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High Tibial Osteotomy (HTO) **Rehabilitation Guidelines**

Rehabilitation following a HTO is an essential part of a full recovery and is a comparatively prolonged process vs. alternative knee surgeries such as uni-compartmental and TKAs. This protocol is intended to provide the user with instructions, directions, rehabilitative guidelines and functional goals during the rehabilitation process. The physical therapist must exercise their best professional judgement to determine how to integrate this protocol into an appropriate treatment plan. Some exercises may be adapted depending on the equipment availability at each facility. As an individual's progress is variable and will possess various pre-operative deficiencies, this protocol must be individualized for optimal return to activity. There may be slight variations in this protocol if there are limitations imposed from the surgery and quality of individuals healing.

Phase 1 Week 0-2

Goals:

- Pt. education: crutches and WB status
- TTWB with crutches
- Decrease pain and swelling
- Maintain flexibility of hamstrings, calves
- Gluteal and quadriceps activation

Exercise Suggestions:

- Heel slides in supine and seated
- Seated active assisted knee flexion (towel slides w/ heel on floor)
- Seated calf stretch with towel – knee bent/straight
- Seated hamstring stretch
- Quad/Ham sets
- Glute sets
- Ankle PF, DF, INV, EV with tubing
- SAQ
- 4 way SLR

Phase 2 Week 2-6

Goals:

- Pt education: Continue with crutches and WB status for 6 weeks post-op to allow healing, activity is guided by pain, swelling and warmth over osteotomy site.
- WB:
 - 2-4 weeks advance to 25% WB with crutches

- 4-6 weeks advance to 50% WB crutches- normalize gait with crutches
- ROM: encourage >120 flexion and full extension by end of 6 weeks
- Non-weight bearing strengthening exercises: hip, hamstrings, quadriceps, calves
- 50% WB CKC calves, leg press, mini squats as tolerated by patient

Exercise Suggestions:

- Continue ROM exercise
- Sitting passive leg extension with roll under heel
- Prone leg hangs off end of end/plinth
- Continue with hamstring/calf stretches
- Supine gravity assisted wall heel slides
- Supine swiss ball hamstring curls
- Bike as ROM allows, gentle half rotations if motion doesn't allow full revolution
- Quad sets +/- muscle stimulation or biofeedback
- SAQ's over roll, add weight as tolerated
- Standing CKC TKE with tubing – forward facing (active TKE) and backward facing (passive TKE)
- Supine SLR all 4 planes with weight as able
- Side lying clam shells
- Standing hip flex/ext, ABD/ADD → progress to pulleys/bands
- Prone knee flexion
- Quadruped fire hydrant
- Supine bridging: 2 legs → 1 leg
- Supine bridging on swiss ball: 2 legs → 1 leg

Phase 3 Week 6-12

Goals:

- Continue with surgeon instructed WB
- Crutches: Partial WB progress to full WB
- Monitor, normalize and retrain gait
- Full and pain free knee ROM
- Initiate cardiovascular conditioning
- Baseline proprioceptive/balance re-education
- CKC/functional strengthening of lower extremities

Exercise Suggestions:

- Patellar and/or tibial-femoral joint mobs if needed to achieve terminal ROM
- Continue with bike, elliptical, stairstepper as tolerated
- Quad/rectus stretching
- Standing stretches (partial/full WB as tolerated) for calves
- OKC and CKC exercises as tolerated
- Proprioception: With balance drills on unstable surfaces, be aware of and correct poor balance responses such as pelvis compensations.
 - Standing on ½ foam roller: balance → rocking forward/backward
 - SLS 30-60 seconds (when full WB) → progress to unstable surfaces, with and without vision
- Cardiovascular:
 - Bike/Elliptical

3-6+ Months to Return to Play

Goals:

- Continue and advance strengthening: lower chain concentric/eccentric strengthening of gluts, quads & hamstrings
- Pre-run if quad tone and ROM allow
- Dynamic lower chain strengthening
- Progress cardiovascular conditioning
- Progress proprioception
- Sport specific training
- OK to start heavier strengthening in a controlled and safe fashion