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Post-Operative Rehabilitation Protocol
"Small-Medium (<180° circumference) Capsular Stabilization Procedures "
[Labral Repair 1-4 Anchors (Ant/Post Bankart), Capsular Shift, Capsular Plication]
Revised 2012

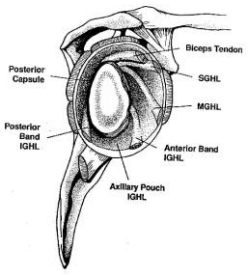
There are many descriptions of the glenohumeral joint. Often it is described as a golf ball and tee. The glenoid surface is surprisingly shallow in which case the circumferential labral structure doubles the actual depth of the joint itself. Alone, the depth of the glenoid is approximately 2.5 mm deep with the labrum adding an additional 2.5mm to the overall structure. A proper functioning rotator cuff and a complex structure of ligaments add to the stability of the glenohumeral joint and in many views the labrum serves a "bumper."

A **Bankart lesion** is an injury of the anterior (inferior) glenoid labrum of the shoulder due to repeated (anterior) shoulder dislocation. When this happens, a pocket at the front of the glenoid forms that allows the humeral head to dislocate into it. It is an indication for surgery and often accompanied by a Hill-Sachs lesion, damage to the posterior humeral head. A **Posterior Bankart Lesion** is an injury to the posterior rim of the glenoid labrum. This injury can be from posterior dislocations or repetitive posterior directed trauma. Often during arthroscopic exploration, the labral injury is identified, subsequent capsular laxity can be identified which can be addressed with either a posterior capsular shift or plication. A good review of many principles involved in the preoperative planning, surgical intervention techniques, and post operative rehabilitation course are summarized thoroughly in the following citation:

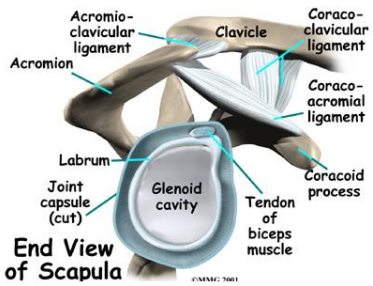
Gaunt BW, Shaffer MA, Sauers EL, et al, The Americn Society of Shoulder and Elbow Therapists' Consensus Rehabilitation Guideline for Arthroscpic Anterior Capsulolabral Repair of the Shoulder. JOSPT. 2010;3:40.

Surgical Techniques, rational, and longitudinal outcome following capsulolabral repairs are well described with the following references:

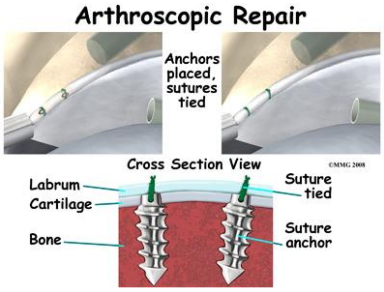
1. Stein T, Linke RD, Buckup J, et al. Shoulder Sport-Specific Impairments After Arthroscopic Bankart Repair: A Prospective Longitudinal Assessment. Am. Jou. Sports Med. 2011;11:2404-2414.
2. Tjoumakaris FP, Bradley JP. The Rational for an Arthroscopic Approach to Shoulder Stabilization. Jou. Arthr. Rel. Sur. 2011;10:1422-1433.
3. Castanga A, Borroni M, Delle Rose G, et al. Effects of Posterior-Inferior Plications in Range of Motion in Arthroscopic Anterior Bankart Repair: A Prospective Randomized Clinical Study. Knee Surg. Sports Traum Arthr. 2009;17:188-194.



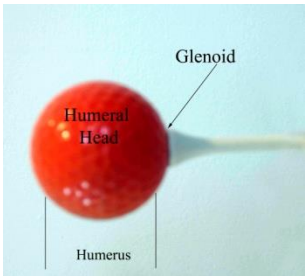
1. GH Ligaments



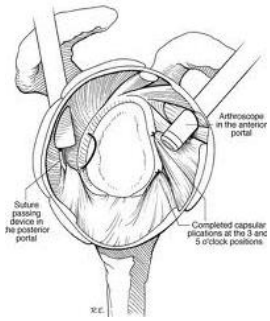
2. Extra-capsular Structures



3. Repair Cross Section*

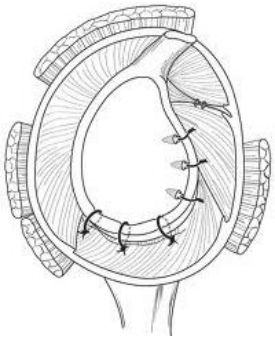


4. Golf ball-Tee Analogy



5. Capusular Shift at the 3-o-clock Position*

6. Anterior and Posterior Capsular Shift*



7. Anterior Bankart Repair and Inferior Capsular Shift*

*These are examples surgical procedures. These are to give the rehabilitation specialist an idea of what structures are addressed.

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General Considerations: This rehabilitation program will vary in time and intensity based on multiple factors including the age of the patient, the extent of the repair, history of prior surgery, instability and laxity prior to surgery (as well as in the contra lateral upper extremity) and individual functional readiness in all stages. Early range of motion and progressive strengthening is valuable to prevent arthrofibrosis, promote circulation and facilitate return to prior activity level.

Physical therapy will begin immediately following surgery. The initial focus will be on regaining motion before emphasizing resistance exercises. Progression through the different phases of rehab will be individually based. A variety of factors will be considered including control of pain and inflammation, recovery of normal motion, strength, endurance and generally accepted tissue healing guidelines. In addition to activities in the physical therapy, the patient will also receive a home exercise program to complement his physical therapy plan of care.

Shoulder Stabilization Repair Considerations: Some repairs and surgeon philosophy may indicate 1-4 anchor repairs for the labrum and may include some type of capsular shift. It is not uncommon for shoulder stabilization procedures to accompany other repairs of procedures. It is wise to understand the methods used by the surgeons you come in contact with. The below rehabilitation protocol takes into consideration that most techniques involve some type of bioabsorbable anchor and suture technique. Further reading on the above can be found in the literature at the end of this protocol.

DDEAMC DOR S.Wea.P. (Sling Weaning Philosophy): There are few procedures that would dictate sling use 24/7 for 6 weeks. If this were the case, special considerations would be made. The time frames depicted below are approximate. Patient **compliance, tolerance, level of pain, function, and physiological factors** all play a role in the sling use with a patient. The sling should be worn in high traffic areas out of the house (e.g. the mall, grocery store). When inside the house the patient can begin trials of being out of the sling in intervals depicted in the below chart. If pain goes up with these trials, the patient goes back in the sling. If the patient appears non-complaint and is at risk of rupturing the repair, the patient goes back in the sling. However, if the patient's pain is lessening over time, tolerates trials out of the sling, and is compliant, it is reasonable to continue the progression.

Hire JM, Pniewski JE, Dickston ML, Jacobs JM, Mueller TL, Abell BE, Bojescul JA. A criterion based sling weaning progression (sweap) and outcomes following shoulder arthroscopic surgery in an active duty military population. Int J Sports Phys Ther. 2014 Apr;9(2):179-86.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Sport Post-op Sling 						
Small-Medium (<180° circumference) Capsular Stabilization Procedures [Labral Repair 1-4 Anchors (Ant/Post Bankart), Capsular Shift, Capsular Plication]	May come out of the sling for hygiene purpose. May come out of the sling to perform exercises. 1 hour trials out of the sling if no increased pain with the above.	May begin trials out of the slings 1-2 hours at a time 5-6 x day. May need it for sleeping. Continue to wear in public places and work.	May begin trials of being out of the sling throughout the entire day in controlled environments. Continue to wear in public places/work.	Continue to wear sling while sleeping if 6-7 hours of uninterrupted sleep is not achieved.	Discharge	
Medium-Large (>180° - 360° circumferential) Capsular Stabilization Procedures [Labral Repair >=5 Anchors (Ant/Post Bankart), Capsular Shift, Capsular Plication]	May come out of the sling for hygiene purpose. May come out of the sling to perform exercises. 1 hour trials out of the sling if no increased pain with the above.	May begin trials out of the slings 1-2 hours at a time 5-6 x day. May need it for sleeping. Continue to wear in public places and work.	May begin trials of being out of the sling throughout the entire day in controlled environments. Continue to wear in public places/work.	May continue to wean if pain persists out of the sling and requires the sling with sleeping.	Continue to wear sling while sleeping if 6-7 hours of uninterrupted sleep is not achieved.	Discharge

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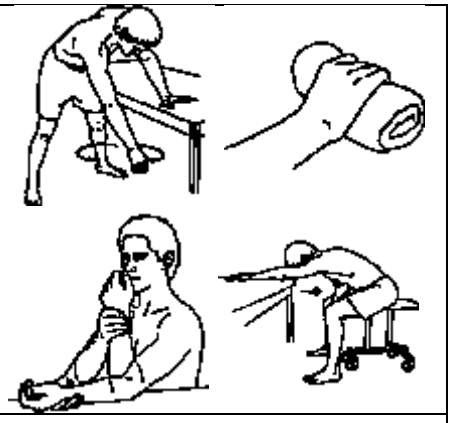
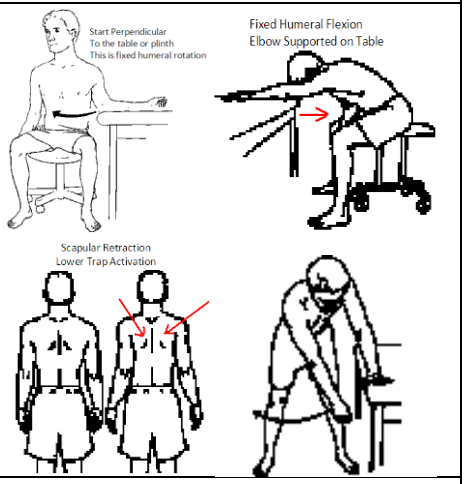
Pre-op Instructions:

Exercises	• Instruct in Phase I post-op exercises: • Elbow PASSIVE range of motion, • Supported (With hand under elbow) pendulum and/or pendulum/Codman's • Hand squeezes with ball	
Sling	• Wear sling until initial visit with physical therapist. • Follow DOR SWeaP	
Education	• Understand the need of compliance in rehabilitation, timelines, and goals • Educate on sleep hygiene in recliner or bed with back support • Review Precautions • Schedule follow-up appointment 3-5 days post op	

Phase I (weeks 1-3)

Precautions	• No running until 8-10 wks. • No active open chained movement x 4-6 wks. • No lifting anything greater than fork for 4-5 wks • Watch for signs of infection • May Shower after post op dressing removed by PT or Ortho (do not scrub over sutures or soak in bath) • Sling per SWeaP	
Suggested Therapeutic Exercise	• HEP for 2 weeks unless pain and/PROM an issue • Begin early scar massage if wound closed • Pendulums/Codman's • Fixed Humeral/Elbow Supported Flexion. • Fixed Humeral/Elbow Supported ER • Scapular Retraction with depression (focus on early lower trap activation) • Soft tissue mobilization of upper trap and deltoid (if problematic for the patient) • PROM supine if unable to meet PROM goals with Supported elbow flexion • Hand/Wrist/Elbow therex	
Modalities	• Ice (Polar Care) 3-5 times daily for 20 minutes • Other pain relieving modalities prn (e.g. TENS)	
Cardiovascular Fitness	• May do stationary or recumbent bike at own pace in sling	

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Education	• Understand the need of compliance in rehabilitation, timelines, and goals • Educate on sleep hygiene in recliner or supported with pillows • Review Precautions • Posture re-education	
Rehabilitation Goals Progression Criteria	• PROM shoulder flexion between 90-120 • PROM 20-35 Degrees of ER from Neutral with elbow at side • 2-4 hours of uninterrupted sleep • Decrease pain/inflammation • Maintain wrist, hand, elbow ROM	

Phase I notes on exercise intervention:

- Repetitions of PROM should be based on quality, not quantity (10-15 reps per day if PROM progresses daily)
- Overactive upper trapezius and deltoid (trap/delt hike) can be problematic when progressing PROM → AAROM →AROM
- Particular attention needs to be directed on proper scapularhumeral rhythm.

Phase II (weeks 3-6)

Precautions	• Walk to Jog Progression can begin at 6-10 weeks • No independent running until 10-12 weeks • No active open chained movement x 6-8 wks • No PROM ER @90° ABD • No excessive horizontal ABD until 8 weeks (Posterior Repair of any kind) • Sling per SWeaP • Limit the use of IR towel stretch (posterior repair)	
Suggested Therapeutic Exercise	• Continue Phase I exercises as needed • UBE Light resistance progress to forward and retro in 2→4→6 minute intervals (each interval split between forward and retro) • AAROM (pain free ROM) Finger ladder (no trap/delt hike) Weighted Bar in supine into shoulder flexion Pulleys (no trap/delt hike) • A/AROM in all shoulder planes • Light Pec stretching (if appropriate) • Supine rhythmic stabilization • Serratus punches in supine • PROM into Flexion (Gentle with Posterior repairs) • **PROM ER/IR at 45° ABD in supine** • Hand up the back slowly progress as tolerated • Shoulder Isometrics sub-maximal (2 sec phase in → 2 sec maintain → 2 sec phase out @ 60%-80% max) • Closed chain weight shifting • Closed chain isometric lower trap strengthening (Standing prone cobra)	
Modalities	• Ice (Polar Care) PRN • Other pain relieving modalities prn (e.g. TENS) • Joint mobilizations I-II per the PT	
Cardiovascular Fitness	• May do stationary or recumbent bike at own pace in sling as long as pain continues to decrease • May walk at own pace and distance in sling as long as pain continues to decrease	

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Education	• Understand the need of compliance in rehabilitation, timelines, and goals • Assess Sleep Hygiene • Review Precautions	
Rehabilitation Goals Progression Criteria	• PROM 120-Full Forward flexion • AROM 120° Forward flexion • 6-7 hours of sleep in bed or recliner or normal for patient. • ADL's below elbow height pain free or 0-2/10 • Decrease pain and inflammation • Minimize shoulder atrophy and deconditioning	

Phase II notes on exercise intervention:

- Sling should be discharged within this phase depending on size of the repair, tolerance of the patient, and pain regression.
- The next phase will focus on strengthening with proper scapular placement therefore attention should be paid towards proper early scapular stabilization.

Phase III (Weeks 6-9)

Precautions	• Walk to Jog Progression can begin at 6-10 weeks if pain free • No independent running until 10-12 weeks • No excessive horizontal ABD until 8 weeks (Posterior Repair of any kind) • No unsupervised strengthening of the involved shoulder unless instructed by PT for HEP	
Suggested Therapeutic Exercise	• Continue Phase II exercises as needed • Pec stretching (doorway →supine small foam roll →large foam roll) • IR Towel Stretch vs. Sleeper stretch • Supine Rhythmic Stabilization with arm at 90° (Scap Stab) • Serratus Anterior Punches (Scap Stab) • Begin light RTC Therex below 90° [(See Citations) none above 60° shoulder abd) • **PROM in ER @ 90° abd 0-45°** • Shoulder height proprioceptive/endurance training: Wall ball dribble/drawing Body blade Ball toss with arm at side • Prone Cobra and Scapular Stabilization W's, T's, Y's • Open chain lower trap strengthening • Active Duty: Sit ups with arms on chest	
Modalities	• Other pain relieving modalities prn (e.g. TENS)	
Cardiovascular Fitness	• May do stationary/recumbent bike or elliptical at own pace as long as pain continues to decrease • May walk at own pace and distance as long as pain continues to decrease	
Education	• Emphasis on high reps low weight with all therex • Understand the need of compliance in rehabilitation, timelines, and goals	
Rehabilitation Goals Progression Criteria	• 90% - Full Forward Flexion AROM when compared to contra lateral UE • ER @ 90° ABD 45° at 9 wks • ADL's below shoulder height pain free or 0-2/10 • RTC Strengthening all directions 30 reps with T-Band • 30 Wall pushups	

Phase III notes on exercise intervention:

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- Proper form during rotator cuff strengthening with scapulas set in retracted depressed state.
- If the patient does not have the available A/PROM to accommodate prone scapular stabilization regress to standing.
- There should be reports of nil-minimal pain with exercise and any pain post exercise should subside within 2-3 hours post cool down.

Phase IV (Weeks 9-12)

Precautions	• May begin walk to jog progression as tolerated in week 8. • No contact sports x 6 months	
Suggested Therapeutic Exercise	• Continue Phase III exercises as needed • Joint Mobilizations as directed by PT as necessary • **90/90 active ER/IR stretching** **At 90º ABD 0-75º 9-10 wks** **At 90º ABD 0-90º 10-12 wks** • Progressive RTC Therex (See Citations) • Ball toss at rebounder (lightest ball) with arm at side → shoulder height → 90/90 • Body Blade/Ball Toss at rebounder • Quad ped stabilization on Bosu/Fitter/Foam • Active Duty: Sit up and Push up progression	
Modalities	• Pain relieving modalities PRN	
Cardiovascular Fitness	• May do Stairmaster, elliptical, treadmill at own pace and distance	
Education	• Caution patient on progressing extracurricular activities too quickly	
Rehabilitation Goals Progression Criteria	• Full PROM WNL/Full AROM 90% non involved side • RTC Strength WFL, 4+/5 MMT • 30 high table pushups (>30^0 incline) w/o increasing c/o pain or 0-2/10 • Can complete higher than phase 5 walk to jog w/o increasing c/o pain or 0-2/10	

Phase IV notes on exercise intervention:

- 90/90 active ER/IR strengthening shoulder scapulas set in retracted depressed state.
- There should be reports of nil-minimal pain with exercise and any pain post exercise should subside within 2-3 hours post cool down.

Phase V (Months 3-6)

Precautions	• No contact sports x 6 months • No Pull-ups/Dips x 6-9 months	
Suggested Therapeutic Exercise	• Continue Phase IV exercises as needed • Plyometric therex (pushup stepping →clap, bosu, stair climbing, fitter on hands, etc) • Pushup Progression • 90/90 IR/ER Strengthening • Progress supine rhythmic stabilization →standing (see image to right) • Sport Specific Training drills (pitching, batting, shooting, etc.) • May begin independent transition back into gym	 Or with body blade
Modalities	• Pain relieving modalities PRN	
Cardiovascular Fitness	• APFT Run training or alternate event	
Education	• Caution patient on progressing extracurricular activities too quickly	
Rehabilitation Goals Progression Criteria	• AROM Symmetrical • Resume all introduction back to sport/job • Pass APFT at 6 months	

Phase V notes on exercise intervention:

- Exercise prescription should focus on endurance with above shoulder height activities.
- Specific job/sport related therex should be completed with proper form and endurance intervals for higher repetitions.

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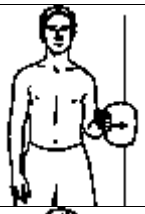
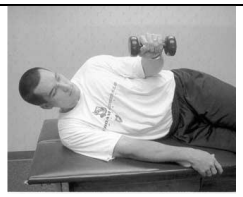
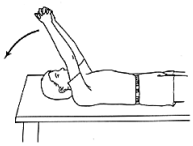
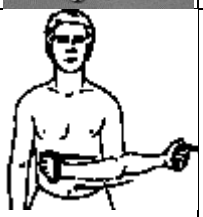
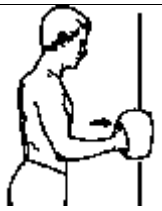
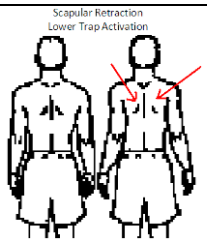
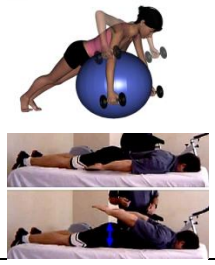
"Rotator Cuff and Scapular Stabilization Exercise Progression"
Muscle fiber initiation to progressive EMG activity
Progression from isometrics to open chain advanced

RC/Scapular Stabilization Exercise Progression	Early Phase (Isometrics) Sub Max (2 sec phase in → 2 sec maintain → 2 sec phase out @ 60%-80% max	Early-Mid Phase	Mid-Late Phase	Late Phase	Advanced
	Lowest	Low	Mid-Level	High	Highest
Infraspinatus/ Teres Minor					
Supraspinatus					
Subscapularis					
Serratus Anterior					
Lower Trapezius					
Rhomboids