

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

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
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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.
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