

Kai Mithoefer, MD

New England Center for Regenerative Orthopedics and Sports Medicine

Boston Sports and Shoulder Center

840 Winter Street, Waltham, MA 02451, (781) 890-2133

125 Parker Hill Avenue, Boston, MA 02120, (617) 264-1100

Postoperative Rehabilitation Guidelines **Medial Patellofemoral Ligament Reconstruction**

Rehabilitation Precautions: *All restrictions and/or precautions will be set by the referring surgeon, based upon the stability of the repair and procedure performed. All precautions are subject to change per physician.*

General Precautions

- WBAT with brace locked in extension
- Perform protected electrical stimulation program if warranted
- Patella Mobilizations: Passive superior glide and lateral to medial glide only until 6 wk
- NO LATERAL PATELLA GLIDE
- No isolated hamstring strengthening if autograft used

Considerations

- Edema/swelling control
- Scar massage
- Ankle, core, hip abduction/external rotation strength
- IT-Band stretch/soft tissue work for tight lateral retinaculum
- Evaluate lower extremity mechanics
- Hamstring/ gastroc stretches
- Progression should be criterion rather than time-based

POST-OPERATIVE 2 WEEKS

Gait

- WBAT
 - *confirm with surgeon if WB status is not documented in the chart
- Gait training – focus on equal weight distribution bilaterally
 - Begin ambulation with 2 crutches, then progress to 1 and no support per mechanics
 - Evaluate for symmetrical joint loading during stance phase, heel strike with full knee extension at initial contact, appropriate push-off at toe off

Range of Motion (ROM)

Begin passive, active-assisted, and active ROM as tolerated

- Biking: bike with ½ revolutions and progress to full revolutions per precautions
- No forced flexion beyond 90° with meniscal repairs
- Patellar mobilization
 - Emphasis on superior and inferior mobility
 - Avoid lateral mobilization
- Heel slides
- IT-Band stretch/soft tissue work
- Gastroc/Soleus Stretching in seated position

Strengthening

- Quad sets
- Glute sets
- SLR in flexion, abduction)
 - Avoid extensor lag
 - Neuromuscular Electrical Stimulation to quad
 - Multi-angle knee extensor isometrics from 60-90 degrees are also appropriate for those

patients who cannot tolerate high-intensity neuromuscular electrical stimulation

Pain and Effusion

- Ice/cryotherapy, compression, elevation to reduce post-operative effusion
- - Continue Patella Mobs as needed
 - Bike-light resistance
- Continue quad, HS flexibility
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Goals to Progress to Next Phase

1. Full active quadriceps contraction with superior patellar glide
2. Full passive knee extension
3. Effusion: $\leq 2+$ (effusion can at least be swept out of medial sulcus)
4. SLR x 10 seconds without extensor lag
5. Patient is able to tolerate full WB without increased pain or 3+ effusion
6. Patient able to walk with assistive device, without obvious deviations on observation

WEEKS 2-4 (DAYS 14-28)

Gait

- WBAT
- Gait training emphasizing avoidance of flexed or stiff-knee gait and normal push-off with gastrocnemius/soleus complex to restore normal gait speed and cadence.

Range of Motion (ROM)

- Continue passive, active-assisted, and active ROM as tolerated
- Meniscal repairs: no forced flexion beyond 90°
- Towel stretching, prone hangs, 'bag hangs' to achieve and maintain knee extension symmetrical to the contralateral limb
- Bike with **NO Resistance**
- Patella mobs with emphasis on superior/inferior glides
- Begin light Quad and HS stretching

Strengthening

- Continue weeks 0-2
- Quad set progression (i.e. prone QS, supine, TKE)
- SLR-Flex, Abduction, Adduction, Extension
- NMES at 60 degrees
- Initiate HS activation exercises(heel slide, HS sets, bridges)
- Step-ups (2" starting height) progressed without increased pain and good technique
- Begin trunk and lumbopelvic strengthening
 - Bridging, planks, pelvic tilts, teach abdominal bracing
- Shuttle ($90^\circ - 0^\circ$)
 - bilateral to single-leg presses per patient tolerance and good mechanics/control
 - increase resistance per patient tolerance
- Single leg stance
 - Eyes open to eyes closed
 - Progress to dynamic movements and/or unstable surface
- Heel/toe raises
- Mini squats

Goals To Progress to Next Phase:

- 1 Effusion: $\leq 2+$
- 2 Patient is able to tolerate full WB without increased pain or effusion
- 3 Patient able to walk on level surface without assistive device and normal mechanics
- 4 Patient able to stand on single leg at least 30 seconds without losing balance

WEEKS 4-6

ROM

- Continue passive, active-assisted, and active ROM as tolerated
Concerns with limited ROM should be communicated directly with surgeon
- Continue Patella Mobs as needed
- Bike-light resistance
- Continue quad, HS flexibility

Strengthening

Continue NMES

- Weighted multi angle SLRs
- Resistance exercises for gluteal strengthening
 - Resisted side stepping, and backward walking, Clamshells, reverse clamshells
- Progressive resistance quadriceps and hamstring exercises per patient tolerance
 - Partial ROM lunges
- Progress WB/CKC (shuttle, aquatics, Total Gym, etc.) strengthening
- Squat progressions on stable and unstable surface with good mechanics
- **NO JOGGING OR SINGLE-LEG PLYOMETRICS**

Goals To Progress to Next Phase

1. Patient is able to tolerate therapeutic exercise program without increased pain or effusion grade ($\leq 1+$)
2. Full, pain-free AROM is equal to contralateral limb (***CONTACT MD IF ABNORMAL***)
3. Normal patellofemoral mobility
4. Patient demonstrates normal mechanics without pain during reciprocal stair climbing and descent

WEEKS 6-10

Strengthening/Dynamic Control

- Progress WB strengthening exercises for quad and HS
 - Lunges, shuttle, steamboats, sidestepping, leg press, squats, single leg Romanian dead lifts (RDLs), etc.
- Step up and step downs (heel touch)
 - Progress step height as tolerated by patient
- Begin sub-maximal leg extensions, 90° - 45° only
- Begin bilateral shuttle jumping $\leq 50\%$ body weight (shuttle, Total Gym, etc.)
 - emphasizing symmetry in landing and take-off phases
- Work on endurance with low impact activities - Treadmill walking, stepper, elliptical
- Progress single leg balance activities
- Begin full weight landing mechanics if good mechanics on shuttle with visual cueing
 - Double to single leg loading response
 - Double leg jumping in place
- Week 8: Initiate isolated hamstrings strengthening per tolerance.

Updated June

Goals to Progress to Next Phase

1. Effusion \leq 1+ (can be swept out of medial sulcus and returns only with lateral sweep)
2. Patient is able to tolerate therapeutic exercise program without increased pain or effusion grade
3. Maintain Full, pain-free AROM is equal to contralateral
4. Normal patellofemoral mobility
5. Patient demonstrates normal mechanics with all CKC exercise and early jumping activities

WEEKS 10-12

ROM

- o Continue with stretching and Bike

Strengthening/Dynamic Control/Functional Activities o

Full weight bearing (FWB) strengthening exercises

- o Strength progression from stable to unstable surface
- o Progress full range open-chain knee extension exercises as tolerated without pain
- o Progress hamstrings strengthening as tolerated (i.e. Double leg hamstrings curls with physioball, resisted leg curls, etc.)

Begin agility exercises between 50-75% (utilize visual feedback to improve mechanics)

- o Side shuffling
- o Hopping
- o Carioca
- o Figure 8
- o Zig-zags
- o Resisted jogging (Sports Cord) in straight planes, etc
- o Back pedaling

Goals to Progress to Independent

Program o **Functional Test**

- o Single –leg and 3 cross-over hop test for distance (within 15% of uninvolved limb)
- o **Isokinetic Testing**
 - o \leq 10% isokinetic peak torque with knee extension and knee flexion (60°/sec, and 300°/sec)
 - o Quadriceps to hamstring isokinetic strength ratio \geq 60%
- o **Complete sport specific drills without compensatory movements, exacerbation of symptoms or reactive effusion**

Week 12-16

Range of Motion

- o Maintain ROM equal to uninvolved

Strengthening

- o Emphasize performance of the quadriceps, hamstrings and trunk dynamic stability
- o Emphasize muscle power generation and absorption
- o Focus on activities that challenge muscle demand in intensity, frequency, and duration of activity
- o Emphasize sport- and position-specific activities
- o Consider:
 - o Double leg and single leg activities and transitions
 - o Vary planes of movement and change of direction
 - o Perturbations and alter support surface (indoor and outdoor)
 - o Challenge multiple muscle groups (lower extremity and core) simultaneously

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- o Examples:
 - o Weight lifting: squats, leg extension, leg curl, leg press, deadlifts
 - o Lunges-forward, backward, rotational, side
 - o Rotational trunk exercises on static and dynamic surfaces
 - o Unilateral shuttle jumping with increasing resistance and mid-air rotations

Return to Sport Activities

- o Emphasize appropriate symmetry in weight-bearing, joint loading and technique during performance of all therapeutic activities and plyometrics.

- Emphasize sport- and position-specific activities
 - Add ball, racquet, stick,
- Consider - Impact loading and appropriate attenuation strategy, cue regarding “hard” landings
 - Double leg and single leg activities and transitions
 - Vary planes of movement and change of direction

- Examples:
 - Single-leg hop downs from increasing height (up to 12” box)
 - Single-leg hop-
 - Double and single-leg hopping onto unstable surface (i.e. Airex pad)
 - Tuck jumps (focus on increasing multi-joint flexion during landing and holding stable position)
 - 90 to 180 degree jumps
- Begin agility exercises between 50-75% (utilize visual feedback to improve mechanics)
 - Side shuffling
 - Hopping
 - Carioca
 - Figure 8
 - Zig-zags
 - Resisted jogging (Sports Cord) in straight planes, etc
 - Back pedaling

Goals to Progress to Independent

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- **Isokinetic Testing**
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