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Elbow UCL Repair Rehabilitation Protocol

Phase/ Goals	Immobilization	ROM	Therapeutic Exercises
Phase 1 (0-1 weeks) Goals: <ul style="list-style-type: none"> • Pain and edema control • Protect repair and healing tissues 	<ul style="list-style-type: none"> • Brace locked at 90° 	<ul style="list-style-type: none"> • None for first week • Cryotherapy elbow and wrist 	<ul style="list-style-type: none"> • Gentle hand/wrist/shoulder ROM • Scapular stabilizing exercises • Gentle rotator cuff strengthening
Phase 2 (2-4 weeks) Goals: <ul style="list-style-type: none"> • Decrease pain/inflammation • Protect healing tissue • Maintain shoulder/scapular ROM and strength 	<ul style="list-style-type: none"> • Hinged elbow brace locked at 90 when upright 	<ul style="list-style-type: none"> • Brace unlocked for ROM exercises <ul style="list-style-type: none"> ○ Week 2: 30° to 90° ○ Week 3: 20° to 100° • Week 4: 10° to 110° • Full A/PROM pronation • Full AROM supination, no supination stretching 	<ul style="list-style-type: none"> • Gripping exercises • Hand/Wrist/Shoulder ROM • Shoulder isometrics (No shoulder IR-stress on medial elbow) • Biceps isometrics • Elbow extension isometrics • Scar Tissue Mobilization and edema control • Begin work on kinetic chain coordination and strength (trunk/hip/core)
Phase 3 (5-6 weeks) Goals: <ul style="list-style-type: none"> • Achieve full PROM 	<ul style="list-style-type: none"> • Hinged elbow brace unlocked full ROM 	<ul style="list-style-type: none"> • Progress to full PROM • Maintain full ROM pronation/supination • Progress to AROM supination 	<ul style="list-style-type: none"> • Begin light resistance (1 lb) <ul style="list-style-type: none"> ○ Wrist curls, extension, pronation, supination ○ Elbow flexion/extension • Progress shoulder program <ul style="list-style-type: none"> ○ Emphasis on cuff strengthening ○ No IR against resistance • Initiate shoulder strengthening with light dumbbells • Initiate Thrower's Ten Program when full ROM achieved • Continue kinetic chain modalities
Phase 4 (7-8 weeks) Goals: <ul style="list-style-type: none"> • Full A/PROM 	<ul style="list-style-type: none"> • D/C brace 	<ul style="list-style-type: none"> • Start AAROM and progress to full AROM elbow 	<ul style="list-style-type: none"> • Progress elbow strengthening exercises • Initiate shoulder IR strengthening program • Progress shoulder program

			<ul style="list-style-type: none"> • Initiate diagonal patterns • Initiate plyometric program (2-hand then 1-hand) • Advance Thrower's Ten Program
Phase 5 (9-12 weeks) Goals <ul style="list-style-type: none"> • Maintain Full ROM • Advance shoulder, elbow, wrist strength and endurance 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Continue full A/PROM • Contact Dr. Ridley if full ROM not achieved 	<ul style="list-style-type: none"> • Advance shoulder, elbow, wrist strengthening as tolerated • Scapular stabilization and endurance • Begin machine-based resistance (seated chest-press, seated row, biceps/triceps) • Begin interval hitting program week 10
Phase 6 (13+ weeks) Goals <ul style="list-style-type: none"> • Begin and advance throwing program • Begin swimming at 13 weeks • Return to golf (13 weeks if lead arm, 16 weeks if trailing arm) 	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Continue full A/PROM 	<ul style="list-style-type: none"> • Progress to heavier load lifting as tolerated per functional goals/needs • Continue focus on kinetic chain optimization • Continue Thrower's Ten Program • Initiate interval throwing program

Return to Sport Notes:

- Average return time to hitting: 4 months
- Average return to pitching: 5-7 months

Return to Throwing:

- Suggested warm up of 1 set of exercises (including Thrower's Ten and neuromuscular control drills) prior to throwing.
- Criteria to begin a long toss program.
 - Full nonpainful ROM (within 5° of nonthrowing shoulder, shoulder horizontal adduction of 40° or greater, elbow and wrist ROM WNL)
 - Strength (MMT, handheld dynamometer or iso): ER/ IR of 72%-76%, ER abduction ratio 68% to 73%, Throwing shoulder compared to nonthrowing- IR greater than 115%, ER greater than 95%, elbow flexion/ extension 100%-115%, wrist strength 100%-115%
 - Clinical exam: no pain, tenderness, or effusion. Negative laxity (prone valgus stress and milking maneuver, negative shoulder & elbow special tests)
 - Functional tests:
 - Prone ball drop- 110% (Position-prone, shoulder abducted to 90°, elbow extended, palm facing floor. Athlete instructed to quickly release & catch a 2lb plyometric ball as many times as they can in 30 seconds. Scoring- record total successful catches per arm. Goal to have 110% of the catches in throwing arm)

- compared to nonthrowing. Example if nonthrowing arm is 20, goal for throwing arm is 22)
- One-arm ball throws against wall with 2lb plyoball for 30 seconds without pain and ability to maintain in 90°/90° position
- Throws into Plyoback rebounder with 1lb plyometric ball for 30 seconds without pain
- Single leg step downs for 30 seconds with good pelvic and lower extremity control that is symmetrical between limbs
- Prone plank for time- Goal time of 90 seconds or greater
- Interval throwing gradually increased from 45 ft to 60 ft and then by 30 ft up to 180 ft
- Program indicates throwing at each stage for 2-3 separate practices without pain or symptoms before progressing to the next stage. (13 stage for non-pitchers, 15 stages for pitchers) For details see Reinold 2002.
- Return to sport is typically between 5-7 months post-surgery and is decided upon by ability to complete return to throwing tests, the rehabilitation team's opinion and the physician's opinion.

Appendix: *see next page*

Thrower's Ten

1. Diagonal-pattern D2 Extension & Flexion
2. Shoulder external rotation & internal rotation at 0° of abduction
3. Shoulder scapular abduction, external rotation (full can)
4. Sidelying shoulder external rotation
5. Prone shoulder horizontal abduction
6. Prone shoulder horizontal abduction (full ER 100° abduction)
7. Prone Rowing
8. Prone rowing into external rotation
9. Press-ups
10. Push-ups
11. Elbow Flexion & Extension
12. Wrist: extension, flexion, supination, pronation

Advanced Thrower's Ten

Band Resisted

1. Shoulder ER/ IR at 0° abduction while seated on a stability ball*
2. Shoulder extensions while seated on a stability ball ~
3. Lower trapezius isolation while seated on a stability ball ~
4. High row into shoulder external rotation while seated on a stability ball ~
5. Biceps curls/triceps extensions while seated on a stability ball ~

Dumbbell Resisted

6. Full can while seated on a stability ball ~
7. Lateral raise to 90° while seated on a stability ball~
8. Prone T's on stability ball ~
9. Prone Y's on stability ball ~
10. Prone row into external rotation on stability ball ~
11. Side lying shoulder external rotation
12. Wrist flexion/ extension and supination/pronation

Key

* Contralateral sustained hold during exercise

~ Exercise performed in 3 continuous patterns per set: 1) bilateral active for 10-15 reps, 2) alternating reciprocal 10-15 reps, 3) sustained contralateral hold for 10-15 reps (30- 45 total reps per set divided over 3 movement patterns is equal to one set. 2 cycles would be a total of 60-90 reps in volume per exercise)

Goal is to perform 2 cycles of entire program without pain