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The Equine Hock: What Horse Owners Should Know

The "hock" is a horseman's term for the tarsus, an anatomic region of the horse's hind limb. Horses of all breeds, types, and disciplines can suffer from hock-related lameness problems, especially those that work heavily off of their hind limbs. This article discusses basic hock anatomy and function, describes desirable hock conformation, and discusses common lameness problems associated with this area.

WHAT IS THE HOCK?

A horse's hock is the evolutionary equivalent to the human ankle. When looking at a horse from the side, the point of the hock is the backward-pointed part halfway down the rear limb. Over millions of years of evolution, the ankle and part of the foot of the early horse raised off the ground, leaving the horse walking on the tip of its third toe. This evolved into the hoof. The other toes and several of the metatarsals (foot bones) were lost in the process. This lower limb change was part of the adaptation that allowed the horse's lower limb to become lighter and better adapted for explosive speed. Horses were heavily selected for great speed as they occupied the prehistoric plains. At that time, there was a great assortment of effective predators that culled any individuals that were slow.

The hock is complex, and consists of four basic joints and many bones, all joined by ligaments. The topmost joint is the high motion joint and accounts for about 90% of the range of motion in the area. The three lower joints together account for the remaining 10% of range of motion and consist of two rows of cube shaped bones lying on top of one another. Below the lower row of these small bones is the cannon bone, which drops down to the fetlock. The digital flexor tendons pass through and over the inside and back part of the hock, and are critical to 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.

CONFORMATION

Ideal hock conformation varies depending on the breed and intended use of a horse, but there are some basics that every horse owner should know about conformation in this area:

- A hock should appear stout and smooth, without obvious swellings. The left and right hocks should look symmetrical. The bones that make up the hock should generally be thick and heavy. This is simple mechanics; there are massive stresses placed on the lower limb of working horses. If this structure is too light, there is a greater chance for injury.
- When looking at the hock from behind, the limb should appear straight through the hock, without major angulation inward or outward.
- When looking from the side at a horse that is standing squarely, the cannon bone should be near perpendicular to the ground. The angle between the limb above the hock and below the hock should not be too straight (post legged) or too angled (sickle hocked).
- Deviation from good hock conformation just means that there will be more stresses placed on the joints, tendons, and ligaments. This may increase the chance for hock-related lameness.
- Major changes in hock conformation and rear limb conformation can limit performance in certain disciplines. An example is found in cutting and reining horses, which are expected to stop and turn hard on their hind limbs. Hocks that are placed too "high" (*i.e.* long cannon bones) create a mechanical disadvantage for this kind of work and are considered undesirable for this discipline.

COMMON HOCK-RELATED LAMENESS

Lameness problems that commonly arise in the hock area have, through hundreds of years of observation by horsemen, been coined with various names including "bog spavin," "thoroughpin," and "capped hock." These terms refer to swellings in various structures of the hock.

The most common problem associated with the hock is arthritis and pain in the lower, low-motion joints of the hock. Swellings and obvious lameness related to these joints has historically been known by horsemen as "bone spavin." Even though these lower joints account for little range of motion, they are commonly the cause of hock-related lameness, especially in horses competing in disciplines that require more use of the hindquarters. Deviations from normal hock conformation mean a higher likelihood of development of problems in this area.

Many performance horses are routinely treated for pain in these lower hock joints. Injection of the joints with a steroid with or without other anti-inflammatory medication is a very common procedure in the performance horse world. While joint supplements like glucosamine, chondroitin sulfate, and MSM may help overall joint health, they often do not drastically improve lameness from hock arthritis.

The good news is that this problem can usually be managed to allow horses to continue to work. For horses that do not respond to typical treatments and management, these

low motion joints may be surgically fused, which, in many horses alleviates the lameness. Relatively new, and potentially very effective therapies that we now use to treat pain in these joints include shockwave treatment, and injection of the low motion joints with alcohol to chemically fuse them.

A common lameness in performance horses, which can be confused with bone spavin, is injury to the high suspensory ligament at the back of the hock. This important ligament can be a source of low-grade chronic pain and can be difficult to diagnose and treat. Another common lameness in this region is osteochondrosis (OCD), a problem of abnormal joint development. OCD can be found in any joint but the top (high motion) joint of the hock is a common site. The problem usually appears as lameness or swelling of this joint in young horses.

Back soreness is often secondary to hock and other hind limb lameness. Underlying lameness should always be considered and ruled out in a back sore horse. It is unfortunate when horses are treated for a sore back for long periods of time, often with alternative therapies, without considering that a lameness-related problem is the source of the back soreness. A more effective approach is to work with your veterinarian to diagnose specific lameness problems first, and then to treat and manage these problems appropriately. Back soreness often improves when the lameness is alleviated. That said, there are some back problems that are not related to underlying lameness.

THE LAMENESS EXAM

The lameness exam is a methodical process of elimination your equine veterinarian conducts to arrive at a diagnosis. This exam begins with a careful history and physical examination. In any lameness exam, it is important to know the type and amount of work the horse does. In the exam, there may be obvious swelling or symptoms of a problem in the painful area, but more often there is not.

A common procedure done in assessing hock lameness and hind limb lameness generally is the "Spavin" test (hock/stifle or upper limb flexion). In doing this, the examiner holds the hock and upper limb in flexion for a given period of time and then evaluates the change in degree of lameness when the horse is asked to trot off. While flexion of the upper limb often makes hock lameness worse, it also will accentuate lameness from other parts of the limb, and so must be thought of as just one piece of useful information and not a diagnosis in and of itself.

In all lameness exams, the lameness is first narrowed down to an area using examination, flexion, nerve and joint blocks. Once the lameness is narrowed down to a region, then x-ray, ultrasound and other imaging techniques are used to define the problem precisely. Proper treatment always depends on making a correct diagnosis. As I mentioned before, a very common treatment is hock injections performed on the lower hock joints. Treatment of OCD might involve surgery or joint injection. Treatment of suspensory ligament injuries usually requires ample healing time but can also being treated effectively with newer therapies like extra-corporeal shockwave application and injection of stem cells into the injured area.

PREVENTION OF HOCK PROBLEMS

The first step in preventing hock problems is to select horses that are the appropriate type and conformation for your intended use, and do not have preexisting lameness problems. The most reliable way to do this is to have a pre-purchase examination performed by a qualified veterinarian. Hock conformation is a very important part of a pre-purchase examination. Breeders should select for horses with good hock and rear limb conformation.

As a horse owner, you should be familiar with the basic anatomy of the hock and what your horse's hocks look like normally. This enables you to recognize swellings and other abnormalities that might suggest a problem. Be aware of your horse's normal behavior and movement. If you suspect that your horse is lame or back sore, consult your veterinarian early for a proper diagnosis and treatment. It is also very important to follow a program for conditioning performance horses to prevent overloading and injury of tendons and ligaments in this and other areas.

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