

## REHAB PROTOCOL FOR BICEPS TENODESIS

### PHASE I (surgery to 4 weeks after surgery)

Appointments	<ul style="list-style-type: none"> <li>Rehabilitation appointments begin 5-8 days after surgery unless instructed otherwise by surgeon</li> </ul>
Rehabilitation Goals	<ul style="list-style-type: none"> <li>Minimize shoulder pain and inflammatory response</li> <li>Achieve gradual restoration of gentle AROM</li> <li>Enhance/ensure adequate scapular function</li> </ul>
Precautions	<ul style="list-style-type: none"> <li>Gentle AROM of the elbow against gravity only with extension</li> <li>No excessive ER ROM stretching, stop when you feel the first pull</li> <li>Use of sling to minimize activity of biceps</li> <li>Ace wrap upper forearm as needed for swelling control</li> <li>No lifting objects with operative shoulder</li> <li>Keep incisions clean and dry</li> <li>No friction massage to proximal biceps tendon/tenodesis site</li> <li>Patient education regarding limited use of upper extremity despite the potential lack of pain or other symptoms</li> </ul>
Suggested Therapeutic Exercise	<ul style="list-style-type: none"> <li>Shoulder pendulum hang exercises</li> <li>Gentle PROM elbow flexion/extension and forearm supination/pronation</li> <li>AROM wrist/hand</li> <li>Begin shoulder PROM all planes to tolerance</li> <li>Scapular retraction and clock exercises for scapula mobility progressed to scapular isometric exercises</li> <li>Ball squeezes</li> <li>Sleep with sling supporting operative shoulder, place a towel under the elbow to prevent shoulder hyperextension</li> <li>Frequent cryotherapy for pain and inflammation</li> </ul>

	<ul style="list-style-type: none"> <li>• Patient education regarding postural awareness, joint protection, positioning, hygiene</li> <li>• May return to computer based work</li> </ul>
Cardiovascular Exercise	<ul style="list-style-type: none"> <li>• Walking and/or stationary bike with sling on</li> <li>• No treadmill</li> <li>• Avoid running and jumping due to the repetitive traction forces that can occur at landing</li> </ul>
Progression Criteria	<ul style="list-style-type: none"> <li>• Appropriate healing of the surgical site</li> <li>• Full passive range of motion to the shoulder and elbow</li> <li>• Completion of phase 1 activities without pain or difficulty</li> </ul>

**PHASE II (weeks 4-8, begin when Phase I criteria met)**

Appointments	<ul style="list-style-type: none"> <li>• If PROM deficit is present with pain as primary barrier appointments should be 1-2 time per week until pain well controlled</li> <li>• If PROM deficit is present with stiffness as primary barrier appointments should be 2 times per week with home exercise program (HEP) performed at least 2-3 times per day</li> </ul>
Rehabilitation Goals	<ul style="list-style-type: none"> <li>• Minimize shoulder pain and inflammatory response</li> <li>• Achieve gradual restoration of gentle active range of motion</li> <li>• Begin light weights level functional activities</li> <li>• Wean out of sling by the end of the fourth postoperative week</li> <li>• Return to light computer work</li> </ul>
Precautions	<ul style="list-style-type: none"> <li>• No lifting with affected arm</li> <li>• No friction massage to proximal biceps tendon, tenodesis site</li> </ul>
Suggested Therapeutic Exercise	<ul style="list-style-type: none"> <li>• Begin gentle scar massage</li> <li>• Progress shoulder passive range of motion to active assist range of motion and active range of motion all planes to tolerance</li> </ul>

	<ul style="list-style-type: none"> <li>• Lawnchair progression for shoulder</li> <li>• Continue active elbow flexion–extension and forearm supination–pronation, no resistance</li> <li>• Glenohumeral, scapulothoracic and trunk joint mobilizations as indicated when range of motion is slightly less than expected</li> <li>• Begin incorporating posterior capsular stretch as indicated</li> <li>• Cross body adduction stretch</li> <li>• Side-lying internal rotation stretch (sleeper stretch)</li> <li>• Continue cryotherapy for pain and inflammation</li> <li>• Continue patient education on posture, joint protection, positioning, hygiene</li> </ul>
Cardiovascular Exercise	<ul style="list-style-type: none"> <li>• Walking and stationary bike</li> <li>• No treadmill, elliptical or Stairmaster</li> <li>• Avoid running and jumping due to the repetitive traction forces that can occur at landing</li> </ul>
Progression Criteria	<ul style="list-style-type: none"> <li>• Appropriate scapular posture at rest and dynamic scapular control with range of motion and functional activities</li> <li>• Full active range of motion of shoulder and elbow</li> <li>• Completion of phase 2 activities with no pain or difficulty</li> </ul>

**PHASE III (weeks 8-12, begin when Phase II criteria met)**

Appointments	<ul style="list-style-type: none"> <li>• If AROM deficit is present with lag signs surgeon should be notified re: concerns about repair integrity. Appointments should be 2 times per week until integrity has been determined and AROM goals met.</li> <li>• If AROM deficit present without lag signs appointments should be 1 times per week until AROM goals met</li> </ul>
--------------	---

Rehabilitation Goals	<ul style="list-style-type: none"> <li>• Normalize strength, endurance, neuromuscular control</li> <li>• Return to chest level full functional activities</li> </ul>
Precautions	<ul style="list-style-type: none"> <li>• Do not perform strengthening activities in a given plan until patient has full range of motion</li> <li>• Patient education regarding gradual increase to shoulder activities</li> </ul>
Suggested Therapeutic Exercise	<ul style="list-style-type: none"> <li>• Continue active passive range of motion of shoulder and elbow as needed</li> <li>• Initiate bicep curls with light resistance, progress as tolerated</li> <li>• Initiate resisted supination, pronation</li> <li>• Begin rhythmic stabilization drills</li> <li>• External rotation, internal rotation and scapular plane</li> <li>• Flexion, extension and abduction, abduction at various angles of elevation</li> <li>• Initiate balance strength program</li> <li>• Initially in low dynamic positions</li> <li>• Gain muscular endurance with high repetition of 30-50, low resistance 1 to 3 pounds</li> <li>• Exercise should be progressive in terms of muscle demand, intensity, shoulder elevation, stress on anterior joint capsule</li> <li>• Nearly full elevation in the scapular plane should be achieved before beginning elevation in other planes</li> <li>• All activities should be pain-free and without compensatory, substitution patterns</li> <li>• Exercises should consist of both open and closed chain activities</li> <li>• No heavy lifting should be performed at this time</li> <li>• Initiate full can scapular plane raises with good mechanics</li> <li>• Initiate external rotation strengthening using exercise tubing at 30 degrees of abduction</li> <li>• Initiate side-lying external rotation with towel roll</li> <li>• Initiate manual resistance external rotation supine in scapular plane</li> </ul>

	<ul style="list-style-type: none"> <li>• Initiate prone rowing at 30, 45, 90 degrees abduction to neutral arm position</li> <li>• Begin subscapularis strengthening to focus on both upper and lower segments</li> <li>• Push-ups plus (wall, counter, knees on floor, floor)</li> <li>• Cross body diagonals with resistive tubing</li> <li>• Internal rotation resistive bands (0, 45, 90 degrees of abduction)</li> <li>• Forward punch</li> <li>• Continue cryotherapy</li> </ul>
Cardiovascular Exercise	<ul style="list-style-type: none"> <li>• Walking and stationary bike</li> <li>• No treadmill, elliptical, Stairmaster or swimming</li> <li>• Avoid running and jumping due to forces that can occur at landing</li> </ul>
Progression Criteria	<ul style="list-style-type: none"> <li>• Appropriate rotator cuff and scapular muscular performance for chest level activities</li> <li>• Completion of phase 3 activities without pain or difficulty</li> </ul>

**PHASE IV (when Phase III criteria met, usually post-op months 3-5)**

Appointments	<ul style="list-style-type: none"> <li>• Rehabilitation appointments are 1 time every 2-3 weeks</li> </ul>
Rehabilitation Goals	<ul style="list-style-type: none"> <li>• Continue stretching and passive range of motion as needed</li> <li>• Maintain full nonpainful active range of motion</li> <li>• Return to full strenuous work activities</li> <li>• Return to full recreational activities</li> </ul>
Precautions	<ul style="list-style-type: none"> <li>• Avoid excessive anterior capsular stress</li> <li>• With weight training avoid military press, and wide grip bench press</li> </ul>
Suggested Therapeutic Exercise	<ul style="list-style-type: none"> <li>• Continue all exercises listed above</li> </ul>

	<ul style="list-style-type: none"> <li>• Progress isotonic strengthening if patient demonstrates no compensatory strategies, is not painful, and has no residual soreness</li> <li>• Strengthening overhead of range of motion and strength below 90 degrees elevation is good</li> <li>• Continue shoulder stretching and strengthening at least 4 times per week</li> <li>• Progressive return to upper extremity weightlifting program and emphasizing the larger, primary upper extremity weightlifting program</li> <li>• Start with relatively light weight and high repetitions</li> <li>• May initiate preinjury level activities, vigorous sports appropriate, cleared by MD</li> </ul>
Cardiovascular Exercise	<ul style="list-style-type: none"> <li>• Walking, stationary bike and Stairmaster</li> <li>• No treadmill or swimming</li> <li>• May begin light jogging and running if the patient has normal (rated 5/5) rotator cuff strength in neutral and functional shoulder AROM</li> </ul>
Progression Criteria	<ul style="list-style-type: none"> <li>• Clearance from MD</li> <li>• No complaints of pain</li> <li>• Adequate range of motion, strength, endurance of rotator cuff and scapular musculature for test completion</li> <li>• Compliance with continued home exercise program</li> </ul>

**PHASE V (when Phase IV criteria met, usually post-op months 5-6)**

Appointments	<ul style="list-style-type: none"> <li>• Rehabilitation appointments are once every 2-3 weeks</li> </ul>
Rehabilitation Goals	<ul style="list-style-type: none"> <li>• Normalize muscular strength, power and endurance</li> <li>• Return to high demand activities</li> </ul>

	<ul style="list-style-type: none"> <li>• Complete return to sport training</li> <li>• Develop strength and control for movements required for sport/work</li> <li>• Develop work capacity cardiovascular endurance for sport/work</li> </ul>
Precautions	<ul style="list-style-type: none"> <li>• Post-rehabilitation soreness should alleviate within 12 hours of the activity</li> <li>• Avoid activities that result in substitution patterns</li> <li>• Avoid exercises that generate a large increase in load compared to previous exercises</li> </ul>
Suggested Therapeutic Exercise	<ul style="list-style-type: none"> <li>• Continue shoulder mobilizations, stretching and PROM exercises as needed per impairments</li> <li>• Rotator cuff strengthening in 90° of shoulder abduction as well as in provocative positions and work/sport specific positions, including eccentric strengthening, endurance and velocity specific exercises. Increasing use of &gt;50% EMG activity level exercises.</li> <li>• Progressive return to weight lifting program starting with relatively lightweight and high repetitions (15-25). Increase weight while decreasing reps over 6-12 weeks.</li> <li>• Core and lower body strengthening</li> <li>• Throwing program, swimming program or overhead racquet program as needed after successful period of plyometric training program</li> <li>• Transition to upper extremity prevention/maintenance program such as Throwers Ten Program</li> </ul>
Cardiovascular Exercise	<ul style="list-style-type: none"> <li>• Design to use sport/work specific energy systems</li> </ul>
Progression Criteria	<ul style="list-style-type: none"> <li>• The patient may return to sport after receiving clearance from the orthopedic surgeon and the sports rehabilitation provider. Return to sport decisions are based on meeting the goals of this phase.</li> </ul>