



PATELLA STABILIZATION PROTOCOL

Rehabilitation following surgery for patellar instability is an essential element of the treatment to achieve a full recovery. This protocol is intended to provide the user with instruction, direction, rehabilitative guidelines and functional goals. **It is not meant as a home program.** The physiotherapist must exercise their best professional judgment to determine how to integrate this protocol into an appropriate treatment plan. Some exercises may be adapted depending on the equipment availability at each facility. As an individual's progress is variable and each will possess various pre-operative deficiencies, this protocol must be individualized for optimal return to activity. There may be slight variations in this protocol if there are limitations imposed from the surgery and quality of individuals healing. Complete recovery after patellar stabilization ranges from 3-6 months or longer, depending upon the procedure performed.

KEY POINTS

The goal of surgery is to restore normal tracking of the patella and restore stability. Various surgical techniques are available to address the specific underlying pathologies causing patellar instability. These include medial patellofemoral ligament (MPFL) reconstruction, tibial tubercle osteotomy (TTO), and trochleoplasty. Based upon individual pathology, each technique will have slight variations in the rehabilitation protocol.

ROM, WEIGHT BEARING AND BRACING

Post-operative instructions will vary based on the specific stabilization technique(s) addressed. If a tibial tubercle osteotomy (TTO) is performed with the procedure, bracing is required and weight bearing is delayed for 6 weeks to allow for bone healing. Also, ROM for flexion and active extension will be slower to protect the healing quadriceps/patella tendon insertion (tibial tubercle).

Phase 1: Protection & ROM (0-6 Weeks)

Brace and Weight Bearing:

- If TTO: Brace locked in extension for ADLs, sleeping & ambulation (can be full WB); remove brace for ROM / exercises (toe touch WB when brace *not* on)
- If no TTO: No brace, WBAT with crutches
- 4-6 weeks: wean from 2 → 1 crutch with adequate quad control → full WB (normal gait)

ROM:

- If TTO: 0-90 (0-2 weeks) progress to 120 (2-6 weeks)
- If no TTO: Increase as tolerated with slow but steady gains week to week

Exercise Suggestions: Caution for TTO: NO active knee extension x 6weeks

0-2 weeks:

- Heel slides (+/- slider board), calf & hamstring stretches
- Quad/ham co-contraction, gluteal activation (supine or standing), isometric hip adduction/abduction, ankle pumping, sitting passive leg extension with roll under heel for extension if needed

2-6 weeks add:

- Patellar mobilizations: medial, inferior & superior
- Supine legs up wall: heels slides (knee flexion); supine legs on swiss ball: knee flexion
- Bike pendulums: ½ circles forward/backward → full circles – lower seat as tolerated
- Prone hangs for extension if needed
- Quadriceps isometrics in long sitting, standing (+/- muscle stimulation)
- Non-weight bearing hip stability exercises: abduction, extension, external rotation, clam shells, supine bridging on swiss ball
- Ankle theraband plantar flexion, sitting calf raises

Modalities: Ice and IFC as needed to reduce pain

Phase II: Weight Bearing & Strengthening (6-12 Weeks)

Brace and Weight Bearing:

- TTO patients: advance to WBAT, wean off brace
- All patients: wean off crutches

ROM:

- All patients: progress to full ROM as tolerated (flexion and extension)

Exercise Suggestions:

- Continue with patellar mobilizations: medial, inferior & superior
- Low resistance stationary bike
- Weight shifting: 2 weigh scales → 50-50WB → progress to mini squats
- Leg extension (or quad over roll), active terminal knee extension with theraband
- Initiate abdominal and core strengthening (i.e. curl-ups, transversus abdominis with SLR x4)
- Standing hip flexion/extension, abduction/adduction → weights/pulleys/bands (watch for excessive trunk shift/sway)
- Supine bridging: 2→1 leg →swiss ball→ bridge + knee flexion
- Shuttle™/leg press: 2 leg squat/calf raises, progress 2-1 leg; increase ROM & resistance
- Mini wall squats (30-60°) → 60°-90°; sit to stand
- Hamstring curls: prone, sitting→progress 1-2 lb weights
- Calf raises 2→1 foot, up on toes walking (when full weight bearing)
- Wobble boards with support: side-to-side, forward/backward
- Single leg stance 30-60 seconds (when full WB)

Phase III: Advanced Strengthening & Return to Activity (3-6+ Months)

Exercise Suggestions: (dependent on patient goals)

- Continue with bike, add elliptical
- Stairmaster™ if adequate strength (must not hip hike when pressing down on step)
- Continue core strengthening functionally (i.e. obliques, planks, Pilates)
- Progress leg extensions with weight as tolerated (pain free arc)
- Sit to stand → lower bed height (watch mechanics) → single leg
- Progress resistance of Shuttle™ working on strength & endurance, 2→1 leg
- Static Lunge → dynamic lunge (with proper alignment: shoulders over knees over toes) → lunge walking as pain free range tolerates
- Bungee™ cord walking: forward, backward, side step, lunging → add speed/direction change as tolerated
- Forward and lateral step-ups 2-4-6" and eccentric lateral step down on 2-4-6" step with control (watch for hip hike or excessive ankle dorsiflexion)
- Squats, Lunges on Dynadisc, Airex, Bosu... as range tolerates
- Continue hip strengthening: weights, pulleys, tubing
- Tubing kickbacks (mule kicks)
- Pro-Fitter™: hip abduction and extension → progress side-to-side
- Shuttle™ standing kick backs (hip/knee extension)
- Supine swiss ball → bridge + knee flexion → 1 leg
- Chair walking/stool pulls
- Hamstring curls: standing & sitting-weights/pulleys/Bungee™
- Eccentric heel drops off step or Shuttle™ 2→1 leg
- Continue wobble boards and add basic upper body skills (i.e. throwing, catching)
- Single leg stance on unstable surface i.e. pillow, mini-tramp, BOSU™, Airex™, Dynadisc™
- Single leg stance performing upper body patterning specific to patient goal(s)
- Standing 747s: eyes open/closed → progress to mini trampoline
- May begin jogging / running program as tolerated
- Agility: Cariocas/grapevine, Figure 8's around cones, ladder drills, lateral shuffle cone-cone
- Side to side steps → jumps on the BOSU
- Line jumping, backward/forward/side-to-side → progress to diagonals / combined patterns; 2→1 leg
- Jumping: tuck jumps, box jumps, long jumps
- Skipping rope double and single leg
- Hopping: single-leg (distance), 6m timed, triple hop (distance), cross-over: 2→1 leg
- May implement sport-specific multi-directional drills/contact when adequate core/lower extremity patterning (stop and go drills, sideways and backwards drills, sprinting with cutting and pivoting)