

## Lameness in the Performance Horse: What Comes After the Flexion Test?

Lameness is defined as an alteration to a horse's gait. This can be even very subtle changes to the gait that may only be evident when the horse is in work. When lameness occurs in your horse, you should call your veterinarian immediately. Prompt examination can lead to saved time, money, and especially frustration. A rapid diagnosis and early treatment can be imperative to prevent further damage and to keep small problems from becoming big ones. A general lameness examination is also a part of a routine pre-purchase examination, which everyone purchasing a horse should consider obtaining before purchase.

The start of a good lameness examination includes a thorough visual and palpation examination of the horse. Conformational problems as well as evidence of injury are the most common findings. This includes the use of hoof testers to evaluate any sensitivity in the feet. Following a good physical examination, the horse is often watched from a distance to evaluate gait and movement. Most commonly, this occurs in a stepwise fashion where the horse is evaluated first walking in a straight line, then trotting in a straight line, and then lunging in circles or worked in a round pen. This examination may also take place on a variety of firmer and softer surfaces to evaluate the gait on different surfaces. Following the visual examination, flexion tests are then routinely employed to help further delineate any lameness that is seen. A flexion test is when the joint(s) of a horse are held in flexion, or stress, for a defined period of time, and then the horse is trotted off in a straight line to determine if stressing of the joint(s) changed the gait. The benefit of flexion examination is that it helps generalize the location of lameness. The downfall of flexion examination is that stressing a single joint of a horse is often impossible because of relationship of that joint to other joints and soft tissue structures. Therefore, a flexion test does not usually give a diagnosis, just a starting point for further work up of the lameness.

After the gait evaluation and flexion tests have been performed, if lameness was identified in a limb, the start of diagnosing the exact cause of lameness begins. This is most commonly done with diagnostic analgesia, also known as blocking the horse. There are two primary ways to block a horse. You can desensitize nerves that lead to specific areas of the limb, or you can desensitize individual joints. The drugs most commonly used for desensitization of these structures are mepivacaine and lidocaine. These drugs are very similar in action to Novocaine, a drug most people are familiar with thanks to modern advances in dentistry. The start of blocking a horse involves either desensitizing nerves leading to the lowest part of the limb and continuing to work up the limb or desensitizing the joint directly that is thought to be the primary cause of lameness. Once the appropriate area is desensitized, the horse should be sound on gait examination.

Nerve blocks are a great way to help localize lameness to a specific location. It should be noted that the nerve blocks desensitize everything in that specific location—so not only are joints desensitized, the associated soft tissues are desensitized as well. This is an important distinction, because even though your veterinarian may make a horse sound with the nerve blocks, it does not definitively prove the exact structure causing the lameness, it just gives the general area to further investigate.

Following diagnostic analgesia, the next step to the lameness examination usually involves some form of diagnostic imaging. The most common imaging modalities employed in lameness examination are radiographs and ultrasonography. The choice of which modality to use is based upon the veterinarian's assessment of where the problem is likely originating from based on physical exam, palpation exam, gait examination, and the results of blocking a horse. Radiographs (commonly referred to as x-rays) and ultrasonography (commonly referred to as sonographs) have very different applications in the horse. Radiographs are employed when there is suspicion of changes in the boney structures of the limbs, such as arthritis in a joint or a possible fracture. Radiographs are not good for evaluating soft tissues structures such as tendons and ligaments, although advances in digital radiology have made it possible to evaluate some soft tissues depending on the location and the experience of the practitioner. To visualize soft tissue structures, ultrasonography is the best method. Ultrasound is not the best way to detect boney changes, so often times both methods are employed after blocking a horse to thoroughly evaluate the structures in the suspected area of lameness.

Based on the findings of the radiographs or ultrasound examination, a therapeutic plan can be made to address cause of lameness and hopefully prevent further progression of the injury or disease. It is the unusual case that the cause of lameness cannot be determined with a routine lameness examination. These cases do present, especially in the high level performance horse. The cause of the lameness is usually something on the very upper limb or in the neck or back. These problems can be difficult to diagnose and often times require an additional neurologic examination or a specialized imaging technique known as nuclear scintigraphy, which is commonly referred to as a bone scan. A bone scan is performed by injecting radioisotopes into the blood stream that highlight areas of active inflammation in bone. The radioisotope is then visualized with a gamma camera, which will provide an image of the site of injury or damage.

As previously mentioned, there are parts of a lameness examination that are also routine parts of a pre-purchase examination. These include the thorough physical and conformational exam, gait evaluation, and routine baseline radiographs of specific joints of interest. As a minimal examination, a physical exam and gait evaluation should be performed whenever purchasing a horse, regardless of the experience of the buyer.

When your horse becomes lame, you should contact your veterinarian immediately. It is important to remember that the longer lameness persists in your horse, the less likely it will be curable. It is often tempting to turn horses out to pasture in hopes that lameness resolves, but this practice should be discouraged without first having a veterinarian examine your horse to determine the cause. If you have any questions regarding lameness or pre-purchase exams, the experienced veterinarians at Kansas State University can help answer questions regarding lameness exams or any of the imaging modalities previously discussed.