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Physical Therapy Rehabilitation following Anterior Shoulder Stabilization with Remplissage

The following post-operative shoulder anterior stabilization guidelines were developed by Hospital for Special Surgery Rehabilitation and are categorized into five phases with the ultimate goal for returning the overhead athlete to full competition. They can be used for patients undergoing a variety of anterior stabilization procedures with attention given to exact location of repair and any concomitant procedures. It is important that full range of motion is restored while respecting soft tissue healing. Classification and progression are both criteria-based and time based due to the healing constraints of the human body. The first phase is focused on soft tissue healing and maintenance of pain-free ROM. Phases two and three are focused on building foundational strength and stability which will allow the athlete to progress to phase four which includes plyometric exercises. With the completion of phase four the athlete will be able to start the final phase which includes interval sports programs. Cardiovascular endurance, hip and core strengthening should be addressed through the rehabilitation process. The clinician should use their skilled judgement and decision making as the athlete advances as all progression may not be linear.

Considerations for addition of "Remplissage" procedure for engaging Hill-Sachs lesions in combination with arthroscopic Bankart repair

Given that the Remplissage involves a tenodesis of the infraspinatus into the Hill-Sachs defect, the healing timeframes associated with rotator cuff repair must be considered in order to optimize the healing of the tendon into the defect. As such, active and passive tension across this repair should be avoided for the first 6 weeks following surgery, and resistance to the posterior cuff avoided for 12 weeks. Based on these timeframes, three modifications to the HSS Rehabilitation protocol have been made for patients who undergo concomitant Remplissage:

Phases 1 and 2 (0-6 weeks): All ER ROM should be passive using the well arm within the precautionary range limits. Avoid active-assisted or active ER ROM.

Phase 3 (6-12 weeks): Do not initiate cross body or sleeper stretch, as this may be too much passive tension on the posterior capsule and infraspinatus; do not initiate theraband or isometrics for ER as this may be too much active tension on the Remplissag. ER may be performed actively in available range in this phase without resistance.

Phase 3 (12 weeks onward): Begin very gentle and slow progression for cross body adduction and sleeper stretch; may initiate ER and scapular retraction resistive training at neutral and then work up to positions of elevation with theraband and/or progressive light weights.

These changes to the standard anterior shoulder stabilization protocol are also in bold within the protocol below.

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PHASE 1: Recovery (Week 1)

Precautions	• Sling for 3 weeks • Avoid stress on anterior shoulder joint • If combined with biceps tenodesis, no biceps strengthening for 8 weeks • No forced stretching • Avoid painful activities • No active external rotation to protect Remplissage
Assessment	• Quick Disabilities of Arm, Shoulder, & Hand (Quick DASH) • American Shoulder and Elbow Surgeons Shoulder Score (ASES) • Numeric Pain Rating Scale (NPRS) • PROM • Palpation • Static scapular assessment (Kibber Grading) • Cervical mobility
Treatment Recommendations	• Gripping and hand AROM • Postural awareness • Wrist AROM: flexion/extension/pronation/supination <u>Range of Motion</u>: • Week 1: passive external rotation (ER) to neutral, elevation in scapular plane 60° [Not Active]
Criteria for Advancement	• Decreasing discomfort at rest
Emphasize	• Protection of repair • Reduction of tissue irritability • Prevention of muscle atrophy

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PHASE 2: Intermediate (Weeks 2-5)

Precautions		• Sling for 3 weeks • Monitor for shoulder stiffness • No forced PROM • **No active External Rotation (due to Remplissage)** • Avoid undue stress to anterior shoulder joint
Assessment		• Quick DASH • ASES • NPRS • PROM • Palpation • Static/dynamic scapular assessment (Kibbler Grading) • Cervical mobility
Treatment Recommendations	**ROM Goals – Do not force, but assess for stiffness**	
	Week 2-3	• Elevation in scapular plane: 90° • **Passive ER** in scapular plane: 5°-10° • IR in scapular plane: 30°-45°
	Week 4	• Elevation in scapular plane: 90°-100° • **Passive ER** in scapular plane: 15°-20° • IR in scapular plane: 50°-60°
	Week 5-6	• Elevation in scapular plane: 120°-145° • **Passive ER** in scapular plane: 40°-60° • IR in scapular plane: 50°-60°
	Abduction	• 0°-90° first 6 weeks (gentle motion)
	Exercises	
	Week 2	• Scapular Isometrics • Elbow AROM • Shoulder AAROM (except for ER)
	Week 3	• RC isometrics • Rhythmic stabilization ER/IR with PT
	Week 4	• Continue RC isometrics • Elastic band row
	Week 5-6	• No pain at rest • 120° shoulder elevation PROM; 45° ER PROM in scapular plane • Tolerance of scapular and RC exercises without discomfort

Criteria for Advancement	• No pain at rest • 120° shoulder elevation PROM; 45° ER in scapular plane • Tolerance of scapular and RC exercises without discomfort
Emphasize	• Reduction of tissue irritability • Activation of rotator cuff (RC) and scapular stabilizers

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PHASE 3: Advanced (Weeks 6-15)

Precautions

- No forced PROM
- Avoid undue stress to anterior shoulder joint
- Avoid "sleeper stretch" and cross-body adduction stretch to protect Remplissage
- Avoid isometric ER strengthening until week 12
- No painful activities

Assessment

- Quick DASH
- ASES
- NPRS
- PROM/AROM
- Palpation
- Static/dynamic scapular assessment (Kibbler Grading)
- Cervical mobility
- Grip strength

Treatment Recommendations

ROM Goals

Week 6-7	• Initiate light and PAIN FREE ER at 90° shoulder abduction Progress to 30°
Week 7-9	• Flexion 160°-180° • ER at 90° abduction: 75°-90° • IR at 90° abduction: 70-75°
Week 9-12	• Shoulder Flexion 180° • ER at 90° abduction: 100°-115°

<u>Exercises</u>

- Progress above
- Throwers Ten and Advanced Throwers Ten
- Scapular stabilization
  - Closed chain quadrupled double arm protraction
  - Prone "T,I" and progress to "Y" and "W" as ROM allows
- End range stabilization using exercise perturbations
- Shoulder endurance exercise
- UE ergometry (if ROM allows)
- Core strength/kinetic linking
- Weeks 10-16
  - 90°/90° ER/IR strengthening

Criteria for Advancement	• Full shoulder AROM • 4/5 strength below shoulder height
Emphasize	• Full PROM and AROM • Restoration of scapular and RC muscle balance and endurance

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PHASE 4: Plyometric (Weeks 16-19)

Precautions	• No painful activities
Assessment	• Quick DASH • ASES • NPRS • PROM/AROM • Palpation • Static/dynamic scapular assessment (Kibbler Grading) • Cervical mobility • Elbow PROM/AROM • Shoulder MMT • Grip strength
Treatment Recommendations	• Continue shoulder RC and scapular stabilization exercises • Continue and progress all Advanced Thrower's Ten exercises • Initiate plyometrics as tolerated Plyometric progression (over 4 week period) Double hand chest pass Double hand overhead soccer pass Double hand chops Single hand IR at 0° abduction Eccentric catch Single hand 90/90 IR Endurance progression Double hand overhead wall taps Single arm 90/90 wall taps Single arm 12 o'clock to 3 o'clock wall taps Exercise blade in multiple sessions
Criteria for Advancement	• Full shoulder AROM • Symptom free progression through plyometrics and endurance program
Emphasize	• Shoulder flexibility, strength, and endurance • Pain free plyometrics

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PHASE 5: Return to Performance Progression (5 months +)

Precautions	• All progression should be pain-free • Monitor for loss of strength and flexibility
Assessment	• Quick DASH • ASES • NPRS • PROM/AROM • Palpation • Static/dynamic scapular assessment (Kibbler Grading) • Cervical mobility • Shoulder MMT • Grip strength
Treatment Recommendations	• Initiate interval sports program at 5 months • Continue with all upper and lower extremity flexibility exercises • Continue with advanced shoulder and scapular strengthening exercises • Gradually progress sports activities • Monitor workload
Criteria for Return to Participation	• Symptom free progression through interval sports program • Independent with all arm care exercises
Emphasize	• Return to sports activity

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