

Equine Chiropractic Medicine - An Overview

Human chiropractic medicine can trace its roots as far back as 2700 BC, to ancient Chinese and Indian culture, the writings of Hippocrates, and to the original inhabitants of North, Central and South America. Conversely, veterinary chiropractic medicine didn't really begin until 1988. Although the demand for equine chiropractic therapy is exploding, it remains a new discipline; despite its increasing popularity, few horse owners or even veterinarians understand how or why it works.

Anatomy 101

Horse or human, from a physiologic perspective we are virtually identical. The nervous system controls everything we do. It regulates our hormones, adjusts blood flow to meet the demands of the moment, digests our food, learns, sees, hears, commands our limbs to walk – there isn't a function the body performs that is not in some way regulated by the nervous system. The majority of these functions happen on a subconscious level, the thoughts that fill our head reflect only a small percentage of our brain's activity. Most of its effort is spent filtering, sorting, and responding to the barrage of information it constantly receives from cranial nerves and the spinal cord.

Segmental nerves, each assigned to a region of the body, exit the spinal cord by passing through a small hole between adjacent vertebrae, out into soft tissue. Some carry information to muscles and organs, while others carry information from these same structures back to the brain.

The nervous system is also dynamic; it is constantly reprogramming itself. By creating, strengthening or eliminating connections, it adjusts to its environment. This is how we form new memories, strengthen muscle, or improve motor skills. But with any complex system, there is opportunity for error. The brain reacts to information it receives, and if that information is inaccurate, the quality of its response is affected.

The equine vertebral column consists of thirty-one vertebrae, and almost three hundred joint surfaces. It is a versatile structure that can bend, flex, extend and rotate. Powerful muscles control movement, while smaller paraspinal muscles provide support. They also contribute to proprioception, the ability to automatically sense one's body position. If the muscles on the right side of the neck are stretched long, but are contracted on the left, even without looking the brain knows that the head must therefore be turned to the left. Proprioceptive information needs to be precise. If it isn't, poor coordination results. Any easy way to demonstrate this is to drink a half bottle of wine, close your eyes, extend your arm, and then try to touch your nose. Research on humans has demonstrated that lower back pain is associated with reduced leg proprioception.¹

It's also important to note that the small opening between each vertebrae, the one through which segmental nerves emerge, can vary in size depending on how the surrounding vertebrae are positioned. If this opening is narrowed, the resulting pressure can interfere with nerve function.

What is it that chiropractors treat?

If your horse suffers a slight injury, something as simple as a poorly fit saddle, bad posture or conformation, or just the repetitive stress of training, the paraspinal muscles can spasm. Consequently, the vertebrae they support are no longer able to move, so other vertebrae must now alter how they move. Flexibility is impaired. Pain causes a local reduction in blood flow, which decreases the oxygen supply to affected muscles, resulting in further spasm. Because the vertebrae aren't moving, joint fluid

¹ Differences in repositioning error among patients with low back pain compared with control subjects. *Spine* 2000; 25(19): 2488-2493

circulation is decreased, which reduces nutrient flow to joint cartilage. As the cartilage starves, it undergoes arthritic change and forms adhesions, which further restrict movement.

Segmental nerves may be compressed as they exit the opening between vertebrae, altering their function, resulting in muscle weakness and proprioception loss. Now the horse is at risk for further injury because not only is it unable to move properly, but joint support is weakened at a time that it is suffering from reduced co-ordination.

Furthermore, ongoing pain results in a release of cortisol, a stress hormone that compromises the immune system. Intestinal motility may be altered, which increases the risk of colic. Other consequences include altered blood flow to the brain, permanent neurologic degeneration, muscle wasting, fused joints, and possibly a host of other conditions that we either don't recognize or have yet to prove.

At the root of this degenerative cascade is an alteration in normal vertebral movement. Chiropractors commonly refer to these lesions as "subluxations", but a more accurate term is "vertebral kinetic abnormality". There are no bones that have torn free from their conventional anatomic position, just ones that are prevented from moving normally.

What do chiropractors do?

A chiropractic exam is similar to a routine physical exam, except that it focuses on the musculo-skeletal system. Observations are made about the horse's posture, muscling, gait, co-ordination, and conformation. This is factored against information about its type and level of performance, saddle fit, and other relevant questions. Finally, every vertebral joint from the skull to the tail, including the ribs are evaluated for normal mobility. If a kinetic abnormality is detected, an adjustment will likely be performed.

Adjustments are short rapid thrusts along the joint's normal range of motion. They break down adhesions, trigger muscle relaxation, release trapped tissue, normalize altered nerve function, reduce swelling, decrease stress hormone levels, improve strength and co-ordination, and increase comfort – they work against the degenerative cascade described above.

A common misconception is that it takes a great deal of force or special tools to adjust horses - not so. It takes no more effort to adjust a horse than it does a person. Because adjustments work with the horse's normal physiology, they do not need to overcome muscle strength. In the same way that farriers don't need special equipment to pick up a horse's foot, chiropractors only need their hands to move joints within the back. Vertebral joints may be difficult to visualize from the outside, but with a detailed understanding of anatomy, they can be moved just as easily.

Which horses need chiropractic work?

Chiropractic lesions are extremely common in horses. One study examined the cadavers of thirty-six thoroughbreds between two and nine years of age, and found a number of lower back issues including sacro-iliac stress fractures (25%), fused joints (28%), impinged vertebrae (92-98%), and degenerative joint disease (100%)².

Increasingly, chiropractic care is being viewed as a part of routine horse health maintenance, similar to vaccines, hoof and dental care. To reduce the chance of sports injury and maximize performance, many high level horses receive monthly assessments. Although all horses should be periodically evaluated, any horse that is working hard, or has ever suffered from a lameness or poorly fit saddle, is already due for a chiropractic assessment.

² Developmental variation in lumbosacropelvic anatomy of thoroughbred racehorses. *American Journal of Veterinary Research* 58(10): 1083-1091

Perhaps the most common reason people seek chiropractic care is to address an existing problem, such as back pain or altered performance. Although chiropractic issues are very common in limping horses, they are not usually the primary cause of the limp itself. If your horse is lame, consult a veterinarian. Once the lameness has been diagnosed and treatment initiated, then a chiropractic evaluation may well enhance the response. However if the lameness is not or cannot be addressed, then a recurrence of secondary chiropractic issues is likely.

Primary chiropractic issues tend to present in more subtle ways. Although one might see physical changes such as altered posture or head carriage, it is more common to notice behavioural changes such as head shyness or pain induced irritability, or performance issues including failure to pick up a lead or poor collection. A summary of common chiropractic presentations is listed below.

Another reason that people seek chiropractic care is to address medical issues that at first glance don't seem back related. Recurrent spastic colic and heaves are two conditions in which normalization of segmental nerve function may help reduce the frequency or severity of episodes. The scientific data to support this idea doesn't yet exist in horses, but anecdotally it is believed that approximately one third of affected animals show observable improvement after chiropractic treatment³. It is important to note that no one is looking to cure these conditions chiropractically, just lessen their severity.

Indicators of Potential Chiropractic Issues

Physical changes

- Altered head, tail, or topline posture
- Difficult to diagnose, mild, or shifting lameness
- Muscle imbalances, spasms, or atrophy
- Reduced poll flexion or head turning ability

Behavioural or Performance changes

- Angled walking
- Increased stumbling
- Irritability
- Loss of collection or impulsion
- Non-specific decrease in performance or fitness
- Problems picking up or changing leads, or turning a given direction
- Pulling on one rein
- Refusing jumps or bucking
- Resisting the bit
- Sensitivity when being saddled or groomed
- Short striding, interfering, forging, or cross firing
- Twitchy or cinchy

A history of other medical issues

- Colic
- Dental issues
- Heaves
- Lameness or arthritis
- Muscular injuries, even ones that now seem resolved
- Saddle fit problems

³ Dr. Pedro Rivera, *personal communication*.

How often are Adjustments Needed?

Every horse is different, so there is no formula for determining how frequently they need chiropractic care. Many high-level performance horses receive monthly preventive assessments. Others horses are seen less frequently, while others still are only seen after a problem emerges.

Horses with significant lesions usually need more than one adjustment to correct the problem. Muscle has memory, and initially tends to drift back into old habits. Horses with badly affected backs are similar to horses with pathologic hooves; the more chronic and severe the condition, the longer it takes to correct it. The place to start is a single assessment with a practitioner you trust. From there, you can devise a program that best addresses your horse's needs. I find that most of my clients, once they have felt their horse performing well, know when a recheck is required.

Beware the rubber mallet!

Because equine chiropractic medicine is so new to Canada, no regulatory body or professional association exists. Unfortunately, this means that anyone can claim to be an equine chiropractor, regardless of training. Rubber mallet wielding charlatans abound, and are harming horses. Accepted chiropractic science does not include the use of boards, rubber mallets, or general anesthetic. Imagine if your farrier insisted on knocking your horse's cannon with a mallet in order to pick up its foot - how quickly would they be escorted off your property?

There is a professional association in the U.S., the American Veterinary Chiropractic Association. It is a group that verifies the expertise of individual practitioners. It also certifies education programs. The closest Canadian equivalent, the Veterinary Chiropractic Association of Canada, is still in its infancy but one day hopes to fill a similar role in developing a national standard of expertise. For now, clients should insist that any practitioner they hire has either completed the American Veterinary Chiropractic Association licensing exam, or has graduated from an AVCA approved program. These programs are quite intense and take months to complete. One needs to have earned either a veterinary or chiropractic doctoral degree before even applying.

Hopefully this article has helped shed some light on how the vertebral column functions, and what role chiropractic medicine plays in maintaining optimal health. Success stories abound, stories about how well horses respond, how they perform better and act happier. Not every case undergoes dramatic change, but even those that don't are still healthier for having had normal spinal kinetics returned. At worst, if no lesions are found, you learn that your horse has a healthy back.