Achilles Tendinopathy

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Disclaimer

This is not medical advice. If you are experiencing pain, use your best judgment and seek out a physical therapist by visiting www.moveforwardpt.com.

Background

The achilles tendon is a functional merger of your two calf muscles; the gastrocnemius and soleus. Together they insert into the back of the heel, working to point your toes down. The muscle and subsequent tendon are involved in the downstroke during the pedaling cycling. During this period they either contract isometrically (ankle joint doesn't move), providing stability, or isotonically, moving the ankle. It is during this period that pain is experienced in those who have achilles tendinopathy.

Right achilles tendon highlighted in yellow
photo made with essential anatomy application

As with most overuse injuries, achilles tendinopathy comes about when the load being placed on the tissue is consistently great than its capacity. Imagine a rubber band (gum band for the yinzers) being stretched thousands of times. You expect to see some deterioration of the

material or fraying at some point. The same process occurs with your tendon. As you place stress on it, micro-tearing occurs.

The difference between rubber bands and tendons, however, is that tendons are capable of repairing themselves, adapting to new loads. It's a similar concept to how you build muscle. When you go to the gym you cause little micro tears in the muscle, hence the soreness, but with appropriate rest your body builds up the area stronger than it was before. This would fall under Davis's Law, the soft tissue equivalent of Wolff's Law.

Issues come about when you don't allow appropriate time for the tissue to repair, once again demonstrating the importance of rest. This is why multiple days of intense high zone training can be detrimental if the body hasn't built up to it. Without repair, the tendon can being to degenerate (tendonosis) or become inflamed (tendinitis). This causes progressive pain that goes from pain during cycling to pain with all activity.

Fit

Bicycle fit can be a quick and easy first intervention in cyclists. Like I said in the iliotibial band syndrome article, fitting recommendations are rarely based on high quality evidence and therefore is more of an art form than a science.

Andy Pruitt's "Complete Medical Guide for Cyclists" is the bible for fitters. Pruitt's recommendations are to move the cleat backwards on the shoe (both shoes), effectively reducing the lever arm and consequently the torque applied to the achilles tendon. Similarly Pruitt recommends going with cleats/pedals with reduced float. This may reduce the stabilizing requirements of the achilles tendon. Assessing the foot-pedal interface could also be an important starting point in reducing instability rooted in the foot. In the end, these fitting principals rely on trial and error and finding what works best for you.

Rehab

First step to managing achilles tendinopathy is to address training faults and protect the injured site. If you're in a lot of discomfort, consider taking time off the bike. For most of us (myself included) that is difficult to do. At the very least, volume and intensity should both come down. Once you're no longer having symptoms, progress volume and intensity slowly to allow appropriate tissue adaptation. The capacity of the tissue needs to relatively match the stress being applied.

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What does the evidence say?

Insufficient evidence to support the use of plasma rich protein (PRP) injections [Moraes 2014].

Low level laser therapy may be beneficial for those with achilles tendinopathy [Tumilty 2010]

Little evidence to support stretching [Giangarra]

Night splints aren't effective when compared to eccentric exercise [Greenburg 2013]

Eccentric calf strengthening has shown good evidence to improve pain in active populations with mid tendon achilles tendinopathy [Alfredson 1998], [Greenburg 2013]

Moderate evidence for iontophoreses with dexamethazone for decrease in pain and increase in function [Greensburg 2013].

Corticosteroid injections are controversial due to their degenerative effect on tendon, leading to increased risk of rupture [Greenburg 2013].

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In terms of what you can do at home, the best evidence would suggest doing eccentric training exercises. This has been shown time and again to be an effective method of addressing achilles tendinopathy especially in an active population [Greenburg 2013]. See the link below on how to perform eccentric exercises. These exercises can be painful but shouldn't be disabling afterwards (ie limping, unable to walk, can't bike, etc). If it's the latter, you might be doing too much too early. A pain level above a 4/10 should be an indicator to tone it down during the exercises.

Alfredson et al protocol: 3 sets of 15 with the knee straight and knee bent two time a day for 12 weeks. Progress to a backpack with weight when the three sets of 15 for both straight and bent can be performed without pain or difficulty [Alfredson 1998].

Eccentric exercises: https://youtu.be/BWCvbV5z7dc

Sources and more reading

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