

Musculoskeletal Injuries and Disorders: Detection and Treatment

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Bones, muscles, ligaments, joints, tendons, and connective tissues are all part of the horses' musculoskeletal system. Asking our horses to perform athletic tasks while supporting our weight in the saddle, ultimately places stress on their structure. Musculoskeletal disorders are one of the primary reasons for poor athletic performance in the horse. Lameness can be caused by traumatic injury, degenerative disease - such as arthritis, neurologic dysfunction, or metabolic diseases.

Injuries such as joint disease and tendon injuries are common and can be a challenge to overcome in the performance horse. Birth defects, neurologic problems, hormonal abnormalities and infectious disease, all play a role and could have a negative effect on a horses' musculoskeletal system.

"Thorough clinical examination of the individual horse, including evaluation of motion in hand and under tack is the first step in localizing the source of pain" Maureen Kelleher, clinical assistant professor of sports medicine and surgery at the Marion duPont Scott Equine Medical Center explains, and adds "Once a thorough visual assessment is completed, diagnostic imaging plays a vital role in determining a diagnosis. Diagnosing and healing musculoskeletal disorders as early as possible, gives us the best opportunity for a positive outcome".

But, which imaging modality is best for what type of injury?



- Digital radiography ("x-ray") provides information regarding bone and joint disease, and can be used to guide surgical interventions.
- Ultrasonography uses sound waves to create images of soft tissue and the surface of bone. Ultrasound is particularly useful to diagnose tendon and ligament injuries in the limb, but is also used to image a wide range of structures from the abdomen to the eye.
- Computed tomography (CT) is used in the anesthetized horse to obtain images of the limbs and neck, providing 3D images of bone and soft tissue structures.
- Magnetic resonance imaging (MRI) provides detailed images of bone and soft tissues. For the standing horse, MRI of the lower limb is available and in the anesthetized horse, depending on MRI equipment size, the upper limb, head, and neck can be imaged. MRI identifies bone and joint disease that cannot be detected by radiographs and soft tissue injuries that may not be seen using ultrasound.
- Nuclear scintigraphy (bone scans) use radioactive molecules to detect remodeling and inflammation, which can be helpful for the diagnosis of subtle bone disease. Regenerative medicine offers therapies that harness the power of the horse's own cells and proteins to promote repair of injured tissues within the horse's biological products. Damaged tendons, ligaments and cartilage can all benefit from these therapies. Repair of damaged tissues are enhanced when the horse's own stem cells from bone marrow is used to regrow tissue. Concentrated levels of platelets from the patient's blood is injected into the damaged tissues to enhance the healing process and treat underlying causes of lameness and other conditions that affect the athletic ability of the horse. Regenerative medicine reduces recovery time by encouraging and supporting the healing process.

In the majority of cases, musculoskeletal injuries are not life threatening but are painful. Returning the horse to comfort and, if possible athletic work, involves assessment of the horse, including its lifestyle. Stabling, turnout time provided, normal feeding routine and expected level of exercise, is all necessary information when making decisions about a comprehensive treatment and rehabilitation plan.

Once the source of the injury or trauma is located and medical or surgical treatment has been completed, an individualized rehabilitation plan should slowly reintroduce the horse to exercise with the goal of reaching the horses' pre-injury fitness level and athletic ability.

Kelleher is part of a dedicated team of specialists at the Marion duPont Scott Equine Medical Center who specialize in the assessment, treatment and rehabilitation of sports medicine related injuries of the horse.



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