Tendon Injuries and Management

Tendons are a vital part of our musculoskeletal system, attaching our muscles to our bones, allowing the muscles to exert a pull on the bones to generate movement. Injuries to the tendons are common and understanding the cause of the injury and pathology involved helps to guide management. Tendon injuries may occur because of one big traumatic force such as a fall, which overloads the tendon, often resulting in a frank tear to the tendon tissue. More often however, injury to the tendon occurs because of a series of smaller more repetitive overloading forces.



A common example of this is getting stuck into cleaning up the garden, pruning, cutting and pulling at things in ways that your arms are not used to, creating overload and soreness to the tendons of the shoulder and elbow. Another very common example involves a sudden change or increase in the types of exercises that you are undertaking, such as taking up running 2-3 days per week or simply increasing your walking or running distances too quickly.

The body will tend to maintain a certain level of strength in the bones, muscles and tendons to cope with the sorts of loads that you have been applying to the tissue. Our bodies are incredibly adaptable and in response to sensing an increase in stress and loads to the tissues, the body will start to devote more energy and effort building stronger tendons, muscles and bones to cope with this increase in load. Importantly this process takes time! If we don’t give the body adequate time to build additional strength in the tissues, it can result in overload, injury and ultimately weakness of the tissue.

E: admin@ibphysio.com.au | T: 02 9976 3540 | F: 02 9976 3290 | Suite 14, Level 2, 22 Darley Road, Manly, NSW 2095 Australia



Injuries to tendons occur because of numerous intrinsic as well as extrinsic factors. Some common intrinsic factors for tendon injury include:

- Age – We synthesize collagen to maintain and build strength in tendons more poorly as we age.
- High BMI – The more overweight we are, the more load there is for the tendons, particularly of the lower limb to cope with.
- Sex – Women tend to suffer from tendon injuries more, with hormonal fluctuations proposed as one of the possible causes of this.
- Weakness – The weaker our muscles, the poorer our movement control and the greater the forces and loads we put through our tendons.
- Lack of flexibility – Often being stiff and tight can result in more undesirable, compressive forces being placed on the tendons through movement.

The extrinsic factors that result in injury to tendons tend to be much more easily controllable and involve things such as:

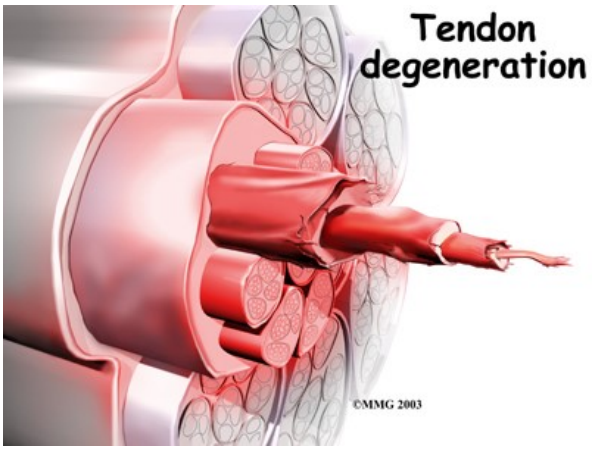
- Training intensity
- Training volume
- Training surfaces
- Poor footwear

The term ‘tendonitis’ was commonly used to describe most non traumatic tendon injuries with the assumption that the painful tendon was inflamed. We now understand that there are no inflammatory cells in the painful tendon and use the term ‘tendinopathy’ instead. A tendinopathy follows a gradual continuum of changes in the tendon over the course of its development, which will require quite different intervention at different stages.

Initially an overloaded tendon will become what we call a ‘reactive tendon’. During this phase, the tendon becomes painful and undergoes several temporary changes such as drawing water into the tendon to stiffen itself up and protect from

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additional loads. Importantly at this point, the structure of the tendon is completely intact and simply decreasing load and resting the tendon will return it exactly to its pre-injury condition.



Dysrepair and tendon degeneration occur when a reactive tendon has been poorly managed and excessive loading to the tendon has continued. During this stage, the structure of the tendon begins to breakdown and small blood vessels grow into the tendon. The body will replace some of the damaged collagen, however this tends to be replaced with a much weaker form of collagen and this portion of the tendon has now undergone permanent change.

Management of a tendon during these phases will involve a degree of deloading the tendon to a level that it is coping better with as a well as managing as many of the intrinsic and extrinsic sources of overload to the tendon as possible. Your physio will guide you through a program of graded increase in loading to the tendon to build up more tissue around the damaged area, increasing the overall strength and functional capacity of the tendon. The further along this path you have progressed, the slower and longer the whole process will take to correct the injury.

Importantly, while not a quick process, even a tendon that has undergone significant degeneration is able to make quite significant improvement if you diligently follow a program of graded loading. The main take home message however, should be to listen to pain in the tendons initially and not let things progress to such a state. Early assessment from a physio to confirm the diagnosis of tendon injury and provide guidance on the stage of the injury and best course of action can often save months if not years of pain and loss of function.

Article by Jim Burke

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