



## Rehab Protocol

### *Minimally Invasive Achilles Tendon Repair*

#### General Treatment Guidelines

- Weightbearing in the boot is progressed as tolerated starting at 2 weeks.
- The boot should be worn as instructed for 8 weeks.

#### Week 2

- Splint is removed in Dr. Dekker's office and the patient is transitioned to a walking boot with 2 heel lifts to maintain 20° of ankle plantarflexion.
- Sutures are removed.
- Weightbearing in the boot with 2 heel lifts is progressed as tolerated with assistance of crutches or a walker.
- Gentle soft tissue/scar mobilization.
- ROM exercises: active plantarflexion from 20° of plantarflexion to full plantarflexion, 2 sets of 20 repetitions; ankle circumduction (both directions), 2 sets of 10 repetitions; NO ankle dorsiflexion past 20° of plantarflexion is permitted.
- Strengthening exercises: isometric inversion/eversion, 2 sets of 10 repetitions with ankle at 20° of plantarflexion; toe curls with towel and weight; hamstring curls in prone with boot on for resistance, 2 sets of 10 repetitions.
- Cryotherapy.

#### Week 4

- Full weightbearing in the boot with 2 heel lifts.
- Wean from crutches as tolerated.
- Begin stationary bike in boot with low resistance.
- ROM exercise: continue as before, may progress to gentle stretch to neutral ankle position with the use of a towel.
- Strengthening: isometric inversion/eversion, dorsiflexion/plantarflexion, 2 sets of 10 repetitions to progress to 2 sets of 20 repetitions; begin light band resisted inversion, eversion, dorsiflexion and plantarflexion, 2 sets of 10 repetitions.
- Prone knee flexion, 2 sets of 20 repetitions.
- Cryotherapy.
- Aqua therapy may begin without weightbearing with use of a flotation device; ROM, walking or running in the water are done to preserve fitness level – Aqua therapy is not necessary, but if available may be used.

#### Week 5

- Remove 1 heel lift from the boot.
- Gentle cross fiber massage to Achilles tendon.
- Ultrasound, phonophoresis, electrical stimulation to decrease inflammation and scar formation.

- Stationary bike for up to 20 min with minimal resistance and aqua therapy as outlined in week 4.
- Gentle stretching of Achilles tendon with towel or with standing (if limited to less than neutral position only), stretch with knee extended and flexed to 40°.
- Strengthening: isometric exercise as on week 4; increase resistance band exercise for plantarflexion, dorsiflexion, inversion and eversion, 3 sets of 20 repetitions.
- Hamstring curls to facilitate gastrocnemius muscle without flexing the ankle, may be performed prone or standing with light resistance, 3 sets of 20 repetitions.

## Week 6

- Remove remaining heel lift from boot. Therefore, the patient should be weightbearing as tolerated in boot with no heel lifts.
- Stationary bike without boot with progressive resistance.
- BTE PROM, isometric and isotonic exercise.
- Weight shifting and unilateral balance exercise seated on therapeutic ball.
- Closed chain, PWB strengthening of plantarflexors (neutral through full plantarflexion).
  - Seated heel raises.
  - Total gym heel raises (low angle).
  - Hamstring curls with light resistance.
- Open chain strengthening of foot and ankle musculature with band (light to medium resistance).
- Gait training with concentration on weight shifting heel-to-toe over the involved foot and side-to-side weight shifting.
- Begin stair stepper with involved limb only.
- Modalities to control edema and pain.
- Aqua therapy, if available (especially helpful for obese patients to initiate weightbearing activity and athletes to maintain conditioning); walking in water (waist deep or greater), standing heel raises (water at least waist deep or greater), standing heel raises (water at least waist deep or greater), flutter kick with kick board (with or without fins as tolerated), conditioning exercise.

## Week 8

- Wean from boot into a comfortable tennis shoe full time.
- Gentle stretching to neutral ankle dorsiflexion (if needed).
- Increase resistance and time on stationary bike.
- Gait training – step over progressively higher steps as able.
- BTE isotonic and isometric exercise for plantarflexion strengthening (eccentric bias).
- Band resisted inversion and eversion in seated position with foot flat on the floor and band around ankle.
- Band resisted dorsiflexion (open chain).
- Total gym with increased angle for heel raises and short arc squats, begin unilateral eccentric plantarflexion exercise.
- Short arc squats in standing.
- Hamstring curls, progressive resisted exercise (PRE).
- Progress to standing heel raises using uninvolved lower extremity to assist involved lower extremity.
- Progress to standing balance exercises in tandem and then single leg support.
  - Use perturbation to increase difficulty.
  - Close eyes.
- Aqua therapy (obese patients may progress more slowly and refine ambulation quality in pool); walking in water, standing heel raises (water at least waist deep), flutter kick with kick board (with or without fins), plyometric, conditioning exercise.

## Week 10

- Stationary bike (warm up and/or aerobic conditioning).
- Gentle stretching in standing past neutral.
- BTE strengthening.
- Standing balance exercise with/without eyes closed.
  - Perturbation:
    - BOSU ball.
    - Airex pad.
    - Band resist.
    - Ball toss.
- Squats with moderate resistance (limit ankle dorsiflexion).
- Hamstring curls with resistance.
- Standing heel raises (two feet with progression to single limb for eccentric strengthening, then eccentric/concentric strengthening as able).
- Total gym single heel raise.
- Resisted walking: free motion machine, pulleys, bands.
- Elliptical trainer.
- Aqua therapy; for obese patients (progress walking tolerance and endurance, heel raises and aerobic conditioning); for athletes (progress plyometrics and aerobic conditioning).

#### **Week 12**

- Stationary bike (warm up and/or aerobic conditioning).
- Gentle stretching.
- Balance exercise with perturbation in single limb support unless WNL and equal bilaterally.
- Resisted bilateral heel raises with free motion, calf machine.
- Unilateral heel raises if able or eccentric unilateral heel raises.
- Elliptical trainer.

#### **Week 14+**

- If patient is able to perform a single limb heel raise 10 times and has low pain rating he/she may progress to:
  - Stair stepper.
  - Plyometrics training (begin with two feet and progress to single limb jumps).
  - Jogging – slow speed and limited distances with progression as symptoms permit.