

High Tibial Osteotomy (HTO) Rehabilitation Protocols

Targets

Upon Discharge from Hospital

- Protected weight-bearing (feather-weight -bearing)
- Ambulating with crutches
- Rehab brace without range of motion limitation
- Sleeping in rehab brace
- Home exercise program includes; isometric quadricep sets, calf stretches, quad and hamstring stretches. Exercises done with rehab brace on.
- Using Dilaudid, Tylenol #3 or Tramacet for pain control

Goal at 6 Weeks Post-Op

- Remove rehab brace
- Progress to full weight-bearing over 3-6 weeks (time interval partly dependent on size of wedge)
- Ideally would like no joint effusion and full or near full ROM
- Begin structured physiotherapy using Stairmaster, bicycle, swimming and strengthening exercises (with or without weights)
- **All exercises at therapist's discretion**

Goal at 3 Months Post-Op

- Full ROM
- Full weight-bearing without crutches
- Able to engage in Stairmaster, bicycling, swimming, or any activity (running and jumping may not be feasible for all patients)

Post-Op HTO Instructions

HTO (0-3 Weeks)

1. **ICE - BEFORE and AFTER EXERCISE** and at any time for pain relief and to decrease swelling. Cover incisions with plastic wrap. Apply a bag of frozen vegetables/crushed ice/cold pack around the knee for 20 minutes.
2. **BRACE** should be worn at all times unless otherwise instructed.
3. **SWELLING** - When sitting or lying down, keep your leg elevated. Move your knee frequently by bending and straightening your knee. This will prevent your knee from becoming stiff.
4. **AMBULATION** - You must use crutches for 6 weeks unless otherwise advised by your physiotherapist or doctor.
5. **EXERCISES** - These are to be done three times daily following ice. Do not do any other exercises on your operated leg unless approved by your physiotherapist.
 - a. Lying on your back, bend your knee by sliding your heel towards you until your knee feels tight (you may use a towel as a sling behind your thigh). Hold for 5-10 seconds. Straighten our your leg. *Repeat 10x*
 - b. Tighten the muscle on the front of your thigh by pressing the back of your knee down. Hold for 5 seconds. Relax. *Repeat 10x*
 - c. In sitting, place a towel around the ball of your foot. Keep your knee straight and pull your foot towards you until you feel a stretch in your calf. Hold for 5 seconds. Relax. *Repeat 10x*
 - d. Standing, holding onto kitchen counter or table (make sure that your knee and thigh are in line with your body), bend your knee as much as possible so that you are bringing your heel up towards your buttock. *Repeat 10x*
 - e. Standing, holding onto kitchen counter or table, keep your leg straight and lift it out behind you (avoid bending forward at the waist). *Repeat 10x*
OR
Lie on your stomach and lift your operated leg straight upwards behind you. *Repeat 10x*
 - f. Standing, holding onto kitchen counter or table, keep your leg straight and lift it out to the side. (Avoid bending your upper body). *Repeat 10x*

Progress this exercise by lying on your non-operative side and lifting your operative leg up towards the ceiling (your shoulders, trunk, hip, knee and ankle should all be in line).
Repeat 10x

Land-Based Therapy

Week Four

- *Range of Motion*
 - Pain free knee flexion/extension. *2 sets of 10 reps*
 - Ankle/plantar dorsiflexion. *2 sets of 10 reps*
 - Hip flexion/extension in standing. *2 sets of 10 reps*
 - Hip ab/adduction. *2 sets of 10 reps*
- Isotonic quad sets with knee over roll.
1 set of 10 reps
- Isometric hamstrings.
1 set of 10 reps
- Stationary bicycle (pedal rocking) without resistance and within pain free range (or without an increase in pain).
1 set of 5 minutes
- Weight-bearing/gait training with assistance i.e. crutches or parallel bars.
1 set of 5 minutes (within restrictions)

Week Five

- Range of motion exercises as above.
Increase to 3 sets of 10 reps
- Isotonic quad sets with leg over edge of bed.
2 sets of 10 reps
- Isotonic hamstrings.
2 sets of 10 reps
- Weight-bearing/gait training with assistance i.e. crutches.
1 set of 5 minutes (within restrictions)
- Stationary bicycle as above.
2 sets of 5 minutes
- Mini-squats (greater than 50% of weight off-loaded).
2 sets of 10 reps

Land-Based Therapy

Week Six

- Range of motion exercises as above.
Increase to 4 sets of 10 repetitions
- Isotonic quad strengthening, no weight.
3 sets of 10 reps
- Isotonic hamstrings, standing, no weight.
3 sets of 10 reps
- Gait training with assistance.
2 sets of 5 minutes
- Stationary bicycle as above.
3 sets of 5 minutes
- Mini-squats (with weight off-loading).
3 sets of 10 reps
- Calf-raises (with weight off-loading).
1 set of 10 reps

Aquatic Therapy

Week Four

- Shallow water active range of motion. Knee flexion/extension, ankle plantar/dorsiflexion, hip flexion/extension, and ab/adduction within pain free range (or without increased pain), operative limb only.
2 sets of 10 in each direction
- Deep water walking.
1 set of 5 minutes
- Shallow water walking or weight-bearing.
1 set of 5 minutes

Week Five

- Shallow water active range of motion as above.
Increase to 3 sets of 10
- Deep water walking.
2 sets of 5 minutes
- Shallow water assisted weight-bearing or walking as tolerated.
1 set of 5 minutes
- Shallow water mini-squats (less than 50% weight bearing).
2 sets of 10

Week Six

- Shallow water range of motion for knees, hips and ankles as outlined above.
Increase to 4 sets of 10 repetitions within pain free range.
- Deep water walking.
3 sets of 5 minutes
- Shallow water assisted walking.
2 sets of 5 minutes
- Shallow water mini-squats.
3 sets, 10 repetitions
- Calf raises.
1 set, 10 repetitions