



**Rehabilitation Protocol:
Medial Patellofemoral Ligament
(MPFL)
Reconstruction**

Department of Orthopaedic Surgery

Lahey Hospital & Medical Center, Burlington 781-744-8650

Lahey Outpatient Center, Lexington 781-372-7020

Lahey Medical Center, Peabody 978-538-4267

Department of Rehabilitation Services

Lahey Hospital & Medical Center, Burlington 781-744-8645

Lahey Hospital & Medical Center, Wall Street, Burlington 781-744-
8617

Lahey Danvers 978-739-7400

Lahey Outpatient Center, Lexington 781-372-7060

◀ Overview

Patellar stabilization is achieved by several factors. Bony anatomy such as patellar alignment in the femoral groove, as well as ligamentous and muscular structures, maintain patellar position in the trochlear groove throughout knee flexion and extension. The medial patellofemoral ligament (MPFL), a continuation of the Vastus Medialis Oblique (VMO) muscle fibers, extends from the superior inner side of the patella to the medial femur and helps prevent lateral displacement of the patella during the first 20°-30° of knee flexion.

Post-operative pain from MPFL reconstruction surgery can greatly impeded muscle active control, particularly of the quadriceps musculature. This pain also interferes with progression of range of motion, resulting in post-operative stiffness. It is necessary to address these matters early in rehabilitation to prevent stiffness and scarring. Early range of motion is effective in decreasing pain, preventing scar tissue formation and enabling healthy development of cartilage.¹

An effective rehabilitation program is critical to a successful outcome after MPFL reconstruction surgery. Rehab goals should focus initially on healing, range of motion and mobility, with an early goal of regaining full knee extension.¹ In order to attain full active knee extension quadriceps strengthening must be addressed. Manual patellar glides also aid in reestablishing normal patellar mobility.

The patient's knee will be braced for weight bearing activity for 4-6 weeks post op or until sufficient lower extremity control is achieved to allow for ambulation with an unlocked brace. As full quadriceps strength is regained full weight bearing is permitted.¹ After early stages of pain control and range of motion are achieved, strengthening and neuromuscular control should be emphasized through the entire leg and core. Dynamic control of the lower extremity with sport specific movements should be addressed in the final stages of rehabilitation.

¹ Fithian, DC, Powers, CM, Khan, N. Rehabilitation of the Knee After Medial Patellofemoral Ligament Reconstruction. Clin Sport Med 2010; 29: 283-290

◀ Phase I Protective Phase 1–2 Weeks

Goals

- Protection of the post-surgical knee
- Restore normal knee range of motion
- Normalize gait
- Eliminate effusion
- Restore leg control

Precautions

- Brace locked in extension for gait and activities of daily living. May unlock brace when sitting
- Use axillary crutches for normal gait weight bearing as tolerated. Range of motion limitations 0°- 90° with seated range of motion or continuous passive motion or assisted wall slides in supine
- Avoid active extension
- No driving

Exercises:

- Quadriceps sets
- Four way leg lifts with brace on in supine for hip strength
- Ankle pumps
- Ankle isotonic with exercise band
- Begin pool walking at 4 weeks

Criteria to progress to next phase:

- Safe gait with crutches and with brace unlocked
- No effusion
- 0° to 90° knee range of motion

◀ Phase II – Intermediate Phase

Weeks 2 – 6

Goals

- Single leg stand control
- Good control and no pain with short arc functional movements, including steps and partial squat
- Good quadriceps control

Precautions

- Avoid over-stressing fixation by beginning close chain movements in a shallow arc of motion and using un-weighting techniques (pool)
- Avoid post-activity swelling
- Discontinue brace when patient has good single leg stand control and good quadriceps control

Exercise

- Gait drills (begin with pool)
- Functional single plane closed chain movements (begin with pool)
- Continued gradual progression of Range of motion
- Balance and proprioception exercises

Criteria to progress to next phase:

- Patients may progress to Phase III if they have met the above stated goals and have
- Normal gait on level surfaces
- Good leg control without extensor lag, pain or apprehension
- Single leg balance greater than 15 seconds

◀ Phase III

Week 6 – 12

Goals

- Normal gait without crutches
- No effusion
- Improve quadriceps strength
- Improve proximal hip and core strength
- Improve balance and proprioception

Precautions

- Avoid closed chain exercises on land past 90 of knee flexion to avoid overstressing the repaired tissues and increased PF forces
- Avoid post-activity swelling

Exercise

- Continue range of motion exercises and stationary bike
- Closed chain strengthening begin with single plane progress to multi-plane
- Single leg press
- Balance and proprioception exercises; single leg stand, balance board
- Hip and core strengthening.
- Stretching for patient specific muscle imbalances

Criteria to progress to next phase:

- Patients may progress to Phase IV if they have met the above stated goals and have normal gait without crutches
- Full Range of motion
- No effusion
- No patellar apprehension
- Single leg balance with 30 knee flexion greater than 15 seconds
- Good control and no pain with squats and lunges

◀ Phase IV

Week 12 – ON

Goals

- Good eccentric and concentric multi-plane dynamic neuromuscular control (including impact) to allow for return to work/sports

Precautions

- Post-activity soreness should resolve within 24 hours
- Avoid post-activity swelling.

Exercise

- Impact control exercises beginning 2 feet to 2 feet, progressing from 1 foot to other and then 1 foot to same foot
- Movement control exercise beginning with low velocity, single plane activities and progressing to higher velocity, multi-plane activities
- Sport/work specific balance and proprioceptive drills
- Hip and core strengthening
- Stretching for patient specific muscle imbalances

Return to Sport/Work Criteria:

- Dynamic neuromuscular control with multi-plane activities, without pain, instability or swelling
- Physician and rehabilitation specialist approval

Interval sports programs can begin per MD

AAROM = active-assisted range of motion, ADL = activity of daily living, AROM = active range of motion,

PROM = passive range of motion, ROM= Range of Motion

Rehabilitation Protocol for MPFL

Rehabilitation Guidelines: Summary Table

Post –op Phase/Goals	Therapeutic Exercise	Precautions
<p>Phase I 1 - 2 weeks after surgery</p> <p>Goals:</p> <ul style="list-style-type: none"> • Protection of the post-surgical knee • Restore normal knee range of motion • Normalize gait • Eliminate effusion • Restore leg control 	<ul style="list-style-type: none"> • Quadriceps sets • Four way leg lifts with brace on in supine for hip strength • Ankle pumps • Ankle isotonic with exercise band • Begin pool walking at 4 weeks <p><u>Criteria to progress to next phase:</u></p> <ul style="list-style-type: none"> • Safe gait with crutches and with brace unlocked • No effusion • 0° to 90° knee range of motion 	<p>Brace locked in extension for gait and activities of daily living. May unlock brace when sitting</p> <p>Use axillary crutches for normal gait weight bearing as tolerated</p> <p>Range of motion limitations 0°- 90° with seated range of motion or continuous passive motion or assisted wall slides in supine.</p> <p>Avoid active extension</p> <p>No driving</p>
<p>Phase II 2 - 6</p> <p>Goals:</p> <ul style="list-style-type: none"> • Single leg stand control • Good control and no pain with short arc functional movements, including steps and partial squat • Good quadriceps control 	<p><u>Therapeutic Exercise</u></p> <ul style="list-style-type: none"> • Gait drills (begin with pool) • Functional single plane closed chain movements (begin with pool) • Continued gradual progression of Range of motion • Balance and proprioception exercises <p><u>Criteria to progress to next phase:</u></p> <ul style="list-style-type: none"> • Patients may progress to Phase III if they have met the above stated goals and have • Normal gait on level surfaces • Good leg control without extensor lag, pain or apprehension • Single leg balance greater than 15 seconds 	<ul style="list-style-type: none"> • Avoid over-stressing fixation by beginning close chain movements in a shallow arc of motion and using un-weighting techniques (pool) • Avoid post-activity swelling • Discontinue brace when patient has good single leg stand control and good quadriceps control

<p>Phase III 6 – 12 Goals:</p> <ul style="list-style-type: none"> • Normal gait without crutches • No effusion • Improve quadriceps strength • Improve proximal hip and core strength • Improve balance and proprioception 	<p>Exercise</p> <ul style="list-style-type: none"> • Continue range of motion exercises and stationary bike • Closed chain strengthening begin with single plane progress to multi-plane • Single leg press • Balance and proprioception exercises; single leg stand, balance board • Hip and core strengthening. • Stretching for patient specific muscle imbalances <p><u>Criteria to progress to next phase:</u></p> <ul style="list-style-type: none"> • Patients may progress to Phase IV if they have met the above stated goals and have normal gait without crutches • Full Range of motion • No effusion • No patellar apprehension • Single leg balance with 30 knee flexion greater than 15 seconds • Good control and no pain with squats and lunges 	<ul style="list-style-type: none"> • Avoid closed chain exercises on land past 90° of knee flexion to avoid overstressing the repaired tissues and increased PF forces • Avoid post-activity swelling
---	--	---

<p>◀ Phase IV Week 12 – ON <i>Goals</i> Good eccentric and concentric multi-plane dynamic neuromuscular control (including impact) to allow for return to work/sports</p>	<p>Therapeutic Exercise</p> <ul style="list-style-type: none"> • Impact control exercises beginning 2 feet to 2 feet, progressing from 1 foot to other and then 1 foot to same foot • Movement control exercise beginning with low velocity, single plane activities and progressing to higher velocity, multi-plane activities • Sport/work specific balance and proprioceptive drills • Hip and core strengthening • Stretching for patient specific muscle imbalances <p><u>Return to Sport/Work Criteria:</u></p> <ul style="list-style-type: none"> • Dynamic neuromuscular control with multi-plane activities, without pain, instability or swelling • Physician and rehabilitation specialist approval <p>Interval sports programs can begin per MD</p>	<ul style="list-style-type: none"> • Post-activity soreness should resolve within 24 hours • Avoid post-activity swelling.
--	---	--