fracture, posterior GH ligamentous compromise
- **Clinical Pearls:**
 - Slow assessment observing amount of motion, neutral zone (movement prior to resistance), end feel, tissue response, pain provocation.
 - For a more effective assessment, stay in the plane of the joint which is anteromedial/posterolateral
 - Technique can be done at multiple angles to assess different parts of the capsule; posterior capsule (below 90 deg) and posteroinferior capsule (above 90 deg)



Glenohumeral Inferior Arthrokinematic Assessment

- **Patient Positioning:** Supine, arm off the edge of the bed, appropriately undressed
- **Therapist Positioning:** Standing on the side of the bed, facing the foot of the bed.
(Technique at 90 degrees): Stand outside the patient's UE with the medial hand on the superior aspect of the humeral head and the lateral hand supporting the underside of the humerus. Tuck the patient's forearm between your body and lateral arm. Table height should allow for mobilizing arm to be parallel to the floor. Therapist applies an inferior glide to the humerus.
(Technique above 90 degrees): Stand inside the patient's UE with the medial hand on the superior aspect of the humeral head, and the lateral hand supporting the underside of the humerus. Tuck the patient's forearm between your body and medial arm. Table height should allow for mobilizing arm to be parallel to the floor. Therapist applies an inferior glide to the humerus.
- **Indications:** To determine GH joint capsular mobility particularly when there is a loss of abduction ROM. Assess uninvolved side first. Begin in loose pack position and progress to closed pack position. Slowly work towards end range.
- **Contraindications:** Fracture, anterior/inferior GH ligamentous compromise
- **Clinical Pearls:**
 - Slow assessment observing amount of motion, neutral zone (movement prior to resistance), end feel, tissue response, pain provocation.
 - For a more effective assessment keep both hands close to joint line and use counter movement "non mobilizing" hand
 - Technique can be done at multiple angles to assess different parts of the capsule



AC Joint Arthrokinematic Assessment

- **Patient Positioning:**
 - **Inferior and posterior:** Supine, upper extremity in neutral at edge of the bed, appropriately undressed.
 - **Posterior:** Seated, upper extremity in neutral at edge of bed, appropriately undressed.
 - **Anterior:** Prone upper extremity off edge of bed, appropriately undressed.
- **Therapist Positioning:**
 - **Inferior:** Standing at the head of the bed facing the foot of the bed. Therapist places pads of both thumbs on the distal aspect of the superior clavicle. Therapist applies an inferior glide of the clavicle on the acromion.
 - **Posterior:** Standing at the edge of the bed facing the patient. Therapist places pads of both thumbs on the distal aspect of the anterior clavicle. Therapist applies a posterior glide of the clavicle on the acromion.
 - **Posterior:** Standing perpendicular to the patients shoulder. Anterior thenar eminence on the anterior distal clavicle and posterior thenar eminence on the distal acromion. Therapist applies a “squeezing” motion gliding the clavicle posterior and the acromion anterior.
 - **Anterior:** Standing at the edge of the bed facing the patient. Therapist places pads of both thumbs on the posterior aspect of the distal clavicle. Therapist applies an anterior glide of the clavicle on the acromion.
- **Indications:** To determine AC joint capsular mobility. Assess uninvolved side first. Slowly work towards end range.
- **Contraindications:** Fracture, AC joint dislocation
- **Clinical Pearls:**
 - Slow assessment observing amount of motion, neutral zone (movement prior to resistance), end feel, tissue response, pain provocation.

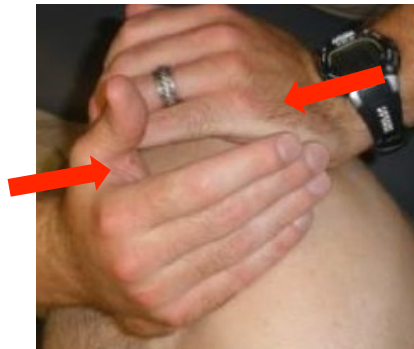
Inferior ACJ Glide



Supine Posterior ACJ Glide



Seated Posterior ACJ Glide



Anterior ACJ Glide



SC Joint Arthrokinematic Assessment

- **Patient Positioning:** Supine with upper extremity in neutral
- **Therapist Positioning:** Standing at head of the bed facing the foot of the bed.
 - **Inferior:** Therapist places pads of both thumbs on the superior aspect of the medial clavicle. Therapist applies an inferior glide to the clavicle on the sternum.
 - **Posterior:** Therapist places pads of both thumbs on the anterior aspect of the medial clavicle. Therapist applies a posterior glide to the clavicle on the sternum.
- **Indications:** To determine SC capsular mobility. Assess uninvolved side first. Slowly work towards end range.
- **Contraindications:** Fracture, SC joint dislocation
- **Clinical Pearls:**
 - Slow assessment observing amount of motion, neutral zone (movement prior to resistance), end feel, tissue response, pain provocation.
 - SC joint is a saddle joint; inferior glide with upward elevation of the scapula, posterior glide with protraction of the scapula
 - Align forearms in direction of the force and utilize your body to glide the joint



Inferior SCJ Glide



Posterior SCJ Glide

Impingement Testing

- **Patient Positioning:** Seated, feet resting on the floor, appropriately undressed
- **Therapist Positioning:**
 - **Neer:** Standing behind the patient. Therapist passively elevates the upper extremity while stabilizing the scapula preventing protraction.
 - **Hawkins-Kennedy:** Standing in front of the patient. Therapist places the shoulder in 90 deg of elevation in scapular plane. Therapist then passively IR the GH joint
- **Indications:** Test for sub-acromial impingement of the supraspinatus or sub-acromial bursa
- **Clinical Pearls:**
 - Both tests are good screening tool to rule out impingement (Neer: sensitivity .78, HK: sensitivity .74)
 - Positive tests are bolstered by positive resistance testing to the RC (supraspinatus/infraspinatus)



Neer Test



Hawkins-Kennedy Test

Rotator Cuff Tear (Supraspinatus/Infraspinatus) Testing

- **Patient Positioning:** Seated, appropriately undressed
- **Test Performance:**
 - **ER Lag Sign:** Standing behind the patient holding the patients elbow with one hand and their wrist with the other. Therapist passively places the UE in 20 deg of abduction, 90 deg elbow flexion and full ER. Patient is instructed to maintain position of the UE as the therapist lets go of the wrist.
 - Positive if the patient is unable to hold full ER upon release
 - **Drop Arm Test:** Therapist passively abducts the shoulder to 90 deg. Therapist lets go of the UE and the patient is asked to lower the UE down actively
 - Positive if the patient feels pain, there is scapular dyskinesia and is unable to control lowering
- **Indications:** Performed when there is suspicion of a rotator cuff tear (ie weakness with isometric resisted testing and or significant scapular dyskinesia with AROM assessment)
- **Clinical Pearls:**
 - Positive ER lag sign more indicative of infraspinatus tear
 - Positive Drop Arm Test more indicative of supraspinatus tear
 - The larger the lag or the more dyskinesia with arm lowering the larger the tear likely is.
 - Cluster of tests to identify full thickness RC tear (+LR 15.57)
 - + Drop arm, painful arc sign (70-110 deg) and weakness with resisted ER at 0 deg *JBJS 2005*



ER Lag Sign



Drop Arm Test

Rotator Cuff Tear (Subscapularis) Testing

- **Patient Positioning:** Seated, appropriately undressed
- **Test Performance:**
 - **Lift Off Test:** Standing behind or to the side of the patient. Place the patients dorsal side of the hand on the sacrum. The patient is asked to actively lift the hand and arm away from the back.
 - Positive if the patient is unable to lift off the back
 - **Belly Press Test:** Patient places the palmar side of their hand on the abdomen. The patient is asked to press their hand into the belly
 - Positive if there is complaints of weakness and/or inability to maintain IR (elbow drops back, shoulder extends, wrist flexes)
- **Indications:** Performed when there is suspicion of a rotator cuff tear (ie weakness with isometric resisted testing. Mechanism of injury with forced shoulder ER or horizontal abduction)
- **Clinical Pearls:**
 - Positive tests indicate subscapularis tear
 - Lift off test is a good screening test with high sensitivity (100%) and moderate specificity (62%)
 - Belly Press test helps to rule in diagnosis with high specificity (98%)



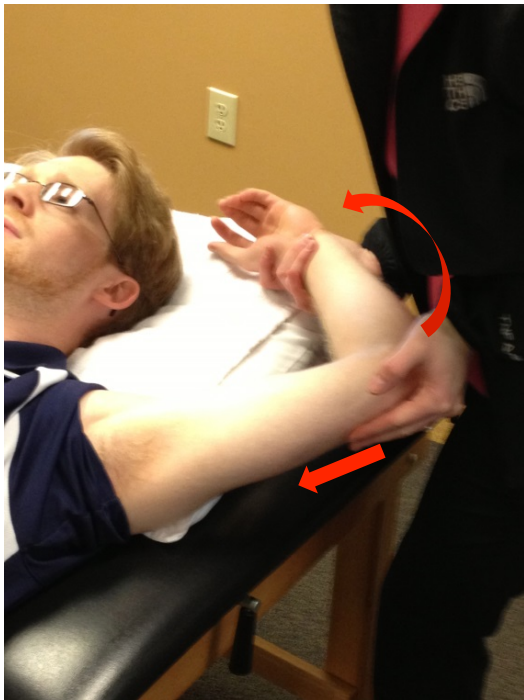
Lift Off Test



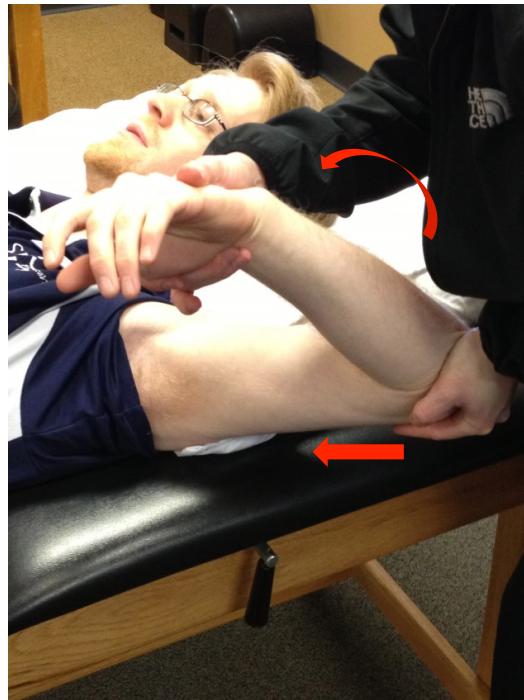
Belly Press Test

GH Labral Testing

- **Patient Positioning:** Supine at the edge of the bed, appropriately undressed
- **Test Performance:**
 - **Crank Test:** Standing on the side of the bed, therapist places the shoulder in 160 deg of scaption with one hand on the elbow and the other supporting the wrist. The therapist applies an axial load of the humerus into the glenoid through the elbow. While maintaining the axial load, the therapist
 - Positive with reproduction of pain and mechanical signs and symptoms
- **Indications:** Performed when there is suspicion of a labral tear (ie. Hx of FOOSH, inconsistent AROM findings, springy end feel with PROM, reports of clicking and clunking, pain deep inside joint)
- **Clinical Pearls:**
 - Claims to identify type 3 or 4 bucket handle SLAP lesions
 - Utilize when peel back injury suspected
 - Wide range of sensitivity and specificity numbers



Crank Test with ER



Crank Test with IR

GH Labral Testing

- **Patient Positioning:** Supine at the edge of the bed, appropriately undressed
- **Test Performance:**
 - **Compression/Rotation Test:** Standing on the side of the bed, therapist places the shoulder in 90 deg of abduction with one hand on the elbow and the other on top of the shoulder. The therapist applies an axial load of the humerus into the glenoid through the elbow. While maintaining the axial load, the therapist rotates the shoulder IR/ER as the shoulder is passively moved to 160 degrees of abduction (scouring the joint)
 - Positive with reproduction of pain and mechanical signs and symptoms
- **Indications:** Performed when there is suspicion of a labral tear (ie. Hx of FOOSH, inconsistent AROM findings, springy end feel with PROM, reports of clicking and clunking, pain deep inside joint)
- **Clinical Pearls:**
 - Helps to rule in a labral tear with higher specificity numbers (76%)
 - Therapist can add horizontal abduction with an anterosuperior force to challenge the anterosuperior labrum
 - Therapist can add horizontal adduction with posterosuperior force to challenge the posterosuperior labrum
 - Utilize with compression injury



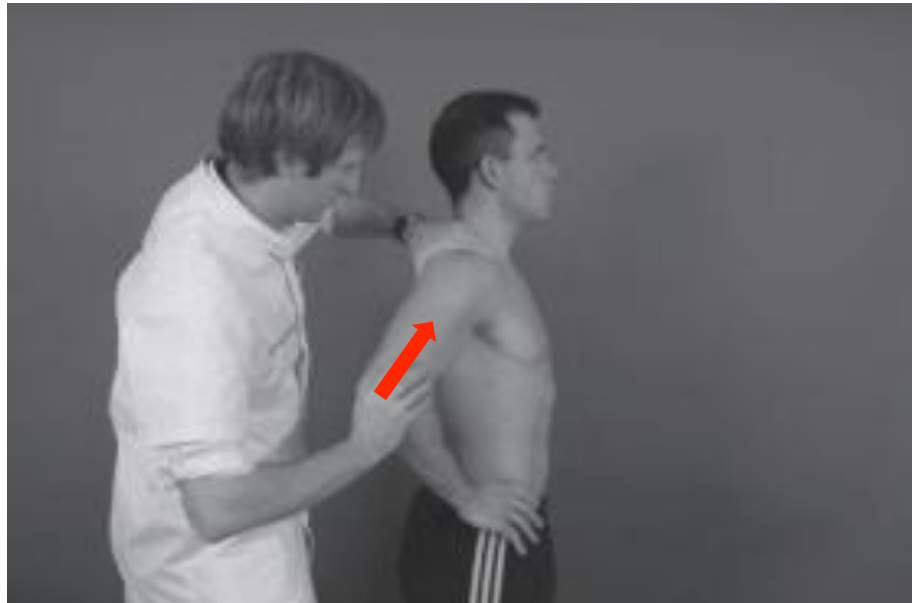
GH Labral Testing

- **Patient Positioning:** Supine at edge of bed, appropriately undressed
- **Test Performance:**
 - **Biceps Load II:** Standing at the head of the bed, therapist passively abducts the shoulder to 120 deg with maximal ER and 90 deg of elbow flexion and full supination. With one hand at the wrist and one hand stabilizing at the elbow, the therapist asks the patient to resist elbow flexion
 - Positive with reproduction of pain and mechanical signs and symptoms
- **Indications:** Performed when there is suspicion of a labral tear (ie. Hx of FOOSH, inconsistent AROM findings, springy end feel with PROM, reports of clicking and clunking, pain deep inside joint)
- **Clinical Pearls:**
 - Superior labrum is “peeled” off the glenoid mimicking a peel back lesion often occurring in the posterosuperior labrum
 - With a SLAP pathology only, Biceps Load II test has a high diagnostic utility (PPV 26) *JSES 2012*



GH Labral Testing

- **Patient Positioning:** Standing or sitting with hand on hip thumb facing posterior, appropriately undressed
- **Test Performance:**
 - **Anterior Slide Test:** Standing behind the patient, therapist places one hand on the scapula to stabilize and the other hand on the posterior aspect of the elbow. Therapist directs an anterior and superior force through the elbow
 - Positive with reproduction of pain and mechanical signs and symptoms
- **Indications:** Performed when there is suspicion of a labral tear (ie. Hx of FOOSH, inconsistent AROM findings, springy end feel with PROM, reports of clicking and clunking, pain deep inside joint, repetitive overhead motion)
- **Clinical Pearls:**
 - Direction of test stresses anterior superior labrum and put biceps tendon on traction
 - Utilize wit compression injuries



GH Labral Testing

- **Patient Positioning:** Seated with elbow fully extended and forearm fully supinated
- **Test Performance:**
 - **Speed's:** Standing in front of the patient, therapist asks patient to flex the shoulder from 0-60 degrees against resistance
 - Positive with reproduction of pain in the bicipital groove
- **Indications:** Performed when there is suspicion of a labral tear with biceps involvement (ie. Hx of FOOSH, inconsistent AROM findings, springy end feel with PROM, reports of clicking and clunking, pain deep inside joint, repetitive overhead motion)
- **Clinical Pearls:**
 - Utilize with traction injuries



GH Labral Testing

- **Patient Positioning:** Standing with shoulder flexed to 90 degrees, 15 degrees of horizontal adduction
- **Test Performance:**
 - **O'Brien's test:** Therapist fully IR and pronates the UE from the starting position. Therapist has the patient resist flexion. The therapist then fully ER and supinates the UE not deviating from the starting position. Therapist again resists flexion
 - Positive is with decreased symptoms in the second test position as compared to the first
- **Indications:** Performed when there is suspicion of a labral tear (ie. Hx of FOOSH, inconsistent AROM findings, springy end feel with PROM, reports of clicking and clunking, pain deep inside joint, repetitive overhead motion). Trying to discern between ACJ and labral pathology
- **Clinical Pearls:**
 - Pain described on top of the shoulder indicates AC joint pathology
 - Pain described deep in the joint indicates labral pathology
 - Utilize with compression or traction injures



GH Stability Testing

- **Patient Positioning:** Seated with shoulder and UE in neutral
- **Test Performance:**
 - **Sulcus:** Therapist grasps around the distal humerus with one hand, the other is placed the shoulder to palpate the subacroimal space. A traction force is applied through the humerus and the distance between the acromion and top of the humerus is palpated
 - Positive is ___
 - **Load Shift Test:** Therapist stands behind the patient, stabilizes the girdle with one hand on top of the acromion and clavicle, the other hand grasps around the proximal humerus. Therapist “loads” the humeral head in attempt to center it within the glenoid. The humeral head is then shifted anterior and posterior relative to the glenoid.
 - Positive is laxity/subluxation over the glenoid rim
- **Indications:** Performed to test stability of the GH joint. If there is suspicion of ligamentous or capsular laxity due to trauma or potential multidirectional instability
- **Clinical Pearls:**
 - Patient may have capsular/ligamentous laxity that is normal for them. Assess uninvolved side and consider Beighton scale.
 - AMBRI: **A**traumatic, **M**ultidirectional, **B**ilateral, **R**ehabilitation (usually successful), **I**nferior Capsular Shift (if conservative treatment fails)



Sulcus Test



Load Shift Test

GH Stability Testing

- **Patient Positioning:** Supine, at the edge of the bed with shoulder in 90 deg of abduction and full ER
- **Test Performance:**
 - **Apprehension:** Therapist one hand supports the UE at the forearm and the other hand is placed on the posterior aspect of the humeral head. A small anterior directed force is applied at the humeral head.
 - Positive is pain provocation and/or apprehension
 - **Relocation:** Therapist one hand supports the UE at the forearm and the other hand is placed on the anterior aspect of the humeral head.
 - Positive is a reduction in pain and/or apprehension
 - **Anterior Release:** A continuation of the relocation test. The therapist releases the posterior force on the humeral head.
 - Positive is pain and/or apprehension
- **Indications:** Performed to test stability of the GH joint. If there is suspicion of ligamentous or capsular laxity due to trauma or potential anterior instability. Description of trauma with UE in 90 deg of abduction with ER.
- **Clinical Pearls:**
 - Anterior dislocation of the humeral head is most common direction
 - Axillary nerve can be damaged with anterior dislocation leading to atrophy of deltoid and teres minor
 - Hill Sachs lesion (compression fracture of the posterolateral aspect of the humeral head) can be a complication after anterior dislocation. Humeral head contacts the anterior rim of the glenoid creating the fracture
 - Bankart lesion (an avulsion of the anterior portion of the inferior GH ligament and labrum off the glenoid rim) can occur due to anterior dislocation of humeral head
 - TUBS: **T**raumatic, **U**nidirectional, **B**ankart Lesion, **S**urgery



Apprehension



Relocation



Anterior Release

Scapular Dyskinesia Testing

- **Patient Positioning:** Standing, appropriately undressed
- **Test Performance:**
 - **Scapula Assist Test:** Therapist asks the patient to actively elevate their UE. Therapist places one hand on top of the spine of the scapula and the other on the inferior angle of the scapula. The hand on the inferior angle assist the scapula in upward rotation and the hand on the spine of the scapula assist with posterior tilt.
 - Positive is painful arc relief
 - **Scapula Relocation Test:** Therapist places UE in “full can” position. Therapist places one hand on top of the shoulder girdle to stabilize the scapula. The other hand is at the distal humerus. Therapist has the patient resist elevation while stabilizing the scapula in retracted position. Re-tested without stabilization of scapula.
 - Positive is improved strength and/or decreased symptoms with stabilization in retracted position
- **Indications:** Performed to determine if scapular dyskinesia plays a role in patient impingement condition.



Scapula Assist Test



Scapula Relocation Test