

High Tibial Osteotomy Rehabilitation Protocol

Benedict Figuerres, MD, Orthopedic and Sports Medicine
kutopeka.com/ortho

Patient Name:

Date of Surgery:

Phase I - Immediate postoperative phase - Weeks 0-4

Date: _____

Goals:

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

Brace:

- Postoperative brace locked at 0 degrees during functional and weight bearing activities
- Sleep in locked brace for 2-4 weeks

Weightbearing:

- Non-weightbearing weeks 0-3
- Toe touch weightbearing (approximately 20-30 lbs.) week 3
- Partial weightbearing (approximately 25% body weight) at week 4

Range of motion:

- Immediate motion exercises
- Full passive knee extension immediately
- Patellar mobilization (4-6 times per day)
- Passive knee flexion ROM 2-3 times daily
- Knee flexion ROM goals:
 - Week 1: 0-90 degrees
 - Week 2: 0-105 degrees
 - Week 3: 0-115 degrees
 - Week 4: 0-125 degrees
- Stretch hamstrings and calf

Strengthening program

- Ankle pump using rubber tubing
- Quad setting
- Straight leg raises (4 directions)
- Progress to multi-hip strengthening
- Stationary bicycle when ROM allows
- Biofeedback and electrical muscle stimulation, as needed
- Isometric leg press at week 4 (multi)
- May begin use of pool for gait training and exercises week 4

Swelling control:

- Ice, elevation, compression, and edema modalities as needed to decrease swelling

Phase II - Intermediate phase - Weeks 4-8

Date: _____

Criteria to progress to Phase II:

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

Goals:

- Gradually progress to full weightbearing
- Gradually progress to full ROM
- Gradually improve quadriceps strength/endurance
- Gradual increase in functional activities

Brace:

- Discontinue brace at week 6-8
- May progress to joint unloading brace at weeks 6-8

Weightbearing:

- Progress weightbearing as tolerated
- 25% weightbearing weeks 4-5
- 50% weightbearing week 6
- 75% weightbearing week 7
- Progress to full weightbearing at 8 weeks based on radiographic evaluation
- Discontinue crutches at 8 weeks

Range of motion:

- Gradual increase in ROM
- Maintain full passive knee extension
- Progress knee flexion to 125-135 degrees
- Continue patellar mobilization and soft tissue mobilization, as needed
- Continue stretching program

Strengthening exercises:

- Initiate weight shifts week 4
- Initiate leg press and mini-squats 0-45 degrees week 6
- Toe-calf raises week 6
- Open kinetic chain knee extension (PRE's), 1 lb./week
- Stationary bicycle (gradually increase time)
- Tilt board squats
- Continue use of biofeedback and electrical muscle stimulation, as needed
- Continue use of pool for gait training and exercise

Functional activities:

- As pain and swelling (symptoms) diminish, the patient may gradually increase functional activities
- Gradually increase standing and walking tolerance

Phase III - Advanced activity phase - Weeks 8-12

Date: _____

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

Range of motion:

- Patient should exhibit 125-135 degrees flexion

Exercise program:

- Leg press (0-90 degrees)
- Bilateral squats (0-60 degrees)
- Unilateral step-ups progressing from 2" to 8"
- Wall squats
- Forward lunges
- Hamstring, hip, and calf strengthening
- Walking program
- Open kinetic chain knee extension (0-90 degrees)
- Single leg balance
- Bicycle
- Stairmaster
- Swimming
- Nordic Trak/Elliptical

Functional activities:

- As patient improves, increase walking (distance, cadence, incline, etc.)

Maintenance program:

- Initiate at week 12
- Bicycle – low resistance
- Progressive walking program
- Pool exercises for entire lower extremity
- Straight leg raises into flexion
- Leg press
- Wall squats
- Hip abduction/adduction
- Front lunges
- Stretch quadriceps, hamstrings, calf

Phase IV - Functional activity phase - Months 4-6**Date:** _____**Criteria to progress to Phase IV:**

- Full non-painful ROM
- Sufficient strength, proprioception and neuromuscular control
- No pain, inflammation or swelling

Goals:

- Gradual return to full unrestricted functional activities

Exercises:

- Continue maintenance program progression 3 to 4 times a week
- Progress resistance as tolerated
- Emphasis on entire lower extremity strength and flexibility
- Progress agility and balance drills
- Impact loading program should be specialized to the patient's demands
- Progress sport programs depending on patient variables

Functional activities:

- Patient may return to various sport activities as progression in rehabilitation and osteotomy healing allows. Generally, low-impact sports such as golf, swimming, skating, rollerblading, and cycling are permitted at about 4 months. Higher impact sports such as jogging, running, and aerobics may be performed at 5-6 months. High impact sports such as tennis, basketball, football and baseball are allowed at 6-8 months.