

# Medial Epicondyle ORIF

## CLINICAL PRACTICE GUIDELINE

### Background

Medial epicondyle fractures account for a significant portion of all elbow fractures, both acute and chronic, in the adolescent population. Indication for a medial epicondyle ORIF is a fracture with a large displacement (typically >5 mm) of the bone. Rehabilitation following an ORIF will progress more slowly over the first 6 weeks to allow bone healing. 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 bone and 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>• Subsequent surgeries</li><li>• Lack of adherence to surgical precautions</li><li>• Secondary comorbidities</li></ul>
<b>Precautions</b>	<ul style="list-style-type: none"><li>• Brace and ROM limitations</li><li>• Splint for 10-14 days at 90 degrees of elbow flexion</li><li>• Light soft tissue mobilization, <b>not directly on the scar</b>, to improve blood flow and reduce edema</li><li>• No elbow joint mobilizations for <b>6 weeks</b></li><li>• No wrist flexor or pronator strengthening for <b>6 weeks</b></li><li>• No aggressive wrist flexor or pronator stretching for <b>6 weeks</b></li><li>• No valgus stress to the medial elbow for <b>6 weeks</b> (consider with PROM and strengthening of shoulder)</li><li>• No lifting &gt;5 lbs for <b>8 weeks</b> (could be longer if other surgical interventions performed)</li></ul>
<b>Potential Complications</b>	<ul style="list-style-type: none"><li>• Nonunion</li><li>• Nerve palsy</li><li>• Joint stiffness</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: Immediate Post-Op (0-2 weeks)

<b>Goals</b>	<ul style="list-style-type: none"><li>• Protection of incision</li><li>• Allow for bone healing</li><li>• Decrease pain and inflammation</li><li>• Patient education: bone healing time, activity modification, swelling management, HEP</li><li>• No elbow AROM, incisions clean and dry, immobilization per physician instructions</li></ul>
<b>Restore Passive Shoulder and Elbow ROM</b>	<ul style="list-style-type: none"><li>• Splint for <b>10-14 days</b> at 90 degrees of elbow flexion</li><li>• Gradual, pain-free elbow PROM</li><li>• Shoulder strengthening (sub-maximal isometrics EXCEPT flexion due to closed fist/gripping and ER)</li><li>• Scapular retraction or clocks in S/L</li><li>• Trunk ROM/core strengthening (<b>No weight bearing on elbow or carrying/lifting</b>)</li><li>• Lower extremity strengthening and balance<ul style="list-style-type: none"><li>- Squats, lunges, heel taps, single leg stance, shuttle presses, side stepping</li></ul></li><li>• Vaso for pain and swelling control</li></ul>
<b>Home Exercise Program</b>	<ul style="list-style-type: none"><li>• Posture education</li><li>• Elbow immobilized per physician instructions</li><li>• Scapular control exercises (side lying clocks, seated retractions, scapular PNF)</li><li>• No active elbow OR wrist extension, flexion, pronation, supination</li></ul>
<b>Criterion to Progress to Phase II</b>	<ul style="list-style-type: none"><li>• Protect the repair/incision site</li><li>• Minimal pain</li><li>• Minimal to no edema</li></ul>

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

<b>Goals</b>	<ul style="list-style-type: none"> <li>• Slow progression of elbow extension and flexion ROM (<b>Do not push aggressively</b>)</li> <li>• Manage pain and inflammation</li> <li>• Promote tissue and bone healing</li> <li>• No soft tissue mobilization or cross friction massage directly on the scar for <b>6 weeks</b></li> <li>• No elbow joint mobilizations for <b>6 weeks</b></li> <li>• No wrist flexion or pronator strengthening for <b>6 weeks</b></li> <li>• No wrist flexor or pronator stretching for <b>6 weeks</b></li> <li>• No valgus stress to elbow for <b>6 weeks</b></li> <li>• Vaso and E-stim for pain and edema control</li> </ul>
<b>Interventions</b>	<ul style="list-style-type: none"> <li>• Hinged brace from <b>weeks 2-6</b> <ul style="list-style-type: none"> <li>◦ <b>Week 2-3: 30 deg - 100 deg range</b></li> <li>◦ <b>Week 3-4: 20 deg -110 deg range</b></li> <li>◦ <b>Week 4-5: 10 deg -120 deg range</b></li> <li>◦ <b>Week 5-6: 0 deg-130 deg range</b></li> </ul> </li> <li>• Gentle PROM of elbow and wrist (<b>Do not push ROM into pain</b>) Muscular end feel: traditional stretching Capsular/firm end feel: low load, long duration</li> <li>• Progress to elbow AROM at <b>4 weeks</b></li> <li>• Ulnar nerve mobility if needed (<b>avoid valgus stress to elbow with nerve glide</b>)</li> <li>• Shoulder strengthening (wrist weights for S/L ER and prone scap series)</li> <li>• Light rhythmic stabilizations <b>proximal to elbow</b></li> <li>• Continue trunk/core strengthening, LE strengthening, and balance (<b>no holding medicine balls/weight OR weight bearing with involved arm</b>)</li> <li>• Shoulder PROM (<b>DO NOT APPLY PRESSURE DISTAL TO ELBOW FOR ER/IR; USE HUMERUS</b>)</li> </ul>
<b>Criterion to Progress to Phase III</b>	<ul style="list-style-type: none"> <li>• Shoulder total arc of motion (ER+IR at 90 degrees of abduction) dominant + non-dominant</li> <li>• Full PROM of elbow (refer back to physician if not achieved)</li> <li>• Pain free with exercise</li> <li>• No swelling</li> </ul>

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

<b>Goals</b>	<ul style="list-style-type: none"> <li>• Gradual increase to WNL elbow and forearm ROM in all planes</li> <li>• Pain free with all exercises</li> <li>• NO swelling</li> <li>• Initiate light strengthening of wrist and elbow musculature</li> <li>• Promote proper scapular control and mobility</li> <li>• Improve overall conditioning and strength</li> </ul>
<b>Post-op Weeks 6-8</b>	<ul style="list-style-type: none"> <li>• Unlock brace to full motion at <b>6 weeks</b></li> <li>• Wean from brace at <b>8 weeks</b></li> <li>• Focus on elbow extension and flexion AROM</li> <li>• Initiate pain-free wrist and elbow strengthening at <b>6 weeks</b>  **Delay if flexor-pronator mass is repaired (check with surgeon)</li> <li>• Continue balance, lower extremity strengthening, and core strengthening (&lt;5 lbs of weight)</li> <li>• Continue shoulder ROM and strengthening (no valgus stress on the elbow) <ul style="list-style-type: none"> <li>- Ex: s/l ER, rows, rhythmic stabilizations, horizontal abduction</li> </ul> </li> <li>• Scapular stability and control exercises (side-lying, prone)</li> <li>• Criteria to progress to next phase: <ul style="list-style-type: none"> <li>- Pain free with all exercises</li> <li>- Full AROM of elbow</li> <li>- Symmetrical hip ROM</li> <li>- 5/5 lower extremity strength (MMT)</li> <li>- 50 degrees of seated thoracic rotation each direction</li> <li>- Shoulder total arc of motion dominant = non-dominant</li> <li>- 4/5-5/5 MMT of involved shoulder musculature</li> </ul> </li> </ul>
<b>Post-op Weeks 8-12</b>	<ul style="list-style-type: none"> <li>• Wean from brace at <b>week 8</b></li> <li>• Plyometric progression can be initiated at <b>week 10</b> (1 week double arm, 1 week single arm)</li> <li>• Example interventions <ul style="list-style-type: none"> <li>- Prone 90/90 ER, prone quick drops</li> <li>- Rhythmic stabilization</li> <li>- PNF patterns</li> <li>- <u>Double arm plyometrics</u>: Medicine ball chest pass, chops</li> <li>- <u>Single arm plyometrics</u>: 90/90 ball on wall/tramp, manual plyo's</li> </ul> </li> <li>• Throwing mechanics/Towel drills <u>initiated same week as single arm plyometrics</u> (need to be pain-free)</li> <li>• Weight bearing on involved arm at <b>week 8</b></li> <li>• Running at <b>week 8</b></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</li> <li>• 5/5 MMT or within 10% of uninvolved side with HHD for shoulder /rotator cuff strength</li> <li>• 5/5 MMT or within 10% of uninvolved side with HHD for scapulothoracic musculature</li> </ul>

## Phase IV: Return to Sport Activity (weeks 12+)

Goals	<ul style="list-style-type: none"><li>• Progress back to sport level conditioning</li></ul>
Exercises 12+	<ul style="list-style-type: none"><li>• Continue lower extremity and core interventions as needed</li><li>• Continue plyometrics and towel drills as necessary</li><li>• Criteria for return to throwing program<ul style="list-style-type: none"><li>- <b>Physician clearance</b></li><li>- 5/5 MMT or within 10% of uninjured with HHD</li><li>- Full AROM</li><li>- Pain-free towel drills and plyometric drills</li></ul></li><li>• Initiate return to throwing program<ul style="list-style-type: none"><li>- Light throw into wall for mechanics</li><li>- Educate on return to throwing progression (give print-out from sports medicine website: <a href="https://wexnermedical.osu.edu/sports-medicine/education/medical-professionals/rehabilitation-protocols">https://wexnermedical.osu.edu/sports-medicine/education/medical-professionals/rehabilitation-protocols</a>)</li><li>- Highlights: therapist monitor mechanics, start at 50% effort, crow hop when reaching distance of 90 ft or more</li></ul></li></ul>

**Authors:** Greg Hock, PT, DPT; Dan Himmerick, PT, DPT; Matt Schultz, PTA  
**Reviewers:** Mitch Salsbery, PT, DPT, SCS; Adam Ingle, PT, DPT, SCS  
**Completion date:** January 2019

### References

- Kamath AF, Cody SR, Hosalkar HS. Open reduction of medial epicondyle fractures: operative tips for technical ease. J Child Orthop. 2009;3(4):331-6.
- Huleatt JB, Nissen CW, Milewski MD. Pediatric Sports Medicine Injuries: Common Problems and Solutions. Clin Sports Med. 2018;37(2):351-362.