SANFORD
ORTHOPEDICS
SPORTS MEDICINE

MPFL Reconstruction Rehabilitation Guideline

This rehabilitation program is designed to return the individual to their activities as quickly and safely as possible. It is designed for rehabilitation following Medial Patellofemoral Ligament (MPFL) reconstruction. Modifications to this guideline may be necessary dependent on physician specific instruction, concomitant injuries or procedures performed. This evidence-based MPFL reconstruction rehabilitation protocol is criterion-based; time frames and visits in each phase will vary depending on many factors- including patient demographics, goals, and individual progress. This guideline is designed to progress the individual through rehabilitation to full sport/ activity participation. The therapist may modify the program appropriately depending on the individual's goals for activity following MPFL reconstruction.

This guideline is intended to provide the treating clinician a frame of reference for rehabilitation. It is not intended to substitute clinical judgment regarding the patient's post-operative care based on exam/treatment findings, individual progress, and/or the presence of concomitant procedures or post-operative complications. If the clinician should have questions regarding post-operative progression, they should contact the referring physician.

General Guidelines/ Precautions:

- Therapist will monitor pain and swelling and adjust program appropriately
- Weight bearing will begin immediately in brace locked in full extension unless restricted by concomitant procedure
- Early emphasis is on restoring full ROM (within 12 weeks) and improving quad and gluteal strength while preventing stress to the healing tissue (preventing hip medial rotation and knee valgus stress).
- No impact activities until full ROM, no swelling, adequate healing and strength, proper biomechanics are demonstrated through appropriate functional progression (minimum of 12 weeks)
- Progression to running program at 12-16 weeks based on physician preference, when able to demonstrate sufficient symmetry and shock absorption with running mechanics and level 1 testing activities
- Level 1 Return to Play testing (see appendix) considered at 16 weeks post-op with physician clearance
- Level 2 Return to Play testing (see appendix) at 4-6 months post-op
- Return to full sport activities when able to complete Level 2 Return to Play testing at game speed with sufficient biomechanics (45/50 score), confidence in limb, and/or release by physician.

MPFL Reconstruction Rehabilitation Guideline (4-6 months depending on patient goals and progress)

Phase	Suggested Interventions	Goals/ Milestones for Progression
Phase I *Patient Education Phase*	*Discuss:* Anatomy, existing pathology, post-op rehab schedule, bracing, and expected progressions *Immediate Post-Operative instructions*: • Weight bearing in brace only, locked in full extension • HEP as instructed by physician post operatively • Care of incision sites	*Goals of Phase:* 1. Understand surgical procedure and immediate post-operative restrictions.
Phase II *Maximum Protection Phase* Weeks 0-3 Expected visits: 0-1	*Specific Instructions:* -Knee flexion 0-30/45 depending on MD preference -Weight bearing in locked brace (full extension) *Suggested Treatments:* Modalities as indicated: Edema controlling treatments ROM: None. *Exercise Examples:* -Ankle pumps -Heelcord stretching -Hamstring stretching	*Goals of Phase:* 1. Provide environment of proper healing of repair site 2. Prevention of post-operative complications *Criteria to Advance to Next Phase:* 1. Control of post-operative pain (0-1/10 with ADL's in brace) 2. Resolution of post-operative effusion (trace to 1+) 3. Restoration of full extension (compared to contralateral side)
Phase III *Protected Motion Phase* Weeks 3-6 Expected visits: 4-9	*Specific Instructions:* -Formal therapy begins -Continue with previous exercise program -Continue weight bearing in locked brace (full extension) -No biking *Suggested Treatments:* Modalities Indicated: -Edema controlling treatments, compression (donut) pad for edema control ROM: 0-90 degrees *(No active knee extension through ROM)* *Manual Therapy:* Patella mobilizations in superior, inferior, medial directions *Exercise Examples:* -Quad sets with NMES as needed -Submaximal (pain-free) isometric knee extension (multi-angle) -Prone hamstring curls in available ROM (0-40 degrees) -SLR in sagittal and frontal planes, can also start in standing or reclined position -Clamshells, Fire Hydrants -Standing heel raises -Single leg proprioception training in locked brace -Mat based trunk stabilization program for core strength (no planks)	*Goals of Phase:* 1. Prevention of contractures through gentle protected motion (symmetrical hyper-extension to 90 degrees flexion) 2. Reduction of post-operative swelling and inflammation (no to trace effusion) 3. Re-education and initiation of quad control with active SLR without extension lag 4. Improved proximal strength (core and gluteal strength 4-/5 or greater) *Criteria to Advance to Next Phase:* 1. Independent straight leg raise with no pain 2. Full hyperextension (compared bilaterally) to 90 degrees of flexion 3. Trace swelling 4. No pain

Phase IV *Motion and Muscle Activation Phase* Weeks 6-12 Expected visits: 9-21	*Specific Instructions:* -Continue previous hip and quad strengthening exercises -Weight Bearing: *Suggested Treatments:* Modalities: NMES as needed ROM: Progression of ROM program – (Bike for ROM only) *Exercise Examples:* Walking program, bike -Continue previous hip and quad strengthening exercises -Progression of ROM program (ROM on bike as appropriate with bracing) -Open chain knee extension (SAQ 0-60 degrees). Avoid anterior knee pain. -Bridge progression for hamstring and gluteals -Static proprioception training (double to single leg) with perturbation and variable surfaces (airex pads, air discs, etc) with emphasis on preventing/controlling rotary stress at knee. -Limited depth closed chain quad strengthening (0-60 degrees) avoiding rotation stress at knee. Includes: Forward step ups Low weight leg press Mini-squats (>45° double leg, single or staggered squats <45°) -Plank progression for core strength and stabilization	*Goals of Phase:* 1. Restoration of full pain-free PROM/AROM 2. Improve muscular strength and endurance 3. Control of forces on extensor mechanism 4. Normalized level ground ambulation 5. Proper application and fit of patella stabilization bracing) 6. Normalized single leg static balance with proper proximal control (no valgus and hip medial rotation) *Criteria to Advance to Next Phase:* 1. Full ROM 2. Normal walking with functional brace 3. 8” lateral step down with good control
Phase V *Advanced strengthening and eccentric control phase* Weeks 12-16 Expected visits: 22-30	*Specific Instructions:* Continue previous exercises *Suggested Treatments:* ROM: Progression of closed and open chain quad strengthening (0-90 degrees) *Exercise Examples:* -Progression of closed and open chain quad strengthening (0-90 degrees) Squat progressions Lateral dips Forward step downs Multi-plane lunges -Progression to single leg strength training as strength and control allows -Non-impact cardiovascular training Elliptical Stairmaster Treadmill walking -Aquatic running/agilities	*Goals of Phase:* 1. Normal Pain-free ADL’s without incidents of patella instability 2. Improved quad strength (80% of contralateral limb) 3. Normalized hip and hamstring strength 4. Proper biomechanics and control with forward step down 5. Improved single leg proprioception (80% or greater on anterior and posterior lateral reach of Y Balance test) *Criteria to Advance to Next Phase:* 1. Quad strength 80% of the opposite limb on isometrics testing with hand held dynamometry or biodex. 2. Y balance within 80% of opposite limb 3. Comparable and adequate hip and hamstring strength compared bilaterally

Phase VI *Advanced Movement and Impact Phase* Weeks 16-24 Expected Visits: 30-34	*Specific Instructions:* Progression to running program (with appropriate bracing) with training to improve/normalize form and shock absorption (as cleared by MD) Progression of open and closed chain strengthening for the entire LE chain with emphasis on single limb strengthening Progression of strengthening program to include multiple plane movements as control allows Progression of sport specific functional skills as control and pain allow including: Lateral shuffling Drop jumping Deceleration Hopping Cutting *Exercise Examples:* -Initiating double limb jump training (around 4 months) -Initiate deceleration and single leg hopping (around 5 months) -Initiate cutting activities (around 5 months) -Initiate agility (floor ladder and cone drills) and sport specific activities (around 5 months)	***Suggested Criteria for Discharge:*** 1. <10% strength deficit in quads and gluteals 2. Functional hop tests and Y balance tests at least 90% of contralateral limb. 3. 45/50 on Biomechanical functional assessment tests 4. No pain or complaints of instability with functional progression of sport specific skills 5. Progress to isokinetics around 6 months

**NOTE: Progression of functional activities should be performed only as pain and proper biomechanics allow. Emphasis should be on proper shock absorption and control of dynamic valgus stress at knee (hip medial rotation with knee valgus) with each task performed. Progression to single limb based tasks (deceleration, hopping, and cutting) should not be performed until double limb activities have been mastered. Activities requiring dynamic control of rotational stress at the knee (cutting, multiple plane lunges/jumps/hops) should not be performed until sagittal and frontal plane control has been mastered. Return to sport may occur at any time during this stage as cleared by physician and as progress and goal achievement occurs.

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