ULNAR COLLATERAL LIGAMENT REPAIR WITH INTERNAL BRACING

Background

Ulnar collateral ligament repair is commonly seen in a throwing athlete; however, it also is frequently performed with gymnasts, wrestlers, cheerleaders, and javelin throwers. UCL repairs with internal bracing is typically performed when there is a complete or partial tear at the proximal or distal insertions or a partial mid-substance tear and there is good tissue quality of the UCL. UCL Repair with internal brace rehab is typically accelerated compared to UCL Reconstruction; however, it is important to continue to perform a comprehensive approach to treat the entire kinetic chain. Consultation with the surgeon 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. If you are working with an Ohio State Sports Medicine patient and questions arise, please contact the author by calling our office at (614) 293-2385.

Summary of Guideline

Precautions	Brace use for **6 weeks** Avoid valgus stress during daily activity (i.e. closing a door, pulling an object to you from the side)
Outcome Tools	Quick DASH KJOC
Strength Testing	Hand Held Dynamometry for scapular and rotator cuff musculature no earlier than 12 weeks (>80% compared to contralateral shoulder)
Range of Motion	Shoulder Total Arc < 5 degrees different from contralateral shoulder Full, pain-free elbow A/PROM (throwers commonly lack full extension, goal is pre-injury ROM) Full, pain-free cervical and thoracic A/PROM
Criteria to Initiate Plyometrics	Time: no earlier than **8 weeks** Pain-free ADL's and strengthening interventions Strength ≥ 4/5 MMT OR ≥ 80% of uninvolved shoulder & elbow with hand-held dynamometry ≥ 95% grip strength of uninvolved with grip dynamometer: hand in neutral with arm at 0 degrees shoulder abduction and hand in neutral, arm at end-range flexion ROM as noted above Proper scapular control during interventions Negative shoulder impingement testing Little to no replication of neural tension in throwing arm ≥90% with involved arm compared to non-involved during prone single arm ball drop test Single limb squats: 5 consecutive repetitions with NO obvious deviations (i.e. increased knee valgus, trunk collapse, hip adduction) Lower Extremity Y-balance Testing: 94% or better on both stance and lead limbs
Criteria for Return to Sport	Clearance from physician Completion of strengthening and plyometrics Successful completion of throwing program Time: no earlier than **5 months,** typically **8 months**

RED/YELLOW FLAGS

Red flags are signs/symptoms that require immediate referral for re-evaluation. Yellow flags are signs/symptoms that require modification to plan of care.

Red Flags	Infection Traumatic Event (i.e. fall)
Yellow Flags	Pain following increase in rehab intensity *Decrease intensity of therapy interventions, manage pain, education for patient on activity modification, monitor during next visit* Persistent pinching in the elbow with ROM

Phase 1- Immediate Post-operative Phase

Goals:

1. Protect healing tissue
2. Reduce pain and inflammation
3. Decrease muscular atrophy
4. Regain full wrist/shoulder motion

Week 1	**Wound Care**	Sterile gauze used at incision site Check brace for rubbing or irritation. Compression garment at elbow to be used with physician's authorization
	Brace	Immobilized at 90 degrees of flexion in brace
	ROM	Wrist AROM (extension/flexion/ulnar and radial deviation) Shoulder A/PROM, avoid valgus stress at elbow Defer to surgeon for ROM limitations
	Strength	Submaximal shoulder, elbow, wrist isometrics Shoulder ER/IR/FLX/EXT/ABD Elbow FLX/EXT Wrist FLX/EXT
	Trunk/Core	Wait until after initial 7-days post-op
	Modalities	Cryotherapy and E-stim for swelling control at elbow
	Lower Extremity	Wait until after initial 7-days post-op

Phase 2- Controlled Mobility Phase

Goals:

1. Gradually restore elbow joint ROM
2. Improve muscular strength and endurance
3. Normalize joint arthrokinematics

Week 2	**Wound Care- As needed**	Sterile gauze used at incision site Check brace for rubbing or irritation. Compression garment at elbow to be used with physician's authorization
	Brace	Unlock brace to 30-110
	ROM	Active and passive ROM of elbow from 30-110 Wrist AROM (extension/flexion/ulnar and radial deviation) Shoulder A/PROM, avoid valgus stress at elbow Defer to surgeon for ROM limitations
	Strength	Shoulder, Elbow, and Wrist Isometrics Shoulder ER/IR/FLX/EXT/ABD Elbow FLX/EXT Wrist FLX/EXT/SUP/PRO Emphasis on scapular retraction and depression
	Trunk/Core	Progress strengthening without stress through upper extremity (i.e. crunch, diagonal crunch, bridges, pelvic tilts)
	Modalities	Cryotherapy and E-stim for swelling control at elbow
	Lower Extremity	Begin light cycling- avoid pressure through upper extremity Progress to strengthening without stress through upper extremity Body weight exercises (i.e. Bridges, SL squats, lateral sliders)

Week 3	**Wound Care- As needed**	Sterile gauze used at incision site Check brace for rubbing or irritation. Compression garment at elbow to be used with physician's authorization
	Brace	Unlock brace to 10-125
	ROM	Active and passive ROM of elbow from 10-125 Wrist AROM (extension/flexion/ulnar and radial deviation)

		Shoulder A/PROM, avoid valgus stress at elbow Defer to surgeon for ROM limitations
	Strength	Shoulder, Elbow, and Wrist Isometrics Bicep curls and tricep extension Prone scapular strengthening with elbow extended Initiation of components of Thrower's Ten, based on strength and progress: - D2 Extension with resistance bands - -D2 Flexion with resistance bands - -Shoulder IR/ER with arm at 0 degrees abduction with resistance bands - -Shoulder Flexion, Scaption, Abduction with ankle weights around wrists - -Prone T- no weight
	Trunk/Core	Progress strengthening without stress through upper extremities: crunch, diagonal crunch, bridges, pelvic tilts
	Modalities	Cryotherapy and E-stim for swelling control at elbow as needed
	Lower Extremity/Conditioning	Begin light cycling- avoid pressure through upper extremity Progress to strengthening without stress through upper extremity Body weight exercises: balance and strengthening Knee extension/hamstring curl/leg press machines
Weeks 4-5	**Brace**	Unlock brace to full: 0-145
	ROM	Active and passive ROM of elbow from 0-145 Joint mobilizations as needed with distraction Continue with progressing towards equal shoulder total arc of motion (IR + ER at 90 degrees) dominant = non-dominant
	Strength	Continue with same components of Thrower's Ten as listed above Prone scapular strengthening (i.e. Y, T, shoulder ext, W) with dumbbells or ankle weights around wrists Forearm strengthening; emphasis on flexor carpi ulnaris (FCU) and flexor digitorum superficialils (FDS)

		(i.e Gripping ball/resistance band with all fingers and 4th and 5th digits)
	Trunk/Core	Progress strengthening, able to place stress through upper extremity (i.e. plank on counter progressing to floor, side plank with arm straight on counter progressing to floor)
	Modalities	Cryotherapy and E-stim for swelling control at elbow as needed
	Lower Extremity/Conditioning	Begin moderate cycling, tempos for cardiovascular benefits (i.e. 15 seconds moderate intensity/45 seconds as self-pace) Light-weight dumbbell holding and safety bar utilization for strengthening

Phase 3- Intermediate Phase

Goals:

1. Maintain/restore upper extremity mobility
2. Improve muscular strength and endurance
3. Re-establish neuromuscular control of elbow
4. Continue functional progression of activity

Weeks 6-7	**Brace**	Brace typically discharged at **Week 6**
	ROM	Active and passive ROM of elbow from 0-145 Wrist AROM (extension/flexion/ulnar and radial deviation) Shoulder A/PROM, avoid excessive valgus stress at elbow
	Strength	Continue with strengthening stated above Add in Shoulder IR/ER at 90 degrees of abduction Forearm strengthening; emphasis on FCU and FDS Perform closed-kinetic chain strengthening for shoulders and elbow (i.e. forward/backward bear crawl, push-ups on counter progressing to ground)
	Trunk/Core	Progress strengthening without stress through upper extremity
	Manual	Scar tissue massage/cupping as needed
	Lower Extremity/Conditioning	Begin moderate cycling, tempos for cardiovascular benefits Initiation of running at **week 6** Continue with strengthening above

Week 8	**Plyometrics**	Assess with criteria above if patient is appropriate for **2-handed plyometrics** (i.e.chest pass, over-the-shoulder pass, overhead soccer pass)
	ROM	Active and passive ROM of elbow from 0-145 Wrist AROM (extension/flexion/ulnar and radial deviation) Shoulder A/PROM Elbow A/PROM
	Strength	Continue with strengthening stated above
	Trunk/Core	Progress strengthening without stress through upper extremity
	Modalities	Cryotherapy and E-stim for swelling control at elbow
	Lower Extremity/Conditioning	Begin moderate cycling, tempos for cardiovascular benefits- avoid pressure through upper extremity Progress strengthening above without excessive elbow valgus

Phase 4- Advanced Strengthening Phase

Goals:

1. Gradually increase strength, power, endurance and neuromuscular control

Weeks 9-16	**Plyometrics**	2-handed plyometrics for at least 2 weeks prior to 1-handed (i.e. chest pass, over-shoulder pass, and soccer pass) 1-handed plyometrics for at least 2 weeks prior to initiation of throwing (i.e. shoulder IR/ER, 90-90 IR taps, shoulder arc taps, body blade)
	ROM	Continue to assess and treat elbow and shoulder ROM as needed
	Strength	Focus on neuromuscular control of scapula and elbow (i.e. sidelying ER, concentric/eccentric shoulder ER with rhythmic stabilization, eccentrics of posterior cuff) Perform shoulder and elbow rhythmic stabilization
	Trunk/Core	Progress strengthening: Able to perform medball rotational work once 1-handed plyometrics are initiated
	Modalities	Cryotherapy and E-stim for swelling control at elbow
	Lower Extremity/Conditioning	Begin moderate/high intensity cycling, tempos for cardiovascular benefits Progress running and initiate sprinting at **week 9** Progress strengthening, emphasis on single leg exercises

	Hitting Program	Initiation of hitting typically around **week 10** Perform **at least 2 weeks** for 2-handed plyometrics prior to initiation of hitting program
	Throwing Program	Begin throwing progression with monitored mechanics. **Requires physician clearance to initiate** Initiation of throwing program typically around **Week 12-14** Perform **at least 2 weeks of hitting** prior to initiation of throwing

Phase 5- Return-to-Activity Phase

Goals:

1. To progress towards return-to-play

Weeks 16+	**Plyometrics**	Perform plyometrics within sport specific activities to address
	Strength	Continue to progress scapular, trunk, upper extremity, and lower extremity to address any deficiencies
	Hitting Program	Continue with progression of hitting program
	Throwing Program	Workload management of strength training, plyometrics, throwing/sport specific management Long-term planning of throwing program (i.e. ramp up periods, shut down periods, etc.) Typical return to sport timeline: **8 months**

Authors: Alex Gough, PT, DPT, SCS
Reviewers: Greg Hock, PT, DPT, OCS; Dan Deleandro, PT, DPT, Matt Horgan, PT, DPT, SCS, ATC, Alyssa Quinlan, PT, DPT, SCS, CSCS
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