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## ACHILLES TENDONOPATHY NONOPERATIVE PROTOCOL

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Achilles tendon problems are often overuse injuries.<sup>1</sup> They can be subdivided into non-insertional, or insertional tendinopathies. Both athletes and sedentary people can present with Achilles tendon pain.<sup>1,2</sup> Research suggests that Achilles tendinopathies are more common in males, 30-50 years old.<sup>1</sup> It is important to consider intrinsic and extrinsic factors when treating patients with this condition. It is also essential to consider the evidence and the APTA's clinical practice guidelines.

**NON-INSERTIONAL:** Non-insertional tendinopathy most commonly refers to the area 6 cm proximal to the insertion of the Achilles tendon. This is more common in active individuals.<sup>1</sup>

**INSERTIONAL:** Insertional tendinopathy refers to the area within 2 cm of where the Achilles tendon inserts onto the calcaneus.<sup>3</sup> This is more common in sedentary individuals.<sup>1</sup>

Type 1 tendinosis: focal thickened tendon

Type 2 tendinosis: focal thickening involving >50% of the width of the tendon

Type 3 tendinosis: diffuse thickening involving <50% of the width of the tendon<sup>3</sup>

### **CLINICAL FINDINGS:**

**Insertional:** shoes may aggravate symptoms, non-active patient, Haglund's deformity may be present, tender at insertion, painful single heel rise

**Non-insertional:** may or may not be associated with training errors, enlarged or nodular tendon, tenderness proximal to tendon insertion, painful single heel rise

Differential diagnoses that should be considered include, but are not limited to, retrocalcaneal bursitis and posterior ankle impingement.<sup>1</sup>

### **INTRINSIC AND EXTRINSIC FACTORS:**

#### ***Intrinsic***

- decreased dorsiflexion ROM
- abnormal subtalar ROM (increased or decreased)
- decreased plantar flexion strength
- excessive foot pronation
- co-morbidities (obesity, hypertension, hyperlipidemia, diabetes)<sup>1</sup>

#### ***Extrinsic***

- training errors (increase mileage too quickly)
- poor jumping mechanics<sup>4</sup>
- insufficient/improper footwear

### **Foot and Ankle Biomechanics**

Abnormal biomechanics can play a role in causing Achilles tendinosis. As mentioned above, decreased dorsiflexion, or decreased talocrural mobility, can place more stress on the Achilles tendon. With decreased dorsiflexion, the Achilles tendon will not be taken through normal excursion and/or extensibility, leading to increased tensile forces during active motions.

With excessive foot pronation, there is an increased rotational force through the tendon. This causes shearing forces that can contribute to tendon damage.<sup>1</sup> With the heel being subject to more of a valgus position during pronation, the medial Achilles has more load placed on it. To the contrary, in a rigidly supinated foot, the heel is in a more varus position, which will place the lateral Achilles at an increased load. Whether treating someone with excessive pronation or supination, it is important to consider the different foot types, and what each one would respond best to. Both foot types will require footwear and/or orthotic recommendations. The supinated foot may need to focus on flexibility and finding accommodative footwear, whereas the pronated foot may need to focus on strength and proprioception and finding motion control footwear.

*Developed in conjunction with the physicians at South Bend Orthopaedics*

When considering biomechanics, it is important to look at the entire lower extremity to determine how poor strength, alignment, or poor movement patterns in the hips, gluteals, or knees could contribute to developing Achilles tendinosis.

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### **Treatment Progression**

Treatment for both insertional and non-insertional tendinopathies should include education, unloading the tendon, gradually reloading the tendon, and protection.<sup>5</sup> We typically recommend the following tiered approach:

- 1) Gastrocnemius and soleus stretching with home exercise program (HEP) with eccentric loading, Strausburg socks, anti-inflammatories, and possible iontophoresis
- 2) Heel cord lengthening (e.g. Strayer gastrocnemius recession)
- 3) Possible other indications surgical procedures
  
- 4) Activity modification, (grade B)<sup>1</sup>
  
- 5) Modalities: iontophoresis using dexamethasone; low level laser, (grade B)<sup>1</sup>
  
- 6) Gastroc and soleus stretching, (grade C)<sup>1</sup>
  
- 7) Orthotics, (if indicated), to address foot mechanics, (grade C)<sup>1</sup> This may include a heel lift in the acute phase to unload the tendon, and customizable orthotics in the later phases to protect and prevent re-injury.
  
- 8) Eccentric loading, (grade A)<sup>1</sup>  
Eccentric heel raises: 3 sets of 15 repetitions, (with knee straight and knee bent), 1x/day x 12 weeks. Perform this exercise to the point of pain, but not through the pain. Progress from the floor, to off a step.<sup>6</sup>  
\*\*This exercise may need to be modified for individuals with insertional tendinosis due to decreased activity tolerance, (only perform from the floor, and not off a step)<sup>6</sup>

There is no guarantee on outcome. All conservative management options have risk of worsening pain, progressive irreversible deformity, and failing to provide substantial pain relief. All surgical management options have risk of infection, skin or bone healing issues, and/or worsening pain. Our promise is that we will not stop working with you until we maximize your return to function, gainful work, and minimize pain.

### **REFERENCES:**

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