

Athletic Animals

[Home](#)

Tendon Injuries - What to do until the vet arrives, and how to develop patience.

[Acupuncture](#)

Tendon and ligament strains and sprains are very common injuries in the lower leg of performance horses. The most common of these injuries affects the weight bearing digital flexor tendons at the back of the canon bone and fetlock. Not only do these injuries result in a high level of wastage in performance horses, they also have a high rate of re-occurrence.

[Bowed Tendon](#)

[Colic 1](#)

[Colic 2](#)

[Dentistry](#)

The most common damage in horses is damage to the superficial digital flexor tendon. This is closest to the skin at the back of the canon bone, and can be palpated from the back of the knee down to the fetlock. The deep digital flexor tendon lies just under it, and under that is the suspensory ligament.

[Endurance](#)

[Feeding](#)

[Hoof](#)

The digital flexor tendons at the back of the leg are there to support the fetlock joint, and to act as a spring, storing elastic energy when the horse is moving. Research confirms that immature tendons seem to adapt to pressures and stresses they are exposed to, but mature tendons appear to lose most of this ability. It is in mature tendons where continual use at close to their limit of resilience – usually a result of rigorous training – causes a progressive degeneration of the tendon structure, eventually resulting in tearing and failure of the tendon.

[Oils](#)

[Sweating](#)

[Tendon Injuries](#)

Performance horses that gallop or jump are most at risk of tendon injury. They usually strain tendons as a result of overextension of the fetlock joint when their weight is all carried on one leg. The overextension of the fetlock causes overstretching of the collagen fibres, resulting in tearing and rupture of some, or almost all, of the fibres. Horses in intense training, especially those not properly conditioned, may damage many fibres. This can occur suddenly, or gradually over time.

[Equine Ulcers](#)

Why does the mention of tendon or ligament sprains put fear into the heart of every rider, then?

[Vitamins](#)

[Fluid loss](#)

[Site Map](#)

[Contact Us](#)

Tendon and ligament injuries take a long time to heal (12-18 months is not uncommon), and there is a reasonably high risk of recurrence unless management of the injury is first class right from the time it occurs. The reasons for this include the facts that tendon tissues have a very poor blood supply, making healing slow, and also that new tendon tissue is not strictly the same tissue as the original (original tendon is type 1 collagen, and new tendon is type 2 collagen, which is not as elastic or as strong, and tends to produce scarring if not managed effectively).

What you do immediately after a tendon injury can play a significant role in determining how your horse responds in the long term, so it pays to understand a little of what is going on inside your horse's legs.

When a tendon is injured, it first begins to swell. If injury is gradual over time, rather than from a serious acute trauma, this swelling is first known as tendonitis. Good observers will always pick up these early signs of swelling in tendons.

Inflammation is always the first response to any damage of the tendon structure. (you should remember that the text books all describe the signs of inflammation as: heat, pain, redness and swelling). It is absolutely vital that you begin to feel and look at your normal horse's legs so you can identify any abnormal heat or swellings as they occur.

As inflammation is cleared up in damaged tissue (it is the first healing response, in simple terms), the next stage is fibroplasia, or the generation of scar tissue. Over the next few months there is a continual remodelling of immature scar tissue into a stronger and stiffer tendon structure. This is highly likely to be re-damaged unless all care is taken to condition and strengthen the new tendon tissue.

While many treatments for tendon damage have been suggested, there is little evidence that these are any more effective than prolonged controlled exercise. We will look at some of these treatments later in this article.

The greatest influence on the prognosis of tendon injury is actually the severity of the actual injury. If you can manage the early strains effectively, the damage will be far less serious in the long term.

Firstly, let's look at a few terms, so you fully understand what is being said:

Tendons and ligaments are made up of elastic fibres, primarily composed of collagen. These fibres can stretch to a limited degree, and each tendon or ligament is composed of many parallel elastic collagen fibres

Tendons join muscle to bone.

Ligaments join bone to bone.

When the fibres tear, that is called a sprained tendon or ligament. This typically occurs when a tendon is stretched beyond its capacity.

When fibres tear, inflammation in the tendon begins. This is called tendonitis. Any time tendon tissue is required to bear extreme stretching forces it may tear.

Any factor that increases the stress on a tendon or ligament can lead to overstretching and sprain. These factors include long training sessions, particularly when horses are tired, as well as simple factors including rough terrain, loss of balance, poorly trimmed or shod feet, inadequate training and conditioning for the work required, etc.

A "bowed" tendon describes the shape or profile of the tendon when tendonitis of the Superficial Digital Flexor tendon (the one about as thick as your thumb which is seen right at the back of the leg behind the canon bone) occurs.

Initial tendon strains are often mild, and the initial signs are often simply a little heat, swelling and/or pain when you feel the strained area of the tendon or ligament. There is usually no sign of lameness at this early strain stage. Commonly riders will see swelling or feel heat in a strained tendon after a workout, but because there is no pain evident, this heat and swelling is often overlooked.

Warning: ignore these early signs at your risk! They are the first warning that something is not right, as no perfectly healthy tissue will suddenly have localised swelling or heat unless you have a good explanation for it, such as a knock, interference, etc. Immediate action at this early sprain stage can prevent further fibre tearing and a worsening inflammatory response which leads to much more serious, longer term damage.

Why do tendon injuries take so long to heal? There is a very poor blood supply to tendons and ligaments, particularly in the region of the mid-canon bone, where most "bowed" tendons originate.

Whenever tendon or ligament damage is even suspected, immediate first aid is very important, as tissue damage must be limited right from the time tissue injury occurs.

What sort of things cause tendon sprain and tearing?

As we said before, anything that stretches the tendon beyond its capacity can be damaging, as the tendon fibres then tear. While most injuries will be due to strain, there can also be lacerations which simply cut into tendon tissues. Lacerations usually occur as legs are caught in fences, or from interference during work, especially when feet are shod. Cuts can be superficial, or extend to actually severing the tendon.

Other causes often include;

Direct trauma – hitting a front leg with the hind hoof, for example.

Poor conformation – long, sloping pasterns and a long toe/low heel

Poor foot trimming and balance – often resulting in overly long toes which alter foot geometry and action

Rough ground

Excessive fast work too early in training before horse is conditioned. Tendons, ligaments and bones all become stronger in response to gradual increases in stress.

Inadequate conditioning – working a horse at an intensity it is not trained for.

Overworking a tired horse can be a risk, as tendons have an inherent elasticity which gives them the ability to cope with strain. As tendons fatigue, elasticity is lost, making them more susceptible to strain and stretching forces. The faster the speed, the further tendons are stretched, and the higher the likelihood of injury.

What Is The Main Goal of Treatment?

a) In the first 24-48 hours:

At this stage the primary concern is to limit and reduce inflammation as much as possible.

Inflammatory products produced in damaged tissue cause more tissue damage and fluid swelling around the damaged tissue. The longer this inflammatory debris remains in a damaged tendon, the more scar tissue will be formed as the collagen fibres repair over time.

1) Using ice cold water, a hose, freezer bricks, ice packs or any available source of cold in this first 24-48 hour period is absolutely essential to minimise inflammation in the tendon. This may be done 3-4 times a day for the first two days, and has a very useful immediate anti-inflammatory effect. Ice restricts blood flow and constricts any ruptured blood vessels to slow haemorrhage and reduce bruising in the area.

In fact, many riders will use a cold hose or other cold treatment after any riding as a routine preventive measure to make sure tendons remain sound after work.

2) Restrict any bleeding

3) Bandaging. A good pressure bandage with adequate cotton wool will help apply pressure to any swelling that is likely to occur. This helps keep fluid build up in damaged tissue to a minimum. Bandage in between ice treatments. Bandaging provides some support, as well as reduces any wound contamination.

4) Rest. Stable rest is absolutely essential to limit any further damage. Do not put the horse in a paddock or yard where it can continue to walk – it must be confined at this early stage.

5) Keep any cuts clean. If there are any cuts or lacerations to the tendon, pay particular attention to cleaning the wound of any debris or dirt, and keeping the wound clean with antiseptics or antibacterial products until the vet arrives. (Cuts often occur if the tendon damage occurs due to over reaching or other interference). It makes no difference if tendon tissue is sprained or cut – it must still heal the same way)

6) Once you have conducted the above first aid measures, call your vet for advice. The vet will prescribe anti-inflammatory drugs as necessary, and will be a critical factor in developing a management plan for getting your horse back into work eventually

7) Anti-inflammatory drugs such as Phenylbutazone or Finadyne are essential to limit the initial inflammatory response. These drugs are known as non-steroidal anti-inflammatory drugs (NSAID's)

because they contain no corticosteroids. (While corticosteroids are very potent anti-inflammatory agents, if used after the initial 48 hour period they will significantly delay tissue healing). Drugs including Phenylbutazone and Finadyne must be provided by your veterinarian, so make sure you have access to a vet at all times.

8) Topical DMSO may be used at this time, as it has anti-inflammatory effects which may help prevent fluid accumulation

9) If severe damage is suspected, try to ask the vet to arrange for a diagnostic ultrasound examination of the tendon. This is the only effective way to determine the actual extent of the injury, and to appropriately prepare a management plan.

b) 48 Hours to 3 weeks

The main aim now is to stop inflammation damaging normal tendon tissue, to reverse the acute inflammation, minimise the permanent damage, and commence the repair process.

To do this, we now use Hot therapy (or hot and cold therapy alternating). The heat now helps to maximise blood flow to the damaged tendon to maximise repair. If you don't have any heat packs, Glad Wrap wrapped around the damaged leg under a bandage can work extremely well. Many people like to use ice packs alternating with heat wraps for the next 5-6 days at this stage.

You will now be working closely with your vet, and the continued use of anti-inflammatory drugs will be at the vet's discretion. They may not be required for long after the initial tissue inflammation has been controlled, especially if there is no pain for the horse.

Continue pressure bandaging to keep pressure on the damaged tissue and reduce swelling.

Once inflammation is managed and swelling is controlled, controlled gentle exercise may begin. This is vital in the management of tendon injuries, to improve tissue fluid movement and begin applying controlled stresses and tension on new collagen being laid down in the tendon for repair. It can also be tedious, and will instill patience into most owners. This exercise may involve hand walking for 10-15 minutes once or twice daily during the first month

(Turning a horse out to pasture after a tendon injury is one of the worst mistakes an owner can make. This allows the horse to place undue stresses on damaged tendons when it trots and canters around the paddock, and can cause irreparable damage such as the formation of excessive scar tissue. The horse must be kept in a stable or box initially).

If there is any doubt as to the degree of the injury, ask the vet to conduct an ultrasound examination of the tendon to determine the precise nature and degree of tissue injury, and to monitor repair. This is rarely possible from palpation alone, and will be very important in determining the prognosis for the injury, as well as determining when exercise can begin again.

c) 3 weeks to 6 months

Lameness may only take a few days or weeks to resolve, depending on the degree of tissue damage originally, but tendon fibres take at least 6 months to repair, and often much longer. While healing continues it is vital to prevent any overloading or excessive stress on tendons, and this may involve regular attention to foot and hoof trimming. At the same time the repair process can be guided to produce a functional tendon with minimal scar tissue.

The use of lasers or therapeutic ultrasounds is possible to encourage optimum healing at this time. (see later section)

Scar tissue reaches about 50% of its eventual strength 6-8 weeks after the initial injury, so horses will receive only very light exercise for at least 60 days.

Once healing is judged to be complete, the next phase of strengthening and conditioning the new tendon tissues must commence. This is important to provide the healed tendon tissue with as much strength and elasticity as possible, as the new tissue will rarely be as elastic, or as strong, as the original tissue. This stage will be managed through close co-operation with your vet.

Any increase in exercise must be slow and gradual, ensuring that overload and fatigue cannot occur.

The next step is to ride the horse for perhaps 15 minutes daily at a walk. In many cases this can occur at about the 3-4 month mark after the initial injury, then being increased as the horse can handle it up to full work.

How To prevent bowing and reduce the risk of re-injury to tendons

- Check the legs, especially after hard work. Feel each leg for swelling and heat, and palpate it for pain.
- Correct trimming and shoeing
- Bandaging – use properly applied exercise bandages to help prevent overextension of the fetlock
- Proper conditioning and training – prepare horses with appropriate long, slow fitness and conditioning work. Don't increase workload too quickly.
- Suspend work if any signs of heat, swelling or pain are detected in tendons.

What is the prognosis after tendonitis in horses?

The prognosis for the return to full work depends on;

- The damage to the tendon: if there was no obvious disruption of the tendon fibres, or if the damage was minimal and healed quickly and completely, the horse has a better prognosis for the return to full work, especially if controlled gentle exercise is used properly in rehabilitation.
- The treatment used: horses with moderate to severe tendonitis have a better prognosis if managed conservatively (rested, brought back to work slowly), with about 50-60% returning to training. If they undergo surgery, and are rehabilitated correctly, up to 70-80% return to full work.
- Use of the horse: horses used for eventing and racing are less likely to return to their previous level of performance than those in less strenuous work such as dressage, pleasure and trail riding.

The best way to ensure that an injured horse returns to full work is to rehabilitate it correctly, by slowly bringing the horse back into training, and giving light exercise daily as the tendon is healing.

Other treatment alternatives

You are going to do a lot of reading after your horse damages a tendon. You will come across many treatment alternatives which may sound of interest. If you think any are of value, it is strongly recommended that you discuss these options with your veterinarian in detail. The treatment options to improve outcomes include those below, but remember that no treatment is universally successful, and all treatment options rely on gradual controlled exercise to increase repaired tendon strength and resilience;

- Surgery – including tendon splitting and superior check ligament desmotomy can be useful. Often used in racehorses.
- Therapeutic ultrasound, low power laser, acupuncture, hydrotherapy, and electromagnets are all offered as treatments to promote tendon healing

• Intratendinous and peritendinous injections of compounds including hyaluronic acid or glycosaminoglycans have been used as conservative treatments. While a variety of medications have

been trialled, none have met with universal success.

- Newer treatments being trialled include “shock wave” treatments at some universities and race tracks
- Growth Factors such as insulin-like growth factor (IGF-1) is a protein made by horses in response to injury. It is now being trialled and used to stimulate tendon cells to produce type 1 collagen as early as possible in the repair phase, rather than the more usual scar tissue. Results are encouraging.
- Stem Cell research is providing encouraging results where stem cells are injected directly into the damaged tendon lesion to stimulate repair by formation of appropriate cells directly on-site

Thankfully, treatment of tendon damage has progressed significantly since the days of blistering and pin firing, then “spelling” the horse for a year or so. Modern management of tendon injuries no longer relies on these antiquated, and often painful, treatments, many of which have been rejected on welfare grounds. In addition to blistering and firing, carbon fibre implants were once popular, but have now been rejected as having no effect.

Above all – make good friends with your vet. You will need their advice when dealing with tendon injuries in horses.