

REHABILITATION PROTOCOL

LCL / FCL Reconstruction

PRECAUTIONS

- No kneeling × 12 weeks post-operative
- Avoid tibial rotation, hyperextension, and varus force to the knee at all times
- Keep resistance band proximal during side steps to minimize varus stress on the knee

Phase I Weeks 0–6

WEIGHT BEARING & BRACE

- NWB × 6 weeks with crutches
- Brace locked in full extension for ambulation and sleeping × 6 weeks
- Open brace once adequate quad control is achieved

ROM

- PROM 0–90° beginning post-op day 1
- Wall slides / supine heel slides with strap
- Seated knee flexion with contralateral lower extremity assist

NEUROMUSCULAR CONTROL

- Quad sets, prone TKE, SLR in brace; NMES if insufficient volitional quad activation
- Quad isometrics at 90°, 60°, 30°, and 0° knee flexion
- Side-lying hip abduction and prone hip extension in brace
- Ankle mobility and resisted motions in all planes
- Supine/seated core stabilization; Pallof press; core isometrics with UE & LE dissociation

Criteria to progress:

- ✓ Pain-free ROM 0–90°
- ✓ Pain and swelling controlled
- ✓ SLR without extensor lag

Phase II Weeks 6–12

WEIGHT BEARING

- Progress PWB → FWB; wean off assistive device
- Discharge crutches then brace when quad activation and strength are adequate
- No kneeling until 12 weeks post-operative

ROM & CARDIOVASCULAR

- Stationary bike — no resistance initially, then progressive resistance

STRENGTHENING

- Closed-chain: mini squat, step-up, sagittal lunges (no flexion >70°), bridges, side steps
- Keep band proximal to minimize varus force; core strength and endurance
- Balance training initiated

Criteria to progress:

- ✓ Non-antalgic gait without assistive device
- ✓ PROM normalized to contralateral (100%)
- ✓ Dynamometry ≥80% contralateral

Phase III
Weeks 12–20

FUNCTIONAL PROGRESSION

- Transverse-plane and multiplanar motions
- Plyometrics initiated; restore power
- Advanced proprioception: perturbations, agility drills

Criteria to progress:

- ✓ Y-Balance >90%
- ✓ 60-sec SL squat to 60° without compensation
- ✓ Plank and side plank 60 sec
- ✓ Dynamometry ≥90% contralateral

Phase IV
Weeks 20+

RETURN TO SPORT

- Alter-G treadmill running initiated at week 20
- Full body running at week 24
- Sport-specific dynamic exercises; plyometric prep screen
- Lower Body Assessment when initiating return-to-sport progression
- Return to full sport at 7–9 months post-operative (criteria-based)

EXERCISE TIMELINE

Exercise	Weeks Post-Operative											
	1	2	3	4	5	6	8	10	12	16	20	24
INITIAL EXERCISES												
ROM Goals	0-90°	0-90°	0-90°	0-90°	0-90°	0-90°	0-125°	Full	Full	Full	Full	Full
Flexion/extension — prone with brace												
Flexion/extension — seated / calf-assisted												
Patella / tendon mobilization												
Quad series — 0° ISOs, SLR												
Quad series — 60° ISOs												
Quad series — 70–30° arc resisted												
Quad series — full arc resisted												
Hamstring sets												
Sit and reach for hamstrings (no hyperextension)												
Ankle pumps												
SLR (with brace until quad control restored)												
Toe and heel raises												
Balance series												

Exercise	Weeks Post-Operative											
	1	2	3	4	5	6	8	10	12	16	20	24
WEIGHT-BEARING STRENGTH EXERCISES												
← Non-weight bearing period	NWB											
Double knee bends												
Double leg bridges												
Reverse lunge — static holds												
Beginning cord exercises												
Dead lift (bilateral → unilateral)												
Squat / leg press — 0 to 45 degrees							0-45°					
Squat / leg press — 0 to 70 degrees (70° max on press)								0-70°	0-70°	0-70°	0-70°	0-70°
Sports test exercises												
CARDIOVASCULAR EXERCISES												
← Non-weight bearing period	NWB											
Bike — both legs, no resistance												
Bike — both legs, with resistance												
Aqua jogging												
Treadmill walking — 7% incline												
Swimming with fins — light flutter kick												
Elliptical trainer												
Rowing												
Stair stepper												
AGILITY EXERCISES												
← Non-weight bearing period	NWB											
Running progression — initial single plane												
Running progression — advance multi-directional												
Functional sports test												
HIGH LEVEL ACTIVITIES												
← Non-weight bearing period	NWB											
Golf progression												
Outdoor biking, hiking, running												
Return to full sport at 7–9 months post-op												

RETURN-TO-ACTIVITY CRITERIA

Return to running

- Trace effusion; flexion within 5° of contralateral side

	• Y-Balance LSI $\geq 90\%$ (anterior reach) • Quad torque LSI $\geq 75\%$ (isometric) • 12-inch single-leg squat tolerance • Walk >1 mile without limping or pain • 5$\times$ UE-assisted hops on operative leg without pain or compensation • Single-leg balance eyes closed $\times 30$ seconds without loss of balance
Return to agility / change of direction	• All return-to-running criteria met; no effusion; full ROM • Quad LSI isokinetic $\geq 85\%$; Hamstring LSI isokinetic $\geq 85\%$ • Y-Balance LSI $\geq 95\%$ (anterior reach) • Single-leg hopping pain-free and effusion-free
Return to sport	• Full AROM, no pain, no/trace effusion, 5/5 strength; negative Lachman and pivot shift • Quadriceps strength $\geq 95\%$ contralateral (<2 cm atrophy); single-leg squat with correct form • LSI single-leg hop $\geq 95\%$; Y-Balance $\geq 95\%$ (mean 3 trials) • Vertical jump, single-leg hop distance, and timed 20-ft hop $\geq 90\%$ contralateral • LSI hamstring curl and leg press $\geq 95\%$