

REHABILITATION AFTER TOMMY JOHN (MCL) RECONSTRUCTION

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Introduction

This rehab program addresses medial collateral ligament insufficiency of the elbow with resultant valgus instability in throwing athletes, reconstructed with a free tendon graft reconstruction. Postoperatively, the body requires time to accept the transfer and establish adequate blood supply in the new tissue. The focus of this rehabilitation program is to provide gradually increasing stresses on the transferred material to allow the tendon to adapt to the forces the ulnar collateral ligament would typically withstand. According to Wolff's Law, the strength of the tissues matrix is directly proportional to the stresses placed upon them during their development.

Approximately nine months is needed for the reconstructed tissues to assume their new functions completely. The patient tends to protect and compensate for their limited ability, which promotes dysfunction of the upper extremity as a whole; therefore, it is important to address the function of the shoulder girdle (i.e., scapulothoracic, glenohumeral, and acromioclavicular joints), along with the return of full elbow function (i.e., range of motion, strength and endurance).

In general, avoid any valgus stress during the rehabilitation period until actual pitching starts.

Days 0-7

- **No valgus stress to the elbow**
- A splint is worn post-operatively for one week.
- Squeeze a soft ball on the first post-operative day.
- Gentle active and active assistive wrist flexion and extension range of motion exercises. **HOWEVER,**
- Avoid pronation of the wrist.
- Full active shoulder range of motion – flexion, abduction, internal & external rotation.

Weeks 2-6

- Splint is replaced with an elbow IROM, **set at 45 of extension and 90 of flexion.**
- **ROM is increased by 10 degrees in flexion and extension weekly until full.**
 - o **Week 1-2** **55 ext** **100 flex**
 - o **Week 2-3** **65 ext** **110 flex**
 - o **Week 3-4** **75 ext** **120 flex**
 - o **Week 4-5** **85 ext** **130 flex**
- Begin lower body and trunk conditioning program.

Week 6 **BEGIN FORMAL PHYSICAL THERAPY**

- ROM
 - o Gradually achieve full elbow range of motion of elbow, wrist, forearm, and shoulder joints.
- Strength
 - o Commence gradual strengthening of the forearm and shoulder musculature
 - o **Take care not to apply a valgus load across the elbow during this phase of rehabilitation.**
 - o Continue lower body and trunk conditioning program.

Week 12

- Strength
 - o Strengthening program becomes more vigorous

- bench pressing light to moderate weights
- Throwing
 - If there is no swelling and the athlete has full, pain free elbow range of motion the athlete may begin easy tossing (no wind-up), start with 25-30 throws at 20 feet, building up to 70 throws and gradually increase the throwing distance to 40 feet.

NOTE: The throwing program is performed every other day. Apply ice after each throwing session to help decrease the inflammatory response to microtrauma.

Commence Progressive Throwing Program

# of Throws	Distance (ft)
20	20 (warm-up phase)
25-40	30-40
10	20 (cool down phase)

Month 4-5

Continue the Throwing Program by tossing the ball with an easy wind-up on alternate days.

# of Throws	Distance (ft)
10	20 (warm-up)
10	30-40
30-40	50
10	20-30 (cool down)

Months 5-6

Continue increasing the throwing distance to a maximum of 60 feet. Continue tossing the ball with an occasional throw at no more than half speed

# of Throws	Distance (ft)
10	30 (warm-up)
10	40-45
30-40	60-70
10	30 (cool down)

Month 6-7

During this step gradually increase the distance to 150 feet maximum. Commence pitching from flat ground.

Phase I	10	50-60
		40 (cool down)
	10	Phase III
	10	
	20-30	
Phase II	20	
	10	
	Distance (ft)	Phase IV
	40 (warm-up)	
	50-60	
# of Throws	78-80	
	56-60	
	40 (cool down)	
	10	40 (warm-up)
	10	50-60
15-20	89-90	
10		

# of Throws	20	40 (cool down)
10	10	
10		40 (warm-up)
15-20		50-60
20		89-90
10	Distance (ft)	50-60
	40 (warm-up)	40 (cool down)
10	50-60	
10	78-80	
15-20	56-60	

Month 7-8

Commence pitching from the mound.

Progress to throwing off the mound at ½ to ¾ speed.

- Try to use proper body mechanics, especially when throwing off the mound:
 - o Stay on top of the ball.
 - o Keep the elbow up.
 - o Throw over the top.
 - o Follow through with the arm and trunk.

	# of Throws	Distance (ft)
Phase I	10	50 (warm-up)
	10	120-150(lobbing)
	30	45 (off the mound)
	10	60 (off the mound)
	10	40 (cool down)
Phase II	10	50 (warm-up)
	10	120-150(lobbing)
	20	45 (off the mound)
	20	60 (off the mound)
	10	40 (cool down)
Phase III	10	50 (warm-up)
	10	60
Phase IV	10	45 ((off the mound)
	10	60 (off the mound)
	30	40 (cool down)
	10	
	10	50 (warm-up)
Phase IV	10	120-150 (lobbing)
	10	45 (off the mound)
	10	60 (off the mound)
	40-50	40 (cool down)
	10	

120-150 (lobbing)

Month 9-10

At this time, if the pitcher has successfully completed the above phase without pain or discomfort and is throwing approximately ¾ speed, the pitching coach and trainer may allow the pitcher to proceed to the next step of "UP/Down Bullpens". Up/Down Bullpens is used to simulate a game

situation. The pitcher rests in between a series of itches to reproduce the rest period in between innings.

Up/Down Bullpens: (1/2 – 3/4 speed)

Day 1	# of Throws 10 (warm-up) 10 (warm-up) 40 pitches 20 pitches	120-150 (lobbing) 60 (off the mound) 60 (off the mound) REST 10 MINUTES 60 (off the mound)
Day 2	OFF	
Day 3	10 (warm-up) 10 (warm-up) 30 pitches 10 (warm-up) 20 pitches	120-150 (lobbing) 60 (off the mound) 60 (off the mound) REST 10 MINUTES 60 (off the mound) 60 (off the mound)
Day 4	OFF	
Day 5	10 (warm-up) 10 (warm-up) 30 pitches 20 pitches 20 pitches 20 pitches	120-150 (lobbing) 60 (off the mound) 60 (off the mound) REST 10 MINUTES 60 (off the mound) REST 10 MINUTES 60 (off the mound) REST 10 MINUTES 60 (off the mound)

Distance (ft)

Month 10-12

At this point, the pitcher is ready to begin a normal routine, from throwing, batting practice, to pitching in the bullpen. This program should be adjusted as needed by the physician, athletic trainer or physical therapist.