

Lameness & The Lameness Exam: What Horse Owners Should Know (Updated October 2014)

WHAT IS LAMENESS?

Lameness is a term used to describe a horse's change in gait, usually in response to pain somewhere in a limb, but sometimes as a result of a mechanical restriction on movement. Lameness is sometimes noticed when a horse obviously favors a limb, but can be as subtle as a small change in gait, or just a decreased ability or willingness to perform. A horse can become lame from a variety of causes (conditions or ailments), some more easily diagnosed and treated than others.

For equine veterinarians, lameness diagnosis and treatment is both a science and art. It requires a solid understanding of equine anatomy and physiology, conformation, biomechanics, and medicine and yet it requires adaptation in response to changing conditions, horse types, uses and personalities, and owner needs.

Lameness accounts for the greatest losses for the equine industry – hundreds of millions of dollars annually. It affects individual horses of all kinds and all levels, from subtle, reduced performance to complete loss of use resulting in euthanasia. Sadly, many horses are asked to perform when they are in pain because of a rider's failure to recognize lameness.

There is a vast amount of erroneous lameness information on the Internet, along with reliable, useful content. Horse owners are faced with a universe of well-advertised but unproven "miracle cure" products which claim to address every ailment. What is missing from the equation is a proper DIAGNOSIS, which only a trained and experienced veterinarian can provide.

For these reasons, it benefits every horse owner and equine professional to understand the basics of lameness. I have defined 5 goals for horse people.

1. Be able to recognize at least modest lameness in your horses.
2. Know the most common lameness conditions and what to look for that might suggest those conditions.
3. Recognize that worsening performance, and resistance can hint at lameness. Just because you can't detect lameness does not mean it does not exist. Apparent back soreness can also relate to underlying lameness.
4. Understand something about the process, and the advantages and limitations of the veterinary lameness exam.
5. Know reasonable steps to take to minimize lameness and musculoskeletal injury in horses.

A basic understanding of lameness in horses is of great value and will assist horse owners with:

- **PURCHASE:** Be able to roughly detect lameness and avoid horses that are lame. Understand the value of a pre-purchase exam, whereby an equine veterinarian assesses lameness and conformation issues, as well as the health of the whole horse, before purchase.
- **MANAGEMENT & PREVENTION:** Recognize conformational predispositions in your horses and manage or treat for the prevention or reduction of lameness.
- **PERFORMANCE:** Recognize, or at least suspect when lameness is the root cause of a horse's poor performance (versus training or riding issues) so that lameness conditions can be diagnosed and treated.
- **BREEDING:** Understanding basic equine form and function allows breeders to select horses that are of superior conformation and thus less likely to become lame.

ORIGINS OF LAMENESS

Lameness mostly results from pain in a location within a limb, but can also result from mechanical restrictions on limb movement. A familiar example of a mechanical restriction on

the hind limb results from hamstring tear, and is called fibrotic myopathy.

Lameness results from pain coming from any part of a limb that contains nerve endings. Pain from skin wounds, connective tissue bruising, muscle pain, arthritis (joint inflammation), tendon sheath and bursal inflammation, tendon and ligament injury, and bone injury can all cause lameness.

Certain breeds and disciplines develop specific lameness problems more frequently. Two familiar examples include arthritis in the knee (carpus) in racehorses and hock arthritis in cutting horses.

Lameness can also result from a mechanical impediment to a horse's movement. An example is what is known as fibrotic myopathy – a hamstring tear of a muscle in the hindquarters. The scarring that results from that tear shortens the hamstring muscle unit and causes a characteristically abnormal gait.

An important point about assessing lameness is that the site and nature of injury cannot necessarily be distinguished based on the appearance of the lameness.

Forelimb lameness is easier for most people to recognize than hind limb lameness. The mechanics of the forelimb causes lameness to usually be more consistent in appearance and more obvious to the untrained eye. Hind limb lameness is generally much more difficult to visualize and diagnose. This is especially true of subtle upper hind limb problems. The massive musculature of the upper hind limb makes it much harder – even for an experienced examiner – to see and feel deeper structures and very difficult to image these structures using x-ray and ultrasound.

A high percentage of lameness in the forelimb originates in the feet. Upper forelimb lameness is not common in adult horses.

Conformation correlates directly with the function of the limb

and is closely related to the development of lameness. Horses with poor conformation are more likely to experience problems with feet, joints, tendons and ligaments than are horses of "normal" conformation. An example is angular limb like "pigeon toe" (toe-in at or below the fetlock level), which causes a horse to paddle when it moves and sets it up for uneven mechanical loading of the limb. Over time this can damage the skeleton and soft tissues, causing arthritis and other problems.

THE LAMENESS EXAM

The lameness exam is a multi-step methodical veterinary exam wherein a veterinarian tries to determine where the pain originates. Only by finding the pain site and alleviating the pain can lameness be properly treated. Generally, lameness exams consist of (1) a careful history, (2) a standing exam, (3) an exam in movement, (4) flexion and hoof tester exams, (5) diagnostic anesthesia – nerve blocks, and (6) imaging the site of injury – radiographs, ultrasound, MRI and others. The diagnosis and treatment plan is derived from a synthesis of findings from all of the above parts of the lameness exam.

HISTORY: The first step in a lameness evaluation is a thorough history of both the horse and the injury. Information gathered about the horse includes breed, age, and prior use all of which provide clues to the problem. The history of the injury includes the date that lameness was first noticed, how severe the lameness has been, and how it occurred, if known. All of these are important questions that veterinarians ask, and horse owners should try to be as complete as possible in their responses.

STANDING EXAM: A standing examination is done at a distance to evaluate the horse's conformation and general appearance. This is followed by more careful examination and palpation of specific anatomic structures for swelling, heat, and pain.

EXAM IN MOVEMENT: The next part of the exam involves watching the horse in movement. Lameness is mostly evaluated at the

trot. Most thorough lameness exams are performed on firm to hard, consistent footing. Examination often includes circles to both directions and may include inclines or specific patterns. For the diagnosis of some types of lameness problems, having a rider up can be advantageous.

FLEXION EXAMS: Flexion exams involve putting specific joints or regions of the limb under stress for a specified and consistent period of time. The horse's degree of lameness is assessed before and after flexion. The result, which is the change in severity of lameness following flexion, provides additional information regarding the origin of the pain. As with many parts of the exam, flexion tests must be interpreted in light of what is normal for that specific horse.

HOOF TESTERS: Hoof testing involves the use of a pincer-like tool to put pressure on specific regions of the foot in search of a pain response. As with flexion exams, the key to accurate interpretation of hoof tester examination is knowledge of what constitutes a normal response. This can only be gained through a methodical approach, and lots of experience with different types of horses and hooves.

At this point in the exam, the veterinarian usually has determined which limb is lame, and may have an idea where the pain is located within that limb. Often, nerve blocks may then be necessary to determine precisely where the pain is located.

NERVE & JOINT BLOCKS: Nerve blocks are used to methodically numb portions of the limb as a means of finding the site of pain, using the process of elimination. Also known as diagnostic anesthesia, "blocking" is the injection of a local anesthetic agent around specific nerves or into specific joints or other structures. The horse is examined at the trot before the block, and the degree of lameness determined. Then the area in question is numbed, and the horse is asked again to trot off. Either there is improvement in the lameness or not. If there is not, the process is continued on specific

nerves progressing up the limb until the lameness is visibly lessened. Specific joints and tendon sheaths can also be blocked for a more specific localization of lameness. Blocks into a joint or tendon sheath require surgical cleanliness to prevent infection of these structures. Limitations include spread of local anesthetics to adjacent regions, clouding the interpretation of the result.

IMAGING THE SITE OF PAIN: Once the site of pain is located, diagnostic imaging is used to view the structures in the area and provides additional information about the nature of the injury. This includes radiographs (x-rays) to image bone and ultrasound to image soft tissues, but may also include MRI, CT Scan and Nuclear Scintigraphy (bone scan).

Radiography is generally the first approach used to image bone, but is considered less useful for imaging of soft tissues. Radiographs are often performed in the field with portable equipment. More difficult studies are often better performed in a clinic setting. In the last decade, digital radiography has become the standard in equine vet practices. It does not rely on film and produces high quality images on a screen within seconds. Examples of diagnoses that could be made via radiographic interpretation are arthritis and fractures.

Ultrasound utilizes sound waves traveling through tissues to image those tissues. It is excellent for imaging soft tissues, but cannot penetrate healthy bone. It is used commonly to image tendons, ligaments, the surfaces of bone, and other soft tissues. An example of a diagnosis that could be made via ultrasound is a tear or strain of a specific ligament.

Other, more advanced and expensive diagnostics such as MRI, Nuclear Scintigraphy (Bone Scan), and CT Scan are often reserved for the more difficult to diagnose lameness cases or to provide additional information to the diagnosis. Arthroscopic surgical exploration is an important and commonly

used diagnostic that allows direct visualization of the inside of joints. See *Subtle or Hard to Diagnose Lameness: What Horse Owner's Should Know* for a more detailed discussion of these advanced diagnostics.

LAMENESS TREATMENTS

All of the above steps, when performed properly and assembled and interpreted correctly, help to provide an accurate diagnosis and form the basis for a treatment program.

Proposed treatments will depend on the DIAGNOSIS. Ultimately, the treatment selected will depend on many factors, including the owner's budget.

Examples of veterinary treatments used to address various lameness diagnoses include:

- Joint (intra-articular) injections of steroids and other substances to reduce inflammation and pain in a joint.
- Systemic (oral or injectable) anti-inflammatories and pain relievers to manage multiple pain sources, to manage chronic pain in older or debilitated horses, and as an adjunct to more specific therapies used.
- Surgery, especially arthroscopy, is used to treat certain types of lameness. The most common is arthroscopic surgery, wherein repairs are made to the joint surface through several tiny incisions, and using a tiny camera and instruments inserted into the joint.
- There are also a multitude of other newer therapies available including Pulsed Extra-Corporeal Shockwave, Stem Cell Injection, Injection of Platelet Rich Plasma, Autologous Conditioned Serum, IRAP and others. These are generally classed as "regenerative therapies" wherein the body is manipulated in some way to heal itself without externally derived medications. This is the exciting forefront of medicine and is the topic of another article.
- Complementary therapies like acupuncture, chiropractic, massage and other treatments may have value in some

cases.

CONCLUSION

While lameness in horses cannot be prevented, it can be minimized through horse owner's understanding of the factors involved in its development. Educate yourself, and work with a trusted equine veterinarian to diagnose the problem early on.

In this way, appropriate and effective treatments can be used, alleviating pain and slowing progression of problems, and enabling horses to get back to comfortable, sustainable work.

While new imaging techniques add a great deal to our understanding, a methodical clinical veterinary exam will always be the cornerstone of lameness diagnosis and should precede use of these diagnostics. While novel treatments are exciting, keep in mind that many of these treatments are in their infancy and are still unproven. Horse owners should consider the evidence for their effectiveness before using these costly therapies on their horses. Most importantly, recognize the value of a veterinary DIAGNOSIS. Treatment without diagnosis is usually a waste of money and resources.

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