

# Doctor's Corner

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## ACHILLES TENDONITIS

The Achilles tendon spans two joints and connects the calcaneus to the gastrocnemius and the soleus muscles, comprising the longest and strongest muscle complex in the calf (see Figure 1 and Figure 2). The Achilles tendon transmits force of the calf muscles to produce the push-off during walking, running, and jumping.

The area of the tendon with the poorest blood supply is approximately 2 cm to 6 cm above the insertion into the calcaneus.

The Achilles tendon does not have a true synovial sheath, instead it has a paratendon. The paratendon is a connective tissue sheath that surrounds the entire tendon and is able to stretch 2 cm to 3 cm with movement, which allows maximal gliding action. The Achilles tendon has been shown to thicken in response to increased activity.

The normal gait cycle requires extreme motion from within the ankle. This movement results in repetitive lengthening and shortening of the Achilles tendon complex. Running and jumping further increase the load on the Achilles tendon. Tendons that transmit large loads under those conditions are subject to injury. Extreme shear forces across the tendon complex are believed to cause prolonged loading of the tendon, resulting in microtrauma and inflammation.

Common conditions of the Achilles tendon include tendonitis, paratendonitis, tendonosis, and rupture.

**Paratendonitis** - is an inflammation of the paratendon. It can be characterized by localized pain during, or following, activity.

**Tendonitis** - results in pain and swelling with activity.

**Tendonosis** - is a degenerative condition that usually does not produce symptoms. It may cause a hard knot of tissue (nodule) on the back of the leg. The nodule is formed by the accumulation of scar tissue.

**Rupture** - where the tendon has separated from the calcaneus.

Figure 1

Right Leg Posterior (Rear) View

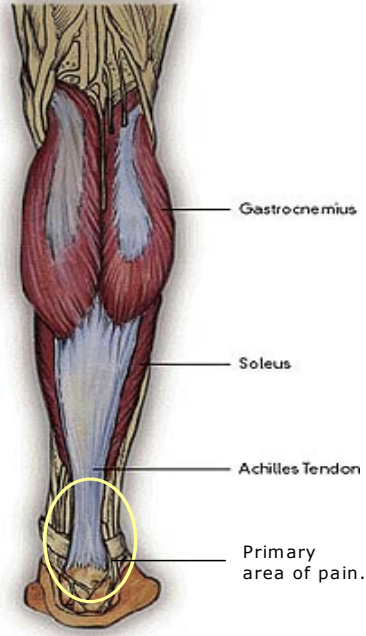
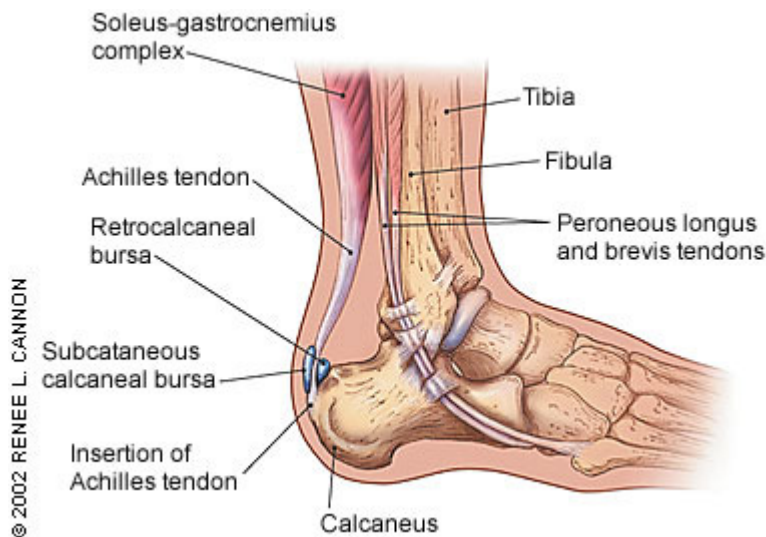


Figure 2



## SYMPTOMS

The symptom of Achilles tendon is either a dull or sharp pain anywhere along the back of the tendon, which is usually close to the heel. Limited ankle flexibility, redness or heat will be felt over the painful area. A nodule (a lumpy build-up of scar tissue) may be present that can be felt on the tendon. A cracking sound (scar tissue rubbing against tendon) with ankle movements.

## HOW ACHILLES INJURIES OCCUR

- 1) Overuse of the Achilles tendon
- 2) Tight calf muscles
- 3) Tight Achilles tendon
- 4) Lots of uphill running
- 5) Sudden increase in the amount or intensity of training
- 6) Over-pronation (when your feet rolls inward and flattens out on impact) (see Figure 3)
- 7) Racing flats (racing shoes with less heel lift)

Figure 3



## TREATMENT

Various treatments have traditionally been used to treat injuries to the Achilles tendon, i.e. ice, rest, orthotics, anti-inflammatories, etc. However, ART<sup>®</sup>, created by Dr. P. Michael Leahy, is fast becoming more and more sought after as the treatment for soft-tissue injuries. Active Release Techniques<sup>®</sup> (ART<sup>®</sup>) is a medically patented soft tissue technique that is quite effective in “freeing up” the soft tissue restrictions to allow normal function/movement to the affected areas. ART<sup>®</sup> has been very successful at treating injuries of the Achilles tendon as it addresses the release of restrictive adhesions between both superficial and deep tissue structures, not just at the Achilles tendon, but including the soft-tissue structures of its kinetic chain.

Before treatment takes place, a very specific examination and diagnosis of the Achilles tendon and its related structures will be performed. It is important to look past the initial point of the pain to identify all other structures that are involved in the kinetic chain.

## NUTRITION PROTOCOL

In some cases, inflammation of the Achilles tendon can be treated naturally with various anti-inflammatory agents. An anti-inflammatory diet can decrease discomfort and reduce systemic inflammation, resulting in the risk for associated diseases.

An anti-inflammatory diet is based on the following:

- 1) Include fresh vegetables and fruits, flax seed oil, extra virgin olive oil, deep water fishes, fresh water, organically farmed foods

- 2) Avoid sugar, refined white products (e.g., pastas and breads, processed foods, fast foods, saturated animal fats (red meats and dairy products))

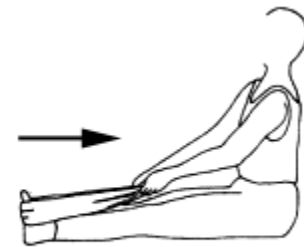
Nutritional and herbal anti-inflammatory supplements to take include:

- 1) Manganese: 25 mg to 100 mg twice a day for the first 2 weeks after injury, then 10 - 15 mg twice a day after
- 2) Selenium: 100 mcg - 200 mcg daily
- 3) Vitamin E: 300 IU daily
- 4) Flax seed oil: 1 - 2 tsp daily
- 5) Omega fatty acids: EPA - DHA: 6 to 1 ratio, 2 g. EPA daily
- 6) Bromelain: 400 mg, 3 times a day, taken without food

### REHAB EXERCISES FOR ARCHILLES TENDONITIS

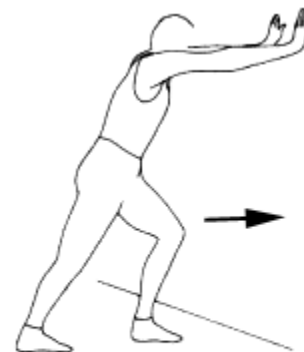
Stretching and strengthening exercises should be performed after the adhesions (scar-tissue) have been released. Below are some rehabilitative exercises to do:

1. TOWEL STRETCH - Sit on an even surface with your injured leg stretched out straight in front of you. Loop a towel around the ball of your foot, and pull the towel toward your body. Be sure to keep your knee straight. Hold this position for thirty seconds and repeat three times.



TOWEL STRETCH

2. CALF STRETCH AGAINST WALL - Face the wall, place the palms your hands against the wall at about eye level. Keep the injured leg back, and the heel of your injured leg on the floor. Turn your injured foot slightly inward as you slowly lean into the wall, until you can feel a stretch in the back of your calf. Hold for thirty seconds. Do this several times a day.



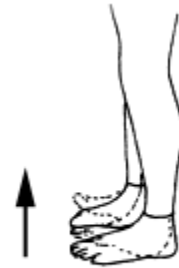
STANDING  
CALF STRETCH

3. **STANDING SOLEUS STRETCH** - Stand facing the wall with the palms of your hands on the wall at about chest level. With both knees slightly bent and the injured foot back, gently lean into the wall until you feel a stretch in your calf. Once again, slightly toe in with the injured foot and keep your heel down on the floor. Hold this for thirty seconds. Return to the starting position, and repeat three times.



**STANDING  
SOLEUS STRETCH**

4. **TOE RAISES** - Stand up straight in a normal weight bearing position. Slowly rock back onto your heels so that your toes come off the ground. Hold this position for five seconds. Repeat ten times. Do three sets of ten reps.



**TOE RAISES**

5. **HEEL RAISES** - Stand straight behind a chair. Rise up on your toes, hold for five seconds, and then lower yourself back down. Repeat ten times. Do three sets of ten reps. (No picture)

6. **SINGLE LEG BALANCE** - Stand in a relaxed position, hands by your side. Slowly bend one leg until the foot is off the floor. Balance on the other foot for 15 to 30 seconds. Begin with your eyes open, and then try to perform the exercise with your eyes closed. Hold the single leg position for thirty seconds. Repeat three times.



**SINGLE LEG BALANCE**

The towel stretch can be started right away. When the towel stretch becomes too easy, try the standing calf stretch, the soleus stretch, and the plantar fascia stretch. When you no longer have sharp pain in your calf or tendon, start exercises 4, 5, and 6.

## References

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Dr. Robert G. Silverman graduated Magna cum Laude from the University of Bridgeport, College of Chiropractic. He is a Certified Nutrition Specialist, Certified Clinical Nutritionist, has a Masters of Science in Human Nutrition, is a Certified Strength and Conditioning Specialist, and is a Diplomate with the American Clinical Board of Nutrition. He has a full-time successful private practice in White Plains where he specializes in the diagnosis of joint pain and its treatments with an innovative, established and well-researched approach to non-surgical care while incorporating proper nutrition protocols. Dr. Silverman is one of the few practitioners in Westchester County who is certified in the highly acclaimed, medically patented, Active Release Non-Force Soft Tissue Technique (ART®), and also the cutting-edge Graston Technique®, which is an advanced form of instrument-assisted soft tissue mobilization technique that has FDA clearance. He serves as a member of the medical team of New York City's Triathlons and Marathons, and the Westchester Triathlon. Periodically, Dr. Silverman gives seminars on injury-related preventions, treatments and nutrition for various organizations and corporations. He also serves as a chiropractor and sports injury consultant for basketball players, professional wrestling organizations, local and collegiate sports teams, professional tri-athletes, body-builders and martial artists. He appears on Westchester's channel 76 - Beyond the Game, as a sports injury consultant and also as a pain-management and nutrition consultant on radio 1460AM. In addition, Dr. Silverman has been chosen as the national spokesperson for the Vitamin Ester-C, and is the team doctor for Amino Vital pro-cycling team. He can be contacted at (914) 287-6464, or e-mail: [DrRGS@hotmail.com](mailto:DrRGS@hotmail.com)