Lameness Evaluation in the Horse

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Lameness is a common problem that we see in horses. Nobody likes to see their horse lame- we don’t like to see them in pain and a persistent lameness can affect a horse’s long term use. Evaluating lameness often requires some detective work by your veterinarian to diagnose the problem. This is a review of what a lameness evaluation by your veterinarian can involve to help you understand what’s being done and why. The goal is to figure out where and what the problem is so we can evaluate it further as needed, determine a course of treatment, and hopefully return the horse to soundness.

Lameness can vary from a severe, sudden lameness to a subtle or chronic lameness. Sometimes only one limb is affected, but multiple legs can be involved. A “bilateral” lameness involves both left and right sides. As an example, laminitis (founder) and navicular disease (caudal heel syndrome) usually affects both front legs. Chronic hock arthritis usually affects both hind legs to some degree. Evaluating a lameness can be very straight-forward in some cases, but others may require an extensive exam and locomotion evaluation as well as diagnostic tests such as flexion tests, nerve blocks, radiographs (X-rays) and ultrasound exams. More advanced tests and/or treatment may be needed that require a referral to an equine hospital/university.

Our patients may show us that they are sore by limping or holding a leg up, but they can’t verbally tell us exactly where it hurts and when it hurts the most. Sometimes an experienced rider will be the first to notice the horse “doesn’t feel right” when being ridden. Observation of how the horse moves helps us see where the horse is “off”. Watching the horse walk and trot in a straight line as well as on the lunge line in both directions can be very helpful. A lameness evaluation can require some “detective work” by your veterinarian to find out the source of the problem. Your veterinarian may use tools and diagnostic techniques as part of a lameness evaluation. Using a hoof tester, palpating and squeezing specific areas, and flexion tests all can help localize soreness by detecting a reaction or a change in the way the horse moves. We have to determine if areas of swelling or increased fluid in a joint or tendon sheath are significant or just “incidental findings” that aren’t causing a problem. The challenge is to figure out where the problem is that’s currently causing pain and affecting the horse. To do this, a systematic approach is used to get to the bottom of the problem. The specifics of each lameness evaluation will vary depending on the individual case and how sore the horse is.

The components of a lameness evaluation can include the following:

- **History**
- **Exam**: close-up visual and “hands-on” exam
- **Locomotion Exam**
- **Flexion tests**
- **Nerve blocks**
- **Additional diagnostics**: radiographs, ultrasound exam, MRI, scintigraphy
History

We often first ask a lot of questions- this is to get a good “history” of the lameness including signs observed, duration and what the horse has been doing for a job. This can be very helpful to consider the possible causes and formulate a plan for the exam.

Exam

Next a physical exam is done (sometimes we ask questions and get a history while we start the exam- multi-tasking!). This may be a brief exam first followed by a locomotion exam right away to determine which leg(s) the horse is lame on. If we find something obvious right away, such as a swollen leg/bowed tendon, or if the horse is too sore to walk, we may not want to or need to do a locomotion exam. A visual assessment and observation, especially comparing sides, can help give us an indication of where the problem is just based on how the horse stands at rest, how the hooves are worn, asymmetry, conformation, or how s/he moves coming out of the stall. A general physical exam, including listening to the chest and abdomen with a stethoscope and getting vital signs, may be warranted if we’re concerned about a systemic problem and need a complete evaluation of the horse. The neck, back, and muscles can also be assessed for problems which might contribute to a lameness or locomotion problem. Back soreness can be a primary problem or can occur secondarily due to compensation for hindlimb lameness.

The majority (90%) of lameness problems involve the foot, so this is often the first place we look. We feel the “digital pulse” in the pastern area- if it’s increased in intensity, this indicates inflammation and a problem in the foot. A “hoof testers” is a very valuable tool for a veterinarian. We squeeze different areas of the hoof and feel for a reaction or pulling back by the horse to detect a painful area in the hoof. A horse with a foot abscess or sole bruise will be focally sore at the site of the abscess or bruise. A horse with laminitis (founder) will usually be sore over the toe area in both front feet. A horse with navicular disease/caudal heel syndrome will be sore over the navicular area.

Hoof testers

Hoof abscesses are common and can result in a horse suddenly being severely lame and even non-weight bearing. With a careful exam and the skilled use of a hoof tester, your veterinarian will try to localize any sore spots. Any suspicious area can be carefully pared out to look for an abscess tract that can then be opened to relieve the pressure of a pus-pocket and establish
drainage. These lameness exams can be the quickest, with a diagnosis made quickly and treatment started immediately. Other types of lameness are not so easily and quickly evaluated.

If the hoof is ruled out as the source of the problem, we move up the leg. Careful observation and then palpation of the limb, including the suspensory ligament and the flexor tendons, is done. Passive flexion of the different joints (done for a few seconds while the horse is standing/at rest) is done to detect any painful reactions. Any swelling can be palpated to detect soreness/pain. Often a comparison between sides can be helpful to determine if a horse is reacting due to soreness or is just “ticklish”. Once a problem is localized, then further assessment is done as needed.

**Locomotion Exam**

Seeing the horse move is often necessary and very helpful to evaluate a lameness. This can be as simple as walking the horse a short distance or may involve a more extended locomotion exam. Sometimes an owner can readily tell that the horse is “off”, but it can be difficult to pinpoint which leg is sore without a “trained eye” and experience evaluating lamenesses. That’s where your veterinarian comes in. We may observe the horse at the walk and trot in a straight line and then on a lunge line in both directions at all 3 gaits if needed. Sometimes seeing a horse move under saddle is helpful. Evaluation on a flat, level surface is ideal. Blacktop is optimal to pick-up a subtle lameness, but is limited to seeing the horse at a walk and slow trot/jog. For safety reasons, non-slick, good footing is recommended for lunging. Evaluating a lameness outside in the winter or in muddy conditions can be difficult. Exercising a horse in the snow/ice can be hazardous for the horse and hard to evaluate if the horse is slipping. We recommend finding an indoor arena to evaluate the horse if there’s no suitable outside area to lunge the horse.

The trot is the best gait to observe for lameness as it is symmetrical from left to right (normally). Gaited horses that don’t move at a typical trot can be more challenging to evaluate. Watching a horse trot in small circles will often accentuate a weight-bearing lameness involving the inside leg. This is because the inside leg spends a slightly longer time bearing weight than the outside leg when going in a small circle. Some lameness can only be seen in a circle in one direction. Your veterinarian will observe for a head nod or head bob. This is most easily observed with a forelimb lameness. When the horse lands on a sore front leg, the horse’s head goes up (to take weight off of the sore leg). When the horse lands on the “good”/sound leg, the horse’s head goes down, putting more weight on the leg that’s not sore (or less sore than the opposite leg). See the diagram below demonstrating this head movement during trotting.

![Lame Trotting Diagram](image-url)
The stride length is also observed for each leg. A lameness involving the suspensory ligament or tendons may sometimes cause soreness when the leg is in motion (“swinging” limb lameness) rather than when landing on the leg. A hind leg lameness is often more difficult to assess as it is not usually associated with a distinct head nod. A change in stride may be seen from the side, but a “hip hike” is what is usually observed with a hindlimb lameness. This is often best seen from behind the horse while watching the horse trot away in a straight line. A “hip hike” is when the hip on the sore side goes up more than the opposite/“good” side while trotting. Once we determine which leg the horse is sore on, the next step is to isolate where in the leg the horse is sore. The way the horse moves may give some indication, but further evaluation is usually necessary. Flexion tests are often done to test for joint soreness. A locomotion exam and flexion tests are usually part of a pre-purchase exam to look for any lameness or soreness problems.

**Flexion Tests**

After first watching a horse trot out to get a “base-line” appearance, flexion tests can be done to stress specific joints in order to detect & localize pain associated with a joint. A flexion test involves flexing an area of a limb for a consistent set of time and then trotting the horse off to look for a change in gait/lameness. We try to isolate the various joints as much as possible, although there are limits on how much this can be done. For example, the hock joint can not be flexed without also flexing the stifte joint and the hip joint, so it’s very difficult to assess these joints separately. The tests are done on each area of a leg as listed below. If needed, a comparison may be done with the opposite limb. A subjective assessment is done on the horse’s response based on how sore the horse acts and for how many strides. If a horse is “positive” (sore) on a flexion test, that indicates there is soreness in the area we stressed/flexed. There may be some variation between veterinarians in how they perform these tests, but each veterinarian tries to be consistent in how s/he performs the tests to optimally assess differences in gaits.

The standard *flexion tests* are:

- distal joints: the coffin, pastern, and fetlock joints are flexed together for ~30 seconds
- knee of front leg (carpus): flexed ~ 1 min.
- hock flexion or “spavin test”: hock, stifle & hip are flexed together for 1.5-2 min. (shown in diagram)

**Diagnostic nerve blocks and joint blocks**

Sometimes additional diagnostics beyond the exam are needed to localize or confirm where a lameness/soreness is. A diagnostic nerve block can be very helpful for this. After seeing the horse trot in a set manner as a “base-line”, the nerve block is done. The veterinarian instills a local anesthetic just under the skin and around a nerve(s) at specific sites to block out pain/soreness below that site. A nerve block usually takes about 5-10 min. to work and lasts a few hours. The horse can still walk/trot as before- the nerve block won’t affect “motor function” or the ability to move the legs. Once the nerve block has had time to take affect, the horse is trotted in the same set manner to look for an improvement in the lameness. Generally, a greater than 50% improvement in the lameness is considered significant and tells us that the horse’s
soreness is localized to the area we “blocked”. Further investigation can then be done of this area if needed. Nerve blocks are started towards the bottom of the leg first. If there’s no improvement, then we move higher up on the leg with the next nerve block to desensitize the next area, until we’re able to hopefully localize the area of pain causing the lameness.

In addition to these local nerve blocks, if we are concerned about a specific joint being the source of pain, the joint itself can be blocked to confirm soreness localized to the joint vs. outside of the joint. Injecting the joint with local anesthetic must be done very carefully to minimize the risk of infection and often requires sedation. Therefore, this is generally only done when necessary for a diagnosis. After we’ve localized and confirmed soreness to a specific area, imaging diagnostics such as x-rays or an ultrasound exam may be recommended for further evaluation. These can provide valuable information regarding the cause of a lameness.

**Radiographs, ultrasound exam, and other imaging diagnostics**

Imaging diagnostics provide a picture of the structures within the leg. At Fredonia Veterinary Clinic, we have digital radiography (DR) which allows us to take x-rays at the farm and to view the radiographs immediately on a laptop computer. The radiographs can be e-mailed to another veterinarian for a consult if needed or saved to a CD. Radiographs primarily give us information about the bones, although some “soft tissue” is visible on a radiograph. Radiographs can rule-out specific problems, such as a fracture. With laminitis (founder), radiographs are the only way to assess if there is rotation of the coffin bone and to what extent (degree of rotation). Follow-up radiographs may be done in some cases to assess healing or progression of a problem. They can also be helpful to assess and optimize special shoeing needs. For evaluation of the soft tissue (such as tendons, ligaments or to look for pockets of fluid/abscess), we will often recommend an ultrasound exam. If more extensive imaging is needed, such as MRI or scintigraphy, we may recommend referral to an equine hospital for these procedures.

**Summary**

A lameness exam can be short and sweet with a diagnosis found quickly or it can be a more involved, extensive evaluation with additional diagnostics needed. Some lameness cases can be very difficult to figure out and frustrating. Our goal is to accurately pin-point the problem as much as possible to determine the best course for treatment. Treatments can vary from simple rest, treatment with anti-inflammatories/pain-killers and other medications, soaking/poulticing a foot (as with a foot abscess), bandaging, modification of work/exercise & or injections into a joint(s). Sometimes referral for additional treatments, arthroscopy, &/or specific surgical procedures are needed. A thorough lameness evaluation can be valuable to assess the problem accurately and hopefully start to get your horse on the road to recovery and soundness. In some cases, we may find that the horse needs modification of his/her occupation to stay comfortable, happy and healthy. We hope you have a better understanding of what’s involved in a lameness exam in the event you need one for your horse.

**If you would like to schedule a farm call with us or have questions about a lameness exam and the care of your horse, please call us at (262) 692- 2439.**

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