

# ACHILLES TENDINOPATHY

What is it and tips for self-management

## What is Achilles tendinopathy?

The Achilles tendon, sometimes referred to as 'calcaneal tendon' or 'heel cord', lies at the back of your ankle (Box 1). Tendinopathy can be defined as local tendon pain that is associated with activities that load the tendon.

Achilles tendinopathy often results in pain and in reduced level of function and tolerance to exercise. It can also result in diffuse or localized swelling, as well as stiffness and soreness after rest, e.g. in the morning or long periods of sitting.

In the initial phase the symptoms can ease or even resolve after little movement, but can also become more limiting constant pain during activity at a later stage of tendinopathy.



**Figure 1.** Achilles tendinopathy is often divided into two conditions A) insertional tendinopathy B) midportion tendinopathy

### **Box 1. Achilles tendon**

- is a robust, fibrous cord that connects your calf muscles to your heel bone.
- is the thickest tendon in the human body.
- transmits forces generated by the contraction of calf muscles, resulting in ankle extension (i.e. straightening).
- must repeatedly withstand and transfer significant forces, in order to perform daily activities and engage in sports.

### **Why do I have it?**

While numerous factors, including biomechanics, genetics, other health issues, and structural changes in the tendon (observed in imaging studies) have traditionally been considered as risk factors for Achilles tendinopathy, the precise pathophysiology and risk factors remains still unknown.

However, it's understood that the condition is not caused by a single factor but rather influenced by multiple elements that vary from one individual to another. This means that there is likely not one reason why you have developed Achilles tendinopathy, but multiple things have played a role.

Achilles tendinopathy can be associated with systemic disorders, such as inflammatory or metabolic disorders. However, often it is classified as an overuse injury, which means it has likely developed gradually over time with repetitive loads exceeding the tendon's capacity.

For example, a sudden increase in the frequency or intensity of activities that load the Achilles tendon can also increase the risk of tendinopathy, as can inadequate rest and recovery.

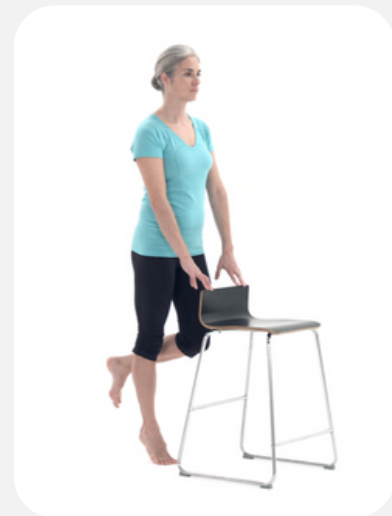
In addition to exceeding the tendon's load threshold, having previously experienced Achilles tendinopathy and training in cold weather can also increase the likelihood of developing this condition.

It's important to note that structural changes in the tendon do not always cause pain, but changes are seen also in individuals without symptoms. Pain is a sensory and emotional experience that acts as an alarm response created by your nervous system. Your brain receives various signals originating from your body, but also other information e.g., your past experiences, beliefs and emotions, etc. Therefore, also other biopsychosocial factors that may influence pain onset and duration of pain also in Achilles tendinopathy.

### **How is it diagnosed?**

Achilles tendinopathy diagnosis does not require imaging (e.g. x-ray or magnetic resonance imaging (MRI)). Instead, it can be determined through clinical symptoms and activity-related localized tendon pain and stiffness history, and further verified by palpating the tendon to determine if it is tender. Functional tests, like single-leg hopping or heel raises, can also help identify if the pain is triggered by activity.

Ultrasonography can be used to eliminate other potential sources of pain.



### **What can I expect?**

It's important to understand that persistent symptoms and flareups are normal and common. We currently have limited knowledge about factors influencing the long-term prognosis of Achilles tendinopathy, making it challenging to determine how long the symptoms will persist.

One person can feel fully recovered in 3-months, but often it takes longer than that, even years. In the long run, majority of people (nearly two-thirds) will see their symptoms resolve, though it may take time. A smaller group (less than one-third) might continue to experience mild symptoms, but only one in ten will face more significant functional limitations.

Achilles tendon rupture is a common concern for those experiencing Achilles tendon issues; however, it can be reassuring to know that Achilles tendinopathy does not increase the risk of an Achilles tendon rupture.

## How can I manage it?

The aim of managing Achilles tendinopathy is often to reduce symptoms and disability due to the condition as well as enhance tendon healing. Early “intervention” can result in better outcomes so management should be started when there are early signs of the condition, such as stiffness and pain during initiation of activity, even if the symptoms ease after you have warmed up.

When the symptoms have lasted for 3-months or longer the likelihood for the condition to improve without an intervention such as an exercise therapy became smaller.

The first line management of Achilles tendinopathy is conservative, i.e. exercise therapy, education and load management. The severity of symptoms doesn't influence the initial management, as even severe symptoms may significantly improve through a conservative approach.

## Exercise therapy

The aim of exercise therapy is to progressively load (i.e. with gradually increasing demands) the tendon. It can be done in many different ways and below are some common strengthening exercise approaches used for tendinopathies. See example of strengthening program progression in Box 2.

- **Isometric exercises** - exercises where muscle is contracted but no movement occurs through the joint. Isometric exercises can be useful in the initial phase to manage pain as an acute pain reduction may be experienced after isometric exercises. Isometric exercises can be useful also to prepare for other exercises that might otherwise feel too uncomfortable.
- **Eccentric tendon loading exercises** - exercises where only the eccentric phase, i.e. the phase where the muscle is lengthening and slowing down the movement, is loaded. One example is heel raise exercise where you rise onto your toes on two legs, lift one leg off the floor and lower your heel back down whilst standing on one leg.
- **Heavy slow resistance exercises (HSR)** - exercises where the movement is slow and load is relatively high, e.g. heel raises on a leg press machine so that it takes 3 seconds to lift the heels, then 3 seconds to hold the heels up and the further 3 seconds to lower heels back to the starting position.

However, there is no 'superior' or "one size fits all" program or approach and the selection of exercises should be tailored for each individual. In the end an effective exercise program is the one being completed on a regular basis.

**Box 2.** Example of strengthening program progression:

- If tolerated, the program often begins with bodyweight strengthening exercises, such as heel raises, using high repetitions for resistance. However, if on a scale from 0 to 10 the pain during or immediately after the exercises is more than 5 it can be recommended to continue with isometric exercises until tolerance improves.
- Following bodyweight strengthening with high repetitions, the program incorporates exercises with external loading and fewer repetitions. This can be for example heel raises in a leg press machine, heel raises in standing with a dumbbell or weight vest etc.
- Before gradually returning to sports, one should also be able to tolerate plyometric exercises i.e. explosive, high-intensity movements like jumping or bounding that enhance power, speed, and agility by training muscles for quicker, more forceful contractions.
- How fast the program progresses depends on pain experienced during and after exercises, as well as muscle fatigue resulting from training.

### What about stretching?

Stretching the calf muscles introduces compression loads to the Achilles tendon so especially if one has insertional Achilles tendinopathy avoiding stretching may be beneficial in the initial phase. Later, as the tolerance improves stretching can introduce, though ankle flexibility can be improved also during strength exercises making stretching an optional part of rehabilitation.

## Load management/activity modification

Load management in Achilles tendinopathy means adjusting the load put on the tendon so that it is not too much, but also not too little. It is good to acknowledge that the load includes also load produced by daily activities and work and not just load from exercise therapy, sports and/or training.

### ***Tips for load management:***

#### ***Reduce loading***

Stop or adjust pain provoking sport and/or activities for a short while in the beginning so that there is no pain or minimal pain. Do not stop loading the tendon entirely, but for example replace pain provoking activities with others, e.g. temporarily switch running to aquatic running, cycling or walking.

#### ***Build up load gradually***

When going back to your sport or activities, take it slow and build up the load over time (Fig.2). For example, if you are a runner change things like how far you go, how often, how long, how fast. If you participate in team sports such as soccer, you may be able to change the loading by changing your playing position. If your symptoms were provoked by work where you need to stand a lot, you might want to discuss the options together with you employer and practitioner.



**Figure 2.** It is recommended that the load is built up gradually step-by-step. Progression is important component of the exercise therapy program, but also a key principle in getting back to tendon loading activities in general.

## Monitor symptoms

It is not good to focus on pain alone, but it may be helpful to monitor pain and adjust the loading to control the pain. This does not mean that pain should be avoided or feared.

Regardless of the approach and exercises selected, it is common and OK that some pain and discomfort is provoked by training. Increased pain due to exercises may seem alarming and even scary and result in avoiding the exercises. However, it is important to remember that tendon loading is crucial for recovery and some pain is normal during and after exercising. In general, pain under 5 on a scale from 0 to 10 during and immediately after loading is recommended (Fig. 3).



**Figure 3.** On a scale from 0 to 10, you can try to aim keeping the pain 5 or under during and immediately after tendon loading activities and exercise, unless another range has been discussed with your practitioner.

## Other options?

In certain instances, a 3-month exercise therapy program consisting of progressive strengthening and load management may not suffice to show any improvements. Then some adjunct therapies may be used. The selection of these additional treatments should be tailored to the individual and typically combined with ongoing exercise therapy and load management efforts.

Examples of such adjuncts include extracorporeal shockwave therapy, injection therapies, and other passive modalities such as massage. We will not delve deeper into these therapies in this article however it is good to acknowledge that the evidence-base for these therapies is lacking.



## Overall wellbeing

Pain is influenced by various factors beyond tissue changes, and its intensity may not correlate with structural changes. Factors like sleep, emotional state, and individual beliefs about pain can affect your experience. Therefore, focusing on overall self-care and addressing metabolic factors linked to Achilles tendinopathy can be recommended.

Feeling down or stressed due to your condition is not uncommon, as it can limit participation in activities you enjoy and create uncertainty. Address these feelings, if they arise.

If fear of making things worse leads to avoiding progressive exercises, consult healthcare professionals for guidance, as avoidance can hinder recovery. Don't hesitate to ask for more information on improving overall health and other health behaviors from your healthcare practitioner.

## Medication

It is good to acknowledge that the use of anti-inflammatory drugs (NSAIDs) seem to be ineffective and introduce an increased risk for adverse side effects especially with increasing age. Corticosteroid injections are also not effective for midportion Achilles tendinopathy, may have long-term negative effects, and pose safety concerns such as increased risk for tendon rupture, especially with multiple injections. Therefore, exercise caution when considering the use of NSAIDs and corticosteroid injections.

Heat and cold are relatively safe alternatives so one may test if these help with the pain symptoms.

## How to prevent (re)occurrence?

- Do not rush it. Spend enough time actively managing the condition before returning to activities that provoked the pain.
- Avoid 'load spikes' and prepare for increasing training/activity requirements by slowly building up your resilience.
- In addition to loading the tendon, make sure there is enough rest and recovery.
- In cold seasons, wear enough clothing to keep warm (also in your ankles).
- Consider aiming for/maintaining a healthy weight.

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