

# REHABILITATION THERAPY FOR THE HORSE

Text & Photography By Krista Porter, DVM, MBA  
with  
Katherine Fox, DVM



## Rehabilitation therapy for the horse

**Rehabilitation:** To restore or bring to a condition of health or useful and constructive activity; refers to the treatment of injury or disease.

Although there are many conditions in the horse that lend themselves to a rehabilitation program, soft tissue injuries, more specifically tendons and ligaments, represent the largest percentage of cases for which rehab plays an important role in recovery. Collateral ligaments, the suspensory ligament and the superficial and deep digital flexor tendons are the structures that are most often involved. Soft tissue injuries most commonly occur when the tendon or ligament is stretched beyond its capacity, causing the fibers to tear. These injuries can be the result of sudden trauma or as a result of repetitive movements that cause gradual weakening that, in some cases, leads to an eventual tear. Soft tissue injuries can either occur in the body of the tendon or ligament, at the point of attachment to the bone or the muscle belly.

Different soft tissues heal at different rates, with the average healing time for tendons and ligaments being 3-12 months. The goal of healing is for the body to fill in the defective area with a type of tissue that is as close to the original tissue as possible.

## Phases of healing

There are three phases of healing that take place when soft tissue is injured. Phase 1 is the inflammatory phase; generally lasting 48-72 hours with some cases continuing for as long as 96 hours. During Phase 1, the body initiates the healing process

and tries to clean up the area around the defect by removing dead tissue. Blood flow increases to the area and the resulting blood clots organize to form a “scaffolding” in the damaged area, providing the new tissue a starting place to grow. This phase is often treated with non-steroidal anti-inflammatory drugs (NSAID’s), ice and poultices. During this phase treatment is aimed at controlling the resulting inflammation which often means immobilization of the affected limb and stall confinement.

Phase 2 of healing is the regenerative phase; this phase can last weeks to months depending on the severity of the injury. Treatment during this phase is directed toward promoting the healing process. Healing of the affected area begins with cells whose specific task involves tissue regeneration to repair the injury. Modalities used during this phase can include low level laser therapy, therapeutic ultrasound and the introduction of controlled and progressive mobilization. This phase is often when light weight-bearing exercises are introduced, such as hand walking or the use of the underwater treadmill. Physical therapy in the form of passive movement of the injured area is also introduced. Tendons and ligaments remodel along the lines of stress so early weight bearing exercise can be important in healing. Early mobilization can also decrease adhesion formation. During this phase is when regenerative therapies such as platelet rich plasma (PRP) and stem cell therapy can be utilized.

Phase 3 is the remodeling phase; this phase can actually last for years. The cells complete regeneration and organize to form tissue as close to normal as possible. This is the phase where horses generally start back to work and the workload is gradually ramped up in hopes of returning the horse to pre-injury work level. The use of an aquatic treadmill provides an excellent exercise to rehab these types of soft tissue injuries while decreasing the load bearing on the limbs due to buoyancy. While there are certainly some real advantages to the use of this type of treadmill, swimming may also be utilized but with caution as rear limb injuries and back pain are potential complications. Gradually the size of paddock for turnout and free exercise becomes larger and walking under tack begins. It is important to be aware of the footing in areas where these horses are working as well as any other surfaces that the horse will be moving over. Deep footing and slick, hard surfaces need to be avoided, as the potential exists for a situation to occur that can cause re-injury, delay healing and even make the injury worse. As healing progresses, the frequency, duration and intensity of activity will increase. During this phase, therapeutic ultrasound, laser therapy and extracorporeal shockwave therapy





Arena Footing

can be used to further promote healing. Instead of healing with normal tendon and ligament fibers arranged perfectly in rows, the horse's body lays down bundles of scar tissue. This resulting disorganized scar tissue formation is weaker than normal original tissue and predisposes it to re-injury. As healing progresses, collagen synthesis increases, and the collagen becomes increasingly organized and cross-linked, resulting in increased tensile strength and the ability to withstand increasing loads over time. Tendons and ligaments heal much more slowly than other tissues, which make it imperative that the rehabilitation process be tailored to accommodate the delayed increase in mechanical properties of the tendon. A rehabilitation program needs to be designed to match the phase of healing of the tendon or ligament and the associated tensile strength of the tissue.

### Formation of a treatment plan

It is important to realize that successful rehabilitation of an injured horse requires a team approach. This team often consists of the owner and veterinarian, as well as other professionals (farriers, massage therapist, etc.) So often it seems as though the entire focus is on the injury itself and a conscious effort has to be made to consider the rest of the equine patient. We have to be mindful of the contra-lateral limb, the limb opposite the injured one, which can be subjected to increased weight bearing as the horse shifts his weight from the injured leg. If support of the contra-lateral limb is not provided, the end result can be support limb laminitis or break down of supporting structures of the non-injured leg. One must also take care of the mental health of the horse and should consider the environment in which the horse will be kept. Consider having a companion in the barn and/or toys in the stall to keep the horse occupied during the hours he needs to be confined. The injured horse's nutrition should also be taken into consideration and feeding a high plane of nutrition during rehab will help the horse maintain his condition and aid in the healing process. Meeting all of the injured horse's needs, physical and mental, and providing a good, safe environment are important components in the successful treatment and rehab of soft tissue injury.

So when an owner is faced with a horse that has sustained a soft tissue injury, there are several key factors that need to be looked at when establishing a rehabilitation program for that patient. What is the nature of the injury? What phase of the healing process is the injury in? How amiable is the patient to the therapy? What are the expected outcomes or goals (for both horse and owner)? What are the owners' expectations? What treatment options or resources are available? Is this an

injury for which the owners have the resources appropriate for rehabilitation or should the horse be referred to a professional with advanced training in rehabilitation and facility that can provide the necessary equipment?

### Therapeutic modalities

Thermotherapy is the use of cold or heat to elicit a therapeutic response. Cryotherapy, cold therapy, is used in the inflammatory phase of healing to decrease inflammation and pain. Cold compression, tubulator boot, ice, ice water circulation or cold packs are all forms of cold therapy. The goal of cold therapy is to provide temperatures of 35-50 degrees to the affected area according to the appropriate protocol for the type of cold therapy used. Cryotherapy is utilized during the first 48 hours of an injury, as it is during this most critical time that cold therapy can be used to slow the inflammatory process.

In contrast, heat therapy has the effect of elevating tissue temperatures to improve local circulation. The goal of heat therapy is to increase the tissue temperature by 2-4 degrees. Heating allows muscles to relax, become more pliable and thus more easily stretched. Heat therapy can be achieved by exposure to heat, direct application of a source of heat or via an electrical modality applied to the affected area. Heat packs, laser therapy, and therapeutic ultrasound are all forms of heat therapy.

### Manual therapies

Massage, stretching, joint and soft tissue mobilization, and/ or chiropractic manipulation are all forms of manual therapies. The goal of manual therapies is to restore optimal joint movement by reducing adhesions, providing improved joint lubrication and joint nutrition, as well as mobilizing tight joint structures.

Massage can promote improved circulation, mobilization of soft tissue adhesions and scar tissue, decrease muscle spasm and increase lymphatic drainage.

Myofascial release can decrease tension of the fascia via applied pressure from the use of hands and fingers.

Stretching can relieve pain from tight muscles and connective tissue that is impinging on or applying pressure and tension to the nerve pathways. Stretching helps to restore and maintain normal muscle length after injury, aids in decreasing stiffness associated with age and inactivity and it protects from stresses and strains.

Chiropractic manipulations are aimed at reducing the irritation of the spinal nerve root, which results in pain relief, restoring of normal joint biomechanics and nerve function, improvement of muscle function and promotion of healing in the injured area.

Joint mobilization is a low velocity passive movement performed in an attempt to improve range of motion and decrease pain.

### Electrical therapeutic techniques

TENS (transcutaneous electrical nerve stimulation), EMS (electrical muscle stimulation) and pulsed electromagnetic units are some of the forms of electrical therapeutic devices techniques available. TENS units work to stimulate nerve function, reduce swelling and stimulate wound healing by



stimulating the top layer of skin. EMS units work by making muscles contract. EMS improves venous and lymphatic drainage, helps to prevent muscle atrophy, reduces the formation of adhesions and scar tissue and encourages nutrition to reach the affected tissue. Pulsed electromagnetic units have been shown to improve circulation, decrease inflammation, improve fracture healing, decrease pain and promote healing.

Low-level laser therapy is another electrical therapeutic technique that is used in the horse. Laser therapy works to improve blood flow to an area which assists in increasing repair activity and improve lymphatic drainage to reduce swelling. Laser therapy helps relieve chronic pain.

Therapeutic ultrasound provides deep heat to help reduce muscle spasms and decrease pain. Ultrasound is a form of acoustic energy that increases blood flow to a wound or injury. It has been shown to increase collagen extensibility, increase collagen remodeling, decrease scar formation, and reduce swelling.

Extracorporeal Shock Wave Therapy has been shown to be beneficial for treatment of soft tissue injuries. Shockwave provides high pressure, short duration shock wave to stimulate healing. It has been shown to increase cytokines, osteoblasts and to decrease inflammation.



### Controlled, therapeutic exercise programs

Perhaps the most important component of treatment in any rehabilitation program is the exercise program. Studies have shown that horses treated with controlled exercise had a successful outcome in 67-71% of cases; while 25-51% of horses treated with turnout had a successful outcome. The duration, frequency and intensity of exercise depend on the phase of healing, the condition being treated, the extent of damage, and the facilities available. Hand walking is the starting point for any exercise program. Other types of exercise include ponying (leading the horse while riding another horse), treadmills, aquatic treadmills, swimming pools and turnout. As the program advances ground poles or cavallettis may be introduced to improve proprioception, agility and coordination. The use of such devices as the Pessoa© or Equiband System© or



even simply changing the terrain the horse is working on can help to target specific areas of the horse's body that need to be strengthened. SureFoot© equine pads can also be utilized to enhance a horse's stability and balance. Typically the duration of exercise is increased by 5-10% each week. When formulating a rehabilitation program for a specific horse, the exercise routine is tailored to that individual and the original rehab plan may need to be adapted to reflect the horse's progress throughout the total rehab time frame.

Rehabilitation of equine tendon and ligament injuries is more than stall confinement or simply putting them to pasture. There are many modalities and techniques available to facilitate in the return to a useable life regardless of the individual's occupation. While some injuries can take a year or more to recover it is being found that with the use of a properly designed rehabilitation program months can be taken off of overall healing time with the added benefit of a much better repair. There are many qualified veterinarians devoted to equine rehabilitation and rehabilitation facilities available to assist in the design and implementation of a rehabilitation program.

