

SLAP POST-OPERATIVE PROTOCOLS AND RECOVERY GUIDELINES

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Presented in PHYT 732, Spring 2023

OBJECTIVES

- Students will demonstrate ability to confidently read a surgical protocol and identify key factors affecting the patient's recovery^{1,2,3}
- Students will demonstrate ability to choose interventions appropriate for the stage of recovery
- Students will demonstrate ability to find reliable surgical protocols using online or other resource
- Students will understand general phases of healing in a post-operative shoulder protocol⁴
- Students will be able to apply concepts discussed in presentation to other post-operative protocols
- Apply healing principles paired with anatomical knowledge to develop a safe treatment plan

BEFORE
WE
BEGIN

Questions to Guide Post-op Rehab⁵

What tissues are involved?

What time frame is needed for healing?

Do we/How do we protect those tissues?

How do I gradually load the tissues?

SNYDER'S 4 TYPES OF SLAP LESIONS⁴

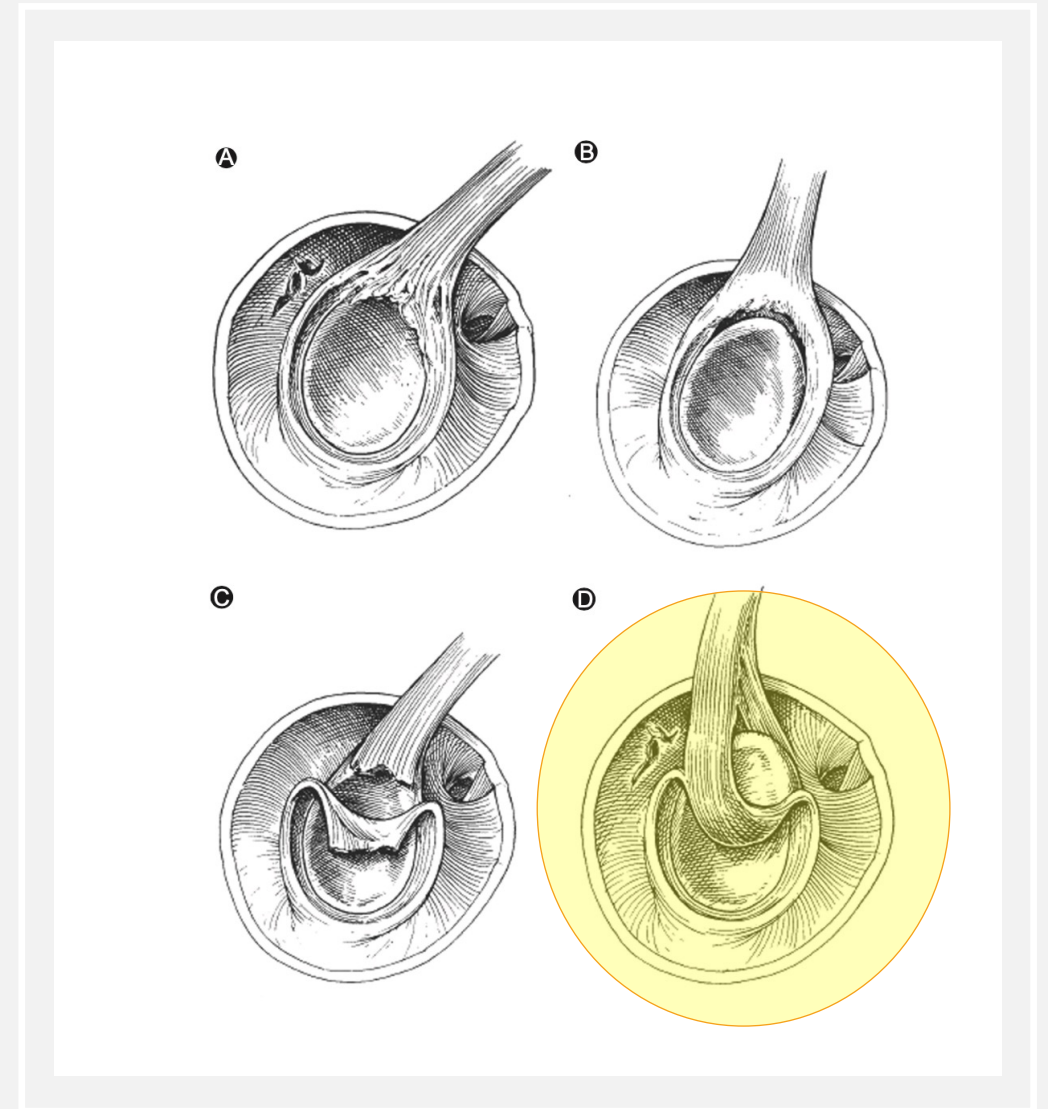
1(a). Fraying or degeneration of the superior labrum

2(b). Detachment of superior labrum AND biceps long head tendon from glenoid

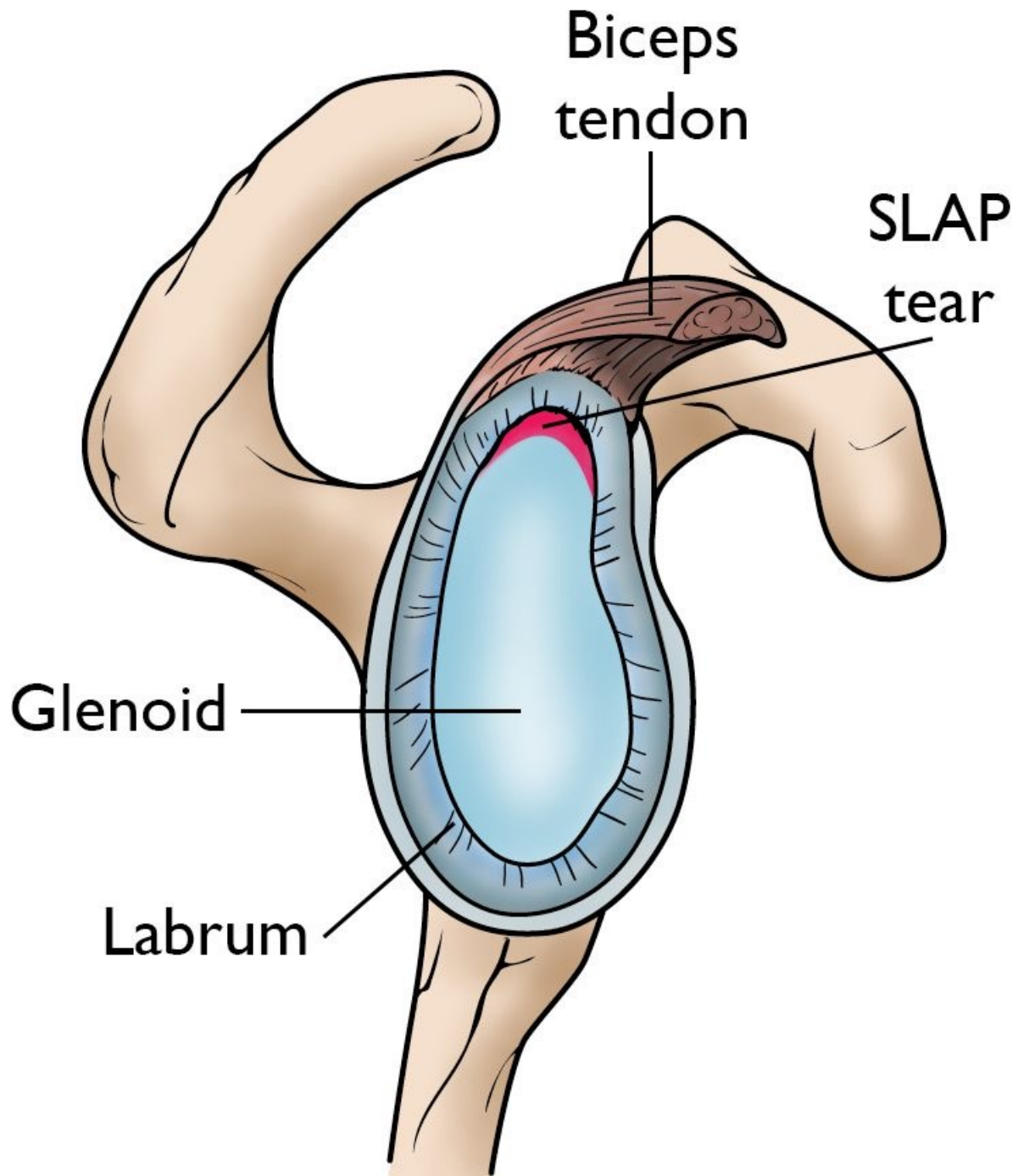
3(c). Bucket handle tear of labrum while biceps tendon remains intact

4(d). Bucket handle tear of superior labrum that extends into the biceps tendon.

Types 1 and 3 typically only require a debridement therefore the recovery is much faster and less restrictive



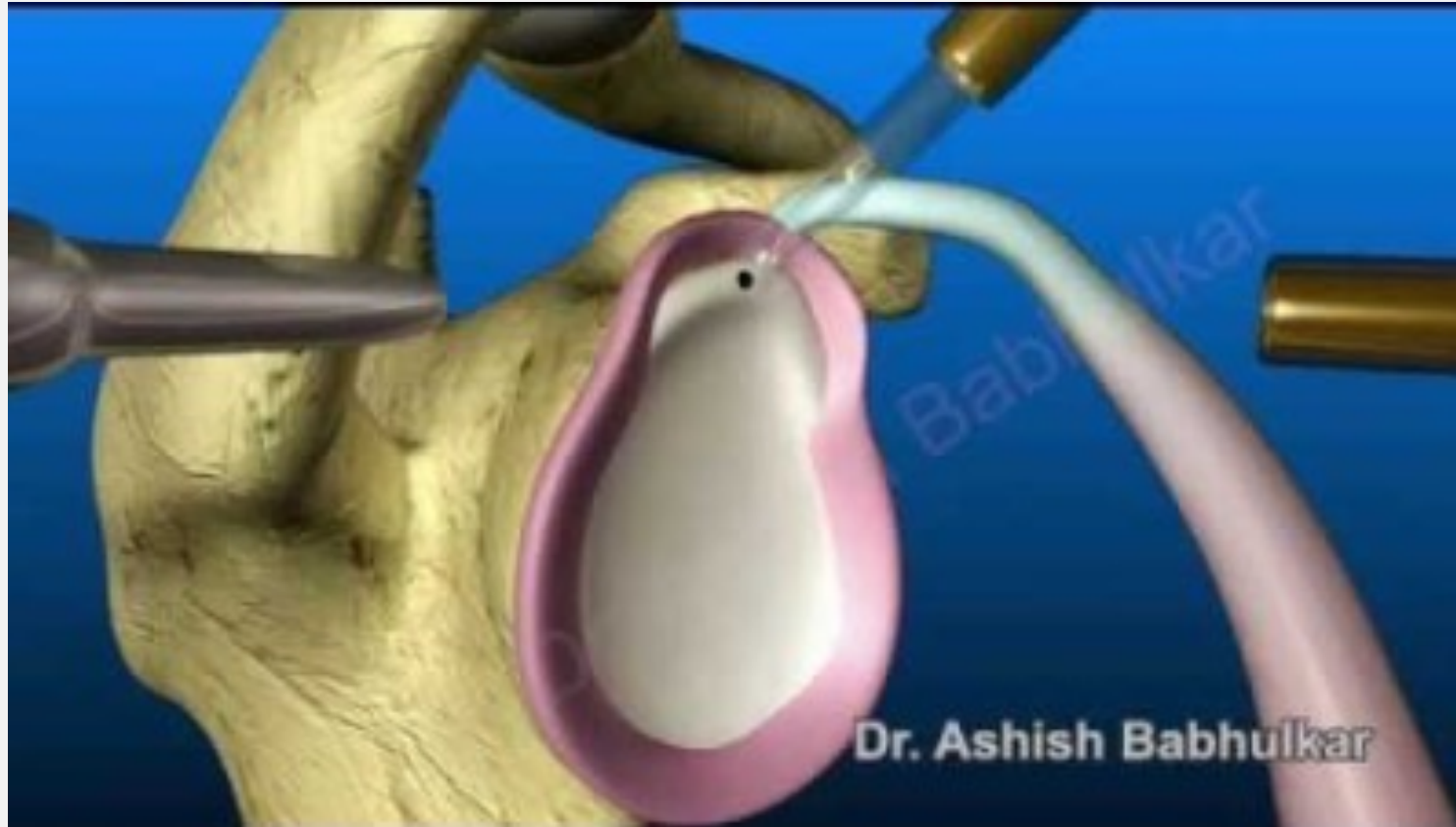
We'll talk mostly about type 4 repairs



SLAP TEAR ANATOMY⁴

- Affected Tissues
 - Superior Labrum
 - Biceps Tendon
 - Superior Glenoid Rim

VIDEO OF HOW SURGEONS ANCHOR
THE LABRUM TO THE RIM⁶



GENERAL TISSUE HEALING TIMES^{4,5,7}

Bone to Bone healing:

- 6 weeks

Collagen to Bone healing:

- 6 weeks = immature healing
- 12 weeks = sharpeys fibers form
- 6 months = mature healing

VERY GENERAL PHASES OF REHAB^{4,8}

1

Phase 1: 0-6 Weeks

- Protection, pain management, edema management, promote healing
 - At 6 weeks, 25-35% tensile strength
-

2

Phase 2: 7-12 Weeks

- Slowly progress PROM and AAROM, begin AROM
 - At 12 weeks, 50% tensile strength
-

3

Phase 3: 13-24 weeks

- Strengthen, motor control, achieve full PROM and AROM
 - At 6 months, 75-80% tensile strength
-

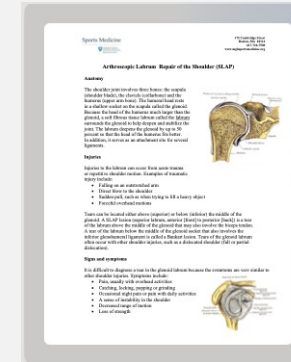
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Phase 4: 24+ Weeks

- Strengthening, power lifting, return to sport training, motor control and proprioceptive training
-

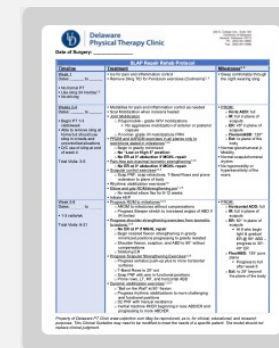
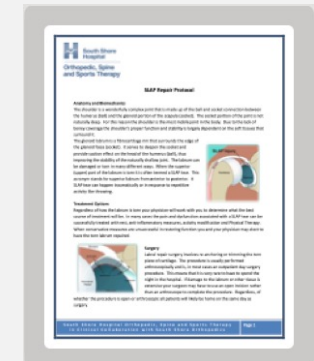
WHERE DO I FIND A GOOD PROTOCOL? ^{1,2,3}

- Google is your friend
- Many hospital clinics have a database of trusted protocols
- Pick from well-known universities or hospitals
- The phases of each protocol differ slightly from each other
- The “phases” of a protocol are different than the phases of healing



Mass General

Brigham and Women's



University of Delaware

STEPS TO CONSIDER WHEN WORKING WITH POST-OP PATIENTS⁴

- Understand the surgical procedure
- Understand the anatomical structures that must be protected, how they are stressed, and the rate at which they heal
- Appropriate selection and skilled intervention; and management of the initial immobilization period
- Optimization of the kinetic chain
- Considerations for return to work and play

NOW YOUR
TURN

1. Pull up one of the linked protocols

2. Look at the Phase I restrictions

3. What are some of the motions we need to restrict?

HOW DO WE
PROTECT THESE
HEALING TISSUES IN
THE FIRST 6
WEEKS?^{1,2,3,9,10}

No biceps activation

Sling 24/7 for 4 weeks including sleeping

No ER past 30 degrees

No IR – reaching behind back

No shoulder flex past 90 degrees for 3 weeks

WHY?

BIOMECHANICAL HEALING⁷

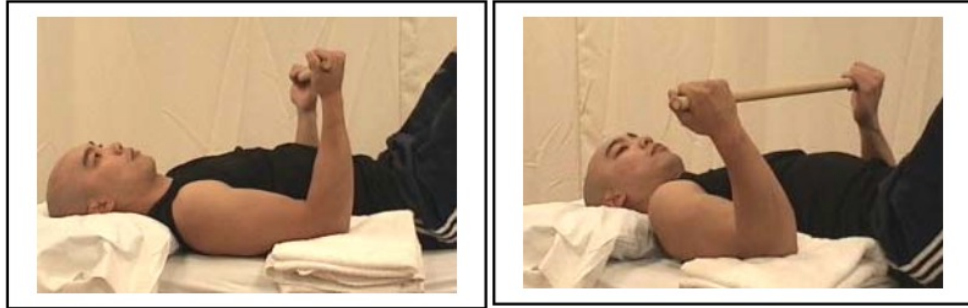
Biceps needs time for tendon to bone healing. No stress on the sutures (active or passive)

Weight of the arm is pulling down on shoulder and stressing sutures at superior labrum

ER past 30 puts stress on anterior labrum, pushing past this point leads to "peeling back" of supraspinatus tendon, located nearby the BLC that has just been repaired.

No IR behind the back because it places shoulder in extension. Anterior translation of humeral head decreases subacromial space

Limit flexion because of limited space in subacromial area where superior labrum and biceps are located. May also recruit biceps.



PHASE I INTERVENTIONS²

Passive Assisted External Rotation

Scapular Retractions



SELF-ASSISTED SUPINE FLEXION²

MORE PHASE I INTERVENTIONS TO CONSIDER

Rope-and-pulley
assisted elevation,
wand-assisted
elevation in the supine
position

Table step back
exercise

Exercise of uninvolved
joints (elbow, wrist,
hand)

Rotator cuff
isometrics with the
arm at your side

CRITERIA TO MOVE TO PHASE 2³

Pain less than 3/10 at all times (home and clinic).

Passive forward elevation to 120°

ER in neutral (scapular plane) to 30°

WHAT ARE THE POST-
OP LIMITATIONS IN
PHASE 2? ^{1,2,3}

Elevation in the plane of the scapula, and abduction not past 180°

External rotation 90-95° at 90° abduction

Internal rotation 70-75° at 90° abduction

Extension only to the plane of the body

NO resistance to biceps

No lifting objects heavier than 1-2 lbs

YOUR TURN AGAIN

Talking to Patients is hard!!

Now that we've talked about the restrictions for phase 2, **how would you explain post-op precautions to a patient?**

Use terminology that every patient will understand.

Rule of thumb is 6th grade level explanations.

Explain it so a middle schooler would understand.



EXAMPLES OF PATIENT CENTERED LANGUAGE FOR PRECAUTIONS

- Sleeping with a pillow propped under your arm, or upright in a recliner may be most comfortable for the first few weeks and will help you avoid rolling onto your arm
- Be careful with raising your arm, especially overhead, away from your body and behind you
- When washing under your arm, bend forward and let your arm dangle instead of actively raising it
- Don't reach behind your back to do things like fasten your bra with the involved arm
- Be careful opening stubborn jar lids and turning door handles



(Start with no weight)

Scapular I,T,Ys



Side lying
External Rotation

PHASE 2
INTERVENTIONS²

MORE PHASE 2 INTERVENTION IDEAS

- Continue isometric and begin isotonic rotator cuff strengthening
- Continue AROM elbow flexion and extension, no added resistance
- Continue all stretching exercises as need to maintain ROM.
- Progress PROM to functional demands
- Begin gentle sub maximal pain free biceps isometrics (late in phase)
- May begin prone scapular exercises
 - Start with shoulder extension and scapular depression

CRITERIA TO
PROGRESS TO
PHASE 3³

Full non painful ROM

Muscular strength 4/5 or better

No pain or tenderness

IR at 90° abduction within 10° of other side

40-60° of ER in 0° abduction

90° of ER at 90°s of abduction

Able to last full days without wearing sling, no pain

GENERAL
GUIDELINES IN
PHASE 3^{1,2,3}

All PROM should be normalized in this phase if deficits persist.

Gently restore external rotation at 90° of abduction beyond 90/90 position (115° for thrower by week 20).

May begin jogging and light free weights in the gym.

Avoid pectoral work posterior to the frontal plane, or overhead lifting such as military press or skull crushers

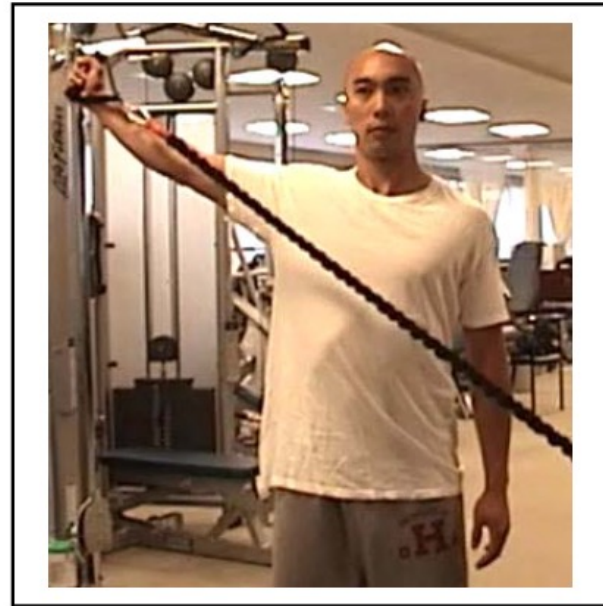
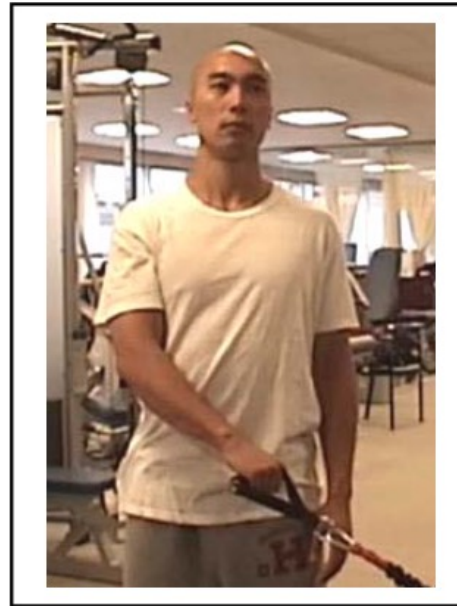
Biceps resistance may begin gradually and pain and soreness allows.

GOALS OF PHASE 3²

- Full AROM without pain and with good mechanics; full PROM, including ER at 90°s of abduction.
- Progress cuff and scapular strengthening slowly to provide glenohumeral joint support.
- Strengthen and return to functional activities and ADLs with good biomechanics
- Phase 3 activities should focus on loading the tissues to strengthen the musculature appropriately for each patient's goals

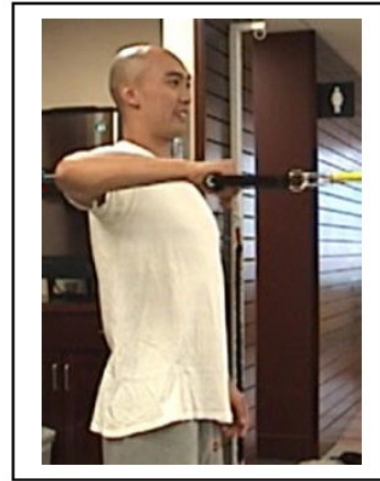
PHASE 3 INTERVENTIONS²

Proprioceptive
Neuromuscular
Facilitation D2
Pattern





Seated or standing rows
with theraband



External rotation in
90/90 position

MORE PHASE 3 INTERVENTIONS

- Continue all stretching exercises (capsular stretches)
- Maintain thrower's motion (especially ER)
- Continue rotator cuff, periscapular, and shoulder strengthening exercises
- Progress to isotonic biceps strengthening as appropriate
- PNF manual resistance
- Endurance training
- Initiate light plyometric program
- Restricted sports activities (light swimming, half golf swings)

GENERAL CRITERIA
TO RETURN TO
WORK AND SPORT

ER at 90° abduction to at least 115°

IR within 10° of nonthrowing shoulder

Total arc of motion within 5° of
nonthrowing shoulder.

Rotator cuff and scapular stabilizing muscle
strength within 10% of nondominant arm

RESOURCES:

1. Delaware Physical Therapy Clinic. Rehab Practice Guidelines for: SLAP Repair.

2. Massachusetts General Hospital Orthopedics. Arthroscopic Labrum Repair of the Shoulder (SLAP).

3. Brigham and Women's Hospital Department of Rehabilitation Services. Arthroscopic Labral Repair Protocol-Type II, IV, and Complex Tears. Published online 2016.

4. Christopherson ZR, Kennedy J, Roskin D, Moorman CT. Rehabilitation and return to play following superior labral anterior to posterior repair. *Oper Tech Sports Med*. Published online July 2017. doi:10.1053/j.otsm.2017.07.002

5. Kennedy J. Rehabilitation After Upper Extremity Surgery. Lecture presented at the: PHYT 874; January 31, 2023.

RESOURCES CONTINUED:

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6. SLAP Repair Arthroscopic Double loaded anchor Y config - YouTube. Accessed April 3, 2023.
<https://www.youtube.com/watch?v=75ARVxXIRBE>
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7. Killian ML, Cavinatto L, Galatz LM, Thomopoulos S. The role of mechanobiology in tendon healing. *J Shoulder Elbow Surg.* 2012;21(2):228-237. doi:10.1016/j.jse.2011.11.002
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8. Thigpen CA, Shaffer MA, Gaunt BW, Leggin BG, Williams GR, Wilcox RB. The American Society of Shoulder and Elbow Therapists' consensus statement on rehabilitation following arthroscopic rotator cuff repair. *J Shoulder Elbow Surg.* 2016;25(4):521-535. doi:10.1016/j.jse.2015.12.018
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9. Itoi E, Hatakeyama Y, Urayama M, Pradhan RL, Kido T, Sato K. Position of immobilization after dislocation of the shoulder. A cadaveric study. *J Bone Joint Surg Am.* 1999;81(3):385-390.
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10. Park MC, Idjadi JA, Elattrache NS, Tibone JE, McGarry MH, Lee TQ. The effect of dynamic external rotation comparing 2 footprint-restoring rotator cuff repair techniques. *Am J Sports Med.* 2008;36(5):893-900. doi:10.1177/0363546507313092