Achilles Tendon Repair Rehabilitation Protocol

For Acute Surgical Repair (Open or MIS)
📞 Call (615) 936-7846 to schedule a consultation

Overview:

Acute Achilles tendon ruptures most commonly occur in active adults in their 20s–40s during recreational sport. Surgical repair restores tendon continuity and length-tension relationship of the gastroc-soleus complex.

Modern rehabilitation emphasizes:

- **Early protected weight bearing**
- **Early controlled range of motion**
- **Avoidance of prolonged immobilization**

Level I evidence supports accelerated functional rehabilitation without increased rerupture risk when properly supervised

Progression is **criteria-based**, not calendar-driven.

Why Early Motion and Early Weight Bearing Matter — But Must Be Protected

Modern Achilles rehabilitation emphasizes **early range of motion (ROM) and early weight bearing** because controlled mechanical loading improves tendon healing. Gentle, protected movement stimulates collagen organization, reduces stiffness, improves circulation, and helps prevent muscle atrophy. Studies have shown that when performed in a structured and protected manner, early functional rehabilitation does **not** increase rerupture rates and leads to excellent long-term outcomes.

However, there is an important distinction between **early loading** and **unrestricted loading**.

If too much stress is placed on the tendon too soon — especially excessive dorsiflexion stretching or aggressive weight bearing without protection — the healing tendon can lengthen. Tendon lengthening alters the normal length-tension relationship of the gastrocnemius-soleus complex. Even a small increase in tendon length can lead to:

- Persistent weakness with push-off
- Loss of explosive power
- Reduced single-leg heel raise strength
- Difficulty returning to high-level sport

Excessive early strain can also disrupt collagen alignment, leading to atypical tendon remodeling and inferior mechanical properties.

The goal, therefore, is **early but protected motion** — gradual dorsiflexion to neutral, progressive weight bearing in a boot with heel lifts, and structured advancement based on tissue healing and strength milestones.

Rehabilitation after Achilles repair is a balance:

- Too little motion → stiffness and deconditioning
- Too much too soon → tendon elongation and strength loss

A carefully guided, criteria-based progression protects the repair while optimizing long-term strength and function.

Phase I: Protection & Early Healing (Weeks 0–2)

Goals

- Protect repair
- Minimize swelling
- Promote incision healing
- Prevent proximal deconditioning

Immobilization

- Posterior splint in ~20° plantarflexion
- Strict elevation

Weight Bearing

- Non–weight bearing

Activity

- Hip/core strengthening
- Straight leg raises
- Toe mobility
- Upper body conditioning

Phase II: Early Functional Rehabilitation (Weeks 2–6)

Transition (2 Weeks Post-op)

- Wound check
- Sutures removed once healed
- Transition to removable CAM boot with 2 cm heel lift (~20° PF)

Weight Bearing

- Begin **protected weight bearing at 2 weeks**
- Progress to weight bearing as tolerated by 4 weeks if:
  - Pain controlled
  - No increased swelling
  - No wound issues

Range of Motion

- Active plantarflexion immediately
- Active dorsiflexion to neutral only
- No passive DF stretching
- Knee flexed during early DF exercises

Therapy Focus

- Edema control
- Scar mobilization
- Seated bike (boot on)
- Gentle intrinsic activation
- Proximal strengthening

Phase III: Progressive Loading (Weeks 6–10)

Goals

- Normalize gait
- Restore 4-quadrant ankle ROM
- Begin strengthening

Weight Bearing

- Wean from boot 6–8 weeks
- Transition to supportive shoe with heel lift

ROM

- Gradual passive dorsiflexion after 8 weeks
- Avoid aggressive stretching

Strength

- Seated calf raises
- Isometrics → light isotonic PF
- Inversion/eversion strengthening
- Double-leg balance progression

Phase IV: Strength & Gait Restoration (Weeks 10–14)

Goals

- Restore strength symmetry
- Prepare for impact progression

Strength Criteria to Advance

- 15–20 single leg heel raises
- No reactive swelling

Interventions

- Eccentric plantarflexion emphasis
- Double-leg heel raises → single-leg progression
- Treadmill walking
- Begin walk/jog program (~12 weeks)

Phase V: Return to Running & Sport Progression (Weeks 14–24)

Goals

- Restore explosive strength
- Improve tendon load tolerance
- Prepare for sport-specific demands

Activities

- Progressive running program
- Plyometrics (double → single limb)
- Agility drills
- Cutting and change-of-direction drills

Criteria for Running

- Pain-free walking
- Symmetric gait
- ≥80% plantarflexion strength vs contralateral side

Phase VI: Full Return to Sport (4–6+ Months)

Return is **criteria-based**, not time-based.

Clearance Requirements

- No mid-substance tenderness
- No swelling after high-load activity
- Symmetric ROM
- ≥90% strength vs contralateral limb
- Pain-free single-leg hop
- Sport-specific mechanics without compensation
- Psychological readiness

Elite cutting sports may require 6–9 months.

Special Considerations

Chronic Repairs or Tendon Transfers

- Immobilization may extend to 4 weeks
- PT initiation may delay to 5–6 weeks
- Slower dorsiflexion progression

MIS vs Open Repair

- MIS often allows slightly more confident early motion
- Wound complications are lower with MIS

Expected Recovery Milestones

Timepoint	Expected Status
2 weeks	Protected WB initiated
6 weeks	Neutral DF achieved
12 weeks	Begin jog progression
4 months	Sport progression
6 months	Full sport participation (most patients)
12 months	≥80–90% strength recovery

Evidence Foundation

- **Willits et al.** Operative vs Nonoperative Treatment of Acute Achilles Tendon Ruptures Using Accelerated Functional Rehabilitation
- Costa ML et al. Early weight-bearing studies
- Kangas et al. Tendon elongation studies
- Jackson JB 3rd, Strasser NL, Gonzalez T, Park J. Management and Return to Play of the Elite Athlete for Common Sports-Related Injuries About the Ankle. *J Am Acad Orthop Surg.* 2025.