Lameness Examinations at the Leatherdale Equine Center

If only they could talk! People can tell you in great detail where it hurts but your horse cannot. Approaching a lameness requires a thorough understanding of a horse’s conformation, the discipline the horse is competing in, and the ability of an experienced veterinarian to carefully evaluate the way a horse moves to appreciate what is wrong with each stride. Some lameness are simple and readily solved, like an abscess in a foot, however, some lameness problems are complex puzzles involving several joints, muscles, tendons or limbs. Veterinarians at the University of Minnesota are specialized in orthopedics and lameness and have the experience and time to dedicate to your horse’s lameness and sophisticated diagnostic tools to figure out where your horse hurts, why and how to restore soundness.

Where to start?
Since more than one area can be sore, we begin a lameness evaluation with a careful and systematic examination. At rest, the horse’s conformation and hoof balance is scrutinized as this can often provide clues as to what part of the limb that might be under particular strain. Beginning with the foot, the coronary band is palpated for heat pain or swelling, the heel bulbs are examined for symmetry and the sole and frog are evaluated for tenderness using a hoof tester. The arteries just above the coronary band are palpated for increased pulses indicating inflammation in the hoof. The entire limb is palpated while weight bearing, examining ligaments, joints, tendons and muscles for signs of heat pain or swelling. The leg is then flexed and the joints and tendons are re-evaluated for range of motion and pain. Every flinch is noted and compared from one side to the other to get an overall idea of areas that may be painful to the horse.

The horse in motion
To start with, your horse is evaluated at the walk in a straight line followed by trotting on a hard surface. While examining the horse in motion the veterinarian examines how the hoof contacts the ground, the arc of each limb in motion, evidence of the neck and head elevating when a leg strikes the ground, any change in the height of the hip on one side compared to the other and any tensing of muscles. The fluidity of the stride and any evidence of a shortened length of stride or effort to move quickly off a painful limb are evaluated. We can often gauge from this exam which of the limbs the horse is primarily sore on and whether the pain seems to come from bearing weight on the leg or when the leg is in motion in the swing phase. For some hard to diagnose lameness problems watching the horse go under saddle can be a great help. The Leatherdale Equine Center at the University of Minnesota has a number of advances that help evaluate a horse in motion. The level concrete corridor alongside the rena allows the veterinarian to evaluate the horse on a hard surface, while the 100 by 200 foot indoor arena allows owners to ride their horse or for the horse to be longed on an arena surface year round. The lameness gaiting area is equipped with a force plate and high speed cameras. Rather than trying to assess how the fetlock sinks with each stride as a means of determining weight
bearing, the force plate measures the force with which the limb strikes the ground. Each limb can be compared. The cameras capture the range of motion of each joint simultaneous to the hoof striking the force plate. Stride length, joint motion and left and right limb comparisons are instantly calculated by a computer system and are available in real time. The gait analysis system is of great benefit for detecting subtle lameness and is invaluable for teaching veterinary students to accurately assess the effect of lameness on motion.

**Localizing the pain**
Once the leg (or sometimes legs) that are sore are identified, the next step in a lameness exam is figuring out which area is sore. Repeated flexion tests can be helpful to localize the problem further. The joints are held firmly in flexion for 30 seconds to a minute and the horse is trotted off. A painful joint usually makes the lameness much worse for several strides helping to localize the source of pain. All of the joints in all four limbs are examined and right and left sides compared. Other tests to localize pain may involve pulling the leg out of position or putting pressure on certain ligaments or putting wedges under the hoof to put strain in specific areas. The degree to which each limb is sore is often graded from mild to severe using a grading system. Lameness exams can be complicated to process and require a great deal of experience to draw from in order to pinpoint the problem.

**Using nerve and joint blocks to zero in on the problem**
The physical examination of the horse described above helps to determine which leg, what area of the leg and what likely structures are involved. Nerve and/or joint blocks are a method to confirm these suspicions and ensure the site of pain is precisely defined. A local anesthetic is injected to numb the sensation to an area. If that area is the source of lameness then the horse should look almost sound when jogged. We begin with the nerves closest to the foot and work upward numbing the joints or the nerves or both to pinpoint the site if the lameness.

**Bone, ligament or tendon, figuring out what is involved**
Once the pain is localized to a specific area, the best imaging technique will be selected to find the cause. Soft tissues such as tendons and ligaments may best be evaluated by ultrasound. Arthritis, chips and fractures will often be evident on radiographs (Xrays). Our high quality digital Xray systems at the Leatherdale Equine Center provide detailed images of even large joints like the stifle and cervical vertebrae. More advanced imaging technologies include bone scans, standing CT and Standing MRI. Our standing CT and MRI are available for use at the Piper Equine Hospital and our Bone Scan and 3T MRI which are available for horses at the University’s Advanced Imaging Center. Bone scans involve injecting a harmless radioactive dye into the horse’s bloodstream and looking for uptake in areas of inflammation. They can be very useful for lameness that is difficult to localize and for problems that may exist in areas that are hard to image in other ways, such as the spine and pelvis. The 3T-MRI in the Advanced Imaging Center is the most powerful magnet available in North American Veterinary Hospitals. Our full complement of diagnostic capabilities allow us to obtain remarkable detail of both soft tissue structures and bone and can provide detailed images of the feet and limbs that were previously not possible to evaluate.
**Help with healing**
In prior times, stall rest and phenylbutazone were what could be offered to lame horses. Today there are many more options. The Equine Center offers tailored rehabilitation programs, stem cell and platelet rich plasma therapy, as well as therapeutic ultrasound, acupuncture and shock wave therapy. Arthroscopic surgery performed by our board certified surgeons is now routinely performed to treat cartilage and joint injuries.

**A sound investment**
While some lameness problems can be simple to find and fix, many of today’s competitive athletes have complex problems that require time, experience and high technology to solve. With early intervention, the skills of our team of veterinary specialists and the latest in diagnostic and therapeutic technology, many horses can remain winning athletes for years to come.