



# PLC Reconstruction (+/- PCL 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 varus force to the knee
- \*\*If PCL reconstruction dynamic knee brace used for 6 months ROM 0-90° for weeks 0-2, then progress as tolerated. Emphasize maintenance of full extension
- \*\*If PCL reconstruction, perform ROM in prone position to avoid tension on PCL graft via posterior tibial glide from gravity
- \*\*If PCL reconstruction, NO active knee flexion and open chain hamstring isometrics x 8 weeks
- **ROM:**
  - Wall slides/supine heel slide with strap
  - Seated knee flexion with contralateral LE assist
  - \*\*If PCL reconstruction perform prone knee flexion PROM with strap
- **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 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

### 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



## 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
- **Proprioception and balance:**
  - Initiate balance training
- **Strengthening**
  - Closed chain functional exercise
  - Mini squat, Stepup, 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
- **Criterion to progress:**
  - Y-balance test >90%
  - 60 sec continuous SL squat to 60 deg 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



- Alter G initiated at 20 weeks for running
- Full body weight running at 24 weeks
- Sport specific dynamic exercises
- \*\*If PCL reconstruction, discharge dynamic brace if kneeling stress X-rays demonstrate less than 2mm of difference
- 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- prone with brace																					
Flexion/extension- seated/ calf-assisted or prone																					
Patella/Tendon mobilization																					
Quad Series	0° ISOs, SLR					60° ISOs				70-30° arc-resisted				Full arc resisted							
Hamstring Sets																					
Sit and Reach for Hamstrings (no hyperextension)																					
Ankle Pumps																					
Crutch weaning	NWB																				
SLR (w/ brace until quad control restored)																					
Toe and heel raises																					
Weight-bearing Strength Exercises:																					
Double Knee Bends	1	2	3	4	5	6	7	8	9	10	12	16	20	24							
Double Leg Bridges	NWB																				
Step up/Lunge Progression																					
Beginning cord exercises																					
Proprioception/Balance Training																					
Dead Lift (2 → 1)																					
Squat/Leg Press (ISO →reps, 2→1 leg)									0-45°									0-70° (70° Max on press)			
Sports Test Exercises																					
Cardiovascular Exercises:																					
Bike with both legs-no resistance	NWB																				
Bike with both legs- resistance																					
Aqua jogging																					
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:																					
Running Progression*	1	2	3	4	5	6	7	8	9	10	12	16	20	24							
Initial-Single Plane	NWB																				
Advance-Multi Directional																					
Functional Sports Test																					
High Level Activities:																					
Golf Progression	1	2	3	4	5	6	7	8	9	10	12	16	20	24							
Outdoor biking, hiking, running	NWB																				
Return to Full Sport at 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

- May begin to implement BFR as early as 1 week into post-op period
- Functional Sports Test: Baseline completed at 7 months post-op with subsequent test at 9 months



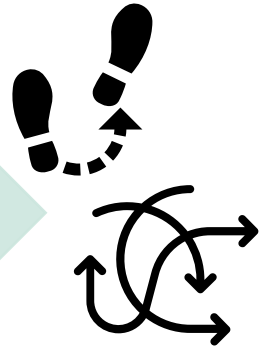
## Return to Running Criteria

- 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

