

Achilles Tendinopathy: Heavy Slow Resistance Training Guide

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Note: This clinical guide focuses strictly on conservative physical rehabilitation and progressive tissue loading. It does not replace medical diagnostics, imaging, or surgical consultation. Please consult with a physician for matters outside the scope of physical therapy.

Welcome to this clinical guide on managing Achilles tendinopathy. As physical therapists, our primary approach to tendinopathy focuses on progressively restoring the load-bearing capacity of the calf-Achilles complex. While historical approaches often favored prolonged rest, we now know that unloading can further weaken tendon structure. Progressive mechanical loading is widely recognized as a first-line physical therapy intervention, and Heavy Slow Resistance (HSR) is one of the most effective ways to apply it.

What Is Heavy Slow Resistance (HSR) Training?

Heavy slow resistance training utilizes progressively heavier external resistance while each repetition is performed at a deliberately controlled, slow speed. For Achilles rehabilitation, the goal is not merely to fatigue the calf muscles, but to systematically expose the tendon and plantar-flexor musculature to higher mechanical demands, thereby promoting tissue adaptation.

Unlike isolated eccentric protocols, HSR normally incorporates both concentric (lifting) and eccentric (lowering) phases. This allows the gastrocnemius, soleus, and Achilles tendon to experience substantial, functional loading throughout the entire movement cycle. Key principles of this approach include:

- Progressive, graded loading rather than sudden spikes in intensity.
- Slow, controlled repetitions (typically 3 seconds up, 3 seconds down) to maximize time under tension and minimize reactive bouncing.
- Gradual, monitored increases in resistance over a 12-week timeline.
- Adequate recovery between sessions (usually performed 3 times per week).
- Strict monitoring of symptom response over 24-hour windows.

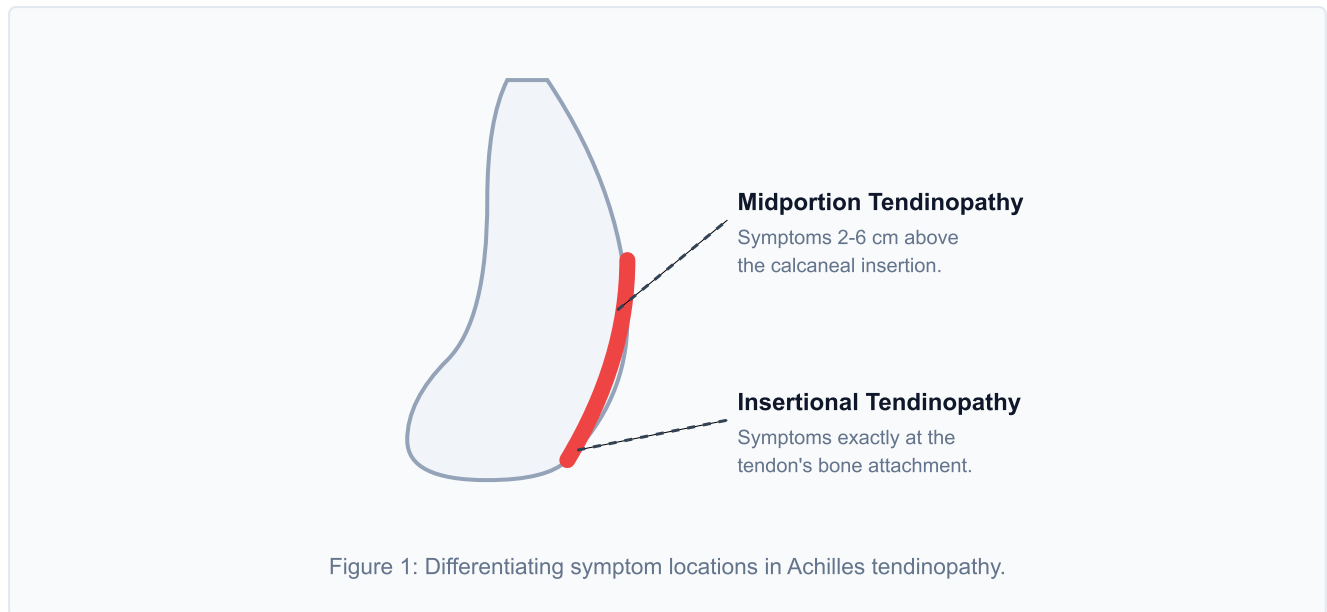
Who Can Benefit From Achilles HSR?

The strongest direct evidence for the classic HSR protocol comes from adults managing chronic **midportion Achilles tendinopathy**. HSR is an excellent option for patients who have sufficient baseline loading tolerance, are capable of performing controlled single-leg heel raises, and are looking for a structured, gym-based strengthening program to return to high-demand activities like running or jumping.

It is important to note that a patient with highly irritable or acute symptoms may initially require a lower-load isometric phase before progressing to traditional HSR. The starting point is always determined by the

Midportion vs. Insertional Tendinopathy

Before prescribing an HSR program, it is essential to accurately identify the location of the patient's symptoms. The clinical guidelines for midportion tendinopathy should not be automatically generalized to insertional issues, as structural biomechanics differ significantly.



Midportion Achilles tendinopathy typically produces pain and swelling in the main body of the tendon, roughly 2 to 6 centimeters above the heel bone. **Insertional Achilles tendinopathy** is centered exactly where the tendon attaches to the calcaneus. For insertional symptoms, deep ankle dorsiflexion can cause physical compression of the tendon against the heel bone. Therefore, early HSR exercises for insertional patients are often performed from a flat surface (floor) to avoid compressive end-ranges, rather than off the edge of a step.

The Classic HSR Exercise Selection

The standard HSR protocol designed for midportion Achilles tendinopathy typically utilizes three bilateral calf exercises performed in a structured gym environment. This combination ensures that both the soleus and gastrocnemius muscles are thoroughly loaded.

1. Seated Calf Raise

The seated variation emphasizes plantar-flexor work with the knee bent (flexed). This position places the gastrocnemius on slack