

SHOULDER AND ELBOW INJURY NON-OPERATIVE GUIDELINES

The following shoulder/elbow guidelines for the throwing athlete were developed by HSS Rehabilitation and are categorized into four phases with the goal of returning the overhead athlete to full competition. Classification and progression are mostly criteria-based often being dictated by the patient's symptoms. The first phase is focused on the acute recovery period and healing. Phase two is focused on building foundational strength and stability which will allow the athlete to progress to phase three which includes plyometric exercises. With the completion of phase three the athlete will be able to start the final phase which includes interval sports programs. Cardiovascular endurance, hip and core strength may be progressed throughout recovery. The clinician should use their skilled judgement and decision making as the athlete advances as all progression may not be linear.

FOLLOW PHYSICIAN'S MODIFICATIONS AS PRESCRIBED

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Phase 1: Acute/ High Irritability Phase (Weeks 1-2 Post Injury)

PRECAUTIONS

- Avoid pain provoking activities
- Avoid any painful exercises

ASSESSMENT

- Quick Disabilities of Arm, Shoulder & Hand (Quick DASH)
- Kerlan-Jobe Orthopaedic Clinic Overhead Athlete Shoulder and Elbow Score (KJOC)
- Numeric Pain Rating Scale (NPRS)
- Static scapular assessment (Kibler Grading)
- Glenohumeral (GH) range of motion (ROM)
- Flexibility: Pectoralis Minor, Latissimus Dorsi
- Cervical, Thoracic & Distal mobility
- Kinetic chain assessment

TREATMENT RECOMMENDATIONS

- Elbow and shoulder active range of motion (AROM)
- AROM hand/wrist
- Cross body stretch or Side-lying Posterior capsule stretch
- Row with scapular protraction and retraction
- Scapular stabilization
 - Prone row
 - Prone extension
 - Prone horizontal abduction
 - Supine serratus punches
- Rotator cuff (RC) isometrics and walk-outs
- Kinetic chain focus

CRITERIA FOR ADVANCEMENT

- No pain at rest or with above exercises
- Full, pain-free elbow ROM

EMPHASIZE

- Reduction of pain and inflammation
- Restoration of pain-free ROM
- Prevention of muscle atrophy

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Phase 2: Sub-Acute/Moderate Irritability Phase (Weeks 3-4 Post-Injury)

PRECAUTIONS

- Maintain pain-free ROM
- Avoid painful exercise

ASSESSMENT

- Quick DASH
- KJOC
- NPRS
- Static/dynamic scapular assessment (Kibler grading)
- Cervical, Thoracic & Distal Mobility
- Manual muscle testing (MMT):
 - RC: supraspinatus, infraspinatus/ teres minor, subscapularis
 - Scapular Retractors/Stabilizers: rhomboids, middle trapezius, lower trapezius
- Kinetic chain assessment

TREATMENT RECOMMENDATIONS

- Continue Phase 1 treatment recommendations
- Posterior shoulder flexibility: cross body and/or sleeper stretch
- Wrist and forearm strength progression
- Throwers Ten/Advanced Throwers Ten
 - Progress with manual resistance → perturbations → unstable surface
- RC resistance band at 0° shoulder abduction, progress to 90° shoulder abduction
- RC eccentrics
- Scapular stabilization
 - Closed kinetic chain (CKC) quadruped single arm protraction → unstable surface → perturbations
 - CKC high plank shoulder taps → resisted weight bearing clocks → plank to down dog
 - Wall slide with lower trapezius lift off
 - Dynamic hug
 - Prone T, W, Y, I
- End range shoulder stabilization using exercise blade/perturbations → isometric holds → PNF patterns

CRITERIA FOR ADVANCEMENT

- Tolerance of Phase 2 exercises without elbow discomfort
- 5/5 strength for RC MMT

EMPHASIZE

- Progression of RC and scapular strength
- Restoration of shoulder endurance in 90/90 position
- Improved neuromuscular control

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Phase 3: Chronic/Low Irritability Phase (Weeks 5-6 Post-Injury)

PRECAUTIONS

- Avoid painful activities

ASSESSMENT

- Quick DASH
- KJOC
- NPRS
- Static/dynamic scapular assessment (Kibler grading)
- Cervical, Thoracic & Distal mobility
- Elbow passive range of motion (PROM)/AROM
- Shoulder PROM/AROM
- Shoulder MMT as above
- Kinetic chain assessment
- Athletic Shoulder (ASH) Test
- Closed Kinetic Chain Upper Extremity Stability Test (CKCUEST)

TREATMENT RECOMMENDATIONS

- Continue stretching from previous phases
- Foam roller/trigger point ball as needed
- Continue all shoulder exercises from previous phases
- Progress neuromuscular stabilization
 - Perturbations at end range external rotation 90/90
 - Wall ball stabilization with perturbations
- Plyometric progression
 - Double arm plyometrics → Single arm plyometrics → 90/90 plyometrics
 - 90/90 wall dribble
 - Eccentric catches
 - Kinetic chain plyometrics → Med ball slams → wall rotations → chops (double arm)
- Progress scapular/serratus activation
 - Landmine press
 - “Plus” in plank position → unstable surface → perturbations
- Reaction Time Training
 - Multidirectional weight bearing (WB) cone taps or light pods

- Towel drill (throwing)
 - If the overhead athlete can hold a towel and move the arm through a throwing path as if throwing a baseball

CRITERIA FOR ADVANCEMENT

- Single arm plyometrics without discomfort
- Towel drill without discomfort

EMPHASIZE

- Advancement to plyometric and sports specific movements
- Progression of RC and scapular strength and endurance

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Phase 4: Return to Sport Phase (Weeks 7-12+ Post Injury)

PRECAUTIONS

- Avoid painful activities
- Monitor for loss of strength and flexibility

ASSESSMENT

- Quick DASH
- KJOC
- NPRS
- Static/dynamic scapular assessment (Kibler grading)
- Cervical, thoracic & distal mobility
- Elbow PROM/AROM
- Shoulder PROM/AROM
- Scapula assessment: position, rhythm
- Shoulder flexibility
- Shoulder MMT
- Kinetic chain assessment

TREATMENT RECOMMENDATIONS

- Initiate interval sports program
 - Monitor mechanics
 - Monitor workload
 - Monitor tolerance for throwing progression
- Initiate hitting program if appropriate
- Continue with all upper and lower extremity flexibility exercises
- Continue with advanced shoulder and scapular strengthening exercises
- Collaborate with ATC, performance coach/strength and conditioning coach, skills coach and/or personal trainer to monitor load and volume with return to sport participation

CRITERIA FOR RETURN TO SPORTS PARTICIPATION

- Pain-free progression through interval sports program
- Independent with all arm care exercises
- Assess need for HSS Video Throwing Analysis program

EMPHASIZE

- Return to sport participation
- Monitor volume in sports related activities
- Collaboration with Sports Performance experts

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