Strengthen those Achillies tendons with Eccentrics!

We have been working for a few years as Physiotherapists on the Old Mutual Joberg2C. A few injuries have kept rearing their heads on this race event. So here's a low down on the 5 most common injuries presented, and how to keep them at bay.

Injury #1 is **Achilles Tendonopathies** (note, not a tendinitis)

So what's going wrong???

Even after two to three solid days in the saddle (and you guys are doing 9), the foot is spending a about 6-8 hours alternating between dorsi-flexion and plantar flexion, ie up and down. You can well imagine the wear and tear forces caused by this friction type of activity.

Consider it like this-
Gently wrap your left hand around your lower right forearm, or right hand if you are a lefty (no not the Cannondale lefty) Now move your arm up and down in your hand for at least ten minutes - ok maybe a just minute! Feel the forces??? Now imagine doing that for 6 hours, for 9 consecutive days.

And now to make it even worse. For those of who don't like to stretch (you know who you are). You have tight calves. Make your fist much tighter around your arm.....and I'll give you a free physio session if you can handle that for a solid 6 hours!

That is basically what is happening, your Achilles tendon is wrapped in a sheath, and the tendon builds up friction inside this sheath.....and it's made worse by having tight calves.

Unfortunately many of us don't get to ride more than 3 or 4 days consecutively for the whole year. As a result our poor tendons are not capable of withstanding such a constant load and strain when we're on the joberg2C. Input not matching output = failure of the tendon and.....PAIN.

So what you going to do???

Good news, there's still time to ensure you ride our beloved country - pain free!

It's all about **Eccentric control**

My dad always said to me you gotta learn one new thing every day, so here's yours:

Eccentric control is defined as the active contraction of a muscle occurring simultaneously with lengthening of that muscle. Thanks Wikipedia!!!
It is the ability of a muscle to still contract **and** withstand a constant load whilst being stretched to control a slow downward movement. There are three distinct phases in the movement of muscles: isometric (no movement), concentric (contracting) and eccentric (extracting). All three of these stages in muscle movements have an effect on the muscle tissues and tendons overall functioning. Remember, a tendon is what joins the muscle to the bone/ joint.

An easier way to explain this: Pick up a glass of water....make that a pint of beer-  (you'll be doing a lot of this training after a good day in the saddle!). Have a good glug, now put the beer down. That was your Biceps action - called a concentric contraction - putting the beer into the mouth. The eccentric action for the bicep is to put that beer down slowly so you don't spill, not even a drop! The isometric is trying to restrain your bicep lifting up for another sip. If your muscle and tendon were not capable of lengthening slowly with that heavy pint, whooops, you would have slammed your arm down, beer all over the place!

So, same same for the Achilles. As that foot is on the up peddle, the calf and tendon shorten to give you the power, and on the down stoke you start to store elastic energy by lengthening the tendon. Add to that a tight calf and the load of your body - and in comes the wear and tear with Mr Pain!

This eccentric movement provides a braking mechanism for the muscle and tendon and it aims to protect joints from damage as the contraction is released.

How do you train this eccentric stuff???

Eccentric training focuses on slowing down the elongation of the muscle process in order to challenge the muscles, which can lead to ***stronger muscles***, ***faster muscle repair*** and ***increasing metabolic rate.*** Those are all great things!

Some tips for you below. *(Thanks to SA trail runner, Tracy Zunckel for being our model)*. Print out and stick on your wall!

Standing heel raises:

1.Double to single leg knee heel raise

Start on a flat surface
Raise heel up slowly, hold for 2 seconds **return down very slowly**. **STOP if PAIN is felt, stretch UP TO pain limit.**

- Always keep a **straight back and tighten the abdominal and pelvic core muscles**

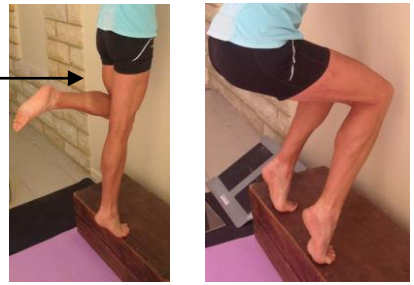
4 sets of 15 repetitions, 1 minute rest

Progressions

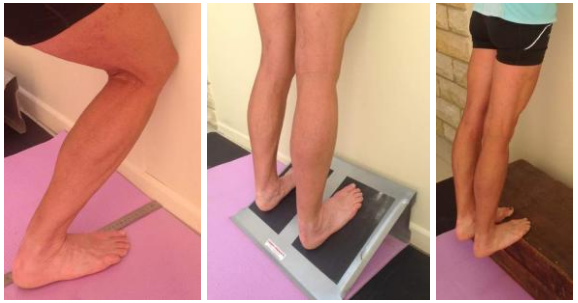
- Single leg heel raise
- *5 sets of 25 reps, 2min rest*
- heels dropped over a stair

2.Stair standing single heel raise and drop

3. Stair bent



Calf stretch 1.Knee to wall 2.Stair stretch 3.Incline board



Always feel as if you are squashing a jelly tot under your heel. Stretch UP TO PAIN not into Pain.
1. Use a measuring tape to watch your daily progression- keep the heel down and pelvis straight.
2. drop heels over a step, straight knee then bend the knee
3. use an inclined surface, keep heel flat.
Hold each for 3x 60 seconds.

Control and Balance

It is important to retrain your balance.
Start on a firm surface, progress to a slightly unstable surface, and then onto a wobbly cushion.
Start with double leg and progress to single leg.
Hold position, turn head left to right, close eyes.
Activate core, keep knees behind the toes and hip width apart.

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Get a suitable resistance band- wrap around the forefoot, push down and come back up slowly to the count of 5 seconds.

Theraband strengthen/ stretching:

The next four injuries coming up in the next few weeks, be sure to keep watching.....

Next week we'll discuss injury # 2 - Medial knee pain- sort out your Biomechanics

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