

# BICEPS TENODESIS CLINICAL PRACTICE GUIDELINE

## Background

Indications for tenodesis include partial tears >25%, tendon subluxation, recalcitrant tendinopathy, chronic tendon atrophy, and impingement, SLAP, or rotator cuff treatment. The normal attachment of the long head of the biceps is surgically cut and reattached to the humerus with either a soft tissue or hardware fixation technique. Rehabilitation following tenodesis will progress more slowly over the first 6 weeks to protect healing biceps tendon. Consultation with the surgeon as well as a review of the operative report should be completed prior to initiation of rehabilitation.

## Disclaimer

Progression is time and criterion-based, dependent on soft tissue healing, patient demographics and clinician evaluation. Contact Ohio State Sports Medicine at 614-293-2385 if questions arise.

## Summary of Recommendations

<b>Risk Factors</b>	<ul style="list-style-type: none"><li>• Limit shoulder ER to 40° and no extension or horizontal extension for <b>4 to 6 weeks</b></li><li>• Concomitant surgeries</li></ul>
<b>Precautions</b>	<ul style="list-style-type: none"><li>• Use sling for 6 weeks</li><li>• No excessive biceps loading for 8 weeks</li><li>• Initiate soft tissue mobilization at 2 weeks (avoid or cross friction massage for <b>6 weeks</b>)</li><li>• No isolated biceps activation with elbow flexion or straight arm resisted flexion/ supination for <b>8 weeks</b></li></ul>
<b>Manual Therapy</b>	<ul style="list-style-type: none"><li>• PROM exercises and GH joint mobilizations (phase I &amp; II)</li><li>• Scar massage is appropriate in phase II</li></ul>
<b>Corrective Interventions</b>	<ul style="list-style-type: none"><li>• Cryotherapy for pain and inflammation</li><li>• Manual Therapy</li></ul>
<b>Functional Outcome Measures</b>	<ul style="list-style-type: none"><li>• Disability of Arm Shoulder and Hand (DASH) Questionnaire</li><li>• Kerlan-Jobe Orthopaedic Clinic (KJOC) Questionnaire</li></ul>
<b>Criteria for Discharge</b>	<ul style="list-style-type: none"><li>• &gt;90% with patient-reported outcome</li><li>• Full AROM, strength, and able to demonstrate pain-free, sports specific movements without compensatory movements</li></ul>



## Phase I: Protection to PROM (0-2 weeks)

<b>Decrease Pain and Inflammation</b>	<ul style="list-style-type: none"> <li>• Education: No extremity AROM, incisions clean and dry, ace wrap or lymphatic drainage taught for upper extremity swelling control</li> <li>• Initiate passive pendulums as warm-up</li> <li>• Modalities including vasopneumatic device or E-stim</li> <li>• No friction massage</li> <li>• Sleep with sling, place towel under elbow to prevent extension</li> </ul>
<b>Restore Passive Shoulder Range of Motion</b>	<ul style="list-style-type: none"> <li>• Limit shoulder ER to 40° for 4 weeks</li> <li>• No extension or horizontal extension for 4 weeks</li> </ul>
<b>Begin Home Exercise Program</b>	<ul style="list-style-type: none"> <li>• Posture education</li> <li>• Arm immobilized seated scapular retractions</li> <li>• Scapular clocks progressed to scapular isometrics</li> <li>• PROM elbow flexion/ extension &amp; forearm supination/ pronation</li> <li>• AROM wrist/ hand &amp; ball squeezes</li> <li>• No computer activity: 4wks</li> </ul>
<b>Criterion to Progress to Phase II</b>	<ul style="list-style-type: none"> <li>• Full passive shoulder range of motion</li> <li>• Full passive elbow flexion/extension</li> <li>• Full passive forearm supination/pronation</li> </ul>

## Phase II: PROM to AROM (2-6 weeks)

<b>Minimize Pain and Inflammation</b>	<ul style="list-style-type: none"> <li>• No bicep tension for 6 weeks</li> <li>• Continue sling use for 6 weeks</li> </ul>
<b>Post-op Weeks 2-4</b>	<ul style="list-style-type: none"> <li>• NO ER&gt;40deg and Limit shoulder extension in frontal and sagittal planes (4weeks)</li> <li>• PROM-AAROM for all planes to tolerance and within limits at shoulder, wrist, and elbow</li> <li>• Scar massage, no cross friction</li> </ul>
<b>Post-op Weeks 4-6</b>	<ul style="list-style-type: none"> <li>• Initiation of shoulder submaximal-isometrics: IR, ER, ABD, &amp; ADD</li> <li>• Increase AAROM – AROM muscle endurance from supine to standing for waist level function, maintaining proper scapular kinematics (ex. Lawn chair progression). See inset:</li> </ul> <div data-bbox="358 1461 1219 1652" data-label="Image"> </div>
<i>Krupp RJ, JOSPT, 2009</i>	
<b>Criterion to Progress to Phase III</b>	<ul style="list-style-type: none"> <li>• <b>Pain-free, full shoulder AROM</b></li> <li>• Pain-free, full AROM elbow flexion and extension</li> <li>• Pain-free, full AROM forearm and supination</li> <li>• Proper static posture and dynamic scapular control with AROM</li> </ul>



## Phase III: Strength Phase (6-12 weeks)

<b>Pain-free, Progressive Restoration of AROM and Strength</b>	<ul style="list-style-type: none"> <li>No pain, inflammation or strengthening in plane until ROM in almost full</li> <li>Avoid long lever arm resistance for elbow supination and flexion</li> <li>Normalize strength, endurance, neuromuscular control starting below chest level, working up to overheard functional activities</li> </ul>
<b>Post-op Weeks 6-8</b>	<ul style="list-style-type: none"> <li>Continue PROM to AROM of shoulder and elbow, gaining muscle endurance with high reps, low resistance</li> <li>Isotonic IR and ER light resistance resisted movement with wrist in neutral (no supination)</li> <li>Supine ABC &amp; SA punches with high reps, low resistance</li> <li>Week 7 begin prone scapular stability program</li> </ul>
<b>Post-op Weeks 8-12</b>	<ul style="list-style-type: none"> <li><b>Slowly progress</b> resisted biceps curl, supination, &amp; pronation</li> <li>Progress prone Scap 6 to Supine 5</li> <li>Resisted IR and ER at 30° ABD progressing to 90°</li> <li>Resisted SA punch &amp; bear hugs, standing</li> <li>Resisted low row, prone 30°/45°/90° to standing</li> <li>Push-up plus: wall, counter, knees on the floor, &amp; floor</li> <li>Rhythmic stabilization: ER &amp; IR in scapular plane; flexion, extension, ABD &amp; ADD at various angles of elevation</li> <li>Supine to standing diagonal patterns: D1 &amp; D2</li> <li>Begin closed chain stabilization exercises</li> </ul>
<b>Return to Activity After Week 8</b>	<ul style="list-style-type: none"> <li>Running, biking, &amp; Stairmaster</li> <li>Golf with proper kinematics</li> </ul>
<b>Criterion to Progress to Phase IV</b>	<ul style="list-style-type: none"> <li>Pain-free, full AROM of shoulder and elbow with normal scapulohumeral rhythm</li> <li>5/5 MMT scores for RTC at 90° ABD in scapular plane</li> <li>5/5 MMT for scapulothoracic musculature</li> </ul>

## Phase IV: Return to Sport/Activity (weeks 12-16)

*Aim to return to sport at 4 month at earliest*

<b>Goals</b>	<ul style="list-style-type: none"> <li>Maintain full non-painful AROM</li> <li>Progress strength and power without compensatory strategies</li> <li>Avoid excessive anterior capsule stress (NO military press, upright row, or wide grip bench)</li> <li>Return to sports progression: throwing/ swimming</li> <li>Analysis of sports specific movements</li> </ul>
<b>Exercises 12+</b>	<ul style="list-style-type: none"> <li>Initiate plyometric training below shoulder to overhead: begin with both arms and progress to a single arm</li> <li>Low to higher velocity strengthening and plyometric activities: ball drops in prone to D2 reverse throws</li> </ul>
<b>Criterion to Return to Sport Activity, Weeks 12+</b>	<ul style="list-style-type: none"> <li>Pain-free, stability &amp; control with higher velocity movements including sports specific patterns and change of direction movements</li> <li>Proper kinematic control transfer from the hip &amp; core to the shoulder with dynamic movement</li> </ul>



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### References

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