ULNAR COLLATERAL LIGAMENT RECONSTRUCTION GUIDELINE

Functional Outcome Measure
KJOC (Appendix 1) should be completed at initial evaluation and at all identified times through guideline.

Phase 1 – Immediate Post-Op Phase

Goals
1) Protect healing tissue
2) Decrease pain/inflammation
3) Limit muscle atrophy

WEEK 1
DAYS 1-7

<table>
<thead>
<tr>
<th>Wound Care</th>
<th>Sterile gauze used at incision site. Check brace for rubbing or irritation. Compression garment at elbow to be used with physician’s authorization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posterior Splint</td>
<td>At 90 Degrees</td>
</tr>
</tbody>
</table>
| ROM                       | Wrist AROM ext/flex
Hamstring flexibility if gracilis tendon graft utilized.                                                                                      |
| Shoulder Strength          | Gripping
Shoulder Isometrics EXCEPT Internal Rotation AND External Rotation
Scapular Clocks with manual resistance                                                                                                             |
| Trunk/Core                 | Thoracic Extension
Side lying Thoracic Rotation
Pelvic Tilts – supine, seated, standing, single leg stance as able                                                                                   |
| Lower Extremity            | Hamstring Strength – eccentrics
Hip Abduction – side steps, SL abduction, clamshells
Hip Extension – glute sets, bridges, hip extension                                                                                              |
| Breathing Exercises        | Teach proper breathing patterns- no accessory breathing
Progress from supine to functional positions                                                                                                     |
| Balance                    | Progressive, safe exercises in kneeling, half kneeling, and single leg                                                                 |
| Posture                    | Education on proper posture throughout each session                                                                                     |
| Modalities                 | Cryotherapy and E-stim for swelling control at elbow and graft site.                                                                     |
| Lower Extremity            | Stationary bike without upper body support                                                                                             |

WEEK 2

<table>
<thead>
<tr>
<th>Brace</th>
<th>30-90 degrees</th>
</tr>
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<tbody>
<tr>
<td>ROM</td>
<td>Elbow- 5 – 125 degrees. May progress if no pain or pinch is reported.</td>
</tr>
</tbody>
</table>
| Strength                  | Light rhythmic stabilization at end range of elbow extension
T-Band – Scapular retraction exercise                                                                                                           |
| Trunk/Core                | Continue previous exercises/mobility
Progress as able without weight bearing or stress on elbow
No holding med balls/weights                                                                                                                  |
| Lower Extremity           | Continue previous activities with safe progressions                                                                                      |
| Modalities                | Cryotherapy and light compression                                                                                                        |
WEEK 3

Brace: 10-120 degrees

ROM: Elbow - 5 – 125 degrees. May progress if no pain or pinch is reported.

Strength: Light rhythmic stabilization at end range of elbow extension
T-Band – Scapular retraction exercise

Conditioning: Begin light cycling- avoid gracilis graft irritation.
Core strengthening avoiding any upper extremity stress.
May begin lower extremity strengthening (hold if gracilis graft used)

Criteria to progress to Phase 2
1) Meet ROM guidelines
2) Low, controlled pain
3) Consistently low swelling

Phase 2 – Intermediate Phase

Goals
1) Control pain and inflammation
2) Gradual increase in ROM to WNL
3) Promote healing of tissue
4) Good scapular control with exercises
5) 5/5 shoulder strength with MMT or dominant = non-dominant with HHD
6) Progress general conditioning, including lower extremity strength work

WEEKS 4-5

Brace: 10-110 degrees
Low load long duration stretch, maintaining forearm in a neutral position, if elbow extension is lacking.
Shoulder internal rotation flexibility as indicated

Strength: Use ankle weights around wrist vs dumbbells/bands if able
Initiate light resistance exercises
Wrist dumb bells – flexion/ extension/ pronation/ supination.
Elbow dumb bells and light T-band - flexion and extension.
   Over pressure and rhythmic stabilization to be utilized with end range elbow extension strengthening.
Shoulder program for rotator cuff strengthening – use ankle weights
   - Prone Series – row/ extension/ flexion/ horizontal abduction
   - Standing - flexion/ abduction/ scaption
   - IR and ER ISOMETRICS in neutral
   - Protraction supine – manual resistance proximal to the elbow
   - UBE – low resistance
   - Hand/gripping exercises to be continued.

Manual Therapy: Scar massage

Conditioning: Initiate Elliptical and /or stepper for aerobics
Begin leg press and mini lunges (gracilis graft)
Continue Core strengthening program – no planks
No upper body resistance training
No lifting plate weights or holding dumbbells in hands
### WEEKS 6-7

| ROM                                      | Full AROM/PROM – discharge brace  
Joint mobilizations as needed at end range with distraction  
Shoulder Total Arc of Motion (IR+ER at 90): dominant = non dominant |
|------------------------------------------|----------------------------------------------------------------------------------|
| Strength                                 | Elbow PRE’s – dumb bells and manual resistance  
Push up plus on Swiss ball, elbows remain straight  
Side lying External Rotation with dumbbells/ankle weights  
Thera band exercises - Shoulder internal rotation/ external rotation/ horizontal abduction. – AVOID VALGUS STRESS TO THE ELBOW  
Manual resistance exercises (concentric and eccentric) Prone row/horizontal abduction in neutral/ external rotation/ internal rotation/ flexion at 105 deg. thumb up position.  
PNF- D2 pattern (hold at elbow) rhythmic stabilization at multiple angles. |
| Aerobics                                 | Running may be initiated on safe surfaces. (hold if gracilis graft used) |

### WEEK 8

| Strength                                 | Seated row and lat pull  
Prone row with external rotation  
Prone quick drops – flexion/ external rotation/ horizontal abduction  
Thera-band at 90/90- external rotation/ internal rotation (perform slowly avoiding valgus stress at the elbow)  
Rhythmic Stabilization - 90/90 position and D2 PNF- holding at elbow  
Begin hamstring open chain exercises (gracilis graft used)  
Thera Band at 0 degrees shoulder abduction – IR and ER |

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**Criteria to advance to Phase 3**

1. Full Elbow AROM
2. Total Arc of Motion: uninvolved = involved
3. 5/5 MMT strength OR Hand Held Dynamometer of involved shoulder  
   a. Shoulder external rotation in neutral  
   b. Shoulder internal rotation in neutral  
   c. Shoulder horizontal abduction  
   d. Shoulder flexion  
   e. Shoulder full can/scaption  
   f. Shoulder extension  
   g. Shoulder overhead flexion
4. Ext Rotation/Int Rotation to 67% ratio
5. Lower Extremity Strength 5/5 or HHD dominant=non dominant  
   a. Hips all planes  
   b. Knee all planes  
   c. Ankle all planes
6. Ankle Dorsiflexion  
   a. Equal bilaterally (ideal 10 degrees)
7. Thoracic Spine AROM  
   a. 50 degrees rotation bilaterally in seated position
# Phase 3 – Advanced Strengthening Phase

**Goals**

1. Full elbow ROM maintained
2. Progression of UE strength without exacerbation
3. Good muscular control with manual exercises
4. General conditioning progression tolerated

<table>
<thead>
<tr>
<th>WEEK 9</th>
<th>ROM</th>
<th>Normalize elbow ROM- external rotation of humerus to facilitate elbow extension- do not press at wrist (avoid valgus stress at elbow)</th>
</tr>
</thead>
</table>
|        | **Strength** | Elbow – initiate eccentric flexion/ extension exercises and continue concentric strengthening progression  
Shoulder – continue concentric strengthening program  
Manual resistance D2 PNF pattern with resistance proximal to the elbow.  
Impulse – 90/90 position external rotation and horizontal abduction.  
Body blade – 90/90 position external rotation/ internal rotation/ and through the throwing motion.  
Rhythmic Stabilization – at 90/90 position and through the D2 PNF pattern. |
|        | **Core Strengthening** | Prone pike stabilization with forearms held in a neutral position.  
May begin jogging on flat ground (gracilis graft used)  
Continue lower extremity strengthening progression |

| WEEKS 10-16 | **Strength** | Continue strengthening as above.  
Weight training program to be progressed (avoid pec fly’s and push ups) |

| WEEK 10 | **Bodyblade** | Internal/external rotation at 0 degrees shoulder abduction  
Flexion and scaption at 90 degrees shoulder abduction |
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<td><strong>Impulse</strong></td>
<td>Internal/external rotation at 0 degrees shoulder abduction</td>
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<tr>
<td></td>
<td><strong>Plyometrics</strong></td>
<td>Double arm ball toss – start at chest height 2-3kg ball</td>
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</table>

| WEEK 11 | **Plyometrics** | Continue double arm plyometrics  
Overhead Soccer Throw  
Wall dribbles – semi circle  
Ball chops  
Free throws- 3kg ball (100-200 reps) against a wall |

| WEEK 12 | **Strength** | Single arm plyometrics  
Initiate over-the-shoulder deceleration exercise with 1kg ball  
Begin closed chain shoulder stability exercises |
### WEEK 13
**Plyometrics**
- T-band ER/IR quick contractions.
- 90/90 wall dribbles

### WEEK 14
**Functional Exercise**
- 15 ft baseball throws into wall for mechanics
- Elbow elevation above the shoulder for over the top throwing mechanics.
- Finish throw with ample deceleration ROM from the shoulder back and trunk

### WEEK 16
**Strength**
- Continue UE strengthening program
- Continue core strengthening

**Plyometrics**
- Continue progression of UE plyometric activities

**Isokinetic Testing**
- IR/ER testing to be performed at 90, 180 and 300 deg./sec.

### Phase 4 – Functional Activity Phase
**Goals**
1) Continuation of strengthening program
2) Full UE ROM maintained
3) Acceptable Isokinetic test results for external/internal rotators
   a. Shoulder non-dominant to dominant side strength to be 90%
   b. Shoulder external rotators to be 65% of internal rotators.

### WEEK 18
**Functional Activities**
- Begin throwing progression with monitored mechanics avoiding medial elbow stress. – Requires physician clearance to initiate
  - Maintain elbow elevation above shoulder height.
  - Curl hop to be used when initiating throws of 90 ft and greater.
  - Deceleration to include good back and trunk flexion ROM