



# LPFL Reconstruction

## Post-Operative Rehabilitation Protocol

### 0-2 weeks

- WBAT
- Brace locked at 0 degrees for ambulation and sleeping
- ROM: 0-30° with emphasis on full extension
- SLR supine with brace locked at 0 degrees
- Quad Sets with brace locked at 0 degrees
- Ankle Pumps

### 2-4 weeks

- WBAT
- Brace locked at 30 degrees for ambulation and sleeping
- ROM: 0-60 degrees (Maintain full extension)
- Proprioception training
- SLR, quad sets, ankle pumps

### 4-6 weeks

- WBAT
- Brace locked at 60 degrees for ambulation and sleeping
- ROM: 0-90 degrees (maintain full extension)

### 6-14 weeks

- Discontinue brace once good quad control
- Progressive Squat program
- Initiate Step Down program
- Leg Press, Lunges
- Isotonic Knee Extensions (90-40 degrees, closed chain preferred)
- Agility exercises (sport cord)
- Versaclimber/Nordic Track
- Retrograde treadmill ambulation

### 22 weeks

- Advance plyometric program
- Return to sport (MD directed)

### Weight Bearing Status

WBAT

### Brace Settings

*(sleeping and ambulating)*

Week 0-2

Locked at 0°

Week 2-4

Locked at 0-30°

Week 4-6

Locked at 0-60°

### ROM Restrictions

Week 0-2

0-30°

Week 2-4

0-60°

Week 4-6

0-90°



Exercise	Week														
	1	2	3	4	5	6	7	8	9	10	12	16	20	24	
<b>Initial Exercises:</b>															
ROM Goals	0-30°			0-60°			0-90°			Progress to full					
Flexion/extension, heel slides	[Green bar]														
Flexion/extension- seated	[Green bar]														
Patella/Tendon mobilization	[Green bar]														
Quad Series	[Green bar]														
Hamstring Sets	[Green bar]														
Sit and Reach for Hamstrings	[Green bar]														
Ankle Pumps	[Green bar]														
Crutch weaning	WBAT [Green bar]														
Heel prop knee extension stretch	[Green bar]														
SLR (w/ brace until quad control restored)	[Green bar]														
Toe and Heel Raises	[Green bar]														
Balance Series	[Green bar]														
<b>Weight-bearing Strength Exercises:</b>															
Double Knee Bends	[Green bar]														
Double Leg Bridges	[Green bar]														
Reverse Lunge, static holds	[Green bar]														
Beginning cord exercises	[Green bar]														
Dead Lift (2 →1 leg)	[Green bar]														
Squat/Leg press (ISO →reps, 2 → 1 leg)	[Green bar]														
Sports Test Exercises	[Green bar]														
<b>Cardiovascular Exercises:</b>															
Bike with both legs-no resistance	[Green bar]														
Bike with both legs- resistance	[Green bar]														
Aqua jogging	[Green bar]														
Treadmill-walking 7% incline	[Green bar]														
Swimming with fins-light flutter kick	[Green bar]														
Elliptical Trainer	[Green bar]														
Rowing	[Green bar]														
Stair stepper	[Green bar]														
<b>Agility Exercises:</b>															
Running Progression	[Green bar]														
Initial-Single Plane	[Green bar]														
Advance-Multi Directional	[Green bar]														
Functional Sports Test	[Green bar]														
<b>High Level Activities:</b>															
Golf Progression	[Green bar]														
Outdoor biking, hiking, running	[Green bar]														
Return to Sport	[Green bar]														

Adapted from post-operative protocol created by Howard Head Physical Therapy, Jill Monson, PT, OCS and Jon Schoenecker, PT, OCS, CSCS



## 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
  - 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



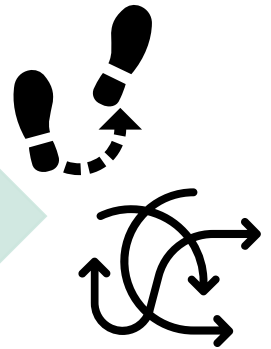
## Return to Running Criteria

- 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

