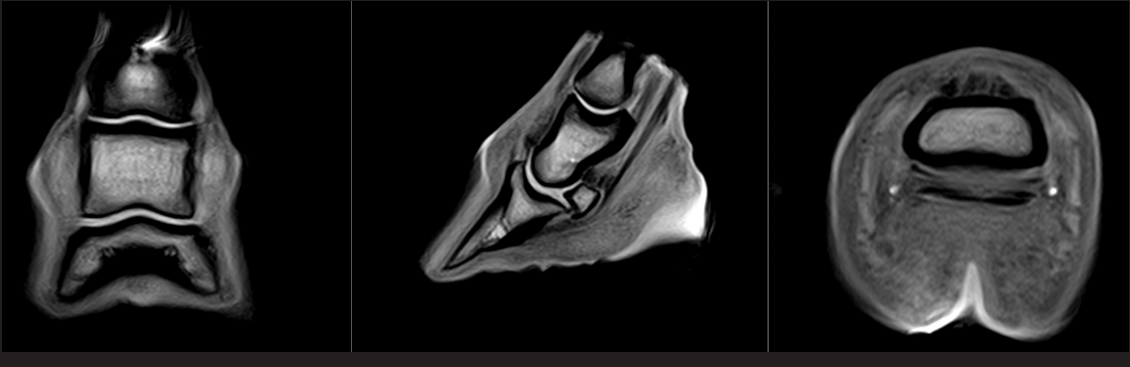


# The State Of The Art In Equine Sports Medicine

## How Advanced Technologies Treat and Prevent Injuries

By Dr. Maureen Kelleher



Magnetic resonance image (MRI) provides two-dimensional, cross sectional images. MRI imaging is beneficial for soft tissue structures, especially within the hoof capsule. MRI can be done in the standing, sedated horse for imaging up to the level of the fetlock.

Devastating news. Your horse has suffered an injury to a tendon or ligament and your show season or recreational riding is in jeopardy for the foreseeable future. But, thanks to the latest veterinary medical research and innovation, injuries resulting in structural damage to these tissues can be treated with a variety of options to heal them and perhaps ultimately salvage your show season.

Sports medicine can be defined as the assessment of physical fitness and treatment or prevention of injuries related to sport and exercise. How does that relate to your horse? Horses of any discipline, from trail horse to seasoned eventer, can benefit from recent advances in sports medicine. There is growing movement towards

as the head, CT enables imaging of over-lapping dental and sinus structures that is limited with radiography.

**Magnetic Resonance Imaging (MRI)** provides two-dimensional, cross-sectional imaging allowing assessment of structures in multiple planes. MRI imaging is beneficial for soft tissue structures, especially within the hoof capsule. Providing superior detail, MRI is sensitive for detection of bone injury such as navicular bone degeneration, fractures, and bone contusion. MRI is also beneficial when locating specific soft tissue regions for targeted therapeutic injection.

**Nuclear Scintigraphy** (“bone scan”) involves the intravenous administration of a radioactive isotope. Once distributed through the blood supply, the radioactive tracer binds to areas of bone inflammation or remodeling. The isotope within the horse emits gamma radiation, detected by a gamma camera.

Images from nuclear scintigraphy identify “hot spots” – areas with more gamma radiation emission – an indicator that an injury may be located at that site. Nuclear medicine provides *early recognition* of a range of bone injuries, and can be helpful for some soft tissue injury at bone attachment and systemic muscle disease. Bone scans are a great scanning tool for determining a focal or multiple site injury *causing variable clinical signs or performance problems*, which are unable to be localized with orthopedic examinations. Once the bone scan is performed, your veterinarian can hone in on the areas in question identified on the scan.

Once a diagnosis is made, physical rehabilitation will improve comfort and promote healing. Along with traditional medical and surgical interventions, physiotherapy will accelerate recovery after injury, manage pain after surgery, and improve the overall well-being of your horse. So what options are available and when should rehabilitation therapies be considered?

Rehabilitation therapies should be considered after a surgical procedure, but also when you notice *any performance related changes in your horse*. Uneven gaits, refusal to perform usual tasks or unusual anxiety and behavioral changes, all signal your horse may be physically uncomfortable.

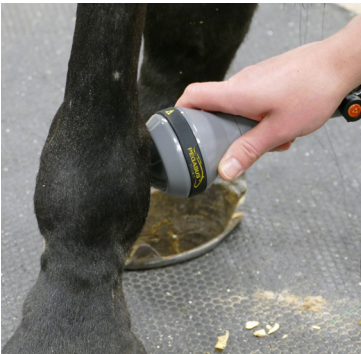
Physiotherapy options include **Extracorporeal Shockwave Therapy (ESWT), Low-Level Laser Therapy (LLLT), Regenerative Therapies, Acupuncture, Chiropractic, and individualized exercise plans.**

ESWT has been a mainstay in treating soft tissue injuries with proven results. ESWT works to improve cellular communication to release growth factors and improve formation of new blood vessels to the injured area.



Dr. Maureen Kelleher uses acupuncture and chiropractic therapies.

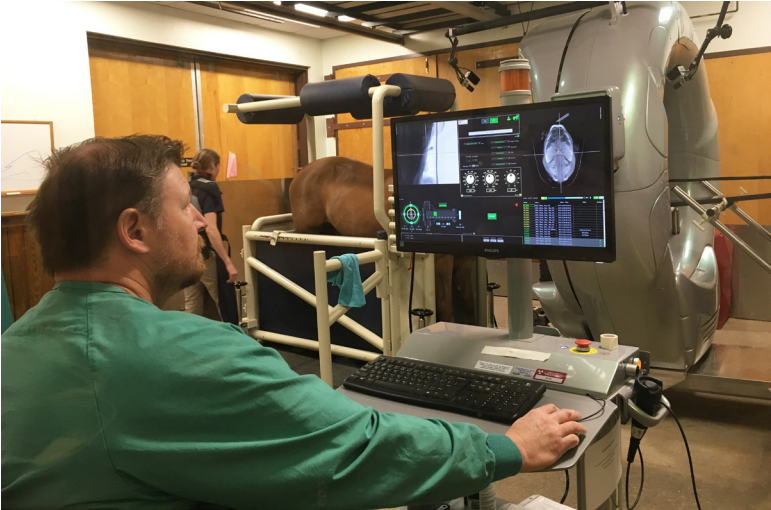
(right) Low level laser light therapy being performed on the fetlock region.



use of *preventative* options to reach and maintain peak health and performance. Supporting your equine athlete with the latest diagnostic and therapeutic modalities ensures your horse will perform effectively.

**Invariably, sports medicine treatment plans revolve around an accurate diagnosis of the problem before choosing a suitable, comprehensive treatment plan.** Access to advanced diagnostic imaging is an important part of ensuring good health by providing a clear diagnosis. The following three imaging modalities are commonly used for sports medicine evaluations and diagnosis:

**Computed Tomography (CT)** developed specifically for the horse are now available. CT images provide three-dimensional, cross-sectional imaging of bone at high resolution. CT is fast, taking only 60 to 90 seconds to capture multiple images. In areas such



Dr. James Brown reviews computed tomographic (CT) images obtained of the head. The horse can be seen in the background of the photo, standing in stocks positioned to comfortably acquire CT images without the need for general anesthesia.

**Low-Level Laser Therapy (LLLT)** is making its way to the forefront of veterinary medicine with documented results for improving many types of injuries including bone, soft tissue and wounds. LLLT works to improve cellular signaling to decrease inflammation and promote cell healing.

Depending on the type of injury your horse has sustained, **Regenerative Therapies** may also be a possibility. Autologous Conditioned Serum (ACS), Platelet Rich Plasma (PRP), or Stem Cell options are beneficial for localized treatment of injuries.

And, in the mix of today’s elective treatments, are adjunctive manual therapies such as **acupuncture and chiropractic therapy**. **Acupuncture**, based on traditional Chinese medicine, restores function by stimulating the nervous, circulatory and immune systems. Used to alleviate pain from musculoskeletal injury or disease, gastrointestinal disease or other internal organ dysfunctions, acupuncture also helps with allergy or immune-mediate diseases, and alleviates fear and anxiety in your horse.

Proven to deliver effective healing and therapeutic value in specific situations, **chiropractic therapy** addresses the malalignment of the horse’s skeletal structure, which can affect gait and negatively affect organs and nerve pathways. More noted to improve lameness, gait abnormalities and improve muscle function, chiropractic treatment also improves response to infections and corrects undesirable behavioral issues.

Once the physiological and psychological aspect of your horse’s health have been addressed, success as horse and rider team hinges on many other factors. Rider fitness, tack fit, and equine nutrition are equally important. Asymmetries in the musculoskeletal system of the horse interestingly often mirror those of its rider. Horses will compensate for an unbalanced rider and incorrect fitting tack, creating pathways for pain and injury.

With today’s latest scientific veterinary advancements, horse owners now have many options for treatment with procedures that can be performed on the farm or in a hospital. Reducing down time for your athlete, detecting smaller issues before they become larger ones, and improve healing from injuries are the goals.

*About the author: Dr. Maureen Kelleher is a clinical assistant professor of sports medicine and surgery at the Marion duPont Scott Equine Medical Center. She completed her doctor of veterinary medicine (DVM) degree and residency in equine surgery at the University of California at Davis. Before joining the EMC, Dr. Kelleher gained years of experience in California focusing on equine sports medicine, lameness and advanced diagnostic imaging. She is a Diplomate of the American College of Veterinary Surgeons and is certified in veterinary acupuncture. Dr. Kelleher focuses on the assessment of performance-limiting conditions in performance horses.*