Tendinopathy

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Achilles Tendinopathy - Interventions

Exercise

1. Exercise has consistently been shown to be the gold standard treatment for Achilles tendinopathy. However it is important for practitioners to understand and educate their patients regarding the realistic healing timeframes involved. While other musculoskeletal tissues such as bone, ligament and muscle, may be expected to heal over 6 to 12 weeks, the healing time for tendon is considerably longer. Depending on age, tendon pathology and intrinsic influences, the patient may be faring well with recovery over 3, 6 or even 12 months. In past years, it has been customary for experts to recommend 3 months of conservative management before consideration of surgical intervention. In most instances of tendon healing, this is an unreasonable expectation.
   The best form of exercise will depend on the stage, type and severity of the disease. Very broadly, moderate to heavy isometric exercise often forms a 'base' from which to start and progress the strengthening programme. In many instances this has been found to provide very effective analgesia, and well as a safe early training load. Tendinopathy is known to be associated with cortical muscle inhibition. Isometric exercise has been found to significantly reduce intracortical inhibition, and this may be related to the mechanism for pain relief. These exercises can generally be performed daily, and are often recommended to be performed up to several times per day.
   More recently, there has been increasing research into *heavy slow resistance training*. While not so effective for pain relief, this training method has been found to be effective in improving function and strength, particularly in medium to later stage rehab. Due to the physiological effects of such loads on collagen, namely a net decrease in strength and structure over 24 to 36 hours, such exercises might only be performed twice weekly in the early stages. The frequency is progressed as function and strength improves.
   Speed is another consideration when prescribing exercise. Tendon load is increased substantially when increasing the speed of contraction. So training for speed and power is addressed towards the later stages of rehab.
   Kinetic chain strength is addressed throughout rehab, and particularly before return to sport. It is known that several muscle groups throughout the lower limbs will be adversely affected with localised tendinopathy. It will be insufficient to target only the Achilles in the strength programme.
   (a) *Mid-substance Achilles tendinopathy*: Several studies have shown heavy, full-range eccentric strengthening (e.g. weighted heel lowering off a step) to be extremely effective for the treatment of mid-substance tendinopathy. However, more recent research has shown that eccentric training is only one component

of overall strengthening. Functional recovery is reliant on restitution of musculotendinous isometric and concentric/eccentric force generating capacity. And strengthening for power and throughout the entire 'kinetic chain' is an essential component of overall management.

(b) *Insertional Achilles tendinopathy*: This condition also responds well to exercise. However in the early and intermediate stages of recovery, full range loading and even passive calf muscle stretching is usually contraindicated for insertional Achilles tendinopathy. This is because of the significant causative role in the disease played by bony compression on the undersurface of the Achilles. Modified exercise that controls for this compressive loading has been shown to be very effective in treating insertional Achilles pain. This usually involves avoiding or minimising dorsiflexion past plantargrade until later stage recovery.

Following recovery & return to sport, an Achilles maintenance programme is recommended to be continued for at least one sporting season.

Shock Wave Therapy (SWT)

Also known as extracorporeal shock wave therapy, this is applied via a mechanical device that somewhat resembles an ultrasound machine. Shock waves are abrupt, high amplitude pulses of mechanical energy. This is applied directly to the painful area of tendon, where it is proposed a healing response is stimulated. There is a degree of discomfort associated with the treatment. The results of studies are equivocal. For Achilles tendinopathy, two studies found it to be no more effective than a sham intervention (cited in Sussmilch-Leitch, et al).

Laser Therapy (LT)

Like SWT, most RCT studies have looked at the effectiveness of LT in combination with exercise. There is evidence that these interventions combined are an effective treatment for Achilles tendinopathy. No quality studies have reported the effect of LT in isolation for this condition.

Injections

Cortisone injections are not recommended for any Achilles related condition, including tendinopathy, paratenonitis or bursitis, due to the adverse effects on the mechanical properties of the tendon (Dean et al 2014; Heckman et al 2009), and the significantly increased risk of tendon rupture (Heckman et al 2009). The next newsletter will provide a more detailed overview of injection therapies for Achilles tendinopathy.

A discussion of surgical intervention for the management of recalcitrant Achilles tendinopathy is beyond the scope of this newsletter.

References:

1. Alfredson, H et al (1998). Heavy-load eccentric calf muscle training for the treatment of chronic Achilles tendinosis. AJSM, 26, 3, 360-366.
2. Carcia, C et al (2010). Achilles tendinopathy: clinical practice guidelines. JOSPT, 40, 9, A1-A26.
3. Cook, J et al (2016). Revisiting the continuum model of tendon pathology: what is its merit in clinical practice and research? British Journal of Sports Medicine, 50, 1187-1191.
4. Cook, J & Purdam, C (2009). Is tendon pathology a continuum? A pathology model to explain the clinical presentation of load-induced tendinopathy. British Journal of Sports Medicine, 43, 409-416.
5. Dean, B et al (2014). Glucocorticoids induce specific ion-channel-mediated toxicity in human rotator cuff tendon: a mechanism underpinning the ultimately deleterious effect of steroid injection in tendinopathy? British Journal of Sports Medicine, 48, 1620-1626.
6. Heckman, D et al (2009). Tendon disorders of the foot and ankle, part 2: Achilles tendon disorders. AJSM, 37, 6, 1223-1234.
7. Jonsson, P et al (2008). New regime for eccentric calf muscle training in patients with chronic insertional Achilles tendinopathy: results of a pilot study. British Journal of Sports Medicine, 42, 746-749.
8. Magnusson, R et al (2009). Non-operative treatment of midportion Achilles tendinopathy: a systematic review. Clinical Journal of Sports Medicine, 19, 54-64.
9. Rio, E et al (2015). Isometric exercise induces analgesia and reduces inhibition in patellar tendinopathy. British Journal of Sports Medicine, 49.19,1277-1283.
10. Silbernagel, K & Crossley, K (2015). A proposed return to sport programme for patients with mid-portion Achilles tendinopathy: rationale & implementation. JOSPT, 45, 11, 876-886.
11. Silbernagel, K, et al (2011). The majority of patients with Achilles tendinopathy recover fully when treated with exercise alone: a 5 year follow-up. AJSM, 39, 3, 607-613.
12. Stanish, W. et al (1986). Eccentric exercise in chronic tendinitis. Clinical Orthopaedics & Related Research, 208, 65-68.
13. Sussmilch-Leitch, S et al (2012). Physical therapies

for Achilles tendinopathy: a systematic review and meta-analysis. Journal of Foot & Ankle Research, 5, 15.

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