



MOVEPOD
PODIATRY

2022 UPDATE: ACHILLES TENDINOPATHY E-BOOK

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THE A -TO-Z OF ACHILLES INJURIES

**HOW TO GET BACK DOING THE
ACTIVITIES YOU LOVE**

TABLE OF CONTENTS

- 2** INTRODUCTION
Key points summary
- 3** WHAT IS THE ACHILLES TENDON
The strong structure with a big responsibility
- 4** COMMON AREAS OF PAIN
Which one is affecting you?
- 5** WHAT'S CAUSING YOUR ACHILLES PAIN
Some of the most common reasons we see in the clinic
- 6** WHO IS MORE AT RISK
Highly active, lacking calf strength or previous calf/achilles issues. Do any of these sound like you?
- 9** HOW TO GET RID OF THIS PESKY INJURY
The simplicity of consistency and progressive overload when managing your Achilles
- 16** COMMON ACHILLES QUESTIONS
Your contributing factors

INTRODUCTION

ACHILLES TENDINOPATHY

If you are a runner, or engage in any running or walking based activity, there is a fair chance that you, or someone you know, has experienced some form of achilles pain.

The reason I can say this so confidently is because 52% of elite runners will experience an onset of achilles tendinopathy throughout their lifetime. This means that greater than 1 in 2 of these runners will have an issue with their achilles!

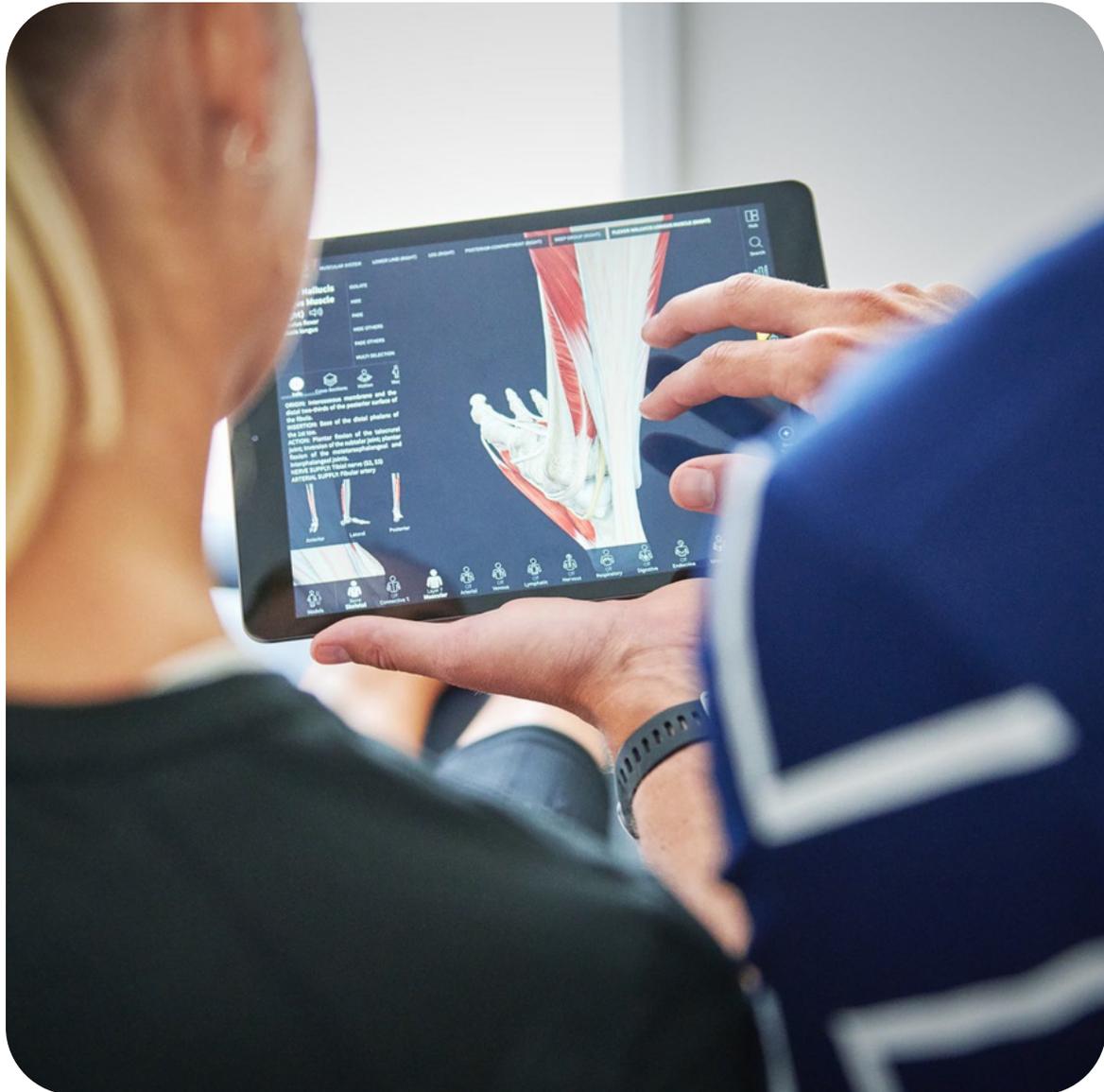
Now I know that we all don't run 80-160km+ per week, however we know that injuries of the achilles are closely related to load accumulation over time. So simply put, those who are highly active throughout their lives, are more likely to develop symptoms.

The frustrating part...for an issue that is so common, we often disregard or mismanage our symptoms..

Too often we see tendon pain disregarded as "only a niggle" at first. Yet pain is the achilles's way of telling you that it is not coping with the current demands and they need to change.

Addressing this early can mean a quicker recovery without drastic changes to activity and routine. However if neglected, this can lead to longer periods of time off activity and a more prolonged recovery outlook. Therefore it is with the health of achilles everywhere, as well as the love of seeing happy, active people doing what they love, that I hope this E-book can help give you the initial tools and inspiration to address your achilles pain.





WHAT IS THE ACHILLES TENDON?

The Achilles is the strong, fibrous tissue (think thick, powerful rubber band) that runs from the base of your heel and inserts into the muscles throughout the back of your calf, mainly the soleus and gastrocnemius muscles.

The main role of the tendon is to store and release energy throughout our walking and running gait. It is because of this, and the loads going through it, that the achilles tendon is the largest and strongest tendon in the human body.

COMMON AREAS OF PAIN

Getting the correct diagnosis is one of the most important parts of managing Achilles pain. The most common reason we see in the clinic for poor treatment outcomes is incorrect initial diagnosis and subsequent poor management planning.

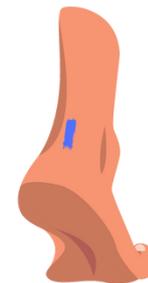
Insertional

- Pain on lateral calcaneus (outside of heel bone)
- Can often involve irritation and thickening of the retrocalcaneal bursa (fluid filled sac under tendon)
- Higher predisposition in cavus foot types (higher arches) with associated Haglund deformity (bump on the back of heel)



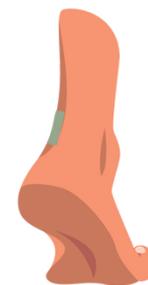
Mid-portion

- Often pain during load or activity
- Stiffness post rest
- Thickening of tendon 2-6 cm proximal to the tendon's insertion (away from the heel bone)



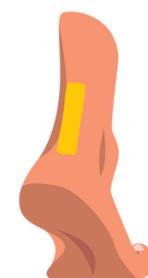
Plantaris

- Pain medial (inside of tendon) and quite high
- Pain at top range of calf raise (when on tippy toes)
- Pain when transitioning from high to low in calf raise or hop



Peri-tendon

- Diffuse (all over the tendon)
- Notable acute thickening of the tendon
- Typically presenting 2-6 cm proximal to the tendon's insertion (away from the heel bone)



ACHILLES TENDON PAIN

WHAT ARE THE CAUSES?

When we talk specifically about Achilles tendon pain, the origins of this typically come down to 3 main causes:

1. Tensile load is too great for capacity

This means that the tendon when stretched is being asked to do more than it's current load capacity

2. Compressive load at the insertion

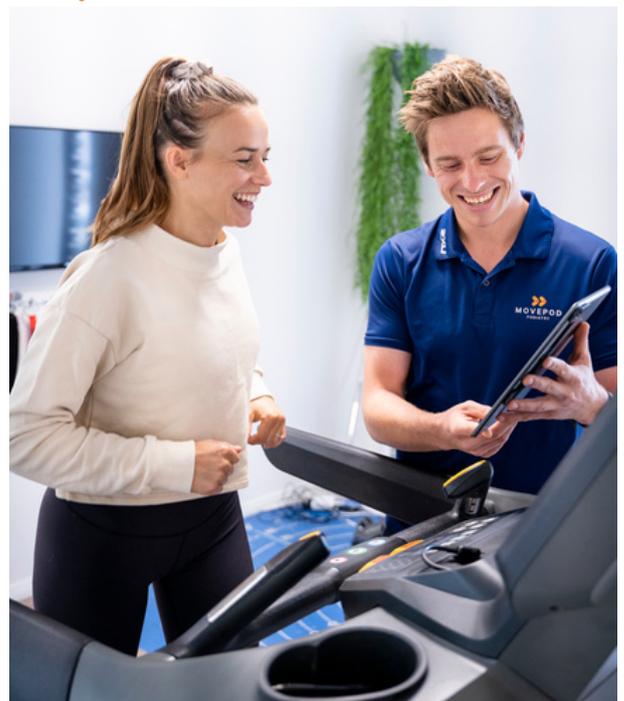
Where because of underlying mechanics and strength deficits, there is a greater twisting force to the tendon base when loaded

3. Friction/shear

Typically this is when the tendon and structures around it (Peri-tendon, Plantaris and Retinaculum) are subjected to too much rubbing from each other which cannot be tolerated consistently over prolonged periods.

There is only a small portion (~2%) that are a result of predisposing or systemic disease.

the Achilles tendon is being asked to do more than it's current load capacity





WHO IS MOST AT RISK OF ACHILLES PAIN?

In the following pages we have listed some examples of groups who might be at greater risk of Achilles pain due to intrinsic and extrinsic factors

1. Highly active individuals
2. Individuals who are requiring more calf strength
3. Those who have experience Achilles or Calf pain in the past

EXTRINSIC RISK FACTORS

ACTIVE INDIVIDUALS

Achilles tendon injuries are a load accumulation injury over time. This typically means that those who have periods of high activity levels throughout their lives are more likely to develop symptoms.

The reason for this is the loads that go through the tendon and supporting structures when active. When increasing training and challenging the capacity of tendon structures, there is an increased risk of tendon overload.

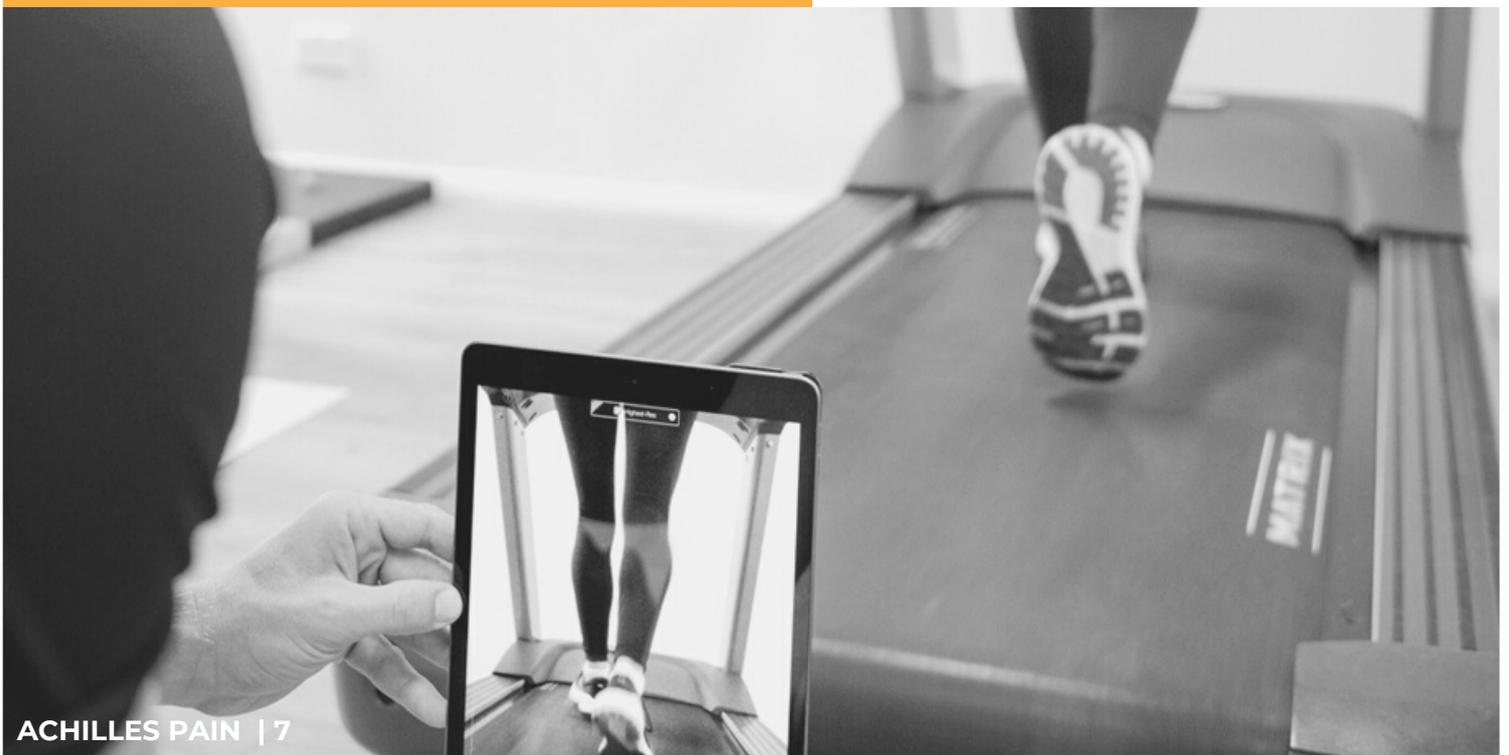
When running the Soleus muscle produced 6 - 8.4 times body weight in force while the gastrocnemius muscles created between 2.5-3 times. That's a lot of work!

This can mean that overtime the tendon collagen (the stuff that makes it strong and springy) can begin to degenerate and reduce the function in the tendon if load is not managed effectively.

OTHER EXTRINSIC RISK FACTORS:

- Inappropriate footwear selections
- Spike in training loads (especially explosive, dynamic activities like jumping/running)
- Inadequate recovery between loading
- Increased period on uneven surfaces or sand
- Prolonged sedentary period

“When increasing training and challenging the capacity of tendon structures, there is an increased risk of tendon overload.”



INTRINSIC RISK FACTORS

PREVIOUS ACHILLES PAIN

Unfortunately, it has been found that 27% of all achilles tendinopathies were re-injuries of a previous achilles issue.

When we tie this with the extremely close relationship to the calf muscles, the statistics for re-injury become more damning.

Injury of the soleus muscle within the calf accounts for 84% of all calf muscle strains with over 90% of all recurring calf strains involving the soleus!

Individuals who had experienced a calf injury in the previous 8 weeks were 9 times more likely to experience re-injury. This is why calf strengthening and the appropriate return to exercise planning is so important!

INDIVIDUALS LACKING CALF STRENGTH

As spoken about previously, the amount of work that the calf has to do when active is enormous. Therefore if the muscles themselves don't have the capacity (aren't strong enough), then this can lead to the achilles becoming overloaded and then sore.

A good measure of where your calf strength is through the measurement of a maximal single leg heel raise test.

OTHER INTRINSIC FACTORS:

- Age
- Reduced ranges within feet & ankles
- Decreased gluteal, hamstring and quadriceps strength
- Poor intrinsic foot strength
- Cavus (high arched) or Planus (low arched) foot structure
- Presence of Haglund's deformity (bump at back of heel)

*Below are the normative values for healthy adults.
How do you compare?*

Age	Male	Female
20-29	37	30
30-39	32	27
40-49	28	24
50-59	23	21
60-69	19	19
70-79	14	16
80-89	10	13



How Do I Get Better?

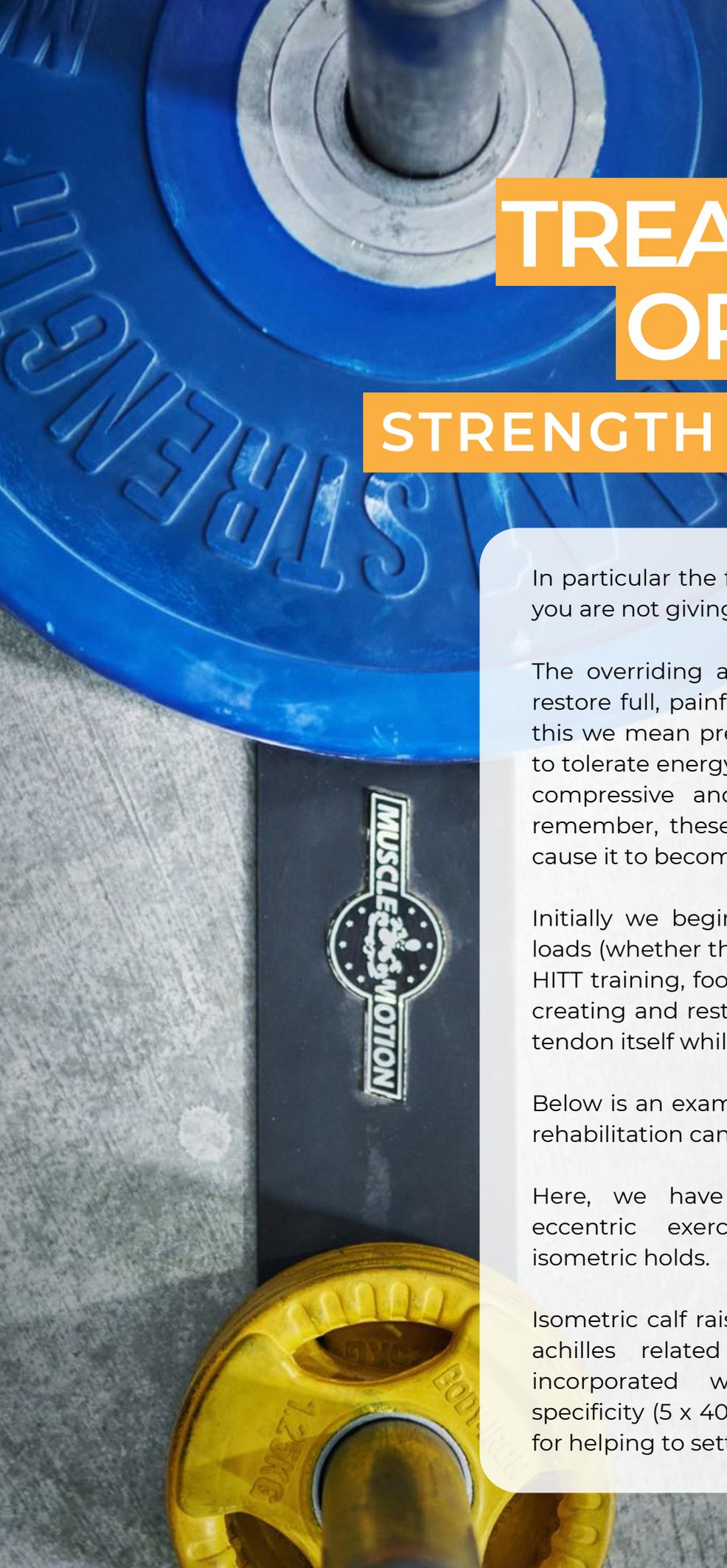
Your Treatment Options

This is the big question! What do I need to do to get myself better? What we've done here for you is list some of the most common treatment options we use or see here at Movepod Podiatry. There are certainly some more available but these are the ones we believe are most relevant and effective

These treatment options which we'll discuss include:

- Home/Gym Strengthening
- Mobility Sessions
- Footwear & Orthotics
- Extracorporeal Shockwave Therapy (ESWT)
- Dry Needling & Manual Therapies
- Sleep

In addition to these treatment options we also place a large focus on “load” management. When we talk about load we are considering all forms of load including running, strengthening, work related load, stress etc. All these things should be considered as a potential contributing factor to your injury and involved in your recovery.



TREATMENT OPTIONS

STRENGTH TRAINING

In particular the feet and lower legs. Without it, you are not giving yourself a chance.

The overriding aim of building strength is to restore full, painfree function of the tendon. By this we mean preparing the achilles to be able to tolerate energy storage and release as well as compressive and frictional loading. Because remember, these are typically the factors that cause it to become sore in the first place!

Initially we begin with deloading aggravating loads (whether that be higher intensity running, HITT training, football etc.) and then move onto creating and restoring pain free capacity in the tendon itself while making the tendon stiffer.

Below is an example of what the initial week of rehabilitation can look like.

Here, we have started with body weight eccentric exercises in combination with isometric holds.

Isometric calf raise holds were found to reduce achilles related symptoms by 50% when incorporated with appropriate load and specificity (5 x 40 second holds) and are perfect for helping to settle down a sore achilles.

ONE WEEK LOADING EXAMPLE

Day	Strength- AM First thing in the morning	Strength- PM Post Runs or Activity	Running/Activity
Monday	Single Leg Calf Raise 5 x 45-second holds Body Weight	Single Leg Calf Raise - Straight knee 3 x 15 Body Weight Single Leg Calf Raise - Bent knee 3 x 15 Body Weight Single Leg Squat 3 x 12 Body Weight	Aerobic at or below 75% MHR 20mins Pain stable and no increasing throughout
Tuesday	Single Leg Calf Raise 5 x 45-second holds Body Weight		Rest Monitor morning pain symptoms post strength & run from previous day Cross train or walk if pain is stable
Wednesday	Single Leg Calf Raise 5 x 45-second holds Body Weight	Single Leg Calf Raise - Straight knee 3 x 15 Body Weight Single Leg Calf Raise - Bent knee 3 x 15 Body Weight Single Leg Squat 3 x 12 Body Weight	Aerobic at or below 75% MHR 20mins Pain stable and no increasing throughout
Thursday	Single Leg Calf Raise 5 x 45-second holds Body Weight		Rest Monitor morning pain symptoms post strength & run from previous day Cross train or walk if pain is stable
Friday	Single Leg Calf Raise 5 x 45-second holds Body Weight	Single Leg Calf Raise - Straight knee 3 x 15 Body Weight Single Leg Calf Raise - Bent knee 3 x 15 Body Weight Single Leg Squat 3 x 12 Body Weight	Aerobic at or below 75% MHR 20mins Pain stable and no increasing throughout
Saturday	Single Leg Calf Raise 5 x 45-second holds Body Weight		No Plan, Enjoy the weekend!
Sunday	Single Leg Calf Raise 5 x 45-second holds Body Weight		No Plan, Enjoy the weekend!

TREATMENT OPTIONS

STRENGTH TRAINING CONTINUED...

After initial symptoms begin reducing and a base level of strength and capacity is achieved, we can then work towards increasing higher level loads and energy storage plyometric exercises such as jumps, hops and pogos. This may take 6-8 weeks before this can occur.

As you can appreciate below, these demand a lot higher force production, and therefore are great for beginning to replicate the levels needed for higher intensity activities such as running.

Tier 2

- Double leg Jump (~3.4 x Body Weight- BW)
- Lunge (~2.1 x BW)

Tier 3

- Double leg Box Drop Jump (~3.6 x BW)
- Double leg Pogos (~5.2 x BW)

Tier 4

- Single leg Hopping (6.7 x BW)
- Single leg Lateral Hopping (7.3 x BW)

01 Bent Knee Calf Raise

Slight bend in the knee you're standing on, raising up onto the ball of the foot whilst keeping knee bent. Focus on driving entire body upwards. Isometric = hold at half height
eccentric bias = lowering slowly



02 Straight Knee Calf Raise

Keep the knee you're standing on straight, raising up onto the ball of the foot whilst keeping knee straight. Focus on driving entire body upwards. Isometric = hold at half height
eccentric bias = lowering slowly



03 Single Leg Squat

Standing on one foot, keep upper body tall, sit bum back slightly and lower knee over ball of the foot. Squat down to a comfortably uncomfortable level and raise back up. Can lightly hold something if struggling to balance



SLEEP & REST

This is your secret ingredient for injury healing and it should not be underestimated. Our muscles and body tissues recover and rejuvenate as we sleep each night so it is crucial to injury rehab. Having the odd bad nights sleep here or there isn't going to dramatically impact your healing, but some common bad sleep habits over time can have a negative effect.



Everyone's sleep and recovery requirements are a little bit different but we have listed some general guidelines for sleep hygiene.

- Keep your coffees for the morning! Consuming stimulants like caffeine in the afternoon has the ability to impact your ability to fall asleep when you head hits the pillow
- Get out there and exercise during the day. Exercising regularly has a positive impact on your sleep hygiene - if you're unsure best type of exercise to do with your heel pain then see the "load management" section
- Turn off those screens before bedtime. Focus on setting a time restriction of not using your phone or compute before bed (eg. 60 minutes)
- Work out a good sleeping environment including a comfy blanket and pillow, a dark room with limited street light or noise and avoid hot stuffy rooms

LOAD MANAGEMENT

WHAT YOU CAN CONTINUE TO DO WHILST MANAGING ACHILLES PAIN

One of the first questions we get is what can I do and am I supposed to just completely rest my foot. Our answer to this is almost always the same “No, you definitely shouldn’t completely rest your foot”.

The Achilles Tendon loves to be loaded and will generally respond well if loaded in the right way at the right time. The way people can often go wrong is they have big fluctuations in load where they will go for a big walk or run and because it’s sore they will take a long period of rest.

We want to try make this movement a bit more regular across the entire week. If you’re a walker or a runner one way of doing this might be to reduce the distance/duration of your sessions and spread them more evenly across the week. Your Podiatrist or Physio will be able to recommend the best load management plan for you and help you to begin working on strengthening and other aspects specific to you during this phase.

TREATMENT OPTIONS

OTHER TREATMENT TOOLS CONSIDERED

Footwear & orthotics

- Our main focus here is around evaluating the underlying intrinsic characteristics of how your feet, ankle and lower limbs move.
- We then pair these characteristics with specific footwear and orthotic characteristics to help reduce tensile or compressive loads through the achilles.
- Common examples of this include implementing heel lifts, Rocker bottom footwear with soft heel counter and custom orthotics.



Mobilisation and soft tissue pain modifiers

- Specifically in initial stages to allow for decreased sensitisation and guarding of range through the ankle joint.



Anti-inflammatories

- Depending on cause and presentation of achilles pain both topical and oral anti-inflammatories can have a short term, positive effect on reducing initial discomfort and symptoms.
- Strategies such as a 'night wrap' of topical anti-inflammatories can be really effective for superficial and peri-tendon pain.

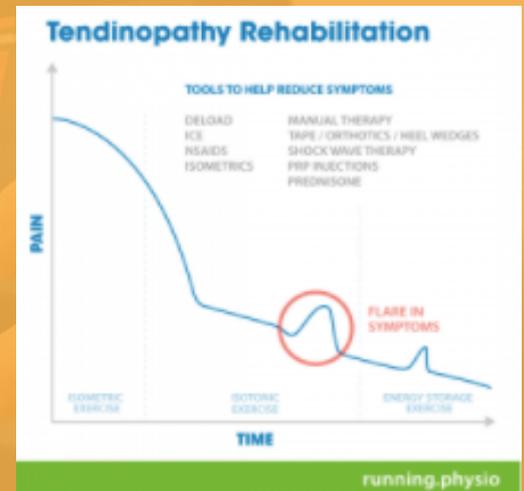


COMMON QUESTIONS

HOW LONG DOES IT TAKE TO GET OVER MY ACHILLES INJURY?

Contrary to initial impressions, tendons typically take longer to heal than bone or muscle. Timelines depend on an individual's underlying tendon health, capacity and goals and can take anywhere from 12 weeks for an acute onset to 6 months for a more chronic presentation to restore painfree, efficient tendon function.

Throughout the rehab process, there will be a consistent decline in pain and symptoms with improved strength and capacity. However, this won't be a straight line and there will be instances of acute flare ups and pain.



CAN I KEEP RUNNING/ACTIVE IF MY ACHILLES IS SORE?

A couple of great indicators we use within clinic are:

Pain post activity

If pain increases in the 24hrs following activity (running, walking, training) = Reduce
If pain is stable (doesn't increase) in the 24hrs following activity (running, walking, training) = can maintain levels

Single leg calf strength

When Calf strength is within normative values for age (refer to table above)
When calf capacity is 90% of contralateral limb (injured side can do

SL hop test

If you can hop on affected leg for 45 seconds without an increase in pain or stiffness following

WILL I RUPTURE MY PAINFUL ACHILLES?

The likelihood of rupturing a painful achilles is low. However outcomes post rupture typically result in significantly lower function post injury and results in a 12 month+ recovery timeframe independent if managed surgically or non-surgically.

It is reported that between 10 - 40 individuals out of every 100,000 will experience an achilles rupture.

The interesting part is that 66% of Achilles tendons that rupture because of poor structural integrity, never actually reported any pain!

YOUR PODIATRIST'S ROLE & WHAT TO EXPECT

Your Podiatrist's role in this is to take every relevant aspect of your lifestyle and how your body functions to figure out what has happened to you and why it has happened.

They should then present you with the best possible treatment plan available to you and assist you in making decisions about your injury. Their primary goal is to facilitate your journey in getting back to doing the things you love.

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At Movepod Podiatry our patients leave their initial appointment knowing what their injury is, what factors have contributed to this injury occurring, what we need to do to get them pain free and how long it will take to get there. This is delivered both verbally and as a written management plan which they can take home and pop on the fridge as a roadmap for recovery.

Everyone's recovery is a bit different when it comes to Achilles pain depending on factors including how long they have had it, what caused it and what their current work/sporting demands are. Although things are different for everyone, you can expect the following things

- Be patient, Plantar Fasciitis recovery can take anywhere between 12 weeks to 6 months. Usually shorter if managed well.
- There's going to be some bumps in the road. You will have days or weeks where you're feeling great, but then have a very sore day here and there. This is completely normal and doesn't mean you've gone backwards
- Trust the process!



*Let's get
you better!*