

## Background and General Considerations:

- **Massive Rotator Cuff Tears/Maturation Time:** Massive rotator cuff tears are defined as rotator cuff tears with over two of the four rotator cuff tendons torn, tears that are over 5cm in size, and/or tears retracted to the glenoid. Massive rotator cuff repairs require the maximal amount of protection. Tendon to bone healing starts to get competent at 6 weeks but likely is not mature out to 6-9 months. Extra protection is required with massive tears, which is why 8 weeks in a sling is recommended. When considering rotator cuff healing, consider the similar process of allowing a newly planted/sodded lawn the time it needs to establish itself. This helps understand why protecting rotator cuff tissue in this healing/maturation phase is important. Ask yourself: When would you feel comfortable walking on a newly sodded lawn or allow a team to play football on a newly sodded field? Then consider when you should expose your shoulder to its normal or sporting activities.
- **Postoperative Pain Pump:** No shoulder exercises while a pain pump is in place
- **Sling Time:** Have the patient wear sling at all times (including sleeping) except while showering and while doing exercise or physical therapy for the first 8 weeks or as directed on the initiating prescription. Rotator cuff repair studies involving tendon healing models suggest that it takes 6 weeks for the repair tissue to start to get competent, but it may not mature until 6-9 months.
- **Range of Motion Restrictions:** Avoid active abduction for 12 weeks. If a biceps tenodesis is performed, no resisted active elbow flexion is advised for the first 6 weeks. "No lifting anything heavier than a coffee cup for the first 6 weeks."
- **Return to Sports:** A return to sporting activities at 9 months may be considered, but each individual's return to sporting activities will be specified and tailored by the circumstances of their case.
- **Protocols are Guidelines and Functional Progression:** Please note that the following protocol is a general guideline. Patients should not be progressed to the next phase until they demonstrate proper form with all activities and functional criteria are met in the current phase. The timelines of this protocol are a general guideline.
- **Whole Body Approach:** Assess functional movements of the whole body and incorporate treatment modalities for loss of mobility and stability in the entire system.
- **Ideal Frequency:** Formal physical therapy provides the optimal environment and guidance throughout the recovery process. In an ideal situation, 20-30 visits during the first 2-6 months of the recovery would be optimal. Patients should visit with a physical therapist 1 time a week for the first 8 weeks, then 3 times a week for the next 2-3 weeks while shoulder motion is restored and then 2 times a week for the following 4-8 weeks. At times 3 times a week for the 2-3 weeks when coming out of a sling (weeks 9-11) may be helpful to restore motion efficiently. This is not always possible and must be tailored for each patient.

- **BLOOD FLOW RESTRICTION THERAPY:** Blood Flow Restriction (BFR) has compelling evidence that it can improve the systemic healing response when used post-operatively with low-intensity resistance training (LIRT). However, not everyone will have access to BFR.
- **Neurocognitive Rehabilitation:** It is clear that injury events effect the brain as much as the muscles and joints involved. Progressive rehabilitation programs are combining neuromuscular with neurocognitive methods. Consider the addition of neurocognitive methods to each phase of the rehabilitation process.

## **Phase I (Maximal Protection Phase, Generally Weeks 0-8):**

### **Principles/Goals:**

- Protect Repair Tissue: Sling at All Times Including Sleeping for the First 8 Weeks
- If Biceps Tenodesis Performed, No Resisted Elbow Flexion for First 6 Weeks and No Biceps Isometrics For the First 2 Weeks.
- Consider 1 Time a Week Visits with Physical Therapy
- Diminish Pain Associated with Swelling and Initial Post-Surgical Inflammatory Response
- Avoid Overhead Movement/Lifting for First 10 weeks
- Optimize Nutrition and Healing Response
- Prevent Negative Effects of Sling Immobilization
- Minimize Muscle Atrophy
- Keep Incisions Clean and Dry

### **Treatment Recommendations/Examples (Day 1-56)**

- Elbow/Hand ROM and Gripping Exercises, Encourage Use of Squeezing Ball that Accompanies Sling

### **Tables Slides Instead of Pendulums**

- Active Scapular Control Exercises in Sling

-Shoulder Submaximal Isometrics (No Biceps Isometrics for Day 1-14)

-Gentle, Pain-Free ROM

- Passive flexion to 90
- Passive ER at 45 degrees of abduction to 35 degrees
- Passive IR at 45 degrees abduction to 35 degrees

- Rhythmic Stabilization Drills

- ER/IR in scapular plane
- All directions at 100 degree flexion

-Neck Mobility, Stability Exercises

-Cryotherapy and Soft Tissue Modalities as Needed

-Blood Flow Restriction (BFR) has compelling evidence that it can improve the systemic healing response. Considering using with LE strengthening exercises.

-Neurocognitive Rehabilitation: Consider the addition of neurocognitive methods to each phase of the rehabilitation process.

## **Phase II (Early ROM and Strengthening Phase, Generally Weeks 9-16)**

### **Principles/Goals:**

-Gradually Restore Full Range of Motion, But Avoid Active Abduction for First 12 Weeks

-Enhance Neuromuscular Control

-Improve Muscular Strength

-Restore Scapular Stability and Neuromuscular Timing

-Improve Rotator Cuff Activation

-Optimize Nutrition and Healing Response

-Begin Restoring Muscle Mass

### **Criteria to Progress to Phase II**

- Steadily Progressing ROM
- Minimal Pain
- Normal Scapulohumeral Rhythm in Gravity Lessened Positions

### **Treatment Recommendations/Examples**

- Table Slides and Pendulums
- Pulleys in Scapular Plane
- Restore Normal Range of Motion
  - Passive flexion to 160 degrees
  - Passive ER at 90 degrees abduction to 80 degrees
  - Passive IR at 90 degrees abduction to 75 degrees
  - -Active ROM Can Progress to Limits Above
- May Begin to Work on Gentle Behind the Back Stretches to Tolerance
- Progress all Isotonic Strengthening and Tube Exercises
  - Prone Row
  - Prone shoulder extension
  - Sidelying external rotation
  - Supine lower trap
- Progress all Scapula Stabilization Exercises
- Progress Proprioceptive Neuromuscular Facilitation (PNF) Techniques
- Core Strengthening
- Cryotherapy and soft tissue modalities as needed
- Blood Flow Restriction (BFR) has compelling evidence that it can improve the systemic healing response. Considering using with LE strengthening exercises.

-Neurocognitive Rehabilitation: Consider the addition of neurocognitive methods to each phase of the rehabilitation process.

### **Phase III (Intermediate ROM and Strengthening Phase, Generally Weeks 16-24)**

#### **Principles/Goals:**

- Restore Active Abduction, Avoid Isolated Abduction Strengthening
- Increase Strength/Endurance
- Improve Neuromuscular Control/Scapulohumeral Rhythm
- Improve Rotator Cuff Activations and Strength
- Enhance Neuromuscular Control
- Optimize Nutrition and Healing Response
- Restoring Normal Muscle Mass

#### **Criteria to Progress to Phase III**

- Full Pain Free Range of Motion
- No Pain or Tenderness
- Normal Scapulohumeral Rhythm in Gravity Lessened Positions

#### **Treatment Recommendations/Examples**

- Consider Once a Week Visits with Instructed Home Exercises
- Emphasize Strengthening in Functional Movements
- Begin Mobility/Stability of Appropriate Spinal Segments
- Proprioception Neuromuscular Facilitation and Perturbation Training
- Incorporate Cardiovascular Training

- Resistance Exercises Progressing to 90 degrees Shoulder Abduction
- Progress Proprioception Exercise (Below Shoulder to Above Shoulder)
- Capsular Stretching Program (active/passive as needed)
- Initiate Closed Kinetic Chain Exercises at Week 8
- Restore Normal Open Kinetic Chain and Close Kinetic Chain Combined Functional Joint Movement Patterns
- Continue to Progress Mobility/Stability of Appropriate Spinal Segments
- Cryotherapy and soft tissue modalities as needed
- Blood Flow Restriction (BFR) has compelling evidence that it can improve the systemic healing response. Considering using with LE strengthening exercises.
- Neurocognitive Rehabilitation: Consider the addition of neurocognitive methods to each phase of the rehabilitation process.

## **Phase IV (Optimize Strength/Proprioception and Return to Sport, Weeks 25-36)**

### **Principles/Goals:**

- Improve Muscular Strength and Endurance; **Avoid Isolated Abduction Strengthening**
- Optimize Neuromuscular Control
- Enhance Muscular Strength, Power, Endurance
- Progress Functional Activities
- Prepare for Sport Specific Movements (Progress to Overhead)
- Return to Sport Activities

### **Treatment Recommendations/Examples**

- Consider Once a Week Visits to Once Every Other Week with Instructed Home Exercises

- Initiate Plyometric Training (2 hand to 1 hand drills)
- Progress Body Weight Resistance Upper Extremity Exercises
- Progress Dynamic Warm-up and Mobility Exercises
- Continue Core Stability in Functional Sport/Activity Demand Positions
- Initiate Endurance Training
- Initiate/Progress Interval Sport Program, For Example Linear Throwing Program or Return To Swinging Program (Golf/Tennis)
- Consider restricted/Non-contact return to sport activities

### **Return to Sport Considerations**

- A return to sporting activities at 9 months is reasonable, but each individuals return to sport will be specified and tailored by the circumstances of their case.
- Timing of Return to Sport Considers Many Factors Including Age, Specific Sport, Participation Level, Time of Season. This will be tailored and considered in light of risks and benefits of timing.
- Consider Video Recording of Athletic Activities to Ensure a Return of Proper, Balanced Functional Movements as well as Form and Technique
- Athlete Must Demonstrate Quality and Symmetric Movement Throughout the Entire Body
- Symmetric and Acceptable Scores on Closed Kinetic Chain Upper Extremity Strength Testing
- Return to Sport Testing Can be Used to Help Identify Deficiencies and Guide Final Preparations

Updated July, 2024  
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*For additional information, please contact the office of Dr. Adam Anz, serving the greater Pensacola, Gulf Breeze, and Gulf Coast communities.*

