



Lameness in the Horse

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"The term lameness signifies any irregularity or derangement of the function of locomotion, irrespective of the cause which produced it or the degree of its manifestation."

(Dr. Liautard, 1903)

For as long as the horse has been domesticated, the topic of lameness and soundness has been of great importance. Early in the relationship between man and horse, the usefulness of any horse was measured by its soundness and ability to remain so. Over time, man has relied less and less on the horse as a beast of burden. As a result, contemporary discussions about lameness revolve around the athletic horse and its use in competition. Not to be overlooked are those horses used for pleasure riding, as their usefulness can also be limited by lameness.

The first consideration in any discussion of lameness should be a definition of the term. Today, as in the above quote from 1903, lameness is taken to be any condition that results in the loss of normal locomotion. Any experienced horse person will be able to come up with several terms used in place of "lameness". Some of those terms include "sore", "off", "weak", "unbalanced", "three legged", or "crippled". In reality, these terms are used more to describe the severity of the condition rather than a specific diagnosis. All of the terms we use are, in fact, referring to lameness. One of the problems with the many terms used to describe lameness is that they are subjective. A horse that is "sore" to one rider may be "crippled" to another. Most veterinarians can come up with at least one instance where they were called to examine a "crippled" horse, or a "three legged" horse, only to find upon their arrival that the horse could not be caught!

In an attempt to make lameness evaluation more objective, several systems have been developed. The system most commonly used by equine veterinarians is the AAEP (American Association of Equine Practitioners) lameness scale.

Grade 0	No lameness under any circumstances
Grade 1	Lameness is difficult to observe and is not consistently apparent
Grade 2	Lameness is difficult to observe when trotting in a straight line but is consistently apparent under certain circumstances
Grade 3	Lameness is observable at the trot in a straight line
Grade 4	Lameness is obvious at the walk
Grade 5	Lameness produces minimal weight-bearing or an inability to move

Obviously, even with this system, lameness evaluation remains subjective. The difference between one grade and the next is not as apparent as it may seem, especially with grades 0-2. As a general rule, this lameness scale is used to help



describe the lameness, and rarely contributes to a specific diagnosis. An exception to this rule is the limited number of conditions that result in a grade 5 lameness. In addition to what grade the lameness is, other observations can be made that help characterize the lameness. Every element of how the horse moves can be evaluated and compared to normal movement. This includes how the foot breaks over and leaves the ground, how the limbs travel while off the ground, how the foot lands on the ground, how the rest of the limb, as well as the rest of the body, respond to movement and weight bearing of each limb. During visual examination for lameness, it is easy to focus on just the legs, but the body, including the head and neck, are also important.

Lameness is unlike other conditions that affect the horse. With most ailments, the horse is either sick or healthy. With lameness, there are many different degrees of unsoundness. These range from barely perceivable alterations in movement all the way to severe lameness which is impossible to overlook. As one might expect, this range of lameness produces a range of complaints, everything from loss of form over a jump or during a specific movement, to increased time for a speed event, to intermittent lameness while working in hand or under saddle, to obvious lameness of one or more limbs. To complicate matters further, subtle loss of performance may not be a lameness issue. Many factors such as training, nutrition, shoeing, and dentistry all can contribute to a loss of performance. Conditioning is also an important consideration.

One similarity between lameness and illness, in the horse, is the fact that the longer each goes on, the easier they are to diagnose, but the more difficult they become to treat. This is especially true with most lameness conditions that if diagnosed and treated appropriately can resolve, but if left untreated progress to a condition that is, at best manageable, and at worst, career ending. This is not to say that all lameness can be cured if only diagnosed early, some conditions can only be managed, even from the earliest diagnosis. In these cases, early diagnosis and treatment will be more effective at prolonging the horse's athletic career.

Evaluation of a horse for lameness begins, as do most medical examinations, with a history of not only the problem, but the horse itself. The purpose of the medical history is to establish a timeline and to begin the process of defining the problem. As with most things, it is easier to arrive at a solution once the problem is identified. Most veterinarians have developed a specific routine for gathering historical information, and many of the questions may seem obvious to the owner or trainer, such as "what is the horse used for?" or "Do you know what caused the lameness?" Other questions may not seem as relevant, such as vaccination history or other medical problems with the horse. All of these questions are designed to provide information that will help diagnose the problem, develop a treatment plan, and provide a prognosis or expected outcome.

The next step is most often a detailed examination of the horse at rest. The focus of this part of the exam will depend on the history gathered earlier. If the problem is an obvious lameness, the exam will focus on the lame limb and expand as needed. If the history indicates a subtle problem, a systematic examination of the entire horse will be needed. This exam will include evaluation of conformation, balance or symmetry, weight-bearing, and palpation for pain, heat, swelling, or any other



evidence of injury or stress. This part of the exam is not independent from the history, as questions about preexisting conditions are raised. Old scars, splints, and other various swellings are not uncommon findings and may or may not be related to the current problem.

After the horse has been examined at rest, the veterinarian will evaluate the horse while moving. Even if a possible source of the lameness was identified prior to this point, watching the horse move will establish a baseline for comparison following other diagnostics. How the horse is worked during this part of the exam will be determined, again, by the nature of the problem. Obvious lameness may make it difficult to do more than walk the horse. Less obvious problems will require that the horse be worked in hand. Most veterinarians start by having the horse trotted in hand in a straight line on firm footing. The handler is important during this part of the exam. Ideally, the horse will trot at an even rate on a loose lead line for a distance of 20-30 yards. Because the entire horse is being evaluated, changes in speed and direction, or trotting a short distance makes it difficult to visualize how the horse is moving. The loose line is important because it allows the horse's head to move freely which may help localize the problem. If the lameness is not apparent following the trot in hand, the next step would be to work the horse on the lunge line. Lunging the horse allows evaluation at the walk, trot, and canter in both directions. Additionally, the veterinarian may request that the horse be worked in soft footing as opposed to hard ground. Subtle lameness may require evaluation under saddle for the problem to be visualized.

Hopefully, at this point in the examination, the lame limb or limbs have been identified. The remainder of the exam will be an attempt to localize the source of the lameness. The foot will be examined with a hoof tester, which applies pressure through the sole of the foot and the frog. A positive response to hoof tester would be pain and withdrawal of the leg. Caution should be used when interpreting hoof tester response, because with enough pressure, most horses will have a positive response. Flexion tests consist of holding various parts of the leg in a flexed position for 30-60 seconds then watching the horse trot off. A positive flexion test is one that results in an increased lameness; negative is no change in the lameness. Because of the horse's anatomy, flexion of one area results in flexion of several joints. When the fetlock is flexed, so are the pastern and coffin joints. When the hocks are flexed, so are the stifle and hip joints. Flexion tests, when positive, help localize the lameness, but do not give a specific joint or structure that is involved. Following hoof tester examination and flexion tests, diagnostic anesthesia, or nerve blocks will be used to identify the specific location that is causing the lameness. Nerve blocks use local anesthetic to desensitize areas of the leg. The blocks are performed in sequence starting with the heel region of the foot and extending region by region up the leg. In addition to nerve blocks, joint blocks may be used as well. A joint block is performed by injecting local anesthetic directly into a specific joint. A positive response to nerve or joint blocks would be improvement in the lameness. In almost all cases, nerve blocks will be performed in the same sequence regardless of where the suspected source of the lameness may be. Despite wishful thinking to the contrary, in most cases it is not possible to determine where the horse is lame just by looking at him move.



Once the area causing the lameness has been identified, diagnostic imaging may be performed. In most cases, radiographs, also called x-rays, will be the first images obtained. Radiographs are most useful for getting information about the bones in the area imaged, but not the soft tissue structures such as tendons and ligaments. If the radiographs are negative, or the examination revealed soft tissue heat, pain, or swelling, then ultrasound will be used to image the tissue. Ultrasound is very useful for soft tissue and the surface of some bones, but gives little information about the deeper bony structures. Ultrasound examination often requires clipping the hair over the area to be imaged, but not always. Ultrasound can also be used to look at joints, and structures within the foot. If radiographs and ultrasound are not sufficient to identify the problem, bone scans, CT scans, and MRI scans may be indicated. These advanced diagnostics are available on a referral basis. Interpretation of the diagnostic images can be complicated by incidental findings. Many athletic horses develop changes in response to exercise and chronic low grade inflammation. These changes may or may not be contributing to the current lameness problem. With subtle lameness issues, or when differentiating between significant and incidental lesions, image quality becomes very important. Diagnostic imaging, like most technology, is continually changing and improving. Upgrades in ultrasound equipment allow us to visualize more areas, with greater detail than ever before. In the same way, digital radiographs will give us more information with less retakes than the systems which are currently in use. Currently, xeroradiographs are used when we need increased detail. Xeroradiographs are helpful with early lesions and other subtle changes in bone, and although they provide more information about soft tissue than radiographs, it does not replace ultrasound. Because the image must be developed quickly, xeroradiography has to be performed at the clinic. The other problem with xeroradiography is the age of the system, which make technical difficulties common. Xeroradiographs are quickly being replaced by digital radiographs, which offer similar benefits.

Following diagnostic imaging, a treatment plan can be developed. Specific treatment of lameness often involves medication, rest, and supportive care including changes in shoeing. The medications used for lameness include drugs to control pain and inflammation, improve blood flow to the affected area, and help repair damaged tissue and joint fluid. These medications may be systemic, given by mouth or injection, or they may be injected directly into the affected joint or tissue.

There are an ever increasing number of non-prescription supplements available for the "treatment" of lameness. These products often make fantastic claims about their ability to help, but provide little scientific proof to back up those claims. Most veterinarians would agree that supplements are useful in the treatment of lameness when used in conjunction with other therapy, but rarely are they capable of curing the problem alone. The various "joint supplements" may be more useful in preventing lameness problems, than in treating them, but more scientific research needs to be done.

In addition to medication, new treatments for lameness include shockwave therapy, new compounds which can be injected into the joint to halt damage and encourage repair, stem cell therapy, and on the horizon, gene therapy for cartilage



replacement. Regardless of the medical therapy provided, rest is often the most important treatment. When an injured tissue is rested, the decrease in active inflammation allows both the tissue to heal, as well as the medication to be more affective. The period of prescribed rest may be as short as three days following injection of an arthritic joint or as long as six months for complete repair of a severe injury to a ligament. Changes in shoeing may be indicated as a treatment such as wedged egg-bar shoes for navicular disease, or to correct an abnormality such as excessive toe length, which is contributing to the lameness. Most farriers have become comfortable looking at radiographs, and would like to review them prior to working on a horse with a lameness problem.

Ultimately, the most effective treatment for any lameness problem is going to be based on the most specific diagnosis which can be achieved by observation of the horse, application of nerve and joint blocks, and the use of diagnostic imaging to allow us to focus our efforts and give us the best chance to quickly return the horse to soundness, because the more quickly the problem is addressed, the higher the likelihood of a good outcome.