KJ Hippensteel, M.D., FAAOS
Sports Medicine
OrthoArizona
P: (602) 795-6300 ext 3174

ACHILLES TENDON RUPTURE NONOPERATIVE

GUIDELINES Phase 1: Weeks 0-2

PRECAUTIONS

- **Weeks 0 – 2: Non-weightbearing with crutches/walker in splint**
- Avoid placing lower extremity (LE) in prolonged dependent position
- Non-removable splint must be kept dry at all times

TREATMENT RECOMMENDATIONS

- Patient education
  - Maintain NWB status
  - LE must be elevated on at least two pillows 80%-90% of the time
  - Walking is for functional home mobility and short distances only – wheelchair or knee scooter should be used for longer distances
- Transfer training: in and out of bed and sit to stand (e.g. chair, toilet)
- Gait training with appropriate device on level surfaces while maintaining NWB status
- Stair training if required NWB with crutch and rail or seated bump-up method
- Activities of daily living (ADL) training and home modifications
- Promotion of knee extension while elevated
- Therapeutic exercise with focus on maintaining non-operative LE and bilateral UE motion, flexibility, and strength
  - Consider blood flow restriction training with surgeon clearance

CRITERIA FOR ADVANCEMENT

- Safe ambulation/stair negotiation with NWB and appropriate device on level surfaces independently or with assistance of family member/friend if consistently present at home
- Independent with transfers

EMPHASIZE

- Control swelling
- Elevation protocol
- Independent transfers
- Gait training NWB
- Safe stair mobility, if required

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GUIDELINES Phase 2: (Weeks 2-4)

PRECAUTIONS

• **Weight bearing progression**
- **Week 3: 50% WB with crutches/walker and boot (x4 ½" heel wedges)**
- **Week 4: 75% WB with crutches/walker and boot (x4 ½" heel wedges)**
- **Week 5: full WBAT with boot, continue crutches/walker until gait normalizes (x4 ½" heel wedges)**
- **Week 6: full WBAT with boot, wean off crutches/walker, (x3 ½" heel wedge)**

• Avoid placing LE in prolonged dependent position
• No active or passive dorsiflexion (DF) stretching

TREATMENT RECOMMENDATIONS

• Active range of motion: full plantarflexion and dorsiflexion to neutral
• No stretching of the Achilles tendon
• Proximal hip and core strength
- Abdominal exercises
  - Supine and quadruped
- 3-way straight leg raise (no forward flexion)
- Clamshells at 45 degrees and 0 degrees hip flexion with abdominal control
- Emphasize hip extension strengthening
- Consider blood flow restriction training with surgeon clearance

• Upper body conditioning program

CRITERIA FOR ADVANCEMENT

• Patient understands repair protection guidelines
• Edema well controlled
• Independent with core and hip stability program

EMPHASIZE

• Proximal hip strengthening
• Control swelling
• Elevation protocol
• Independent transfers
• No stress on the tendon during any exercises

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GUIDELINES Phase 3: Weeks 5-8

PRECAUTIONS

- **Weight bearing progression**
  - **Week 5: full WBAT with boot, continue crutches/walker until gait normalizes (x4 ½" heel wedges)**
  - **Week 6: full WBAT with boot, wean off crutches/walker, (x3 ½" heel wedge)**
  - **Week 7: full WBAT with boot +/- crutches/walker (x2 ½" heel wedge)**
  - **Week 8: full WBAT with boot +/- crutches/walker (x1 ½" heel wedge)**
  - **Week 9+: wean out of boot into athletic shoe + ankle brace**
- Avoid passive overpressure or stretching into ankle DF
- No maximal plantarflexion strength testing

TREATMENT RECOMMENDATIONS

- Focus on seated and closed chain motion
  - Ankle and toe AROM/PROM
  - Seated ankle inversion/eversion
  - Toe articulation – Seated heel raises – emphasize rolling through hallux
  - Intrinsics – Marble toe pick ups
- Arching/doming progressing from seated to standing
- Joint mobilizations
  - Talocrural and tibiofibular joints
  - 1st MTP dorsiflexion
  - Subtalar joint inversion/eversion
- Progress hip flexibility with emphasis on extension
- Initiate balance/proprioception exercise training respecting WB status
  - Multidirectional wobble board → Bilateral stance on a cushion shod/unshod
- Strengthening
  - Proximal LE
  - Bilateral heel raise progression: seated → seated with load → leg press → standing with upper body support
  - Hip extension in standing
  - Consider/progress blood flow restriction training with surgeon clearance
- Aquatic exercise when incision healed and cleared by surgeon – deep water jog only

CRITERIA FOR ADVANCEMENT

- Wound closure
- Symmetrical bilateral heel raises either full weight bearing (FWB) or PWB
- FWB in CAM boot, no wedges, with or without assistive device
- DF to neutral

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GUIDELINES Phase 4: Weeks 9-12

PRECAUTIONS

- **Weight bearing progression**
  - **Week 9+: wean out of boot into athletic shoe + ankle brace**
- Avoid weaning off assistive device and CAM boot too early
- No passive DF stretching

TREATMENT RECOMMENDATIONS

- Gait training weaning from CAM boot and assistive device
  - Encourage step through pattern
  - Emphasize push-off at terminal stance
- Edema management: compression garments, patient education
- Scar mobilization, silicone strips, moisturizing when wound is healed
- Forward step up/down and lateral step-up progressions
- AROM/PROM and mobilizations of ankle and toes
  - Flat footed squat with knees over toes and UE support
  - Mobilization of 1st MTP, distal tibiofibular, talocrural and subtalar joints
  - Lunging with elastic band or strap for talocrural self-mobilization
- Progress unilateral static and dynamic standing balance/proprioceptive exercises
  - Unstable surfaces (e.g., foam, rocker board)
- Strengthening
  - Progress plantar flexor strengthening
    - Bilateral plantarflexion
    - Leg press or standing leaning on elbows, fully upright
    - Heel raises with proper eccentric control – Two up/one down
  - Core strengthening – Front and side planks
  - Progress to dynamic, closed chain proximal LE strengthening
    - Squats, gluteus medius band exercises, leg press, hip extension
- Progress cardiovascular conditioning
  - Retro treadmill
  - Aqua jog / Swimming: avoid pushing off the wall during turns

CRITERIA FOR ADVANCEMENT

- Functional ankle/toe ROM to allow for symmetrical gait
  - DF to 75% of non-operative side
- Ascend 6-inch steps reciprocally
- SLS without Trendelenburg
- Ability to perform symmetrical bilateral heel raises
  - Ability to perform single leg eccentric heel raise 10x

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GUIDELINES Phase 5: Weeks 13-23

PRECAUTIONS
• Avoid premature progression to impact activities (e.g., running, jumping)

TREATMENT RECOMMENDATIONS
• Edema control with ankle compression garment, as needed
• Maximize gait symmetry, efficiency, and speed
• Forward step-down progression
• AROM/PROM and mobilization focusing on persistent deficits
• Progress single leg closed chain activities (e.g., single leg squat, loaded forward lunge)
• Progress dynamic balance/proprioceptive and loading exercises
  - E.g., cariocas, tandem walking, heel walking, toe walking, single leg balance with multidirectional challenges
  - Progress to unstable surfaces and perturbations
• Continue to progress functional strengthening
  - Maximize symmetrical movement patterns and encourage healthy compensatory patterns in adjacent joints as necessary
• Consider starting pre-impact training (i.e., aquatic/anti-gravity treadmill)
  - Eccentric strengthening and control
    - End range control
    - 3-point heel lowering exercise
  - Functional LE chain strengthening
  - Hiking, yoga, Pilates, light aerobic classes

CRITERIA FOR DISCHARGE OR ADVANCEMENT TO RETURN TO SPORT
• Ankle DF within 10% of uninvolved side
• SLS > 90% of uninvolved side
• MMT 5/5 of all muscle groups
  - At least 90% closed chain, heel raise work (height x reps) compared to contralateral side
• Independent gym program

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GUIDELINES Phase 6: Return to Sport/Dynamic Activities (Week 24+)

PRECAUTIONS
• Avoid too much, too soon: monitor volume and load
• Avoid inadequate rest and recovery

TREATMENT RECOMMENDATIONS
• Increase volume and plantarflexion load to mimic load necessary for return to activity
• Introduce movement patterns specific to patient's desired sport or activity
• Introduction of light agility work
  - Hopping patterns
• Increase cardiovascular load to match that of desired activity (return to running progression)
• Consider collaboration with certified athletic trainer (ATC), performance coach/strength and conditioning coach (CSCS), skills coach and or personal trainer for complex sports specific movements, if available
• Begin gentle passive DF stretching at 6 months if less than 90% DF of non-operative side

CRITERIA FOR DISCHARGE OR ADVANCEMENT TO RETURN TO SPORT
• Ensure that there is a plan in place for a graded return to full or modified activity based on patient's maximal therapeutic activity (e.g., ATC, skills coach, CSCS)

EMPHASIZE
• Progression of pain free loading
• Eccentric gastrocnemius and soleus control
• Quality with functional activities