MEDIAL PATELLOFEMORAL LIGAMENT RECONSTRUCTION CLINICAL PRACTICE GUIDELINE

- **Medial Patellofemoral Ligament (MPFL):** Ligament on the inner side of the knee.
- **Function:** Stabilizes the patella (kneecap) against lateral (sideways) movement.
- **Injury:** Can be damaged during a patella dislocation.
- **MPFL Reconstruction Surgery:** Uses a ligament from another part of the body to rebuild the MPFL, ensuring patella stability.

Risk Factors	
Patellar instability	Abnormal movement mechanics
Bone structure issues	Weak quadriceps

Corrective Measures	
NMES for activating the quadriceps	Training specific to sports activities
Use of a vasopneumatic device to manage swelling	
Manual therapy to enhance patellar mobility and knee ROM	
Neuromuscular retraining to strengthen the lower extremities and correct movement mechanics	
Use of anabolic steroids and creatine supplementation	

Precautions
Weight-bearing with crutches until there's no extensor lag with a straight leg raise (SLR)
Use electrical stimulation cautiously if needed
Passive patellar glides: superior and medial only until 6 weeks
Avoid lateral patella glides
Do not perform isolated hamstring strengthening if an autograft is used until 8 weeks

Outcome Testing

1. **Isometric testing at 10 weeks**
2. **Isokinetic testing at 12 weeks**
3. **Functional test: Hop testing**

Manual Therapy
Patellar mobilization: passive superior and medial glide only until 6 weeks
Knee extension/flexion passive range of motion (PROM)
Scar massage
Appropriate soft tissue mobilization

Criteria for Discharge	
Functional Test	Single-leg and triple cross-over hop test for distance within 15% of the uninvolved limb
Isokinetic Testing	• ≤10% difference in peak torque for knee extension and flexion (at 60º/sec and 300º/sec) between involved and uninvolved limbs • Quadriceps to hamstring isokinetic strength ratio of 60%
Clinical Evaluation	No signs of patellar instability during clinical testing
Sport-Specific Drills	Able to complete drills without compensatory movements, symptom exacerbation, or reactive swelling

Phase I (Weeks 0-2): Protection (Post-Operative 2 Weeks):

Category	Details
Gait	• WBAT with crutches (confirm with surgeon if unclear) • **Gait training:** equal weight distribution, progress from 2 crutches to 1 then none • Assess joint loading, heel strike, push-off
Range of Motion (ROM)	• Begin passive, active-assisted, and active ROM • **Bike:** start with ½ revolutions, progress as tolerated • Avoid forced flexion beyond 90º with meniscal repairs • **Patellar mobilization:** superior and inferior glide only, no lateral • Heel slides, IT Band stretch, soft tissue mobilization, gastroc/soleus stretch (seated)
Strengthening	• Quad sets, glute sets • SLR in flexion, abduction (avoid extensor lag) • NMES to quadriceps at 60°-90° • Multi-angle knee extensor isometrics if NMES not tolerated
Pain and Effusion	• Ice/cryotherapy, compression, elevation to manage swelling
Goals to Progress	1. Full active quadriceps contraction with superior patellar glide 2. Full passive knee extension 3. Effusion ≤ 2+ (swept out of medial sulcus) 4. SLR x 10 seconds without extensor lag 5. Tolerate full WB without increased pain or 3+ effusion 6. Walk with assistive device, no gait deviations

Phase I (Weeks 2-4): Protection (Days 14-28):

Category	Details
Gait	• Weight-bearing as tolerated (WBAT) • Focus on normal gait mechanics, avoiding flexed/stiff-knee gait
Range of Motion (ROM)	• Continue passive, active-assisted, and active ROM • Avoid forced flexion beyond 90º for meniscal repair • Towel, prone, and bag hangs for knee extension • Bike with no resistance • Patellar mobilization: superior/inferior glides • Light quadriceps and hamstring stretching
Strengthening	• Continue exercises from Weeks 0-2 • Progress quad sets (prone, supine, TKE) • SLR in various planes • NMES at 60º knee flexion • Initiate hamstring activation exercises • Step-ups (2” height), progress as tolerated • Begin trunk and lumbopelvic strengthening • Shuttle/Leg Press, progress to single-leg presses • Single-leg stance (eyes open/closed), progress to dynamic movements • Heel/toe raises • Modified range squats
Goals to Progress	1. Effusion ≤ 2+ 2. Full weight-bearing tolerance without increased pain or effusion 3. Walk on level surfaces without assistive device and normal mechanics

Phase II (Weeks 4-6)

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Phase II (Weeks 4-6)	**Range of Motion (ROM)**	• Continue ROM exercises • Patellar mobilization • Bike with light resistance • Maintain quadriceps and hamstring flexibility
	Strengthening	
	Goals to Progress	**1.** Tolerate exercise program with ≤ 1+ effusion **2.** Full, pain-free AROM equal to contralateral limb **3.** Normal patellofemoral mobility **4.** Normal stair mechanics
	Strengthening/Dynamic Control	• Progress weight-bearing exercises • Step-up/step-down with increasing height • Begin sub-maximal leg extensions • Bilateral shuttle jumping (50% body weight) • Endurance activities • Single-leg balance activities • Full weight landing mechanics • Begin isolated hamstrings strengthening by week 8
	Goals to Progress	**1.** Effusion ≤ 1+ **2.** Tolerate exercise program without increased pain or effusion **3.** Maintain full, pain-free AROM **4.** Normal patellofemoral mobility **5.** Normal mechanics with CKC exercises and jumping activities

Phase III (Weeks 10-12)

Phase	Weeks	Category	Details
Phase III	**Weeks 10-12**	**Range of Motion (ROM)**	Continue stretching and biking
		Strengthening/Dynamic Control/Functional Activities	• Full weight-bearing exercises • Progress from stable to unstable surfaces • Increase range in open-chain knee extension • Progress hamstring strengthening • Plyometric exercises: squat and broad jumps (start at 50% effort) • Introduce single-leg jumping, rotational activities, and jogging • Start walk-jog progression when criteria are met
		Criteria for Jogging	• Full active knee extension • Normal landing mechanics and single-leg squat • Strength ≥ 80% of uninvolved limb • Rhythmic strike patterns, no antalgic gait
		Goals to Progress	**1.** Effusion ≤ 1+ (swept out of medial sulcus) **2.** Tolerate exercise program without increased pain or effusion **3.** Maintain full, pain-free AROM equal to contralateral limb **4.** Normal patellofemoral mobility **5.** Normal mechanics with CKC exercises and jumping activities

Phase IV: Return to Sport/Activity (Weeks 12-16)

Category	Details
Range of Motion (ROM)	Maintain ROM equal to uninvolved limb
Strengthening	• Focus on quadriceps, hamstrings, and trunk stability • Emphasize muscle power, intensity, frequency, and duration • Sport- and position-specific activities
Considerations	• Double and single-leg activities, transitions • Vary planes of movement and direction • Use perturbations and change support surfaces • Challenge multiple muscle groups simultaneously
Examples	• Weight lifting: squats, leg extensions, curls, deadlifts • Lunges: forward, backward, rotational, side • Rotational trunk exercises on various surfaces • Unilateral shuttle jumps with resistance and rotations
Return to Sport Activities	• Focus on symmetry in weight-bearing and technique • Sport- and position-specific drills • Include balls, racquets, sticks • Consider impact loading and attenuation strategies
Examples	• Single-leg hop downs (up to 12” box) • Single-leg hop-holds on stable and unstable surfaces • Tuck jumps, 90º to 180º jumps • Agility exercises (e.g., side shuffling, hopping, figure 8)

Category	Details
	• Resisted jogging (Sports Cord)
Goals to Progress to Independent Program	**1.** Single leg and triple cross-over hop test within 15% of uninvolved limb **2.** ≤10% deficit in isokinetic peak torque for knee extension and flexion **3.** Quadriceps to hamstring strength ratio = 60% **4.** Complete sport-specific drills without compensatory movements or symptoms