Endeavor Health
Orthopaedic & Spine Institute

JOSEPH D. LAMPLOT, M.D.
ORTHOPAEDIC SURGERY & SPORTS MEDICINE
(847) 866-7846 | SPORTSMEDICINE@NORTHSHORE.ORG
21481 N. RAND RD, KILDEER, IL 60047
1535 ELLINWOOD AVE, DES PLAINES, IL 60016

Medial Patellofemoral Ligament Reconstruction (no cartilage repair/restoration)

Date of surgery: _____
Concomitant procedures: _____

Brace duration: Week 0-4 from surgery the brace is **locked** in full extension for standing and walking; may remove brace for sit/lay range of motion AND at rest. Brace to be worn while asleep. May remove brace and flex knee as recommended below.

Weight Status: Full weight with brace LOCKED in full extension

REMOVE THE BRACE AND BEND THE KNEE WHILE AT REST!!

SEE BELOW TABLE FOR OVERVIEW OF POSTOP REHAB PROTOCOL. COMPLETE PROTOCOL FOLLOWS FOR YOUR PHYSICAL THERAPIST.

	Weight bearing Status	Brace	Range of Motion	Recommended Therapeutic Precautions/Goals	**PATIENT'S POST OPERATIVE CHECKLIST**
Week 1-4	Full weight with brace **locked** in full extension.	YES Take off the brace for range of motion and while resting.	Full. Take off the brace for range of motion and while resting.	1. Emphasize patient compliance to home exercise program and weight bearing precautions/progression 2. Avoid ambulation without brace locked 3. Avoid pain with therapeutic exercise & functional activities 4. Prevent quadriceps inhibition 5. Quad sets, Heel pumps, straight leg raises, gravity assisted knee flexion	○ Day 1: take off Ace-wrap. Leave it off ○ Take Aspirin 81mg as recommended daily. ○ Elevate the leg ○ Focus on regaining **FULL EXTENSION** ○ Exercise 4x-6x daily and use Ice ○ **Keep up with minimum range of motion 0-90 degrees by week 3-4** ○ Remove/unlock the brace for range of motion exercises **AND** at rest
WHEN DO I START PT?	**POST OP WEEK 1** • ***1x session within first week postoperative to evaluate progress, start weight bearing, and provide home exercise program.				

Week 4-6	Transition to FULL Weight with brace unlocked, then removed if quad strength is adequate **Crutches until no limp**	YES Take off the brace for range of motion and while resting.	Full Take off the brace for range of motion and while resting.		○ Use muscle stimulator 3 days after surgery. 3x/day ○ Swelling AND/OR bruising may pool behind the knee, ankle, and foot (normal). IF you have persistent calf pain, call the office.
Week 6-12	Full weight	As needed	Full	1. HEP: advance as tolerated. Continue phase I exercises, as appropriate 2. Patellar mobilization 3. ROM exercises 4. Quadriceps strengthening progression 5. Leg press: monitor arc of motion 6. Flexibility exercises Advance proximal strengthening and core	
Week 13-22+	Full		Full	1. Home exercises 2. Patient education 3. Quad strengthening 4. Forward Step up/Step down Address muscle imbalance	

Brace

- You will wear a long brace on your leg, known as a Bledsoe brace, and use crutches. You will wear it day and night, locked straight for 6 weeks.
    - While resting, Remove/unlock brace and flex the knee as recommended. However, brace **must be worn while sleeping or ambulating**.

Quadriceps Stimulator – https://www.amazon.com/Balego-Digital-Neuromuscular-Stimulator-MT100I/dp/B07CVGN7MC

- The quadriceps muscle will become very weak and atrophied following surgery. To limit and prevent the extent of this disuse weakness, you will use a quad stimulator. Please purchase this from Amazon using the link above. If you have questions as to how to use, bring to your physical therapy appointment
    - Use for at least 20 minutes 3x/daily for 6 months

Return to Play Assessment

This is a specific evaluation that is performed by your physical therapist. It is a two part evaluation; the first part is at post-op month 5-6 and is to demonstrate specific areas that need continued work. You will then be given a detailed program to increase strength in specific areas. The second part is 6-8 weeks later to determine your readiness to return to sport.

JOSEPH LAMPLOT, MD
Orthopaedic Surgery & Sports Medicine

FULL PROTOCOL FOR PHYSICAL THERAPIST:

PHASE I: PROTECTION PHASE (WEEKS 0-6)

Emphasize
- Ambulation with brace locked in extension
- Improving quadriceps contraction
- Controlling pain/effusion
- Compliance with home instructions: cold therapy unit, CPM, quadriceps re-education with estim unit

GOALS:
- Independence in home therapeutic exercise (HEP) program
- Promote healing
- Control post-operative pain / swelling
- Prevent quadriceps inhibition: fair to good quadriceps contraction
- Straight leg raise (SLR) without lag, pain-free
- ROM: 0° KE to ≥ 90° KF
- Independent ambulation WBAT with brace locked in extension, and appropriate assistive device on level surfaces and stairs

PRECAUTIONS:
- Ambulation without brace
- Lateralization of patella
- AA-AROM KE, especially with significant quad atrophy, and articular cartilage injury
- Symptom provocation: quadriceps shut down, joint effusion, active inflammation
- KF ROM as per surgeon's guidelines

TREATMENT RECOMMENDATIONS:
- Emphasize patient compliance to HEP and weight bearing precautions/progression
  - ✓ WBAT with brace locked in extension with appropriate assistive device on level surfaces and stairs
  - ✓ Cryotherapy: home cold therapy unit
  - ✓ Electrical stimulation for quadriceps re-education: quadriceps sets with towel roll under knee
- Sitting knee ROM exercise: AAROM KF, PROM KE
- Quad set with towel roll under knee
- Hip progressive resisted exercises: pain-free SLR with brace if lag is present
- Distal strengthening (PF)
- Flexibility exercises (hamstrings, gastrocnemius)

MINIMUM CRITERIA FOR ADVANCEMENT TO NEXT PHASE:
- Fair to good quadriceps contraction
- Good patellar mobility in medial direction
- ROM: 0° knee extension to ≥90° knee flexion
- 0/10 pain at rest
- Able to SLR pain-free without quadriceps lag

PHASE II: GAIT PHASE (WEEKS 7-10)

GOALS:
- Independence in HEP, as instructed
- Control pain, inflammation, effusion
- Promote healing
- ROM 0° KE-110° KF (8 weeks), 120° (10 weeks) to full ROM
- Good patella mobility
- Good quad contraction
- Normalize gait with brace and assistive device, prn
- Postural stability, alignment and N-M control in single limb stance
- 0/10 pain with ADLs, therapeutic exercise: Recognize pain-free arc of motion

Emphasize
- Symptom control with ADLs, therex
- Minimizing knee effusion
- Normal gait pattern
- Postural stability, alignment, neuro-muscular (N-M) control during stance

PRECAUTIONS:
- Sign and symptom provocation: pain, inflammation, quadriceps shut down, joint effusion
- Concomitant procedures: TTT, articular cartilage procedure
- Lateralization of the patella
- Pathological gait pattern (quadriceps avoidance; bent knee)
- Arc of motion during exercise

TREATMENT RECOMMENDATIONS:
- HEP: advance as tolerated. Continue phase I exercises, as appropriate
- Patient education: Activity modification, progression of gait training, cryotherapy
- Patellar mobilization, MD directed
- ROM exercises:
- Sitting PROM to AAROM KE in a pain-free arc of motion (no cartilage injury) to AAROM KF
- KF: sitting progressing to stair ROM, supine wall ROM as tolerated (~125°KF in sitting, quad control)
- Gait training: heel toe gait pattern with brace open to 90° or functional brace and assistive device [with adequate quad control (SLR without a lag, ability to achieve terminal knee extension) and knee ROM] to ensure normal loading response; hydro–treadmill (adequate wound healing) or anti-gravity treadmill. Low grade elevation or retro-walking to encourage N-M control with KF during loading response
- Quadriceps strengthening: progress pain-free arc of motion, close chain preferred
- Continue with Estim, biofeedback, quad sets, submaximal multi angle isometrics, as needed
- Leg press: monitor arc of motion (bilateral, eccentric)
- Initiate forward step up (FSU) progression, 6” step with adequate strength
- Bicycle: progressing from short crank to standard crank as ROM allows (115° KF in sitting), 80 RPMs
- Flexibility exercises - evaluation-based: AROM KF with hip extension in standing
- Advance proximal strength and core training: (i.e. hip extension with knee flexion, side planks, bridge)
- Hydrotherapy for gait, single limb alignment and stability, proximal strengthening
- Initiate balance 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 N-M control

MINIMUM CRITERIA FOR ADVANCEMENT:
- ROM 0° KE → 115° KF
- Normal gait pattern
- Good patella mobility
- Postural stability, alignment and N-M control in single limb stance
- 0/10 pain with ADLs and therapeutic exercise
- Independent HEP

PHASE III: STRENGTHENING (WEEKS 11-18+)

GOALS:

- Independent HEP
- Control pain, effusion and inflammation
- 0/10 pain with ADLs, therapeutic exercise
- ROM: WNLs, 130° (12 weeks)
- Normalize gait on level surfaces and stairs
- Address imbalances
- Core stability: Single leg bridge = 30 s, Sahrmann ≥ level 3
- Good single limb dynamic balance
- Eccentric quadriceps and pelvic control with 6"/ 8" FSD
- Initiate running program, plyometrics (bilateral)
- Symmetry, quality, alignment during selected movement patterns: squat, jump in place

Emphasize

- Normal gait
- Identifying and addressing muscle/ soft tissue imbalances
- Neuromuscular control
- Functional progression
- Quality of movement

PRECAUTIONS:

- Sign and symptom provocation: pain, and active inflammation/ effusion, quadriceps shutdown
- Gait deviations
- "Too much, too soon" progression
- Disregarding quality of movement

TREATMENT RECOMMENDATIONS:

- HEP, as instructed
- Educate patient: Activity modification, individualized, and cryotherapy
- Quadriceps strengthening: progress as tolerated, monitor arc of motion, closed chain preferred
- FSU progression: 6" step progressing to 8" step (dependent on patient height)
- Eccentric leg press progressing to:
- Forward step down (FSD) progression: 6" step progressing to 8" step (dependent on patient height)
- Squat progression: chair squats, (use ball if necessary with buttocks moving under ball), to free squats
- ROM exercises:
- (AA) ROM KE (monitor arc of motion) to AAROM KF in sitting to supine wall slides to stair stretch
- Gait training to emphasize heel-toe gait pattern with emphasis on loading response
- Advance proximal strength through functional activities (bridging progression, hip extension with KF, clock, RDL, windmill, lawn mower) and core training (planks, side planks, Sahrmann progression)
- Balance progression with postural alignment and N-M control (static to dynamic, introduce different planes of motion, challenging surfaces)
- Address muscle imbalances – evaluation-based: (i.e. 2 joint hip flexor length)
- Cross training: elliptical trainer initiated with good strength/ quality during 6" FSU, bicycle (80 RPMs), swimming (crawl, back stroke)
- Initiate running program (late phase): with eccentric quadriceps control during 8" FSD and MD clearance
    - ✓ 30 second interval initially
- Initiate plyometric program with MD clearance and evidence of good eccentric quadriceps control
    - ✓ Vertical jumping progression: Jump up to jump in place

CRITERIA FOR ADVANCEMENT:

- ROM WNLs
- No pain or swelling
- Normalize gait
- Ability to demonstrate alignment, control, stability in single limb stance during dynamic activities
- Core stability: Single leg bridge = 30 s, Sahrmann ≥ level 3
- Able to ascend 6"/ 8" step with good control
- Able to descend 6"/ 8" step with good control, and alignment
- Symmetry, quality, alignment during selected movement patterns
- Independence in a home exercise program

PHASE IV: ADVANCED STRENGTHENING AND FUNCTION (WEEKS 19-24)

GOALS:

- Lack of pain, apprehension with sport specific movements
- Maximize strength and flexibility as to meet demands of individual's sport activity
- Ability to demonstrate strategy, symmetry, quality, control and alignment during selected movement patterns: squat, jump (vertical and horizontal), single leg squat
- Isokinetic test: 180° / sec and 300°/ sec 85% limb symmetry index (LSI)
- Cardiovascular fitness to meet demands of sport

PRECAUTIONS:

- Pain with therapeutic exercise & functional activities
- Inadequate strength, functional strength, ROM, flexibility, fitness when returning to sport

TREATMENT RECOMMENDATIONS:

- Continue to advance LE strengthening, flexibility, dynamic single limb stability & agility programs
- Continue to address muscle imbalances – evaluation-based
- Advance core stability
- Cross training
- Advance plyometric program with MD clearance and 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 of direction with MD clearance and dynamic single limb stability

CRITERIA FOR ADVANCEMENT:

- Isokinetic test at 180°/ sec and 300°/ sec: 85% limb symmetry index (LSI)
- Demonstrate symmetry, quality, alignment during selected movement patterns
- Medical clearance by surgeon for return to play progression
- Lack of apprehension with sport specific movements
- Flexibility to meet demands of sport

Emphasize

- Quality of movement
- Functional progression

PHASE V: RETURN TO PLAY (WEEKS 25-30)

GOALS:

- Lack of pain, apprehension with sport specific movements
- Maximize strength and flexibility as to meet demands of individual's sport activity
- Ability to decelerate with good control, and alignment on single limb
- Isokinetic test: 180° / sec and 300°/ sec 85% limb symmetry index (LSI)
- Cardiovascular fitness to meet demands of sport
- Hop Test > 85% limb symmetry

PRECAUTIONS:

- Pain with therapeutic exercise & functional activities
- Inadequate strength, functional strength, ROM, flexibility, fitness when returning to sport

TREATMENT RECOMMENDATIONS:

- Continue to advance LE strengthening, flexibility, dynamic single limb stability, core stability & agility
- Advance plyometric program: with MD clearance
    - ✓ Horizontal jumping progression: Broad jump to Hop to opposite to Single leg hop
- Advance cutting, deceleration training
- Progress cardiovascular fitness to meet demands of sport

CRITERIA FOR DISCHARGE:

- Isokinetic test: 180° / sec and 300°/ sec 85% limb symmetry index (LSI)
- Ability to decelerate with good control, and alignment on single limb
- Medical clearance by surgeon for return to play
- Hop Test > 85% limb symmetry
- Lack of apprehension with sport specific movements
- Flexibility to meet demands of sport
- Independence with gym program for maintenance and progression of therapeutic exercise program
- Demonstrate quality of movement with required sports specific activities