An Osteopathic Approach to the Prevention and Rehabilitation of Kissing Spine in Performance Horses

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Introduction

Kissing spine, also known as overriding or impinging dorsal spinous processes (ORDSP), is a pathological condition affecting the vertebral anatomy of horses. It occurs when the thoracic vertebrae become abnormally close together, resulting in insufficient spacing compared to a healthy spine. This condition is most frequently found in the thoracic vertebrae but may also affect other spinal regions (Henson, 2018, pp. 208-209). In mild cases, the dorsal aspects of the spinous processes may come into contact; in severe cases, the processes can become fused. The severity of the condition is determined by the extent of bony changes and their proximity (Young & Le Jeune, 2019). It is estimated that around 40% of the horse population may have kissing spine, although many horses remain asymptomatic, complicating diagnosis without veterinary evaluation and x-ray imaging (Morton, 2024). Performance horses typically undergo routine veterinary examinations due to their athletic demands, enabling early detection. However, kissing spine may go unnoticed if the horse does not present with clear signs of back pain. Disciplines involving repeated spinal inversion, such as eventing, jumping, and barrel racing, are at an increased risk. These activities involve landing over jumps and obstacles or maneuvering around barrels, which causes repetitive strain on the spine (Turner, 2011). Other disciplines that require similar repetitive spinal movements can also contribute to structural changes in the vertebrae over time.

Prolonged activities can cause discomfort and spinal changes. Owners and trainers must monitor posture during training and competition to prevent spinal hollowing and injury, especially on non-competitive days.

Thesis Overview

This thesis explores the development of kissing spines in performance horses and how osteopathic techniques and manual therapy can create an effective treatment plan for optimal prevention and rehabilitation, supporting long-term spinal health.

Hypothesis

Applying osteopathic principles and manual therapy techniques can significantly enhance spinal mobility, reduce compensatory dysfunctions, and prevent recurrence of kissing spine in performance horses, thereby improving comfort, biomechanics, and performance.

Understanding Kissing Spine

Performance horses do not typically start with kissing spine at birth; it is usually something they develop over time. However, some horses will be more prone to getting a kissing spine than others. The horse's conformation will contribute to its risk of developing kissing spine. “Horses with a long back tend to be predisposed, especially if they also have a sway back. That combination gets a lot of horses into trouble when they start losing core strength and muscling” (Wenholz, 2024). Improper use of muscles is another contributing factor: “lack of engagement of abdominal muscles…leads to a hollow or saggy back that allows the spinal bones to venture closer together” (Morton, 2024). Poor saddle fit, rider imbalances, and “prolonged or repetitive trauma and inflammation in these areas causes bony changes and growth of the vertebrae.” (Morton, 2024) are also potential causes of kissing spine. Proper training that promotes correct biomechanics and core engagement helps reduce stress on the spine and may mitigate the risk of kissing spine. While Turner (2011) emphasizes mechanical stress and

repetitive strain, Morton (2024) highlights muscular dysfunction and postural imbalances, suggesting that a kissing spine develops through a structural and functional pattern.

"Back pain is a common cause of poor performance in equine athletes" (Haussler, 2009, p. 860). However, it is not the only symptom a performance horse can present with before a diagnosis of Kissing Spine. In fact, many performance horses will not show any clinical signs of kissing spine. Symptoms will typically present as "...changes in behavior such as hypersensitivity to brushing, girthiness, bucking, rearing, head tossing, kicking out, hollowing the back, resisting the bit, trouble with transitions, cross-cantering, and refusing or rushing fences. Their backs are often sore to the touch" (Young & Le Jeune, 2019). The symptoms will likely be attributed at first to a lack of training or behavioral issues, before the owner takes their horse to the vet to rule out pain or lameness as the cause. Once at the vet, the only way to properly diagnose a horse with kissing spine is by taking radiographs of the horse's back. However, "...your veterinarian will first start with a full physical exam and lameness evaluation. They will go over the whole body, looking for overt sensitivities or flinching along certain areas" (Morton, 2024). Ruling out other sources of pain or lameness is essential, and the veterinarian may find multiple areas of pain before making a complete diagnosis.

Performance horses perform repetitive movements. If they have been moving in a way that puts stress on their thoracolumbar spine, it could result in the dorsal spinous process overriding or kissing. In the case of a performance horse with a kissing spine, diagnosed by a veterinarian with radiographs and clinical signs, an osteopath can more easily identify how the horse may be compensating for the pain. The thoracolumbar spine consists of the thoracic and lumbar vertebrae. In the equine back, the thoracic and lumbar vertebrae carry the load of the internal organs. This section of the spine provides stability rather than mobility (Kleven, 2019, p.

59). The equine trunk functions like a "bow & string". The spine is the "bow" that is held in flexion by the action of the hypaxial muscles. The "string" is the ribcage, sternum, and the musculature of the abdomen. When the neck lowers, it engages and stretches the nuchal ligament. The nuchal ligament attaches to the spinous processes at the withers, pulling them up and forward and lifting the middle of the back. "The loin-pelvic muscles and the abdominal muscles are responsible for the remainder of the spinal column. When they engage, the pelvis straightens up, the upper spinous processes get a pull from the back…and the back lifts." (Kleven, 2019, p. 43) Drawing the pelvis and sternum closer together, this is how the hind and forelimbs work together to move the horse fluidly.

"The most mobility of the lifted back can be found in the area of T17 and T18…With a hollowed (extended) back, the extent of the movement is smaller, as this will be limited by the spinous processes. In this case, the most mobile area will lie between T14 and T18." (Kleven, 2019, p. 59) Understanding normal spinal biomechanics of the equine back can help us to understand what is happening when a performance horse is diagnosed with a kissing spine. "Spinous impingement has been reported to occur most commonly between T13 and T18." (Turner, 2011, p. 429)

In the image below from Tuskey Dressage (Figure 1), the dorsal spinous processes stick up vertically from the vertebrae. A spine in a neutral or lifted position will allow for gaps of space between each dorsal spinous process (DSPs), and a spine in a hollowed-out position will move the dorsal spinous processes (DSPs) closer together. The issue is that when the DSPs are in that hollowed-out state for an extended period, they can begin to rub together, which can be painful. When a horse adopts a hollowed-out posture, the DSPs can also develop bony growths between them that sometimes fuse completely. It can lead to the horse developing back pain and

a persistent tendency to carry its body incorrectly. The pain, in turn, will lead to other issues in the horse's body, which is why it is imperative to seek out help from an osteopath after diagnosis. To help the horse regain mobility and function throughout their entire body after dealing with the pain in their back and any compensations they may be making because of the kissing spine.

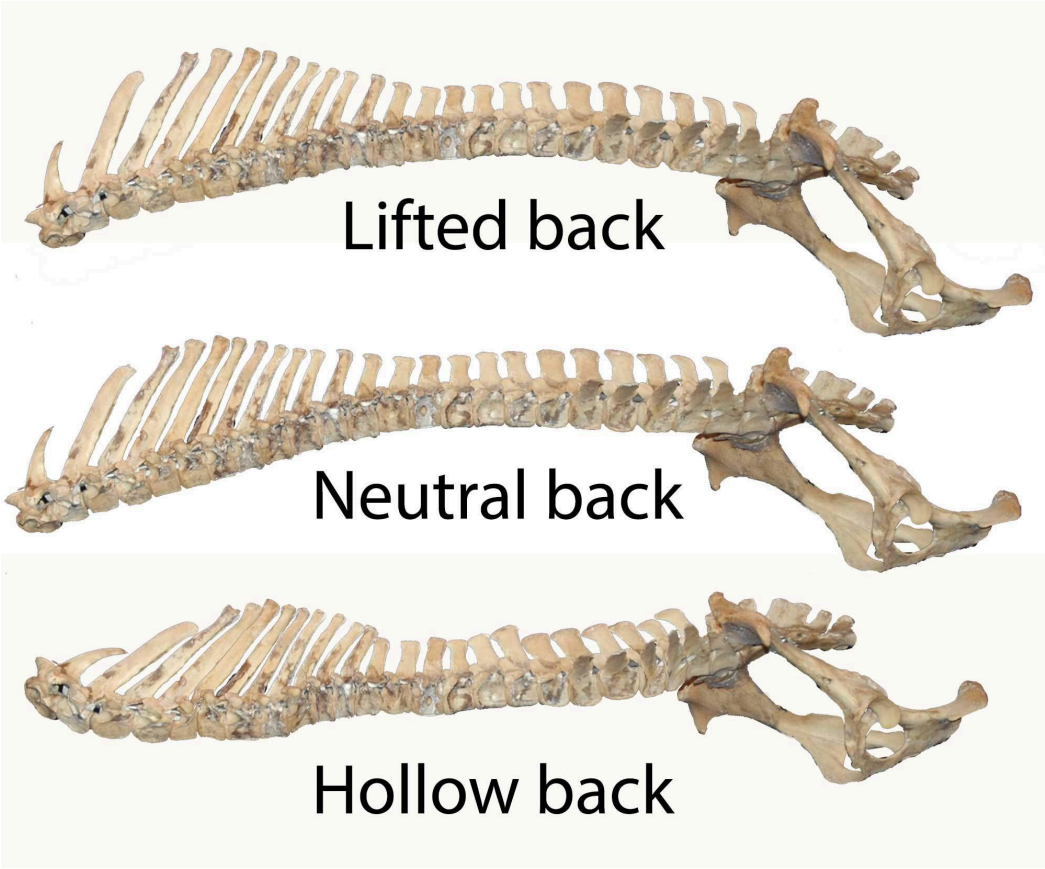

Figure 1. Spinal positions in the horse (Tuskey Dressage, 2023).

The biomechanical changes associated with kissing spine emphasize that the condition is not a localized structural issue. Kissing spine affects the performance of the horse's whole functional system. The compensatory patterns and changes in movement are why a whole-horse and osteopathic approach is essential during assessment and treatment. Osteopathy looks at the horse from a structural and functional standpoint and allows the osteopath to question what could

be affected, how we could help the horse feel its best, and what is normal for its structure. From an osteopathic perspective, dysfunction in the thoracolumbar spine disrupts interconnected biomechanical, neurological, and fascial systems, reinforcing the need for a whole body approach to treatment.

Core Osteopathic Principles

"The body is a machine and must run smoothly." -Andrew Taylor Still

Andrew Taylor Still is the founder of osteopathy. He established osteopathy in 1874 after searching for a more effective approach to disease than the medical treatments of his time. His findings and teachings have shaped osteopathy into what it is today. The core principles of osteopathy are:

1. The body is a dynamic unit of function
2. The body possesses self-regulatory mechanisms that are self-healing in nature
3. Structure and function are interrelated at all levels
4. The Rule of Artery is supreme

(Chila, 2010, p. 3)

Osteopathy believes in and teaches a 5-model concept of health function. They are biomechanical, neurological, respiratory and circulatory, metabolic, and behavioral. When one area of the body is dysfunctional, it leads to compensation in another area. Therefore, we can assume that restoring function to the area of dysfunction will correct any compensation. We must look at the body as a whole and try to determine what could be causing the symptoms and whether the main or contributing symptom could lead to another related issue.

When assessing a performance horse with kissing spine, an osteopath may observe some or all of the following:

Biomechanical dysfunctions may present as thoracolumbar rigidity, pelvic restrictions, and rib dysfunctions.

Neurologically, the horse may show altered proprioception, unnatural posture, or changes in motor control, such as stumbling.

Respiratory and circulatory may also occur, and present as reduced rib mobility, decreased spinal pumping, and local vascular compromise.

Metabolic changes can show up as muscle fatigue and chronic inflammation

Behavioral responses often show up as pain avoidance during movement, refusing a trained movement, and a change in mood or attitude

The spine is a bridge between the loaded forelimbs and the hind limbs that aid in propulsion. When we view the spine as a bridge, we can see that movement is shared among multiple parts of the body. If one area loses mobility, this may indicate that linked areas will begin to compensate. Kissing Spine in horses is often treated as a local structural problem, but when we use the 5 Osteopathic Models of Health, we can see that it affects more than meets the eye.

Osteopathic Assessment of the Kissing Spine Horse

The main objective of osteopathic assessment in performance horses with kissing spine is to evaluate the functional relationships, mobility, and compensatory patterns throughout the body. An osteopath considers the horse's conformation, posture, weight distribution, and

musculature, and how these factors may play an integral role in a performance horse with a kissing spine. “Kissing spine is the most common cause of back pain in horses and is likely present in up to 40% of horses. However, most of these horses do not show clinical signs of pain so it is often under diagnosed” (Morton, 2024). Knowing that a kissing spine is often undiagnosed or presents only as back pain highlights the need for an osteopath to gather as much information as possible from the client.

A detailed history of the horse prior to an appointment provides essential information for assessment. When taking a client history, we should know the breed, age, workload, any injuries, diagnosis, medications, and behavior before assessing the horse.

Observation of posture and movement provides a baseline for assessment. When conducting the dynamic assessment, the osteopath should note where motion is lost or where there is excessive movement. Oftentimes, compensation will show up in another area of the body when a horse has a kissing spine, so it is very important to note all movement or lack thereof. Compensation results in the redistribution of motion.

After assessing the horse standing and in movement, the osteopath should then proceed to palpation and motion testing to identify dysfunctions. Palpating “…can determine the body’s consistency, elasticity, mobility, and sensitivity to pain at the surface. You’re looking for areas of tension, adhesions, growths, muscle knots, swellings, and differences in temperature-all of which are anomalies that can hint at illness.” (Kleven, 2019, p. 113) Osteopaths must palpate and assess both sides of the horse to get an accurate assessment of where or if any abnormalities are. Once a static, dynamic, and palpation assessment, along with a range-of-motion assessment, is performed, an osteopath will have a very good idea of where restrictions are throughout the

horse's entire body. Then it is time to develop an effective treatment plan and course of action to restore the horse's function and mobility.

Osteopathic Treatment Approaches

The goal of osteopathic management is to restore mobility and address compensatory dysfunction throughout the body. Osteopathy is a great way to help a horse with a kissing spine because it assesses the horse structurally and dynamically and uses non-invasive methods to release areas of tension and restore fluid movement and nerve pathways.

Myofascial Release (MFR) is a technique that applies gentle, steady pressure in areas to release tension in the fascia. Fascia "...is the connective tissue that wraps every muscle, bone, nerve and organ. When fascia becomes tight, glued or restricted, movement gets stiff, posture changes, and subtle discomfort shows up long before any clear lameness." (Talking Horse Equine, 2025). Fascia plays an important role in maintaining structural integrity and function in the body. Kissing spine creates tension in the vertebral column, as well as in the rib cage, pelvis, and neck. Fascia is an intricate web that communicates throughout the entire body. Releasing the tension in the fascia stemming from the compensation of the kissing spine is integral to regaining mobility, improving function, and possibly increasing flexibility. Given that fascia connects to the nervous system, MFR may help support neural communication through fascial release (Talking Horse Equine, 2025).

Craniosacral Therapy Techniques (CST) focuses on the membranes and cerebrospinal fluid that surround and support the brain and spinal cord (A Plus Equine Bodywork, n.d.). It is a gentle, non-invasive technique that requires a light touch and a quiet mind to feel the fluid moving through the head, spine, and sacral area. While gently coaxing movement back into

places of restriction to promote movement and communication again throughout the body. In relation to the kissing spine, this technique may support fluid movement and nervous system regulation (A Plus Equine Bodywork, n.d.). CST will also help release tension in the head, neck, jaw, and TMJ, thereby enhancing proprioception and body awareness. (A Plus Equine Bodywork, n.d.)

The Osteopathic Articular Balancing (OAB) technique is unique in that practitioners use it to assess, diagnose, and treat many different conditions that a performance horse may have. “OAB method is a classical, long-lever osteopathic technique that uses gentle mobilization and manipulation to both assess and treat joints, muscles, and fascia with no side effects or adverse reactions.” (Animal Osteopathy College, n.d.) OAB is an ideal technique to use with a horse with a kissing spine because it allows assessment of the range of motion in the back, ribs, pelvis, forelimbs, and neck. Allowing the osteopath to gently guide the body through a joint's range of motion without putting additional strain on the joint or surrounding musculature. OAB will allow the opening of the vertebral column and rib cage and help stretch the supporting muscles and fascia in the surrounding area affected by the kissing spine posture and compensations.

Using a combination of Myofascial Release, Craniosacral, and Osteopathic Articular balancing for a horse with a kissing spine is the best approach to restoring optimal function and mobility. Targeting the spinal column is essential, as an osteopath must reestablish movement between the vertebrae and the ribcage. However, assessing the pelvis, hindlimb, forelimb, and neck is also crucial to overall stability and functionality. Using these techniques helps to restore mobility and function, but results will not last without continued management.

Rehabilitation and Preventive Strategies

Rehabilitation and prevention focus on restoring function and reducing compensatory dysfunction associated with the kissing spine. Early rehabilitation for a horse with a kissing spine focuses on reducing pain, protecting tissues, and gently restoring movement. During this phase, the osteopath applies light manual therapy and gentle mobility techniques while recommending a reduced workload to support recovery. Having an osteopath gently mobilize each horse's joints will keep them open and freely moving, gently stretch the attached musculature, allow fluid to move, and allow the nerves to communicate correctly.

As pain decreases and mobility increases, the next step in the course of action will focus on restoring more movement in the spine and in areas of compensation that may have newly emerged. Adding more active manual therapy mobilizations will help keep joints open longer, which, in turn, will result in a less hollowed-out back position. Retraining the body is another crucial part of this phase. Controlled exercises that reinforce correct posture and movement patterns retrain the horse to carry its body effectively in both daily movements and performance. (Kleven, 2019, p. 193)

Long-term rehabilitation goals will be to build overall strength in the performance horse's back and core musculature. Ensuring they maintain the correct biomechanical stances in rest and while working will help prevent recurrence of kissing spine dysfunctions and their accompanying compensations. Correcting and strengthening the core can encourage the horse to lift its back, therefore reducing the strain on the dorsal spinous processes, as the core musculature plays a critical role in stabilizing the spine and controlling posture (Clayton, 2016). Activation of the hind end further contributes to stability and coordinated movement patterns.

Using groundwork exercises, such as lunging, will allow for assessment of movement and for correction of incorrect posture before adding rider variables. Exercises utilizing ground poles may encourage a horse to engage their core muscles, in turn lifting their back to support spinal function. Dynamic mobilization techniques engage the stabilizing and mobilizing musculature through controlled, easy movements increasing in difficulty over time (Clayton, 2016). This approach will aid in retraining the muscles and movement patterns. Another way to help retrain a horse to use their core muscles is to use balance pads. Having a horse stand on pads with some give will help the horse engage their core muscles and retrain their brain on how to balance as well (O'Leary, 2024). Owners using these training tools should do so in conjunction with the help of an osteopath or trainer to get the best results. Regular osteopathic assessments will allow the osteopath to catch dysfunction early and identify any compensation before it becomes pathological. Prevention of recurrence of kissing spine will help to maintain mobility, circulation, and function.

Integrative and Collaborative Care

The primary responsibility of an osteopath should be to the health and welfare of the horse. Embracing a collaborative approach when assessing a horse osteopathically is essential in achieving an optimal outcome. In the case of kissing spine in performance horses, it is imperative to work closely with the owner, trainer, veterinarian, saddle fitter, farrier, and other therapists. If the owner has not consulted with a veterinarian, that should be the first recommendation during an osteopathic assessment when the horse shows signs of pain or change outside our scope of practice. As osteopaths, we must go into every session with an open mind and know when a referral is needed. If a veterinarian has already diagnosed a horse with kissing spine and given the owner the all-clear to resume work and/or pursue additional therapy, then

osteopathic work can begin. Sometimes, as osteopaths, we can see how something is still structurally off with the horse. We can recommend talking with their farrier about how the horse's hoof angles are benefiting or hindering the horse. If, after seeing a veterinarian and a farrier, the horse is still having consistent issues, it may be worth recommending a saddle fitter to assess the current saddle fit and, if they think the horse would benefit, recommend a different tack setup. The main goal should be to get the horse the help it needs to be happy and healthy in its daily life and in its job, and recognizing when we can help and when a referral is needed. Working within a collaborative environment improves patient care and also helps an osteopath develop clinical skills, apply judgment, and gain a deeper understanding of the horse's body and individual needs.

Professional Development and Reflection

By studying these concepts and applying them to my own horses with a kissing spine, I have gained valuable insight into both the condition and its management. I have two horses with a kissing spine, one is older, while the other is younger. My older horse underwent surgery in the fall of 2024. He was 13 years old and needed 8 of his dorsal spinous processes reshaped. He was my main motivation for learning osteopathy, as I want to learn as much as I can so I can help him with his pain and slow down the chance of recurrence of kissing spine. My younger horse is a full sibling to my older horse, and he underwent surgery in the late summer of 2025. He had 5 dorsal spinous processes reshaped, and he was only 5 years old. My vet suspects their kissing spine is related to genetics and conformation, but there is no way to know for certain.

This experience has shown me that I am on the right path to help my horses regain mobility, reduce their pain, and rehabilitate them effectively, thereby improving their quality of

life and supporting a possible return to performance work as barrel racers and ranch horses. I learned a lot about how compensation shows up in unexpected areas when looking at kissing spine from a back-problem-only perspective. I hope to use my knowledge to support other horses and their owners who may be dealing with kissing spine, and to help reduce the risk of kissing spine developing in others.

Conclusion

Kissing spine in performance horses is a complex condition that involves not only structural dysfunctions, but compensatory patterns that affect the body as a whole. The thoracolumbar spine serves as the bridge between the horse's forelimbs and hindlimbs. It plays a critical role in biomechanical movement, highlighting that dysfunction in this area leads to compensations throughout the body. Osteopathy emphasizes a whole body approach to assessing movement, function, and communication within the body, allowing for the identification and treatment of underlying dysfunctions. By restoring balance and mobility, osteopathic techniques support the body's natural ability to heal. Rehabilitation and prevention are essential to maintain these improvements. A thorough osteopathic and rehabilitation plan helps improve a performance horse's quality of life. It educates the owner or trainer on how best to support the horse without invasive intervention. Limitations of an osteopathic approach also need to be considered. While the osteopathic techniques will help in mobility and function, their effectiveness varies from horse to horse. Differences in the severity of the kissing spine in each horse, their overall conformation, muscle tone, and compensations are all factors that will influence how the osteopathic techniques will help.

Additionally, research into the effectiveness of the modalities is limited in quantitative terms. As a result, osteopathic treatment should be considered as part of a broader, integrative plan, not as a standalone solution. Continued research into why horses develop kissing spine and how we can help prevent it will go a long way toward improving the performance horse's quality of life.

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