Jennifer Thomson, MD
ORTHOPAEDIC SURGERY | SPORTS MEDICINE

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

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**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+**

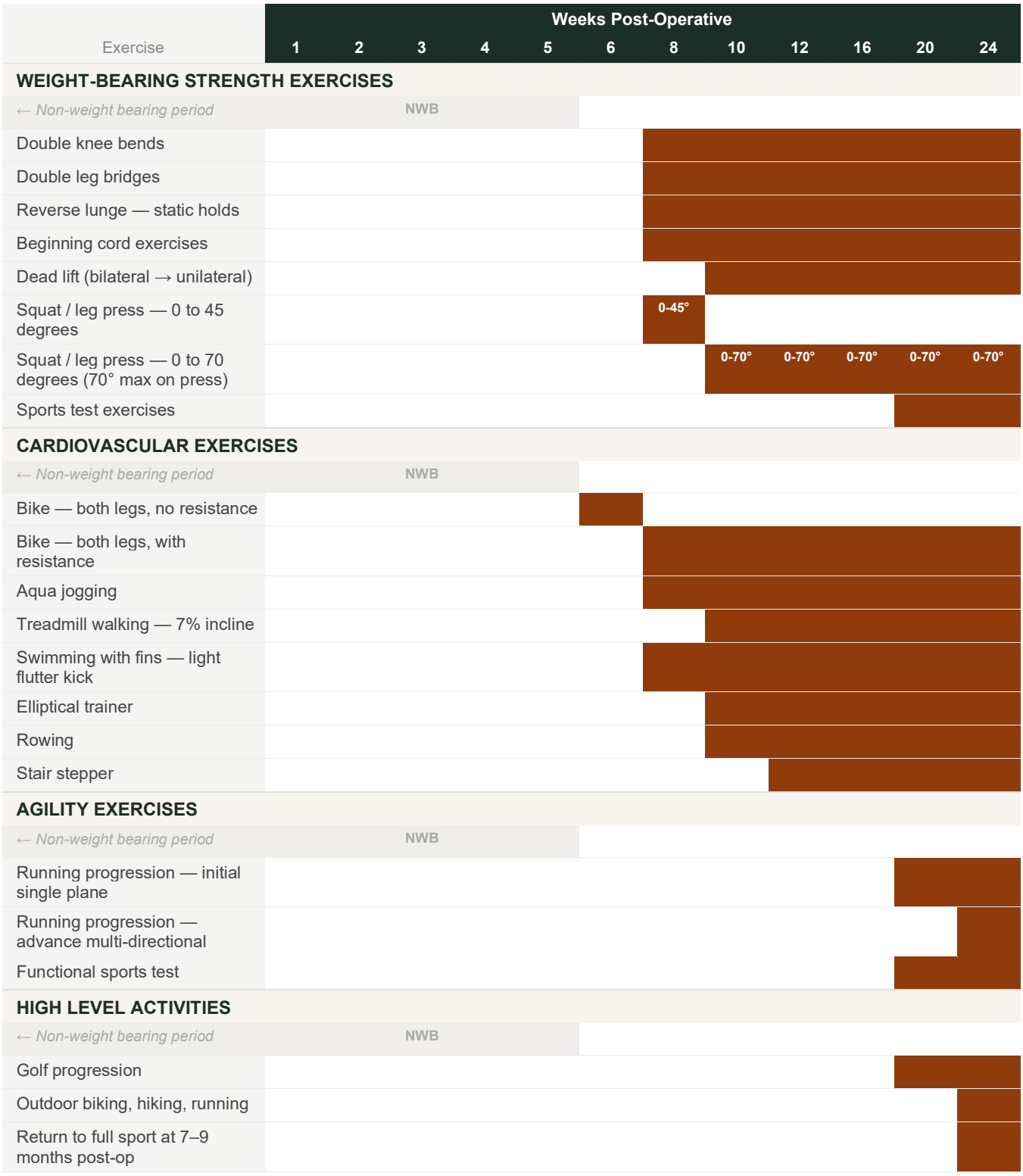
RETURN TO SPORT

- 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 | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ |

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## RETURN-TO-ACTIVITY CRITERIA

| | |
|---|---|
| **Return to running** | • Trace effusion; flexion within 5° of contralateral side |

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