

The Equine Neck and Back

Fourth of a series on lameness in horses

By Mark R. Baus, DVM

No other region of the horse's musculoskeletal system draws as much speculation as the back. Since humans experience back pain frequently, we assume the horse must also. Furthermore, palpation of any horse's back can easily elicit sensitivity further supporting a claim of back soreness. Yet establishing the existence of back pain and its exact source is quite difficult.

The skeleton is divided into the appendicular and axial skeletons. The appendicular skeleton refers to the limbs and the axial skeleton refers to the head, sternum, ribs and spinal column. Of the two skeletons, the axial skeleton is the most difficult to understand. It provides the core frame for the musculoskeletal system and consists of many small bones (vertebrae) linked together in a linear fashion along the topline of the horse.

The spine consists of 7 cervical vertebrae in the neck, 18 thoracic vertebrae in the chest region, 6 lumbar vertebrae in the lower back, 5 fused sacral vertebrae in the pelvis and a variable number of coccygeal vertebrae to bring up the rear. To provide the necessary rigidity and flexibility, the vertebrae are held together by a complex system of joints, intervertebral bodies, muscles, tendons, ligaments and sheets of connective tissue.

Although the back has many functions, its primary purpose is to provide a firm but flexible frame for connecting the limbs to the body and supporting the body's organs. As it concerns locomotion, the back plays a critical role transferring thrust from the hind limbs into motion. The hind limbs create mostly horizontal forces to move the horse forward but it is the muscle masses of the back that create vertical forces to resist gravity and maintain balance.

There is much debate about the movement of the vertebrae during motion, especially while being ridden. It was once thought that increasing the flexion and bending of the spine, especially in the thoracolumbar region, was a critical function of the rider's input during athletic pursuits. It is now believed that although it is important to develop the muscles of the neck and back, the vertebrae of the horse's back should remain as rigid as possible while working or performing.



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The horse's back plays a critical role transferring thrust from the hind limbs into motion.

One of the ongoing debates in the sport horse world is whether back pain creates limb problems or if limb problems create back pain. My opinion is that it is usually the latter. Chronic, low grade lameness from a limb forces the back to compensate by shifting weight off that limb to another limb. This is especially true when a front limb and hind limb are simultaneously affected by lameness.

In a normal state, the back transfers the push from the hind limbs into forward and vertical directions. But when one or more limbs are weakened from lameness, the back responds by transferring propulsion or load-bearing to the stronger limbs. Although the exact compensatory movements are difficult to comprehend, the back may respond with excessive rotational forces causing inflammation and possible degeneration in the moving parts of the axial skeleton.

A common sequel to chronic lameness of a hind limb is a strain of the sacroiliac joint. When one hind limb is strong and the other weak, every thrust of the hind limb, especially while jumping, causes the pelvis to twist. This twisting creates an added strain at the connection of the pelvis to the spine (the sacroiliac joint). Sacroiliac pain is usually characterized by reluctance to canter, especially when asking for a lead change. Affected horses will bunny-hop or kick out when asked to canter or change leads.

Another consequence of chronic low grade lameness, especially when a front limb and hind limb are involved, is pain from the dorsal spines of the thoracic and lumbar region.

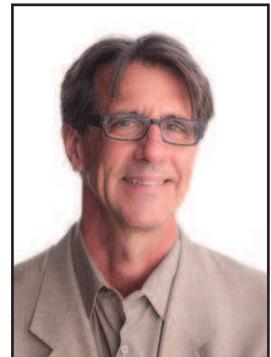
About Mark R. Baus, DVM

Dr. Baus is the son and grandson of large animal veterinarians in South Dakota. Although this experience shaped his decision to become a veterinarian, the desire and inspiration to provide care exclusively to horses occurred during veterinary school. Upon graduation from Kansas State University College of Veterinary Medicine in 1981, Dr. Baus joined a veterinary practice in Fairfield, Connecticut with Drs. Howard Raven and Rick Mitchell.

Dr. Baus and Dr. Mitchell founded Fairfield Equine Associates in 1989 where Dr. Baus worked until he started Grand Prix Equine in 2009. He has provided care to horses in the same region and for many of the same clients for over thirty years. The Fairfield and Westchester county region has a long tradition of supporting the show horse industry. Many of the finest horses, riders and trainers in the country have started their careers in this region and Dr. Baus has had the privilege to work on many of those great horses and with many great trainers and riders.

In addition to memberships in the American Veterinary Medical Association and American Association of Equine Practitioners, Dr. Baus is on the veterinary committee for the United States Equestrian Federation and the Horse and Rider Advocates Committee for the United States Hunter Jumper Association. He is the moderator for the English Sport Horse rounds with the AAEP and is a past member of the AAEP Ethics Committee.

In his off time, Dr. Baus teaches a course in life skills at a local prison. He also enjoys auto racing as a fan and a driver. Ω



Although “Kissing Spine Disease” or “Dorsal Spinous Impingement” occurs most commonly in the lowest part of the back (mid thoracic region), it can occur anywhere along the thoraco-lumbar spines. The owner’s or rider’s first response to solving this problem is to explore saddle fit. In my opinion, poor saddle fit is certainly a problem but usually does not cause Kissing Spine Disease.

Neck pain can occur for a number of reasons but it mostly originates from the small joints (articular facets) on each side of each cervical vertebrae. Like other joints, articular facets become painful from degenerative changes that occur over time. This pain is usually seen as reluctance to bend in one direction or the other and might manifest as lameness of a front limb.

Although these three problems represent common sources of pain from the horse’s neck and back, there are many other causes of axial skeleton pain. An accurate diagnosis of problems in this area involves a detailed lameness examination, possibly including an ultrasound examination, radiographs, thermography or nuclear bone scan. Compounding the difficulty of making an accurate diagnosis of back pain is determining simultaneous lameness conditions of the limbs and their role in creating back problems.

The horizontally oriented spine of the horse probably adds to the difficulty we humans have understanding the function of the equine back. One of the most challenging aspects of riding sport horses is the mastery of a creature with a horizontal spine by a creature with a vertical spine. Our best riders do this intuitively! Ω

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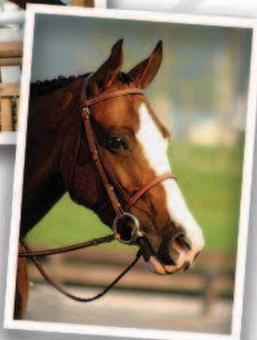
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