

Date: 12-02-08
Date of Visit: 01-25-08

Kennesaw Mountain Veterinary Services
MEDICAL CONDITION

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Client: Underwood, Kirk

Patient: HOCK

Species: EQUINE Breed:

Sex:

SUBJECTIVE SECTION

Understanding your rope horse's hock.

C. Kirk Underwood, DVM

Hock Anatomy and Function:

The hock or tarsus is the complex joint in the equine that allows quick locomotion and durability for the rope horse. This joint allows the rear limbs to quickly flex in the forward phase of the stride to prepare the quadriceps to powerfully propel the horse as the hocks extend. The tibio tarsal joint (A) is the joint highest and responsible for most of the movement. It is well lubricated by synovial fluid that is produced and maintained by the articular cells that line the joint protecting the underlying bone. The fluid is also responsible for absorbing concussion forces as the weight is distributed over the joints. Next, there is the proximal (B) and distal (C) intertarsal joints which also may share some of the synovial fluid in the higher joints. The lowest joint in the hock is the tarso metatarsal joint (D) and usually possesses its own joint fluid which may not communicate with the others. The durable joint capsule suspends the joint fluid in each respective joint space and it is important to have a good quality fluid in order for protection and efficiency. Although the lower three joints combined only contain 5% of the total motion of the hock, they are responsible for a substantial amount of the problems in the horses going up and down the road.

.Figure 1.

This complex joint is surrounded by a host of important blood vessels, ligaments, nerves and tendons. There is not musculature surrounding or below the hock in order for the tendonous structures to maneuver the distal limb. The digital flexor tendons pass through and over the inside and back part of the hock, and are critical in supporting the horse's weight. The Achilles (gastrocnemius) tendon runs down the back of the limb above the hock and attaches on the point of the hock. If this tendon is cut, the whole function of the hock is lost, the hocks folds, and a horse cannot support any weight.

The horse is specifically equipped with an apparatus which enables the stifle, hock, fetlock, and foot move in unison. This allows the horse to rest while one leg is locked and also instrumental in the performance horse to concentrate his ability to run with the powerful concentrated propulsion.

Common Hock Problems in Rope Horses

The rope horse is a unique individual. Most rope horses are broke to be ridden and then tried and tested to see if they can achieve the speed, agility, and heart it takes to become an exceptional athlete. Whether they are bred for specifics or simply stumble into the sport, genetics play a vital role in the conformation of the horse and specifically the hocks. If one displays poor rear limb conformation, this joint will be affected later on in life. Straight hocks allow a wide range of motion and predispose the joint to a moderate amount of wear and tear. It may also affect the flexor tendons, suspensory ligaments and hoof angles. Sickie hocks or Cow hocked horses also are less desirable traits when looking at a performance rope horse. The cannon bone should be perpendicular to the ground, the hock joint straight when looked from behind, and slightly angled when viewed from the side. Both rear limbs should be symmetrical and no obvious swellings should be present. Long cannon bones may also pose unwanted stresses on the hocks when stopping or turning when looking at calf or heel horses. Younger horses 7-12 months may show acute painful swellings on the inside of the hock. These are usually osteo-chondritis dessicans or juvenile OCD lesions which need to be confirmed radiographically and treated accordingly. Most of these colts perform well if treated promptly with surgery or conservatively. Some will have residual lesions that may pose problems later in life.

A common presentation with rope horses is the horse that is swishing his tail and shutting down or coming out of his stop. We perform a thorough spinal exam and incorporate a lameness exam. It is common for a horse to have muscle strain in the para-lumbar musculature of the spine from over compensation from sore hock. Although most of the

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movement is in the high joint, most of the problems in rope horses are seen in the distal joint spaces. These lesions, referred to as degenerative joint disease (DJD), are traumatic or worn injuries which over time lessen the degree of performance. Bone spavin, bog spavin, thoroughpin, and capped hock are other rule outs involving the hock and related structures. Hock flexion tests and passive lameness tests (ie: Churchill Spavin Test) are imperative while watching the horse on a hard surface in a straight line and a circle to help establish the severity on exam. One common injury that shows similar symptoms to distal tarsitis is suspensory desmitis. This lesion shows similar clinical signs, blocks sound occasionally on a lameness exam, and confirmed by ultrasound. This lesion carries a much less favorable prognosis and requires sometimes up to a years worth of rest.

More often than not these early signs go undetected or poorly diagnosed. Swellings of the joint capsule or a boney enlargement on the inside of the hock are often the first noticeable signs. By this stage there is inflammation in the joint capsule, degeneration of the joint cartilage, and remodeling of the underlying bone

Current Therapies and Preventative Measures for the Hocks

It is imperative to have the horse examined when lameness or back soreness is suspected. Without proper diagnosis, treatment, and time, the horse may be put into jeopardy by further injury. Your veterinarian should be informed of the use and performance level of the horse. Baseline radiographs, a thorough lameness exam with diagnostic nerve blocks, and proper interpretation are important when establishing a diagnosis, prognosis, and treatment plan. Further tests include: MRI, CAT scan, ultrasonography, and nuclear scintigraphy. Once the diagnosis is confirmed, a plan needs to be established. Acute injuries may go undiagnosed and the source of pain may be the only thing established. A recheck should be performed before the horse goes back to normal. Proper rest for any injury is vital to a healthy recovery. I see a lot of horses over worked with further injury when one more week would allow a better recovery.

Special considerations should be made to determine which option is best for your horse. The 15 year old practice horse that spends 5 days in the practice pen and makes 100 runs a week should be taken care of at a high level of care due to the mileage. He will need a good warm up and cool down. If he feels good in the practice pen, you will be able to concentrate on improving your game. If he is hurting, you may develop bad habits and decrease his longevity. Another consideration should be the horse that only goes to one or two rodeos or ropings a month. The time in the pasture between events will allow good recovery and proper warm up should minimize the incidence of injury.

There are many different regimes used today for protecting the articular surface and improving articular function. Oral nutraceuticals come in many forms and contain many products. These products are good for healthy joint maintenance and providing the body with some necessary additives that they may not be deriving from their diet. These compounds are usually a daily maintenance given orally. When a horse becomes stressed and tired, his muscles, joints, and other soft tissue structures become vulnerable to injury. Stronger forms of glucosamines are available for injectable weekly or monthly therapies. Systemic Poly Sulfated Glucosamino Glycans (PSGAG) are commercially available for labeled use to treat damaged cartilage. They may be injected intravenously, intramuscular, or intra-articular. This product will strengthen the articular bond at the cellular level which protects the surface of the joint. This in turn, allows the cells to produce a high quality synovial fluid by working more efficiently. Intravenous and intra-articular use of hyaluronic acid (HA) also is instrumental in providing a better quality synovial fluid which protects the vulnerable articular cells. You can see how these products work differently to achieve a similar goal and therefore, they are often used in combination. When intra-articular therapy is began, different types of combination therapies are used with steroids. Some are long acting and others short acting. I like the steroid combination with the HA due to the protective function against the steroids. Long term use of corticosteroids in the joints may impede the ability to heal. Often, non-steroidal anti-inflammatory drugs (NSAIDS) are used daily to reduce the pain and also used in combination with rest for recovery. These are generally oral or injectable forms such as phenylbutazone, flunixin, and ketoprofen, but topicals such as diclofenac acid and dmsol are valuable as well. Many cases of distal tarsitis involving the lower joints will resolve because the joints fuse together minimizing the movement and damage. There are also surgical techniques and intra-articular therapies that can aid in the fusing of the joints. The current use of IRAP (Interleukin receptor Antagonist Protein) is used intra-articular which stops the inflammatory cycle. The proteins are harvested from the plasma and injected weekly for several treatments. This is particularly beneficial in the younger horse having beginning degenerative joint disease and has a bright future. A thorough understanding of the severity and prognosis should be the basis for a

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practical treatment plan for each case. Rope horses are used as much as any athlete and hauled more than most horses. We must continue to maintain their joints to ensure their longevity in the pen.

Conditioning and Strengthening for the Rope Horse

In today's sport of rodeo, it is imperative to have a consistent warm up routine for these athletes. Today there are more rodeos to go to, different arena conditions, different climates, and all the travel play important roles with regard to injuries and fatigue. Injuries and fatigue are instrumental in decreasing a horses' performance level and will directly affect longevity of the horse. As the horse is exercised, the circulation increases the body temperature and allows a wider range of motion for the muscles, tendons, and ligaments. This allows the vital structures more flexibility, thus reducing injuries such as avulsions and torn ligaments. In addition, the muscles can work more efficient which works as a temperature regulatory mechanism by allowing the horse to perform at a lower body temperature and improving stamina. I encourage symmetrical exercises both directions at a walk, trot, and lope. The long trot during the week will help achieve full potential when done on a routine basis. I also encourage 20 min 3-4 times during the week and perform similar warm ups at the rodeos or ropings. After a few weeks of a normal routine, you will see your calm horse pick up a little and your high strung horse knocked down a notch. Hill exercises improve the quality of the hind limb musculature which will protect the hocks and place the stress away from the joints in the healthy horse. I like to lunge both directions on the side of a hill or long trot up the hill, then zig-zag back down at a walk or slow trot. Do these 20 minutes a day and you will see improved rear limb function in the hock as well as the stifle.

Cooling the horse down will minimize the stress and healing after demanding performance. The lactic acid build up will dissipate better allowing the horse to feel better the next day and minimize stiffness. By slowly incorporating the warm up, cool down and conditioning / strengthening patterns, your horse will improve his athleticism.

OBJECTIVE SECTION

ASSESSMENT SECTION

PLAN SECTION