

# ULNAR COLLATERAL LIGAMENT (UCL)

INJURIES ARE COMMON IN  
OVERHEAD THROWING ATHLETES  
AS A RESULT OF VALGUS MOMENT  
PLACED ON THE ELBOW,  
SPECIFICALLY DURING THE  
LATE COCKING AND  
EARLY ACCELERATION  
PHASE OF THROWING.

-LAWTON ET AL

THE INCIDENCE  
OF **UCL SURGERY**  
HAS BEEN  
INCREASING  
PARTICULARLY IN  
YOUNGER  
ATHLETES  
INVOLVED IN  
YEAR-ROUND  
PITCHING FOR  
MULTIPLE TEAMS  
WITHOUT  
WELL-DEFINED  
AND ENFORCED  
PITCH COUNTS.

-CAIN JR

*UCL DYSFUNCTION TYPICALLY  
PRESENTS AS PAIN WITH LOSS  
OF VELOCITY AND CONTROL.*

PATIENTS WILL PRESENT WITH  
ACUTE INJURY

**OR**

A MORE INSIDIOUS ONSET OF  
SYMPTOMS WITH PROGRESSIVE  
PAIN WITH THROWING &  
DECREASED PERFORMANCE

-CAIN JR

## RISK FACTORS!

- Extended seasons
- Higher pitch counts
- Year-round pitching
- Pitching while fatigued
- Pitching for multiple teams

“  
Current studies suggest that UCL repair may be a viable surgical option in younger athletes who sustain an acute UCL avulsion-type injury at the proximal or distal end with no degeneration of the ligament or suggestion of a chronic injury.

-LAWTON ET AL

# TOMMY JOHN REPAIR

## PHYSICAL THERAPY PROTOCOL

At UAMS | Health and Train · Recover · Move, our goal is to create an environment that is safe for the healing structures, exciting for the patient, and able to provide an open and transparent line of communication with the therapist and physician. If you ever have any questions or concerns, please feel free to give us a call and we would be more than happy to discuss any concerns or questions you might have.

### OUR PROTOCOL CAN BE DIVIDED INTO 4 DISTINCT AND SEPARATE PHASES:

<i>PHASE 1</i>	<i>PHASE 2</i>	<i>PHASE 3</i>	<i>PHASE 4</i>
<b>PROTECT</b>	<b>EARLY MOTION</b>	<b>LATE MOTION</b>	<b>STRENGTH</b>
DAY 1 - WEEK 3	WEEK 3 - WEEK 6	WEEK 6 - WEEK 12	WEEK 12+

### BEFORE WE DIVE INTO THE DETAILS OF THE SEPARATE PHASES, WE WOULD LOVE TO ANSWER SOME COMMON QUESTIONS OUR PATIENTS OFTEN ASK WHEN CONSIDERING THIS SURGERY AND REHABILITATION PROCESS:

#### DO I REALLY NEED TO WEAR MY SPLINT/BRACE?

Based on the specifics of the surgery, you will be placed in a non-removable cast for the first week following your surgery. The cast will be replaced with a hinged elbow brace by your physician at your follow-up appointment. This hinged elbow brace is to be worn for the next 4-6 weeks depending on the guidelines from your physician.

We recommend you wear the hinged elbow brace at all times. Unwanted movements can place increased stress on healing musculoskeletal tissues that can delay healing times.

You may take your arm out of the brace for exercises (prescribed by your surgeon/physical therapist/athletic trainer), for using ice/heat, dressing, and for showering

#### IS IT NORMAL FOR MY ELBOW TO BE SO STIFF WHEN I AM OUT OF THE SPLINT?

Following a period of bracing/inactivity in a joint, it is normal to have range of motion limitations.

These range of motion limitations can occur due to muscle, joint, tendon, or skin that is placed in a shorted position for an extended period.

One of the earliest goals after surgery is to limit the effects of immobilization. Talk with your surgeon/physical therapist about the importance of early elbow mobility and home exercise compliance.

Early range of motion activities nourish articular cartilage and assist in synthesis, alignment, and organization of collagen tissue (Wilk 2012 Rehab of OH Elbow).

#### WHAT MOVEMENTS DO I NEED TO AVOID EARLY AFTER SURGERY?

Unwanted movements can place increased stress on healing musculoskeletal tissues in the elbow. Avoid movements that place an increased stress on the lateral elbow; including holding a cup of coffee, pushing up from a chair, twisting open a door knob or jar, pushing open a door, etc...

Avoid movements such as reaching up your back or behind your head. If you are at a computer, keep your elbow by your side during the initial six weeks.

Depending on where you are during your phase of rehabilitation, the limitations placed on your elbow will change.

#### WHEN DO I BEGIN PHYSICAL THERAPY?

Generally, therapy will begin sometime between 1-3 weeks following surgery. The frequency of how often and when a patient starts physical therapy can be adjusted by your surgeon.

#### HOW OFTEN DO I NEED TO GO TO PHYSICAL THERAPY?

The frequency of physical therapy will typically start at 2-3 times a week. This frequency can also be adjusted by your surgeon or your physical therapist's recommendations.

Once strength training begins, the patient's frequency can be reduced to 1-2 times a week depending on goals met, home exercise compliance, and surgeon/therapist recommendations.

#### WHEN CAN I START STRENGTHENING?

You will begin early strength/endurance training of the elbow and shoulder during 5-6 weeks after surgery depending on progress made towards goals, home exercise compliance, and surgeon/therapist recommendations.

#### I HAVE FRIENDS WHO HAVE HAD AN ELBOW SURGERY... WILL MY EXPERIENCE BE LIKE THEIRS?

There are several factors that are specific to the patient that will affect their recovery. Some of these factors can include the surgical approach, the quality of the tissue, chronicity of pain, the mechanism of injury, limitations of the surrounding upper extremity joints, and prior level of function.

Your physical therapist will work with you to develop a plan of care based on your specific limitations following the surgery.

# PHASE 1 - PROTECT

DAY 1 - WEEK 4

## GOALS

Protect surgical repair by avoiding unwanted strain to the involved structures

Manage post-operative pain/wean off medication

Normalize elbow range of motion

Screen for shoulder internal rotation deficits

Wean out of elbow brace

## THINGS TO AVOID

No lifting, pushing, or pulling anything

No jogging, running, or active sports participation

Avoid sleeping on the surgical side to avoid unwanted stresses placed on the elbow

## THINGS TO BE DOING

Come out of the splint multiple times a day to perform elbow mobility exercises

Elbow flexion range of motion limitations are commonly found in this phase; it is important to begin early recovery of elbow range of motion

Elbow brace is unlocked further each week

Week 2-3: 30 degrees extension to 90 degrees flexion

Week 4: 20 degrees extension to 100 degrees flexion

Week 5: 10 degrees extension to 110 degrees flexion

Week 6: 0 degrees extension to 120 degrees flexion

Begin formal physical therapy at 2-3 times a week

Wear your brace at all times; except when performing home exercises, dressing, or showering

We encourage you to tease, touch, and nudge any pain you might experience. Please do not push through or into pain. Do not be aggressive with any mobility exercises that might cause muscle spasms or produce sharp pains in the elbow

# THE THERAPY EXPECTATIONS

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## DAY 1 - WEEK 4

### **BEGIN FORMAL PHYSICAL THERAPY**

**ADDRESS INCISION SITE MOBILITY, DRAINAGE, EXCESSIVE REDNESS, OR DISCOLORATION**

**PATIENT POSITIONED IN SEATED, RECLINE, OR SUPINE**

**BEGIN HOME EXERCISE PROGRAM THAT IS TO BE COMPLETED 2-3 TIMES PER DAY**

**Supine elbow active-assistive ROM exercises for flexion and extension at 90 degrees of shoulder flexion; seated supination and pronation.**

#### **Submaximal and pain free isometric contractions**

Elbow: flexion and extension muscles

Wrist: flexion, extension, pronation, supination muscles

Shoulder: flexion, extension, abduction

Avoid external and internal rotation early on to reduce unwanted elbow stresses

#### **Shoulder active, active-assistive, and passive mobility exercises**

Avoid excessive external and internal rotation of the shoulder to limit fulcrum at the elbow

**Scapular squeezes, depression, and rolls active exercises**

**ICE, TOOL ASSISTED MANUAL THERAPY, AND MODALITIES AS NEEDED**

Kinesiotaping, soft tissue manual edema mobilization, TENS, etc.

**ADDRESS PATIENT SPECIFIC MOBILITY DEFICITS ON ADJACENT JOINTS**

**Grade I-IV mobilizations at the GHJ joints at tolerated based on shoulder mobility deficits**

Shoulder ABIR: 60-80 degrees for healthy thrower's shoulder

**Cervical and thoracic mobilizations as needed and guided by clinical examination and history**

# PHASE 2 - LATE MOTION

WEEK 4 - WEEK 10

## GOALS

Discharge from elbow brace

Week 5: 10 degrees extension to 110 degrees flexion

Week 6: 0 degrees extension to 120 degrees flexion

Discharged from brace after week 6

Protect surgical repair until strength and mobility is full

Achieve maximum gains in elbow and shoulder range of motion

Begin gradually restoring upper extremity strength and stability with a progressive program

Achieve 80% scores on upper extremity strength/stability tests

Seated shot put test

Closed kinetic chain upper extremity stability test

Muscle specific isokinetic tests

## THINGS TO AVOID

No active sports participation

Avoid positions that place increased stress on the medial elbow

No sudden jerking or uncontrolled movements through the elbow

## THINGS TO BE DOING

Return to normal activities of daily living with the affected side.

Progressive strengthening exercises will be added gradually to your home exercise routine; to be performed 1-2x a day.

If elbow mobility deficits persist; continue with home elbow mobility exercises to be performed 4-5x a day with increased aggressiveness to prevent stiffness.

Physical therapy frequency can be reduced to 1-2x a week depending on patient progress and good compliance with home exercise program.



# THE THERAPY EXPECTATIONS

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## WEEK 4 - WEEK 10

### JOINT MOBILIZATIONS AND MANUAL THERAPY AS NEEDED TO ADDRESS MOBILITY, PAIN, AND GUARDING DEFICITS

Grades I-IV mobilizations to upper extremity joints

Instrument assisted soft tissue mobilizations

### ACTIVE AND ACTIVE-ASSISTED ELBOW AND SHOULDER MOBILITY WITHOUT RESTRICTION

ROM exercises can be performed in any plane of motion

Continue to avoid excessive external and internal rotation until week 8 to avoid unwanted strain on the repair site

Wall / table slides

Ball rolls

Recumbent bike

Gravity assisted elbow extension

### PASSIVE ELBOW MOBILITY WITHOUT RESTRICTIONS

Doorway elbow extension stretches

Pulleys

Low load long durational stretching

Consider sports specific requirements into stretching

Banded step ups

Banded kettlebell drags

### PROGRESSIVE STRENGTHENING EXERCISES FOR THE SHOULDER, ELBOW, AND WRIST

Begin progressing isometric exercises towards isotonic contractions; beginning with concentric and progressing towards eccentric towards the end of the phase

Begin wrist, elbow, and shoulder progressions at week 6

Begin shoulder external/internal rotation progressions at week 8


Low intensity and high repetition recommended early on

### NEUROMUSCULAR CONTROL

PNF Patterns

Rhythmic stabilization and D1 / D2 in multiple planes of movement  
Standing, lunge, supine, etc.

Manual resistance recommended for easy modification based on patient tolerance



## SCAPULAR STABILITY/STRENGTHENING PROGRESSIONS

### Open chain strengthening progressions

Three-way rowing  
Serratus wall slides  
Bilateral shoulder external rotation  
Prone I's Y's and T's  
Wall push ups

### Closed chain strengthening progressions

Begin standing with arms on the wall weight bearing; progress to incline and floor every other week  
Patient should feel comfortable weight bearing in full push up position by week 10

### Modified thrower's 10 program

Add shoulder external/internal rotation exercises at week 8

## REGIONAL INTERDEPENDENCE

Progressive lower extremity cardiovascular endurance

Progressing back into jogging / running

Sports specific lower extremity requirements

# PHASE 3 - STRENGTHENING

WEEK 10 - WEEK 16

## GOALS

PROTECT SURGICAL REPAIR UNTIL STRENGTH AND MOBILITY IS FULL

CONTINUE TO GRADUALLY RESTORE MOBILITY, STRENGTH, POWER, ENDURANCE, AND NEUROMUSCULAR CONTROL OF THE UPPER EXTREMITY AS NEEDED

ACHIEVE 95%+ SCORES ON UPPER EXTREMITY STRENGTH/STABILITY TESTS

- SEATED SHOT PUT TEST, CLOSED KINETIC CHAIN UPPER EXTREMITY STABILITY TEST, UPPER EXTREMITY Y-BALANCE TEST, MUSCLE SPECIFIC ISOKINETIC TESTS
- 110% SCORES RECOMMENDED IF TESTING THE DOMINANT UPPER EXTREMITY

FOCUS ON RETURN TO SPORT REQUIREMENTS FOR ATHLETES

## THINGS TO AVOID

No sudden jerking or uncontrolled jerking movements through the elbow

Caution in weight room with loading/unloading heavier weights with elbow

## THINGS TO BE DOING

Continue to normal activities of daily living with the affected side

Progress gradually into upper extremity weight room exercises

Physical therapy frequency can be reduced to 1-2x/week depending on patient progress and good compliance with home exercise program

Discuss the return to sports participation plan with your surgeon and physical therapist

# THE THERAPY EXPECTATIONS



## WEEK 10 - WEEK 16

### ADDRESS UPPER EXTREMITY SORENESS WITH MANUAL THERAPY AS NEEDED

Tool assisted soft tissue mobilizations, dry needling, joint mobilizations, etc

Avoid needling directly into surgical site

### GRADUAL PROGRESSION OF ELBOW FLEXION AND EXTENSION ISOTONIC EXERCISES

Higher resistance of weights/bands, eccentric contractions, varying speeds of contraction

### GRADUAL PROGRESSION OF SCAPULAR STRENGTHENING/STABILITY EXERCISES

Closed kinetic chain upper extremity progressions

Advanced Thrower's Ten program

Prone/gravity maximized scapular strengthening

### GRADUAL PROGRESSION OF SCAPULAR STRENGTHENING/STABILITY EXERCISES

#### PNF Patterns

Rhythmic stabilization and D1/D2 in multiple planes of movement  
Standing, lunge, supine, etc

Manual resistance for elbow/wrist flexion and extension drills

### REGIONAL INTERDEPENDENCE

Progressive lower extremity cardiovascular endurance

Sports specific lower extremity requirement drills

### WEIGHT ROOM ACTIVITIES

Week 10: Return to full activities in weight room

Deadlift, squats, bench press, etc

Modify positioning to avoid loading the elbow in 90-90 ER positions; such as back squat

### PLYOMETRIC EXERCISES

Progressive upper extremity plyometric exercises to prep for return to throwing/sport in next phase

Week 12: initiate 2 hand plyometric exercises progressions; isometrics to eccentrics to plyometrics to rotary plyometrics

Example: chest press to scoop toss to step through press with rotations to vertical med ball slams

Week 14: initiate 1 hand plyometric exercise progressions

Example: single arm body blade to wall dribbles to 90-90 wall dribbles to single arm ball throws on wall to deceleration catching drills





# PHASE 4 - RTS

WEEK 16+



## GOALS

CONTINUE TO GRADUALLY RESTORE MOBILITY, STRENGTH, POWER, ENDURANCE, AND NEUROMUSCULAR CONTROL OF THE UPPER EXTREMITY AS NEEDED

BEGIN PROGRESSIONS FOR INTERVAL THROWING PROGRAM



## THINGS TO AVOID

CONTINUE WITH CAUTION IN WEIGHT ROOM WITH LOADING/UNLOADING HEAVIER WEIGHTS WITH ELBOW

MULTIPLE DAYS OF THROWING IN A ROW OR PAIN WITH THROWING PROGRAM



## THINGS TO BE DOING

CONTINUE TO NORMAL ACTIVITIES OF DAILY LIVING WITH THE AFFECTED SIDE

CONTINUE TO PROGRESS GRADUALLY INTO UPPER EXTREMITY WEIGHT ROOM EXERCISES

PHYSICAL THERAPY FREQUENCY CAN BE REDUCED TO 1 VISIT EVERY OTHER WEEK DEPENDING ON PATIENT PROGRESS AND COMPLIANCE WITH HOME EXERCISE PROGRAM

DISCUSS THE RETURN TO SPORTS PARTICIPATION PLAN WITH YOUR SURGEON, PHYSICAL THERAPIST, AND ATHLETIC TRAINER

# THE THERAPY EXPECTATIONS

## WEEK 16+

### CONTINUE TO ADDRESS UPPER EXTREMITY SORENESS WITH MANUAL THERAPY AS NEEDED

Tool assisted soft tissue mobilizations, dry needling, joint mobilizations, etc.

Avoid needling directly into surgical site

### CONTINUE PROGRESSIONS OF ELBOW FLEXION AND EXTENSION ISOTONIC EXERCISES

Higher resistance of weights / bands, eccentric contractions, varying speeds of contraction

### CONTINUE PROGRESSIONS OF SCAPULAR STRENGTHENING / STABILITY EXERCISES

Closed kinetic chain upper extremity progressions

Multi-plane movements

Plyometric push / pulls

Continue Advanced Thrower's Ten Program

Prone / gravity maximized scapular strengthening



## NEUROMUSCULAR CONTROL

### PNF Patterns

Rhythmic stabilization and D1 / D2 in multiple planes of movement  
Manual resistance for upper extremity in sports specific positions

## REGIONAL INTERDEPENDENCE

Progressive lower extremity cardiovascular endurance

Sports specific lower extremity requirement drills

## PLYOMETRIC EXERCISES

Continue progressive upper extremity plyometric exercises from prior phase

Emphasis on rotatory plyometric movements in 2 hand and 1 hand positions

Med balls, light weight balls, etc

Begin Interval Throwing Program

# POST THROWING SORENESS RULES

NO PAIN DURING THROWING OR SPORTS SPECIFIC ACTIVITIES

POST-THROWING SORENESS OR PAIN SHOULD NOT LAST MORE THAN 1-2 DAYS

REGRESS LEVEL OF THROWING PROGRAM IF YOU HAVE PAIN OR LINGERING SORENESS LEVELS

IF THIS PATIENT IS AN OVERHEAD OR THROWING ATHLETE AND YOU WISH TO CONTACT US ABOUT OUR THROWING OR GOLF PROGRESSIONS AFTER THE PHYSICAL THERAPY PROTOCOL, PLEASE FEEL FREE TO CONTACT US.

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ATTN: BLAKELEY KREIS

**TRM**  
UAMS Health