

DR. JOHN AWOWALE
MEDIAL PATELLOFEMORAL LIGAMENT RECONSTRUCTION POST-OP THERAPY PROTOCOL

Phase 1 – Maximum Protection Phase (0-6 weeks)
(continued on next page)

Goals for Phase 1	Precautions for Phase 1
<ul style="list-style-type: none"> • Protect integrity of repair • Minimize pain, inflammation, and swelling • ROM 0-90, emphasis on extension • Encourage quadriceps function • Prevent muscle atrophy • Scar tissue mobility 	<ul style="list-style-type: none"> • No patellar mobility with lateral glides • Avoid AAROM knee extension with significant quad atrophy or cartilage injury

Immobilization/Weight Bearing

- 0-2 weeks: 50% weight bearing with bilateral crutches
- 2-4 weeks: gradually progress full weight bearing with brace and crutches on even surfaces

Range of Motion

- 0-6 weeks: 0-90°, emphasis on extension
- PROM and AAROM: flexion and extension
- 0-90° with no forced flexion

Brace

- **0-4 weeks:** 0-90 degrees
 - Leave brace unlocked at all times following resolve of nerve block
 - Brace may be removed for hygiene and therapy
 - Avoid ambulation without brace for first 4 weeks
- Progression of opening brace is dependent controlled pain, appropriate quad strength, and controlled effusion

Manual Therapy

- Scar massage
- Gentle flexibility using deep tissue mobilization or the “Stick” – hamstring, quadriceps, gastrocsoleus, ITB
- PROM/AROM knee flexion per ROM guidelines listed above

Strengthening

- Stationary bike: Weeks 4-6 for ROM <90° of knee flexion
- Quadriceps strengthening (NMES for recruitment as appropriate)
- Quad sets, quadriceps isometrics
- Prone TKE
- Hip strengthening
- Gluteal sets, multi-plane open kinetic chain SLR, brace on if quad lag is present
- Hamstring activation; heel slides, hamstring sets, bridges
- Plantarflexion strengthening and ankle pumps
- Core strengthening
- Balance and proprioception as tolerated
- Upper body ergometer



Phase 1 – Maximum Protection Phase (0-6 weeks)

Modalities

- Vasopneumatic compression for edema management 2-3x/week
- Cryotherapy, 3 x per day for 20 minutes each with knee elevated above heart
- NMES for quadriceps function
- Home NMES unit with or without a garment to be issued for first 8 weeks following surgery, per physician and therapist discretion
- NMES to be used at home, 3 x a day for 20 minutes each time

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Phase 2 – Moderate Protection Phase (7-10 weeks)
(continued on next page)

Goals for Phase 2	Precautions for Phase 2
<ul style="list-style-type: none"> • Minimize pain, inflammation, and swelling • Full knee ROM • Pain-free arc of motion • Good patellar mobility • Good quad contraction • Normalize gait with heel-toe pattern • Discharge knee brace • Restore normal, Pain-free activities of daily living 	<ul style="list-style-type: none"> • Consider other procedures that may further limit progression • Prevent quadriceps avoidance; promote full knee extension during gait

Immobilization/Weight Bearing

- FWB

Range of Motion

- **6-8 weeks:** 0-110°
- **8-10 weeks:** 0-120°
- **10+ weeks:** Restore full range of motion

Brace

- Weaning from brace is dependent on controlled pain, appropriate quad strength, and controlled effusion

Manual Therapy

- Gentle flexibility – hamstring, quad, gastrocnemius, ITB

Strengthening

- Stationary bike for ROM
- Progress seat height and resistance as tolerated
- Progress quadriceps strengthening
- Mini squats, leg press, side planks
- 4-way hip strengthening, hip extension with knee flexion
- Step-ups, bridging, calf raises

Aquatics/Normalize Gait

- Initiate aquatic therapy program
- Underwater treadmill
- Anti-gravity treadmill for gait
- Low grade elevation and retro walking
- Gait training: heel to gait pattern

Neuromuscular Control

- Proprioception training and core strengthening
- Double limb support on progressively challenging surfaces
- Single limb support on level surface only when able to perform with good alignment, stability and control



Phase 2 – Moderate Protection Phase (7-10 weeks)

Modalities

- Vasopneumatic compression for edema management 2x/week
- Cryotherapy, 2 x per day for 20 minutes each with knee elevated above heart
- NMES for quadriceps function if quad lag present with SLR

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Phase 3 – Advanced Strengthening and Plyometrics (11-18+ weeks)
(continued on next page)

<p>Goals for Phase 3</p> <ul style="list-style-type: none"> • Pain-free ADL's and pre- operative activity level • Full knee ROM • Normal gait on unlevel surfaces • Uncompensated stair negotiation • Good single limb dynamic balance • Initiate running and plyometrics (bilateral) • Achieve optimal patellar tracking during squatting and jumping in place 	<p>Precautions for Phase 3</p> <ul style="list-style-type: none"> • Avoid symptom provocation • Correct gait deviations, ROM limitations or impaired patellar tracking
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Immobilization/Weight Bearing

- Full without restriction

Range of Motion

- Maintain full ROM

Manual Therapy

- As needed to maintain pain-free motion and flexibility

Strengthening

- Stationary bike or elliptical for warm-up
- Bilateral gym strengthening with progression to unilateral as able; static to dynamic
- Leg press, step ups, side-stepping, calf raises
- Single leg squat
- Multidirectional lunges
- Core strengthening

Aquatics/Normalize Gait

- Swimming and advanced gait
- Promote cross training
- Initiate running progression (late phase)
- Initiate bilateral plyometric program at 12 weeks if demonstrating <20% side to side strength deficit, single leg balance >30 seconds, able to complete a 12" lateral step down with good form, no pain or swelling, and evidence of good eccentric quadriceps control
- Submaximal body-weight exercise (pool, GTS, plyo-press, Alter G)

Neuromuscular Control

- Advanced proprioception from double to single limb activities on unstable surfaces, different planes of motion and with dual tasking
- Address muscle imbalances

Modalities

- Cryotherapy after activity



Phase 3 – Advanced Strengthening and Plyometrics (11-18+ weeks)

Testing to Advance to Phase 4 of Protocol

- Functional strength testing to be scheduled before 12-week follow-up with physician
- Criteria:
 - Y-Balance testing within 6 cm of involved LE
 - Isometric quadriceps testing (<25% difference)
 - Single leg squat without display of knee valgus

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Phase 4 – Advanced Function and Return to Sport (19-24 weeks)

<p>Goals for Phase 4</p> <ul style="list-style-type: none"> • Pain free • Lack of apprehension with sport specific movements • Meet individualized sport specific demands including cardiovascular fitness • Demonstrate optimal patellar tracking with lower extremity alignment during jumping and single leg squats • 85% limb symmetry index at 180°/sec and 300°/sec 	<p>Precautions for Phase 4</p> <ul style="list-style-type: none"> • Pain with therapeutic exercise or pre-operative daily activities • Inadequate strength, ROM, flexibility and overall • Fitness with return to sport
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Manual Therapy

- Restore flexibility – hamstring, quad, gastrocsoleus, ITB
- As needed to maintain pain-free motion and flexibility

Strengthening

- Continue cross training, stationary bike or elliptical
- Continue to advance lower extremity strengthening

Neuromuscular Control

- Advanced plyometric program with evidence of good eccentric quadriceps control
- Vertical jumping progression: jump down
- Horizontal jumping progression: broad jump, single leg landings
- Progress running program
- Cutting, deceleration, change speed/direction with evidence of dynamic single limb stability
- Continue to address muscle imbalances in multiplane, sport-specific tasks on variable surfaces with progression of dual tasking

Modalities

- Cryotherapy after activity

Return to Function Testing

- Medical clearance by surgeon
- Criteria:
 - Isokinetic test at 60°/sec: >90% limb symmetry index
 - Demonstrate symmetry, quality, and alignment during selected movement patterns
 - Lack of apprehension
 - Hop test > 90% limb symmetry
 - Demonstrate quality of movement with required sports specific activities