



Rebalancing loading

- When it comes to exercise for LL tendinopathy. We need to firstly identify and reduce aggravating factors and then we can begin to strengthen the muscle tendon unit to increase its capacity.

Reducing the Aggravating factors

- There are typical known triggers that can irritate the tendons of the lower limb, these typically fall into two categories of loading triggers, compression factors or a mix of both.
- Achilles, running (specifically endurance or up hill running)
- Patellar, JUMPING and also running (repetitive or unaccustomed)
- Hamstring, Running or walking up hills, repeated or sustained hip flexion exercises.
- Gluteus medius, running or walking, hip adduction postures like side lying. Again there is usually a recent increase in activity.

Some important exercise principles

- With tendinopathy pain does not equal damage, it often just means sensitisation.
- Short term the exercises aim to de-sensitise the tendon, allowing the brain to downgrade its response to tendon load and essentially turn down the volume on the pain. Known as pain modulation or just simple pain relief to our patients.
- Patients may report pain when starting the exercises - thats OK. The pain should temporarily reduce following the exercises.
- We should also see Improved motor control happening fairly quickly with rehabilitation BUT Structural changes within the muscle and improved tendon structure will take 2-3 months at least.
- So initial response (pain-), mid-term (pain- and motor control), long term (pain-, motor control & structural change).

- Achilles Exercises
- Isometric (easy to teach and do, hard to get wrong, patient has less concern about tendon damage because there is no movement)
- Can then progress to dynamic and possibly include dorsiflexion of a step BUT not for insertional as this can cause compression of the tendon over the posterior calcaneus. We will however need to restore dorsiflexion at some point so don't avoid dorsiflexion forever.
- Ideally Achilles should be targeted with both straight knee and bent knee calf raises. The reason is the soleus provides approximately half of the fibre contribution to the AT along with the Gastrocnemius, and is a significant contributor to upright stance during propulsion). So we bend the knee to bias the load onto the Soleus.
- We need to start Slow to avoid stimulating the elastic properties of the tendon and to also increase the time under tension. Ideally the exercises should be performed until fatigue becomes apparent. You could time the exercises (60 sec) or pace it with a metronome.
- To be honest AT exercises are easy and simple
- The biggest challenge is getting the patient to complete them regularly.

Motivation 1

- Reason Reason Reason (why am I doing these boring exercises?) Pain, control, function, resolve of the condition, increased performance, evidence based, protects the tendon avoids surgery etc that damages the tendon. Rapor, get the buy in, the trust from the patient and the patient onboard and improve their 'expectation of a positive outcome'.

Motivation 2

- Get the patient to design, try and set the exercise plan with you.
- They should feel invested in the process and the agreed plan.
- Ask them to identify when and where they will do them. Not could do them but WILL - Language is important.

Motivation 3

- Monitor, record, support.
- Morning symptom diary tracking daily activity and symptoms the following day - delayed response.
- Document the exercises done daily.
- Support the patient, if they fail look at why and implement strategies - don't shout at them or beat them with a big orange stick. We need to create the same positive supportive environment that weight loss groups provide.

Patellar

- Simply want to load the quads and patellar tendon. We also have an opportunity to provide some offloading of the knee by shifting some of the stress onto the powerful hip joint muscles.
- When performing the exercise you can Kneel forward for more knee loading, or sit back for more of a hip bias squat.
- Arguably the first 60 flexion provides the most tendon strain before its reduced by PF compression. BUT 60 not that functional. On balance deep squats are probably not required and not suitable for lots of people.
- Strengthen the quad patellar tendon to handle more load but also strengthen the hip extensors to offload the knee more by changing landing mechanics.
- Squat isometric, one leg, slow, increase range, D-lift, banded squat, drop squats.

How often

- Loading 3x per day to ache/fatigue.
- Loading triggers a cellular sim that last 4-5 hours,
- Bone density research indicates we need to re-trigger the response after this time period.
- When get heavy load will need more rest for recovery and adaptation.

Hamstring

- Awkward - less common, slow to recover.
- Avoid compression of tendon over the ischium.
- Might be OK to just squat 1/2 or D-lift from the blocks rather than ground.
- Long lever bridge (go to exercise) Iso, dynamic, then increase hip flexion.
- Pressure Cushion - sitting often painful.

Im not fit enough, I'm too fat, I'm too old.

- Good news is are least fit patients have the greatest potential to improve. Trickier are the elite athletes who are already doing all the correct things because less options remain for intervention.

Gluteal

- Most common, more common in women 4:1 ratio, from middle age. Glute med and min tendon onto the greater trochanter.
- Clam - be careful, can aggravate or even trigger it. ADDUCTION COMPRESSION, stop or cushion between knees and just do inner range.
- Abduction Iso supine, sitting. Simple, minimal equipment, can begin to reeducate movement.
- Avoid crossing legs, low seats, hanging on hip.

Conclusion

- Exercises are simple, just might need to avoid tendon compression postures.
- Motivation is the challenge.
- Then sticking at it for a few months.
- Monitor and review, change along the way.
- Finish with a maintenance programme.

Final mentions

- Video on The Physio Chanel (youtube)