SPORTS MEDICINE INSTITUTE
www.smiweb.org

The Courthouse Plaza Building
260 Sheridan Ave, Suite B40
Palo Alto, CA 94306
(650) 322-2809

Purple Patch Fitness
268 Alabama Street
San Francisco, CA 94103
(415) 590-7532

PHLX
www.phlxtherapy.com

Achilles Tendinopathy

The Achilles Tendon is a long tendon that is formed proximally by the junction of the soleus and the gastrocnemius muscles and inserts distally at the heel bone (calcaneus). Achilles Tendinopathy is a common injury in activities that involve running and jumping. Once irritated, it can be challenging to heal because of the lack of blood flow to the tendon but also because of the constant strain placed on the tendon during everyday activities such as standing and walking. Even the ancient Greeks understood the challenges around recovering from achilles injuries as chronicled in the story of the great warrior Achilles and his weak heel. Today, an "Achilles heel" is often used to refer to someone's vulnerability or weak spot. Although, with proper treament, a complete and even relatively short recovery is possible.

Achilles Tendinopathy can be classified as either mid-portion tendinopathy which occurs in the belly of the tendon approximately 2 inches above the heel, or insertional tendinopathy which occurs at the back of the heel where the tendon connects to the calcaneus. Treatment is similar for each but there are some differences to keep in mind. Furthermore, paratendinosis is very similar to Achilles Tendinopathy but is an irritation of the sheath-like fatty covering of the tendon. Treatment varies for this condition as well.

Causes

As with almost all repetitive stress injuries, the primary cause of Achilles tendinopathy is an overloading of the tendon and a resulting failure in the healing response. It is more common in men and occurs more frequently as we get older. Psoriasis, high blood pressure and being overweight can also be contributing factors. Use of certain anibiotics known as fluoroquinolones (ie. cipro) increase the risk of Achilles Tendinopathy by 2.5x and the risk of Achilles rupture by 4x.

Treatment

The first course of action in treating Achilles Tendinopathy should be activity modification. Reduced stress on the tendon will clearly help in facilitating healing. It is also important to incorporate foot and ankle mobilizations as well as stretching of the posterior chain especially the hamstrings, calf and arch of the foot. Massage of the lower leg and foot should also be incorporated on a regular basis to release trigger points which can cause muscle inhibition and restrict range of motion. Cross fiber friction should be incorporated on a regular basis but should only be used on Achilles Tendinopathy and NOT used when treating paratendinosus as this will further irritate the paratenon. **Eccentric strengthening programs have been the most widely researched and proven treatement for Achilles Tendinopathy.**

A heel lift can be temporarily added to your shoes to decrease the tension on the Achilles when running, walking and standing. But, research has found that in some people a heel lift may actually increase the tension on the Achilles. Make sure to gradually introduce a heel lift to see how you respond. If it seems to make symptoms worse, take it out immediately. A night splint or strassburg sock to stretch the calf/Achilles complex while sleeping can also be helpful, especially if you experience pain, tightness or discomfort first thing in the morning. Orthotics may be helpful and could be tried in more recalcitrant cases. Keep in mind that a 2015 study published in the British Journal of Sports Medicine found no difference in the effectiveness of custom orthotics versus over the counter orthotics when treating Achilles Tendinopathy.

This is not an inflammatory injury and therefore anti-inflammatories should not be part of the treatment protocol. Icing is a bit different in that the numbing effect may have a positive impact on the pain response from the central nervous system but keep in mind that heat can potentially have the same impact. If icing seems to help, then do it. If icing makes things worse or has no impact, you should stop. The same can be said of heating the Achilles.

For More Information

This packet provides a great general outline for treating Achilles Tendinopathy. For more specific guidance, you can contact us directly. We are availabe for in person appointments at our clinics in Palo Alto and San Francisco or for telehealth virtual appointments. For more information, visit our website at www.smiweb.org OR contact Mark Fadil at Mark@smiweb.org or 650-823-1091.

Achilles Taping

Using a stretchy tape such as RockTape or KT tape is not a cure, but it may be helpful in providing some relief. Taping has been shown to have a small yet beneficial impact on decreasing the force on the Achilles Tendon improving both strength and range of motion. The positive impact is most likely a result of how the tape impacts proprioception and/or sensory input.

For a basic taping technique that you can do yourself, sit in a chair and cross the affected foot over the opposite knee and put the calf/Achilles in a stretch position as shown in *Figure A*. Start with the tape on the bottom of the foot and pull with light tension around the heel and up the lower leg about 1/2 of the way up the calf. Then place a four inch strip perpendicular to the first strip with moderate tension right above the heel. Place an additional strip with moderate tension about 2-3 inches above the second piece. When finished, it should look like *Figure B*.

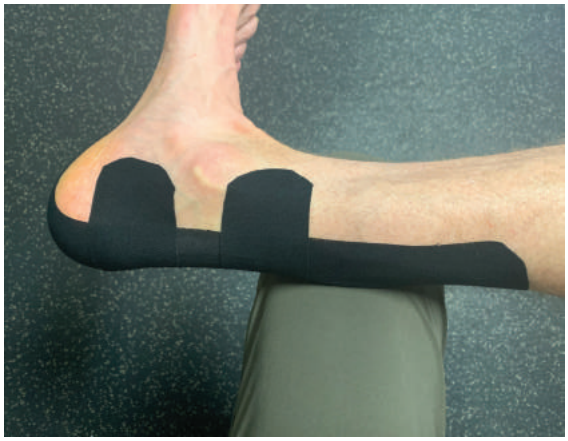

Figure A

Figure B

Heel Lifts

One common approach to treating Achilles Tendinopathy has been the use of a 2-3mm heel lift inserted into the shoe. The theory is that the lift will shorten the calf muscles and Achilles Tendon and result in off loading stress from the Achilles. Current research have found conflicting results in whether a heel lift actually decreases OR increases stress on the Achilles. This probably has something to do with the shoe itself and how different shoes may actually impact gait in slightly different ways. The bottom line is that the impact a heel lift has on Achilles Tendinopathy is unpredictable. It is something to try. If it seems to have a positive impact, it may be worth using temporarily with the intention of removing it ASAP. BUT, if the heel lift seems to irritate or have a negative impact on symotoms, remove it immediately. Make sure that you use heel lifts in both shoes, not just the effected Achilles. This will help maintain symmetry between the two sides.

Movement

Movement and muscle activation is an effective technique to expedite virtually all repititve stress injuries (RSI's) such as plantar fasciopathy. This stimulates the circulatory system which brings fresh bloodflow and nutrients to injured tissue as well as the lymphatic system which removes waste. The more efficiently these two systems are operating, the faster recovey will take place. For the plantar, this can be accomplished with three simple movements in a non-weightbearing position. First, simply point your toes up and down. Second, make a clockwise movement with the foot. And lastly, make a counter-clockwise movement with the foot. Try to go through these movements for approximately 5 minutes multiple times throughout the day. It is also important to do this before getting out of bed in the morning. It is possible that use of an Electrical Muscle Stimulator (EMS) machine can have a similar effect but there is currently no research to support this theory.

Self-Massage

Massage should be done on a daily basis. It can help eliminate tight areas and release trigger points that may be contributing to pain and dysfunction. We recommend spending 10-15 minutes a day massaging the areas outlined below. Treatments are demonstrated on the right side. The self massage tools shown here can be purchased at www.phlxtherapy.com.

HAMSTRING

Roll up and down the back of the thighs as shown in *Figure C*. Stop when you encounter a tender knot or band and then rotate your thigh back and forth until you feel the spot "soften" and become less painful. You will sometimes feel pain radiate up and/or down the leg. If this occurs, continue massaging the spot until the referred pain subsides or diminishes. For added pressure, cross one leg over the other.

Figure C

CALF with PHLX roll

Start by placing both calves onto the PHLX roll. Roll back and forth between your heels and right below the back of your knees. Find a tight knot or band and hold. You can also flex and extend your foot until the tight area begins to soften and loosen up. To generate more pressure, place one leg on top of the other as shown in *Figure D*.

Figure D

CALF with PHLX stick

Slide the PHLX stick up and down the calf. If you find a tight band or knot OR an area that feels "gravelly," move the stick back and forth with short, quick strokes until the tissue softens and the stick slides more smoothly.

Figure E

CROSS FIBER FRICTION

In addition to more conventional massage, you should also incorporate cross fiber friction directly on the painful area. For mid-portion tendinopathy cross the affected foot over the opposite knee as shown and squeeze the tendon between your thumb and first two fingers (*Figure F)*. Do not slide over the skin. Move the skin with your thumb and fingers over the underlying tendon. Move your thumb back and forth for 3-5 minutes. This will often times be a bit painful when you start but should become less painful during the treatment. For insertional tendinopathy, place your thumb on the painful spot at the insertion shown in *Figure G* . DO NOT perform this treatment when dealing with paratendinosis.

Figure F

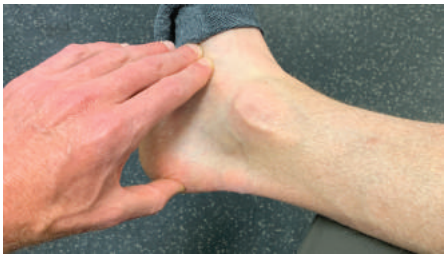

Figure G

Mobilization

The mobilizations outlined here should be completed 2-3 times per day when treating Achilles Tendinopathy. When performing the mobilization, move into position until you start to feel a stretch and then return to the starting position. The mobilization should be a continuous movement without stopping. Repeat up to 50 times slightly increasing the range of motion with each repetition. An uncomfortable stretch feeling is OK, but make sure that you do not cause pain or irritation during or after the mobilization. All mobilizations are shown for the right leg.

ROTATIONAL HAMSTRING

Stand on your left foot and place your right heel on a surface below waist level (*Figure H)*. Keep your right leg straight but do not lock your knee. Lean forward from the waist and keep your back straight. Rotate your torso to the right and then to the left so that you are alternately facing to the outside and inside of your right leg.

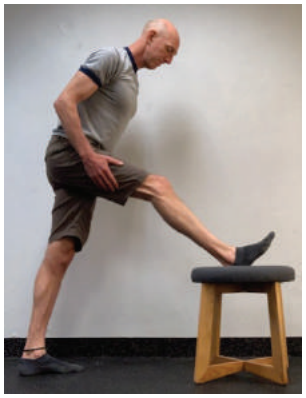

Figure H

CALF

Figure I

Place your hands on a wall as shown. Bend the knee closest to the wall and let your pelvis shift forward. The mobilization is for the calf further from the wall. Your weight should be focused on the heel of the back leg and not the forefoot. Shift your hips forward and backwards. It is important to incorporate both versions described below.

1. Keep the back knee straight as shown in *Figure I* to focus on the gastrocnemius.

2. Keep the back knee bent as shown in *Figure J* to focus on the soleus/Achilles.

Figure J

Stretching

The stretching outlined here should be completed 2-3 times per day when treating plantar fascia pain. When performing the stretch, move into position until you start to feel a stretch and hold for 60 seconds. Repeat the stretch for a total of 3-4 times. An uncomfortable stretch feeling is OK, but make sure that you do not cause pain or irritation during or after the stretch.

Figure K

ARCH

Pull on your toes as shown in *Figure K*.

"Broken Toe" Pose

The "broken toe" yoga pose *(Figure L)* is a great way to stretch the arch. It is a more aggressive arch stretch than the one demonstrated in *Figure K*.

Figure L

Strengthening

One of the keys to proper strengthening is not doing too much too soon. A good general guideline to follow is to strengthen every other day for the first week, two out of every three days for the second week and every day from the third week on. Based on research, the single most important aspect of treating Achilles tendinopathy is incorporating consistent heel drops.

TOE WALKING

Keep you upper body erect and hold your hands behind your back. Come up onto your toes as high as you can. Your heels should not touch the ground during the entire exercise. Keep your weight focused over the big toe. Walk forward taking very short steps. Walk for 15 meters with your toes pointed straight ahead, 15 meters with your toes pointed 20 degrees inwards and 15 meters with your toes pointed out 20 degrees.

HEEL WALKING

Keep your upper body erect and hold your hands behind your low back. Lift your toes as high as you can. Your toes should not touch the ground through the entire exercise. Take very short steps and walk for 15 meters with your toes pointed straight ahead, 15 meters with your toes pointed 20 degrees inwards and 15 meters with your toes pointed out 20 degrees.

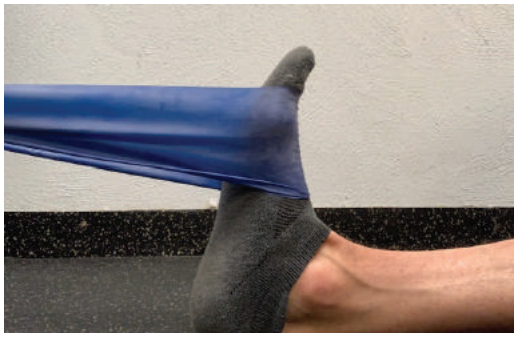

Figure M

FOOT EXTENSION

Wrap the elastic band around the top of your foot as shown in *Figure M*. Pull your foot straight up against the resistance of the band. Take 2 seconds to pull the foot up and hold for 2 seconds at the end range before you return to the starting position. Repeat by pulling the foot up again but this time at an angle 20 degrees to the inside and a third time 20 degrees to the outside.

ANKLE INVERSION/EVERSION

For ankle eversion, start with your foot pointed up and in *(Figure P)*. Slowly turn your foot down and out against the resistance of the band *(Figure Q)*. Focus on pushing the ball of the foot out and towards the ground. Then slowly let the foot return to the starting position. For inversion, start with your foot pointed up and out and slowly turn your foot down and in. The band should be pulled up and out for inversion.

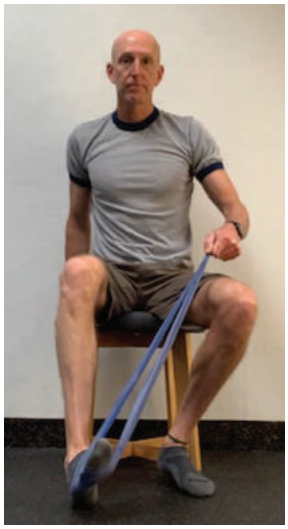

Figure P

Figure Q

Figure N

Figure O

HEEL DROPS

Stand on your toes with both heels off the edge of a stair (*Figure N*). Slowly drop your heels down as far as you can (*Figure O*). Hold the end position for 2 seconds before coming back up onto your toes. Keep your weight focused over your big toe. Repeat with your feet pointed out 20 degrees and again with your feet pointed in 20 degrees. Eventually you should advance to doing this exercise on one leg at a time. With the single leg version, come up onto your toes with both feet on the ground and descend while balancing on only one foot.