

## REHABILITATION FOLLOWING HIGH TIBIAL OSTEOTOMY

### I. PHASE I – IMMEDIATE POSTOPERATIVE PHASE (WEEKS 0-4)

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

#### **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

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## II. PHASE II – INTERMEDIATE PHASE (WEEKS 4-8)

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

### **Criteria to Progress to Phase II:**

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

### **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

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### III. PHASE III – ADVANCED ACTIVITY PHASE (WEEKS 8-12)

Goals: Improve muscular strength and endurance  
Increase functional activities

#### **Criteria to Progress to Phase III:**

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

#### **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

#### IV. **PHASE IV – FUNCTIONAL ACTIVITIES PHASE (MONTHS 4-6)**

Goals: Gradual return to full unrestricted functional activities

***Criteria to Progress to Phase IV:***

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

**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.