

Post-operative Rehabilitation Protocol

Medial Patellofemoral Ligament (MPFL) Reconstruction / Tibial Tubercle Osteotomy (TTO) / Trochleoplasty

Phase 1 (0-6 weeks post op):

Goals	<ul style="list-style-type: none"> • Protect Repair • Control post-operative pain, inflammation, and swelling • Prevent muscle atrophy – regain active quadriceps contraction • Emphasis on compliance to HEP and WB precautions/restrictions
Brace/Precautions/ Crutch Use	<ul style="list-style-type: none"> • Weight bearing: <ul style="list-style-type: none"> ○ 0-6 weeks: 50% WB – avoid full WB for first 6 weeks • Brace: 0-2 weeks: 0-70°, 2-4 weeks: 0-90°, unlock brace after week 4 <ul style="list-style-type: none"> ○ Brace may be removed for hygiene, therapy, sleeping, and while sitting ○ Avoid ambulation without brace for first 6 weeks • Avoid lateralization of patella • Avoid AAROM knee extension with significant quad atrophy, and articular cartilage injury • Follow ROM guidelines per surgeon’s suggestion
Range of Motion	<ul style="list-style-type: none"> • Active assisted and passive knee flexion and knee extension ROM <ul style="list-style-type: none"> ○ 0-90° with no forced flexion • 0-2 weeks: 0-70° in brace • 2-4 weeks: 0-90° in brace • 4-6 weeks: unlock brace
Strengthening	<ul style="list-style-type: none"> • Restore quadriceps recruitment through strengthening exercises • Hip progressive resistive exercises: pain-free SLR with brace if lag is present • Distal strengthening
Home Instructions	<ul style="list-style-type: none"> • Keep surgical dressings clean and dry • Change surgical bandages on the 2nd day after surgery (keep covered until first clinic visit) • Avoid getting sutures wet until at least 5 days after surgery (do not scrub, soak, or submerge the incisions) • Note DVT (blood clot) prophylaxis medications provided by your surgeon to take following surgery – follow those instructions carefully
Suggested Exercises	<ul style="list-style-type: none"> • Ankle pumps • Quad sets (consider NMES for poor quad sets) • Glute Sets • SLR – 4 way • Hamstring activation – Heel slides (out of brace, up to 15 degrees beyond the brace setting at each time point), hamstring sets, bridges

Phase 2 (7-10 weeks post op):

Goals	<ul style="list-style-type: none"> • Control pain and inflammation • Promote healing • Achieve normal knee ROM • Good patella mobility • Good quad contraction
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	<ul style="list-style-type: none"> • Progress to achieve normal gait mechanics • Pain-free ADLs and pain-free arc of motion in therapy
Brace/Precautions/ Crutch Use	<ul style="list-style-type: none"> • Be aware of concomitant procedures and restrictions they pose to rehabilitation (tibial tubercle transfer or articular cartilage procedure) • Avoid lateralization of the patella • Normalize gait pattern with fully extended knee in an effort to fight quadriceps avoidance
Range of Motion	<ul style="list-style-type: none"> • Knee extension: full PROM and AAROM to full knee extension (if no cartilage injury) • Knee flexion: (achieve in seated position and with supine wall slides) <ul style="list-style-type: none"> ○ Limit ROM 0°-110° (until 8 weeks) ○ 0°-120° by 10 weeks ○ 0°- full flexion 10+ weeks
Strengthening	<ul style="list-style-type: none"> • Progress quadriceps strengthening • Advance proximal strength and core training • Initiate balance and proprioceptive training
Home Instructions	<ul style="list-style-type: none"> • Restore normal activities of daily living
Suggested Exercises	<ul style="list-style-type: none"> • Continue Phase 1 exercises as appropriate • Gait training: heel toe gait pattern [with adequate quad control (SLR without a lag, ability to achieve terminal knee extension) and knee ROM] to ensure normal loading response • Underwater treadmill (adequate wound healing) or anti-gravity treadmill for gait: Low grade elevation or retro-walking • Progress pain-free arc of motion, close chain preferred • Leg press – monitor arc of motion (bilateral, eccentric) • Initiate forward step up (FSU) progression, 6" step with adequate strength • Stationary Bike – progress short crank to standard crank as ROM allows (115° flexion while sitting) • Hip extension with knee flexion, side planks, bridge • Initiate and proprioceptive training: double limb support on progressively challenging surfaces to single limb support on level surface only with demonstration of good alignment, stability and control

Phase 3 (11-18+ weeks):

Goals	<ul style="list-style-type: none"> • Pain-free with ADLs, therapeutic exercise • Maintain normal knee ROM • Maintain normal gait on level surfaces and stairs • Good single limb dynamic balance • Initiate running program, plyometrics (bilateral) • Achieve patellar tracking symmetry and alignment during movements such as squatting and jumping in place
Precautions	<ul style="list-style-type: none"> • Avoid symptom provocation • Correct any gait deviations in ROM or patellar tracking
Range of Motion	<ul style="list-style-type: none"> • Maintain full ROM by 12 weeks
Strengthening	<ul style="list-style-type: none"> • Advance proximal strength through functional activities • Balance progression with postural alignment and N-M control
Home Instructions	<ul style="list-style-type: none"> • Restore normal activities of daily living • Restore pre-operative activity level
Suggested Exercises	<ul style="list-style-type: none"> • Balance progression with postural alignment and N-M control (static to dynamic, introduce different planes of motion, challenging surfaces) • Gait training with emphasis on heel-toe gait pattern on loading response • Address muscle imbalances based on evaluation • Promote cross training: elliptical, stationary bike, swimming • Initiate running progression (late phase)

	<ul style="list-style-type: none"> • Initiate bilateral leg plyometric program with MD clearance and evidence of good eccentric quadriceps control
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Phase IV: Advanced Strengthening and Function (19-24 weeks post-op)

Goals	<ul style="list-style-type: none"> • Lack of pain, apprehension with sport specific movements • Maximize strength and flexibility as to meet demands of individual's sport activity • Demonstrate patellar tracking symmetry and alignment through movement patterns such as jumping and single leg squats • If isokinetic testing available, aim for 85% limb symmetry index (LSI) at 180° / sec and 300°/ sec • Cardiovascular fitness to meet demands of sport
Precautions	<ul style="list-style-type: none"> • Pain with therapeutic exercise & functional activities • Inadequate strength, functional strength, ROM, flexibility, fitness when returning to sport
Range of Motion	<ul style="list-style-type: none"> • Maintain full ROM
Strengthening	<ul style="list-style-type: none"> • Continue to advance LE strengthening, flexibility, dynamic single limb stability & agility programs • Advance core stability and strength
Home Instructions	<ul style="list-style-type: none"> • Maintain normal activities of daily living
Suggested Exercises	<ul style="list-style-type: none"> • Continue to advance LE strengthening, flexibility, dynamic single limb stability & agility programs • Address muscle imbalances – evaluation-based • Advance core stability • Continue cross training • Advance plyometric program with MD clearance and evidence of good eccentric quadriceps control <ul style="list-style-type: none"> ○ Vertical jumping progression: Jump down ○ Horizontal jumping progression: Broad jump, single leg landings ○ Progress running program ○ Cutting, deceleration, change of direction with MD clearance and dynamic single limb stability

CRITERIA FOR DISCHARGE/ RETURN TO SPORT:

- If available - Isokinetic test at 180°/ sec and 300°/ sec: 85% limb symmetry index (LSI)
- Demonstrate symmetry, quality, and alignment during selected movement patterns
- Medical clearance by surgeon for return to play progression
- Lack of apprehension with sport specific movements
- Hop Test > 85% limb symmetry
- Demonstrate quality of movement with required sports specific activities