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# Achilles Tendon Repair Rehabilitation Protocol


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**Postoperative Week 0-2 (or 0-4 for complex repairs)**

***Immediate Post-op plan or STANDARD achilles repair:***

1. *Patient will be in a splint or cast, NWB for at least 2 weeks in 5-10 degrees of plantar flexion*
2. *Patient may not shower nor wet the splint but may take baths seated with foot on chair and covered*
3. *Formal Physical therapy doesn't begin until the cast is off, replaced by a tall boot with an "achilles set up" (ie. Heel lift, compression stocking, plantar flexed ankle hinge). The non-op limb may be provided with an even-up under the shoe to level the pelvis out. Patient is touch-down weight bearing to begin with once cast is off and gradually progresses in Phase II.*

***Immediate Post-op plan or COMPLEX achilles repair (+- FHL transfer or V-Y Lengthening):***

1. *Patient will be in a splint or cast, NWB for at least **4** weeks in plantar flexion*
2. *Patient may not shower nor wet the splint but may take baths seated with foot on chair and covered*
3. *Patient will be placed in Gravity Equinus in plantarflexion hinged boot at 4 weeks and start therapy at this point. For **gentle** dorsiflexion with goal of neutral dorsiflexion at 6-8 weeks.*
4. *Once at neutral dorsiflexion, may begin touch down weight bearing (**no sooner than 6 weeks**) and progress in the delayed Phase II.*
5. ***Please delay starting below protocol by 2 weeks or when cast/splint off***
6. ***Please keep in mind to adjust below protocol based on pain prior to progression and take care to protect repair, especially first 6-8 weeks post-operatively**.*
7. ***Please also keep in mind, return to daily activities, especially for complex achilles tears may be up to 6 months and return to sport may take up to a year.***

**Phase I: Weeks 3-6 (Delay appropriately per above instructions if complex repair)**

***Precautions:***

1. *Do not start until incision healed completely and stable edema and pain levels*
2. *No stretching of achilles tendon beyond neutral dorsiflexion (0 degrees)*
3. *No barefoot walking*
4. *Protect healing tissue*

***Goals:***

1. *Manage edema*
2. *Minimize scar adhesions*
3. *Initiate early ROM of ankle and foot*
4. *Initiate gentle strengthening*
5. *Encourage weight bearing preparedness*
6. *Improve cardiovascular endurance*

**Treatment**:

- Ice, elevation, compression
- Scar mobilization
- Ultrasound and other modalities to the repaired tendon
- Gentle AROM in all planes, with care to limit DF to 0 degrees with knee extended
    - Toe curls and towel sweeps
    - Gentle stretching in all planes except DF
    - Ankle pumps in NWB
- Hip and knee OKC exercises
- Upright bike with boot on for endurance (using heel – NO toe push off), no resistance
- Gentle mobilization of tarsus and metatarsals to reduce joint stiffness
- Gentle strengthening of plantarflexors with light resistance rubber bands or manual resistance, isotonically
- Late Phase (5-6 weeks) 0 encourage partial closed chain weight bearing through plantigrade foot with heel lift in shoe.
- Wean off crutches by 6 weeks post-op (standard achilles repairs)
- Pool therapy, if available and incision completely healed:
    - Weight bearing on operated leg in deep water (greater than 75% buoyant)
    - Gait in deep water
    - Hip and knee ROM in pool

**Phase 2: Weeks 6 – 16 (Delay appropriately per above instructions if complex repair)**

***Progression to Phase II Criteria:***

1. *No worsening of pain or neurovascular symptoms*
2. *Stable and reducing edema in leg*
3. *No increase in pain with touchdown weight bearing in boot*
4. *Dorsiflexion to neutral or better*

***Goals:***

1. *Full symmetric ROM in all planes by end of phase*
2. *Begin partial weight bearing and progress to full weight bearing on level surfaces and controlled environments*
3. *Begin to wean off walking boot*
4. *Improve muscular strength and endurance*
5. *Improve cardiovascular conditioning*
6. *Improve Proprioception*
7. *Late phase: normalize gait patterns*

**Treatment**:

- Wean off CAM boot to tennis shoes with ½" heel lift in shoe, patient to be FWB without assistive devices before end of phase
- Use of AlterG (if available) to promote gait in a 50% weight reduced environment with shoes on (heel lift in shoe) 5-15 min twice weekly, progressing over time to gradually more weight.
- Increase resistance and variety of exercises to strengthen ankle and foot
    - Seated closed chain heel raises, no weights initially
    - Medium resistance rubber bands in all planes

    - Closed chain wall squats (boot on or heel lift in shoe)
    - Hip and knee exercises with ankle weights or other resistances as tolerated (incline leg press machine, NK table for knee, multi angle hip strengthening machine)
- Begin stretching achilles tendon gently using towel or strap, now pas 0 degree dorsiflexion but not to discomfort
- Proprioceptive and balance training exercises
    - Single leg balance exercises on flat surface with shoe on, heel lift inside
    - Small ROM on BAPS board or wobble board
    - If tolerated, progressively graduated weight bearing and shifting on trampoline
- Joint mobilization and soft tissue management
    - Talocrural mobilization
    - Subtalar mobilization
    - Cross friction massage to maturing scar
- Modalities (Ultrasound, continuous dose for 5 minutes) if applicable
- Upright bike (shoes on) with light resistance for time to improve cardiovascular endurance
- If continuing pool therapy
    - Heel raises bilaterally with 50% buoyancy
    - Regular gait in pool in different directions
    - Squats and lunges
    - Open and closed chain hip and knee exercises
    - Deep water swimming and kicks gently if tolerated

**Phase III: Weeks 16 – 24 (Delay appropriately per above instructions if complex repair)**

***Progression to Phase III Criteria:***

1. *No pain with walking FWB in shoes with heel lift*
2. *Full and symmetric ROM to contralateral ankle in all planes (10 degrees of DF with knee extended or better)*

***Goals:***

1. *Normalize gait pattern*
2. *Initiate fast walking/jogging program*
3. *Full and symmetric closed chain dorsiflexion range*
4. *Repeated single legged heel raise from and back to level surface*
5. *Increased plantar flexion strength and endurance at higher velocities*
6. *Improved cardiovascular fitness*
7. *Improved balance and proprioception*

**Treatment**:

- Walk on treadmill, progressing over time to faster speeds and low grade incline. No running until cleared by MD
- If Alter G available, possibly running with 50-60% body weight, progressively increased
- Bike or swim for cardiovascular fitness
- Closed chain strengthening of hip-knee-ankle musculature in all planes
    - Closed chain cable or sports cord pulls
    - Leg presses and calf presses, double as well as single legged
    - Heel raises, single legged, both concentrically as well as eccentrically from level surface
    - Stair climbing/stepping up on progressively bigger steps

  - Short to medium range squats
  - Short lunges
  - Trampoline shifting/jogging
- Balance and proprioceptive exercises
  - Dynamic balancing on AIREX foam bad or BOSU ball, single legged
  - BAPS board or wobble board done in standing, minimal support, large ROM
  - Ball toss against rebounder, single legged
- Pre-agility drills
  - Quick steps, forward, backward and laterally
  - Braiding or weaving in and out of ladder patterns
  - **No** jumping or single legged hopping at this time until cleared by MD

**Phase IV: Weeks 24 – onwards (Delay appropriately per above instructions if complex repair)**

***Progression to Phase IV Criteria:***

1. *Normal gait patterns on all sorts of surfaces and inclines*
2. *Absolutely no operative site pain with walking*
3. *Able to walk fast and jog, depending on their progress*
4. *Otherwise asymptomatic with all ADLs*

***Goals:***

1. *Resolve all residual impairments of strength, ROM or proprioception and functional limitations related to the same*
2. *Prepare for return to sport*

**Treatment**:

- Single legged heel rise and fall, below the horizontal with eccentric loading, done to max number of repetitions
- Plyometric jumps on floor or off trampoline (if cleared by MD)
- Single legged hopping if cleared by MD and drills around the same
- Progressively increased running pace and time, low grade inclines
- High level sport specific activities and drills (soccer drills, sled pulls or pushes, etc) later in phase

**Return to Sports: Patient needs to demonstrate full proprioception and ability to work in sport specific drills at full speed in all planes without evidence of favoring prior to be released to sports.**