ORTHOPEDICS & SPORTS MEDICINE
BAYCARE CLINIC

DR. JASON DEVRIES
NON-OPERATIVE TREATMENT PROTOCOL OF ACHILLES TENDON RUPTURES

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

Goals for Phase 1	Precautions for Phase 1
• Protect integrity of injury • Minimize effusion	• No ankle PROM/AROM

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
- Quadriceps, 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

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Phase 2 – Passive/Active Range of Motion Phase (2-6 weeks)

Goals for Phase 2	Precautions for Phase 2
• Protect integrity of injury • Minimize effusion • Progress ROM per guidelines • Progress weight bearing in walking boot	• Emphasize on using pain as a guideline for progression of exercises and walking progression • Emphasis on NWB cardio as tolerated • DF ROM to neutral

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 heal raises when tolerated
- **Do not go past neutral ankle DF position**

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Phase 3 – Progressive Stretching and Early Strengthening (6-8 weeks)

Goals for Phase 3	Precautions for Phase 3
• ROM per guidelines • FWB in boot, reducing heel lift to neutral • Gentle strengthening of ankle • Progress cardio endurance	• Do not go past neutral ankle position with weight bearing position • Ambulation in CAM boot • Gradual progression into DF open chain • No impact activities

Immobilization/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

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Phase 4 – Terminal Stretching and Progressive Strengthening (8-12 weeks)

Goals for Phase 4	Precautions 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	• Highest risk of re-rupture • Avoid any sudden loading of the Achilles (i.e. 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 TheraBand
  - 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	Precautions for Phase 5
• Return to function	• High risk of re-rupture • No running, hopping • Avoid extreme DF activities

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:
  - **12+ weeks**: sub-maximal bodyweight (pool, GTS, plyo-press)
  - **15-16 weeks**: maximal body weight as tolerated
- Core strengthening

Aquatics
- Initiate pool running around 15-16 weeks

Neuromuscular Control
- Advanced proprioception on unstable surfaces with perturbations and/or dual tasks

Modalities
- Cryotherapy/Game Ready as needed

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

Goals for Phase 6	**Precautions for Phase 6**
• Progressive running, hopping • Return to function/work/sport	• Only progress back to sport/activity as tolerated, and if cleared by "Return to Sport Test" and physician

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

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