Non-Operative Treatment of Achilles Tendon Ruptures

Phase 1 – Maximum Protection Phase (0-2 weeks)

Goals for Phase 1
- Protect integrity of injury
- Minimize effusion

Immobilization/Weight Bearing/ROM
- Immobilization in brace
- NWB with assistive device

Brace
- Plaster cast or walking orthosis with ankle plantar flexed to about 20° to reduce gap

Strengthening
- Quadriiceps, glut, and hamstring setting
- OKC hip strengthening

Modalities
- Vasopneumatic compression for edema management 2-3x/week (15-20 min)
- Cryotherapy at home, 3 x per day for 20 minutes each with ankle elevated above heart

Precautions
- No ankle PROM/AROM
Phase 2 – Passive/Active Range of Motion Phase (2-6 weeks)

Goals for Phase 2
- Protect integrity of injury
- Minimize effusion
- Progress ROM per guidelines
- Progress weight bearing in walking boot

Immobilization/Weight Bearing
- Protected weight bearing progression
- 2-3 weeks: 25%
- 3-4 weeks: 50%
- 4-5 weeks: 75%
- 5-6 weeks: 100%

Range of Motion
- Active PF and DF range of motion exercises to neutral DF
- Inversion and eversion below neutral DF

Brace
- Walking boot with 2-4 cm heel lift

Manual Therapy
- Joint mobilizations to ankle and foot (Grade I-III)

Strengthening
- Active PF and DF to neutral DF
- Initiate limited ankle and foot strengthening when able to tolerate ankle AROM (towel crunches, marble pick-ups, PF/DF light band strengthening (DF to neutral, etc.)
- Sub-maximal ankle inversion and eversion strengthening
- Knee/hip exercises with no ankle involvement e.g. leg lifts from sitting, prone, or side-lying
- Core strengthening
- NWB fitness/cardio e.g. bike with one leg, UBE, deep water running (usually started 3-4 weeks)

Aquatics
- Hydrotherapy within motion and weight bearing restrictions

Modalities
- Compression garment for effusion control
- Modalities to control swelling (US, IFC with ice, Game Ready)
- NMES to gastroc/soleus complex with seated heel raises when tolerated
- Do not go past neutral ankle DF position

Precautions
- Emphasize on using pain as a guideline for progression of exercises and walking progression
- Emphasis on NWB cardio as tolerated
- DF ROM to neutral
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Phase 3 – Progressive Stretching and Early Strengthening (6-8 weeks)

Goals for Phase 3
- ROM per guidelines
- FWB in boot, reducing heel lift to neutral
- Gentle strengthening of ankle
- Progress cardio endurance

Im mobilization/Weight Bearing
- WBAT, typically 100% in walking boot

Range of Motion
- Controlled active assistive DF stretching

Brace
- Remove heel lift, 1 section every 2-3 days

Manual Therapy
- Joint mobilizations ankle and foot (Grades I-IV)

Strengthening
- Stationary bike in CAM boot
- AAROM DF stretching, progressing to belt in sitting as tolerated
- Progress resisted exercises from open to closed chain; Do not go past neutral DF with weight bearing activities
  - Resisted theraband
- Gait training in boot
- Core strengthening

Aquatics
- Hydrotherapy

Modalities
- EMS on calf with strengthening exercises, Do not go past neutral DF
- Cryotherapy, Game Ready to control inflammation

Precautions
- Do not go past neutral ankle position with weight bearing position
- Ambulation in CAM boot
- Gradual progression into DF open chain
- No impact activities
Phase 4 – Terminal Stretching and Progressive Strengthening (8-12 weeks)

Goals for Phase 4
- Protect integrity of Achilles due to highest risk of re-rupture
- Wean out of boot over 2-5 days
- Gradually wean of assistive device
- Normalize gait

Precautions
- Highest risk of re-rupture
- Avoid any sudden loading of the Achilles (e.g., tripping, step-up stairs, running, jumping, hopping, etc.)
- No eccentric lowering of plantar flexors past neutral
- No resisted plantar flexion exercises which requires more than 50% of pt’s body weight
- Avoid activities that require extreme DF motions

Immobilization/Weight Bearing
- WBAT in ankle brace per surgeon recommendation
- Dispense heel wedge as needed

Range of Motion
- Progress to full range in all planes

Strengthening
- 8-10 weeks
  - Progress resistance on stationary bike
  - Gentle calf stretches in standing
  - Normalize gait
  - Continue multi-plane ankle stretching
  - Progress multi-plane ankle strengthening with Thera-band
  - Seated heel raise
  - Seated BAPS/rocker board
- 10-12 weeks
  - Gradually introduce elliptical and treadmill walking
  - Progress to double heel raise on leg press to standing. Do not allow ankle to go past neutral DF and no more than 50% of pt’s body weight.
  - Supported standing BAPS/rocker board

Neuromuscular Control
- 8-10 weeks: Begin proprioceptive training progressing to unilateral
- 10-12 weeks: Progress proprioceptive training

Modalities
- Cryotherapy, Game Ready to control inflammation
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Phase 5 – Progressive Strengthening (3-5 months)

Goals for Phase 5
• Return to function

Brace
• Wean out of ankle brace and heel lift

Strengthening
• Increase intensity of cardiovascular program
• Cycling outdoors
• Progress to double heel raise to single heel raise to 50% body weight to eccentric strengthening as tolerated
• Continue to progress intensity of resistive exercises progressing to functional activities (single leg squats, step-up progressions, multi-directional lunges)
• Begin multi-directional resisted cord program (side stepping, forward, backward, grapevine)
• Initiate impact activities
  o 12+ weeks: sub-maximal bodyweight (pool, GTS, plyo-press)
  o 15-16 weeks: maximal body weight as tolerated
• Core strengthening

Precautions
• High risk of re-rupture
• No running, hopping
• Avoid extreme DF activities

Aquatics
• Initiate pool running around 15-16 weeks

Neuromuscular Control
• Advanced proprioception on un-stable surfaces with perturbations and/or dual tasks

Modalities
• Cryotherapy/Game Ready as needed
# Non-Operative Treatment of Achilles Tendon Repairs

## Phase 6 – Terminal Stretching and Progressive Strengthening (5-8 months)

### Goals for Phase 6
- Progressive running, hopping
- Return to function/work/sport

### Strengthening

#### 5-6 months
- Initiate running on flat ground
- Progress proprioception
- Sport-specific rehab
- Progress eccentric PF strengthening

#### 6-8 months
- Initiate hill running
- Initiate hopping and progress to long horizontal and vertical hops
- Return to sport testing per physician approval
  - Criteria: pain-free, full ROM, minimal joint effusion, 5/5 MMT strength, jump/hop testing at 90% compared to uninvolved, adequate ankle control with sport and/or work specific tasks

### Precautions
- Only progress back to sport/activity as tolerated, and if cleared by “Return to Sport Test” and physician

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This protocol was updated and reviewed by Dr. Devries and Dr. Scharer of BayCare Foot & Ankle Center and by Jessica Sigl, DPT on 1/18/16
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Resources:

1) Accelerated Rehabilitation Program for Non-operative Treatment of Achilles Tendon Ruptures
