
High Tibial Osteotomy Physical Therapy Protocol

Phase I: Immediate Post-operative (Weeks 0 to 4)

Goals

- Protect healing tissue from deleterious forces
- Decrease pain and effusion
- Restoration of full passive knee extension
- Gradually improve knee flexion
- Regain quadriceps control

Weight Bearing

- Non-weight bearing for three weeks
- Toe touch weight bearing with two crutches at week three
- 25 percent weight bearing with two crutches at week four

Brace

- Brace locked at 0 degrees during functional and weight bearing activities
- Sleep in locked brace for two to four weeks

Range of Motion

- No immediate limitation on passive range of motion (below are minimum recommendations)
- 0 to 90 degrees at week one
- 0 to 105 degrees at week two
- 0 to 115 degrees at week three
- 0 to 125 degrees at week four

Exercises

- Full passive knee extension
- Patellar mobilizations
- Range of motion exercises
- Ankle pumps
- Hamstring and calf stretches
- Quad sets (neuromuscular electrical stimulation as needed)
- Four-way straight leg raises
- Stationary bike
- Cryotherapy with elevation for pain and inflammation every hour for 20 minutes

Phase II: Intermediate (Weeks 4 to 8)

Criteria to Progress to Phase II

- Minimal pain and swelling
- Full knee extension
- Knee flexion to 120 degrees

Goals

- Gradually progress weight bearing
- Restore full range of motion
- Improve quadriceps strength and endurance
- Gradually increase functional activities

Weight Bearing

- 50 percent weight bearing with two crutches at week six
- 75 percent weight bearing with two crutches at week seven
- Progress to full weight bearing at week eight (wean from crutches as gait normalizes)

Brace

- Discontinue brace at week six to eight

Range of Motion

- Progress to full range of motion at week six

Exercises

- Continue exercises as listed above
- Initiate weight bearing exercises per weight bearing restrictions
- Pool for gait training
- Proprioception activities
- Short arc quads (increase one pound per week)
- Core exercises
- Isometric leg press at week four
- Weight shifts at week four
- Leg press at week six
- Toe Raises at week six
- Mini Squats at week six
- Cryotherapy with elevation for pain and inflammation every hour for 20 minutes

Phase III: Advanced Activity (Weeks 8 to 12)

Criteria to Progress to Phase III

- Full range of motion
- Sufficient strength and proprioception
- Minimal pain and swelling

Goals

- Improve muscular strength and endurance
- Increase functional activities

Exercises

- Continue exercises as listed above
- Step ups
- Lateral step downs
- Wall squats
- Lunges
- Terminal knee extensions
- Hamstring curls
- Long arc quads
- Lateral walks with resistance
- Walking program on treadmill
- Swimming
- Elliptical/NordicTrak
- StairMaster

Maintenance Program (Initiate at Week 12)

- Bicycle
- Progressive walking program
- Pool exercises for entire lower extremity
- Leg press

- Wall squats
- Standing hip exercises
- Lunges
- Quadriceps, hamstring and calf stretches

Phase IV: Functional Activities (Months 4 to 6)

Criteria to Progress to Phase IV

- Full, non-painful range of motion
- Sufficient strength and proprioception
- Minimal pain and swelling
- No pain, inflammation or swelling

Goals

- Gradual return to unrestricted functional activities

Functional Activities

- Patient may return to various sport activities as progressing in rehabilitation and osteotomy healing allows.
 - **4 to 6 Months:** Low impact sports such as golf, swimming, skating, roller-blading and cycling
 - **6 to 8 Months:** Higher impact sports such as running, jogging and aerobics
 - **8 to 12 Months:** High impact sports such as tennis, basketball, football and baseball

Exercises

- Continue maintenance program three to four times a week
- Progress resistance as tolerated
- Progress agility and balance drills
- Impact loading program should be specialized to the patient's demands
- Progress sport programs depending on patient variables