



Name:		Patient Flow Sheet
Date of Surgery:		

High Tibial Osteotomy Rehab Protocol

Benedict Figuerres, MD

- **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.