



# MCL Reconstruction

## Post-Operative Rehabilitation Protocol

### 0-6 weeks

- NWB for 6 weeks with crutches
- Brace locked in extension for ambulation and sleeping x 6 weeks
- Avoid tibial rotation, hypertension and valgus force to the knee
- **ROM:**
  - Wall slides/supine heel slide with strap
  - Seated knee flexion with contralateral LE assist
- **Neuromuscular control:**
  - Quad Set, Prone TKE, SLR in brace
  - Use of NMES if insufficient volitional quad activation.
  - Quad isometrics at 90, 60, 30 and 0° knee flexion S/L hip ABD in brace
  - Prone hip extension in brace
  - Ankle mobility and resisted motions in all planes in supine, long sit or seated position.
  - Supine and seated core stabilization.
  - Seated/supine anti rotation/pallof
  - Supine core isometrics with UE and LE dissociative movements
- **Criterion to progress**
  - Pain free ROM 0-90°
  - Pain/swelling controlled
  - SLR without extensor lag

### 6-12 weeks

- No kneeling for 12 weeks post op
- Progress to PWB and then FWB/wean off assistive device
- Discharge crutches then brace when adequate quad activation/strength
- **ROM:**
  - Stationary bike

### Weight Bearing Status

NWB x 6  
weeks

### Brace Settings

Locked  
straight x 6  
weeks when  
ambulating  
or sleeping.  
Otherwise  
open brace  
once good  
quad control

### ROM Restrictions

PROM 0-  
90°  
beginning  
POD 1



- **Proprioception and balance:**
  - Initiate balance training
- **Strengthening**
  - Closed chain functional exercise
  - Mini squat, Step-up, lunging in sagittal plane (no flexion >70°)
  - Bridge
  - Side steps
  - Keep band proximal to minimize varus force on knee
  - Core strength and endurance
- **Criterion to progress:**
  - Pain free, non-antalgic gait without assistive device for limited distances
  - PROM normalized to contralateral side 100%
  - Dynamometry 80% compared contralaterally with muscle testing

## 12-20 weeks

- Initiate transverse plane and multiplanar motions
- Initiate plyometrics
- Restore power
- Alter G initiated at 16 weeks for running
- **Criterion to progress:**
  - Y-balance test >90%
  - 60 sec continuous SL squat to 60° without femoral and lumbo-pelvic compensations
  - Plank and side plank 60 sec without compensations
  - Dynamometry 90% compared contralaterally with muscle testing
  - Return to prior level of function with minimal symptoms

## >20 weeks



- Full body running at 20-22 weeks
- Sport specific dynamic exercises
- Return to sports between 6-9 months
- Plyo Prep Screen when initiating running and/or jumping. Lower Body Assessment when initiating return to sport progression. Schedule via QR code email or [spc@rushortho.com](mailto:spc@rushortho.com)



Exercise	Week																			
	1	2	3	4	5	6	7	8	9	10	12	16	20	24						
Initial Exercises:																				
ROM Goals	0-90°		0-125°			Progress to full														
Flexion/extension, wall slides																				
Flexion/extension- seated																				
Patella/Tendon mobilization																				
Extension Mobilization/Heel prop with knee extension																				
Quad Series																				
Hamstring Sets																				
Sit and Reach for Hamstrings (towel)																				
Ankle Pumps																				
Crutch weaning	NWB																			
SLR (w/ brace until quad control restored)																				
Toe and heel raises																				
Balance Series																				
Weight-bearing Strength Exercises:	1	2	3	4	5	6	7	8	9	10	12	16	20	24						
Double Knee Bends	NWB																			
Double Leg Bridges																				
Limited Leg press- double leg																				
Beginning cord exercises																				
Balance Squats																				
Dead Lift (2 → 1)																				
Leg Press – single leg																				
Sports Test Exercises																				
Cardiovascular Exercises:	1	2	3	4	5	6	7	8	9	10	12	16	20	24						
Bike with both legs-no resistance	NWB																			
Bike with both legs- resistance																				
Treadmill-walking 7% incline																				
Swimming with fins-light flutter kick																				
Elliptical Trainer																				
Rowing																				
Stair stepper																				
*Cardio Exercises						Must tolerate daily walking with no limp & no significant increase in pain/swelling prior to initiating WB cardio (walk, elliptical, stepper)														
Agility Exercises:	1	2	3	4	5	6	7	8	9	10	12	16	20	24						
Running Progression	NWB																			
Initial-Single Plane																				
Advance-Multi Directional																				
Functional Sports Test																				
High Level Activities:	1	2	3	4	5	6	7	8	9	10	12	16	20	24						
Golf Progression	NWB																			
Outdoor biking, hiking, running																				
Return to Full Sport at 6-9 months post-op																				



## Quad Series:

- Quad sets (5 sec hold) also quick contractions (NMES to supplement)
- Prone quad sets
- SLR with no extension leg
- Progression of Quad Strengthening (WB exercises at 6 weeks)
  - LAQ in safe range -no added resistance to begin
  - Once weight bearing tandem stance TKE with 5 sec hold
  - Isometric wall sit
  - SLR with resistance
  - Step up progression
  - Squat progression
  - Leg press progression
  - Lunge progression

## Hamstring Series:

- Hamstring stretching (supine/prone)
- Hamstring set (heel dig)- contract hamstring with knee flexed pressing heel into the floor (5 sec hold)
- Hamstring curls
- Progress to resisted hamstring curl

## Sport Test Exercises:

- Goals: impact training and introduction of directional drills
- Double leg squat jumps
- Box jumps
- Speed skaters
- Double leg jumps for height and distance progress to single leg as tolerated
- Blaze pod change of direction drills

## Further Clarifications and Considerations:

- Double Knee Bends: feet shoulder width apart, bend knees to 30°, keeping knees behind the toes.
- Cord exercises (resistance band/cord): resisted double knee bends, resisted hamstring curls
- May begin to implement BFR as early as 1 week into post-op period



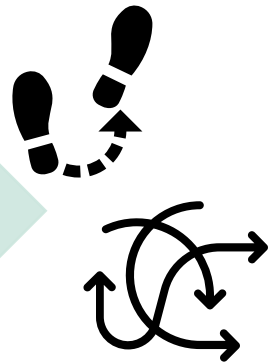
## Return to Running Criteria

- Trace effusion, flexion within 5 degrees of contralateral side
- LSI on anterior reach Y balance test  $\geq 90\%$
- LSI on quadriceps torque output on isometric measurement  $\geq 75\%$
- 12" SL squat tolerance
- Able to walk > 1 mile with no limping or pain
- Able to "hop" with UE assist on operative leg 5 times without pain or compensation
- SL balance with eyes closed 30 seconds without loss of balance



## Return to Agility/Change of Direction Criteria

- Return to running criteria listed above met
- No effusion
- Full ROM
- Quad LSI on isokinetic  $\geq 85\%$
- Hamstring LSI on isokinetic  $\geq 85\%$
- LSI on anterior reach Y-balance  $\geq 95\%$
- SL hopping pain-free and effusion free



## Return to Sport Criteria

- In order to test must demonstrate full AROM, no pain, no/trace effusion, 5/5 strength, negative lachman and pivot shift, LSI  $\geq 95\%$  hamstring curl and leg press
- Quadricep strength  $\geq 95\%$  of contralateral side (< 2cm of atrophy)
- Able to perform single leg squat with correct form
- LSI SL hop  $\geq 95\%$
- Y-Balance  $\geq 95\%$  (mean of 3 trials in anterior, posterolateral, posteromedial/100)
- Vertical jump test, single leg hop distance, and timed single leg hop over 20 -feet  $\geq 90\%$  of contralateral side

