2026

Osteopathic Articular Balancing (OAB) and Equine Rehabilitation: Linking Saddle Fit–Related Biomechanical Dysfunction to Manual Therapy Outcomes

Research paper April 2026

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1. Introduction

When assessing a horse’s biomechanics and pain responses before osteopathic intervention, it is essential to consider environmental factors, training history, management practices, and equipment, as each can influence movement patterns, physical adaptation, and the expression of discomfort. Among these variables, saddle fit has been identified as particularly influential. As MacKechnie-Guire et al. (2019) emphasize, “determining the correct saddle fit is essential to optimize the interaction between the horse and rider dyad, and to reduce the risk of back-related problems or loss of performance as a result of incorrect saddle fit” (*Simple Summary* section). Horses working for prolonged periods in poorly fitting or inappropriate tack may develop measurable alterations in back function and locomotion, including changes in thoracolumbar motion, uneven pressure distribution, and compensatory gait patterns. These effects are significant not only from a welfare perspective but also for performance and rehabilitation, particularly when maladaptive movement strategies persist even after tack correction.

Within this context, Osteopathic Articular Balancing (OAB) may serve as a valuable adjunct in equine rehabilitation. By addressing joint restrictions and associated soft-tissue adaptations, OAB may help restore mobility and promote more balanced movement patterns. Although equine manual therapies are widely used, further research is needed to clarify how OAB influences measurable biomechanical outcomes.

Thesis statement. OAB can support rehabilitation in horses affected by long-term poor saddle fit by (1) addressing mobility restrictions and soft-tissue adaptations in the thoracolumbar region and related limb joints, (2) interrupting compensatory movement strategies that develop in response to chronic asymmetrical loading, and (3) providing a clinically useful framework for re-establishing symmetrical, efficient biomechanics after tack correction, particularly when progress is monitored using objective measures such as saddle-pressure mapping or thoracolumbar kinematic analysis.

2. Saddle Fit and Measurable Biomechanical Effects

Recent peer-reviewed studies have helped shift saddle fitting from a subjective practice toward one grounded in quantifiable biomechanics. In a controlled trial, MacKechnie-Guire et al. (2019) evaluated a correctly fitted saddle and then altered the same saddle to one with a narrower width and one with a wider gullet. Using inertial measurement units (IMUs) and a pressure mat, they demonstrated that both overly wide and overly narrow conditions altered peak pressure distribution and reduced thoracolumbar range of motion at clinically relevant landmarks such as T13. The wide saddle increased cranial peak pressures, whereas the narrow saddle increased caudal pressures, reinforcing the importance of correct tree width for preserving normal locomotion.

Beyond tree width, saddle position and rider, saddle interaction can create asymmetrical loading patterns detectable through pressure mapping and limb-kinematic analysis. Girth design is another critical factor. Marlin et al. (2025) found that girth material and tension influence limb kinematics and fatigue onset. They also reported that girth tension restricts rib motion and increases pulmonary resistance in standing horses, while fluctuating cyclically during locomotion in relation to respiration and stride dynamics.

Research on back shape during movement further suggests that a saddle fitted to a standing horse may not correspond to the flatter back configuration observed during walk and trot (Smirnova et al., 2024). This may explain why a saddle that appears correct at rest can still create focal pressure or restrict movement during exercise. Similarly, Becard et al. (2025) found that reduced-pressure saddles facilitated greater limb protraction, likely through increased spinal flexibility and altered muscular engagement. Collectively, these findings demonstrate that both saddle and girth design can significantly influence equine biomechanics and locomotion, contributing to movement restrictions and compensatory patterns throughout the body.

3. From Tack-Related Loading to Thoracolumbar Dysfunction and Compensatory Patterns

Repeated uneven or excessive loading from ill-fitting tack can lead horses to adopt protective movement strategies that persist over time. These may include reduced thoracolumbar motion, altered spinal posture, shortened stride length, and asymmetries that redistribute load to other joints and muscle groups and postural changes. Over months or years, compensations that begin as responses to discomfort can become ingrained motor patterns.

Dyson et al. (2015) emphasize that pain responses should be considered important indicators of biomechanical restriction, as discomfort often manifests first through subtle changes in skin and soft tissues. Localized swelling, dry spots, ruffled hair, friction lesions, or white hairs typically reflect chronic pressure and deeper tissue stress. Muscular responses may include soreness beneath the saddle, focal or generalized atrophy, particularly behind the scapula, and inhibited development of the epaxial muscles. Chronic loading can also lead to adhesions between the skin and fascia or deeper fibrotic changes, further restricting normal tissue mobility. Building on this foundation, Dyson's Ridden Horse Pain Ethogram (RHpE) provides a validated behavioural framework for identifying musculoskeletal pain in ridden horses. The ethogram includes twelve highly predictive indicators, such as repeated head tilting, head tossing or unstable head carriage, sustained ear-pinning, prolonged mouth opening with separation of the teeth, tongue displacement, repeated tail swishing, reluctance to go forward, irregular gait rhythm, hindlimb toe-dragging, stumbling, incorrect or inconsistent canter leads, and overt resistance behaviours including bucking or rearing. The presence of eight or more of these behaviours during a short-ridden assessment strongly correlates with underlying pain, with affected horses exhibiting up to three times more RHpE behaviours than non-pain horses. Importantly, RHpE scores decrease significantly following appropriate treatment, reinforcing the ethogram's diagnostic value for practitioners assessing saddle-fit–related dysfunction, axial-skeleton pain, and compensatory movement patterns (Dyson et al., 2018).

These findings align with a broader body of clinical work demonstrating that many behaviours traditionally labelled as resistance or disobedience are, in fact, expressions of pain. As discussed throughout DeClue's veterinary podcast, saddle-fit issues frequently produce recognizable patterns of discomfort that manifest through changes in posture, gait, and behaviour (DeClue, n.d.). When the saddle pinches at the withers, horses may show head tossing, resistance, or shortened forelimb stride due to thoracic compression and restricted rib motion. Uneven saddle contact often results in one shoulder appearing more developed than the other, reflecting chronic asymmetrical loading and scapular compensation. A saddle that is too narrow may produce a hollow back, bucking, or reluctance to move forward as localized pressure creates dorsal pain and functional "kissing spine," whereas a saddle that is too wide may feel unstable, contributing to drifting, muscle atrophy, and thoracic instability. Bridging saddles, those that fail to make contact in the mid-back, can cause tension, loss of topline, and overload at the front and rear of the panels, while localized pressure points often present as grooming sensitivity, pinned ears, or defensive behaviours. Saddles that restrict scapular movement produce short, choppy forelimb steps and lateral deviation, and asymmetrical panels may reinforce existing imbalance, contributing to pelvic pain or lameness. Persistent saddle slipping to one side is another key indicator of discomfort, as the horse compensates by altering posture or gait, and sudden loss of muscle mass beneath the saddle often signals chronic back pain and reduced epaxial muscle recruitment.

These saddle-related signs form part of a larger constellation of pain-related behaviours. The girth or cinch is another critical component of the equipment that can significantly influence comfort and biomechanics. Sensitivity to the girth, such as ear-pinning, biting, striking, or collapsing during tightening, is frequently associated with sternal pain, thoracic cage discomfort, axial-skeleton lameness, or sleep deprivation secondary to chronic pain. These reactions may occur when the girth is too narrow, too tight, poorly padded, made of inappropriate materials, or positioned incorrectly. Horses that refuse to go forward or appear "behind the leg" often do so because of pelvic pain, sacroiliac dysfunction, iliopsoas injury, or back pain rather than behavioural reluctance. Explosive reactions such as bucking, rearing, or bolting typically occur when earlier signs of discomfort have been missed and may reflect thoracolumbar pain, functional kissing spine, pelvic dysfunction, or saddle-fit–related pressure.

Under-saddle observations provide additional insight into pain-related dysfunction. Head tossing, inconsistent contact, or resistance to the bridle are frequently linked to cervical pain, thoracic restriction, or lameness. Difficulty with flying changes, lateral drift, fixed hips, or persistent asymmetry that pushes the rider to one side commonly signals pelvic injury, sacroiliac ligament strain, or iliopsoas dysfunction. Short, choppy, or uneven strides are consistently defined as lameness and may arise from back pain, pelvic pain, or axial-skeleton dysfunction. When observing the horse at rest, difficulty lifting a hind limb, especially when only one limb is affected, is strongly associated with sacroiliac lesions, pelvic pain, sciatica pain, or shivers. Owner-reported behaviours such as kicking in the air, trembling, abnormal hind-limb movements, or exaggerated flexion (stringhalt-like gait) often reflect deeper neuromuscular or nerve dysfunction rather than isolated limb issues. Postural indicators also provide valuable information. In the stall or cross-ties, postural changes such as standing camped under, shifting weight repeatedly, or leaning to one side are never considered normal and often reflect back or pelvic pain. Behavioural withdrawal, tension at the start of work, or resistance during grooming may indicate localized thoracic, sternal, or dorsal discomfort, while muscle atrophy or asymmetry accompanied by behavioural change often reflects scapular injury, saddle-fit issues, or chronic lameness. As DeClue notes, episodes of collapse during girthing are frequently misinterpreted as narcolepsy but are more often linked to pain-related sleep deprivation or chronic sternal or back pain. The most concerning presentation is "learned helplessness," in which the horse becomes apathetic, unreactive, and "shut down," having ceased to communicate discomfort through more overt behaviours (DeClue, n.d.).

Dyson et al. (2015) emphasize that pain responses should be considered important indicators of biomechanical change or restriction. Over time, these effects may contribute to persistent back pain, chronic asymmetry, compromised thoracolumbar function, long-term stiffness, and behavioural resistance, all of which complicate rehabilitation. As Dyson et al. (2015) summarize, pain may be expressed through short steps, unwillingness to bend, and difficulty engaging the back. "If the gullet of the saddle is too narrow or too low, it will interfere with thoracolumbar function and induce pressure on the spinous processes and pain" (*Consequences* section).

Because correcting the saddle does not automatically restore normal coordination, strength, or segmental mobility, a multidisciplinary approach is essential. Effective rehabilitation requires not only identifying biomechanical dysfunction but also correctly interpreting pain-related behaviours rather than misclassifying them as training issues. Comprehensive assessment and coordinated teamwork, combining veterinary intervention, qualified saddle fitting, farriery, Osteopathic Articular Balancing (OAB), bodywork and a structured conditioning program, are necessary to rebuild strength, restore symmetry, and re-establish efficient locomotion. Within this collaborative framework, OAB serves as a valuable complementary intervention by addressing articular and soft-tissue restrictions that perpetuate asymmetry and reduced function, thereby supporting the horse's ability to regain normal movement patterns and respond positively to rehabilitation.

4. OAB-Informed Rehabilitation: Biomechanics, Intervention Strategy, and Measurable Outcomes

According to Animal Osteopathy Worldwide (2024) and the London College of Animal Osteopathy (n.d.), OAB aims to restore mobility and balance throughout the equine axial skeleton through gentle joint mobilization, soft-tissue balancing, and subtle positional release techniques. In cases of equipment-related dysfunction, OAB provides a structured approach to reducing chronic focal pressure and asymmetrical loading, thereby improving mobility in the thoracolumbar spine and ribs, optimizing pelvic mechanics, and enhancing movement in the cervicothoracic junction, thoracic sling, and distal limbs. As Audrey DeClue frequently notes, *the body controls the limbs*; when the axial skeleton becomes crooked or unbalanced, the limbs compensate, often resulting in overload and dysfunction.

Guided by this principle, OAB treatment prioritizes restoring motion and balance in regions most critical to gait, particularly the thoracolumbar junction, the lumbosacral (LS) region, and associated myofascial chains, while also assessing whether restrictions in the cervicothoracic region, scapular mobility, or thoracic sling engagement are perpetuating compensatory patterns. This whole-chain perspective ensures that treatment addresses both primary dysfunction and secondary restrictions that influence global biomechanics and the limbs.

4.1 Lumbosacral and Iliopsoas Function

Effective propulsion depends on coordinated activation of the iliopsoas muscle group, the lumbar transverse processes, lumbosacral (LS) junction, and the coxofemoral joint, without forgetting the muscular chains linking the lumbar spine to the thoracic and cervical regions. The iliopsoas stabilizes the lumbar spine and flexes the hip, drawing the hindlimb forward while supporting LS flexion, a movement essential for transferring power from the hindquarters into forward motion. The epaxial muscles, particularly the longissimus dorsi and multifidus, further stabilize the spine and coordinate force transmission along the axial skeleton. Marlin et al. (2025). However, equipment-related restrictions frequently compromise this system. Poorly fitting saddles, girths, or rider imbalance can inhibit LS flexion and place chronic tension on the iliopsoas, contributing to a range of compensatory pathologies and pain response. Within this context, Osteopathic Articular Balancing (OAB) plays a valuable rehabilitative role. By applying gentle oscillation and joint mobilization, soft-tissue balancing, and subtle positional release techniques to the lumbar and LS regions, OAB aims to restore segmental mobility, reduce muscular guarding, and re-establish the coordinated function of the hindquarters. This targeted intervention supports the horse’s ability to generate effective propulsion and contributes to the broader rehabilitation strategy required to correct equipment-related biomechanical dysfunction.

4.2 Thoracic Sling and Forehand Mechanics

Hind-end engagement is directly linked to the muscular chains of the thoracic and cervical spine, including the longissimus cervicis, serratus ventralis, and brachiocephalicus. When the lumbosacral (LS) junction flexes effectively, the thoracolumbar region lifts, allowing the thoracic sling to function without compression. This improves forelimb protraction, increases stride length, and reduces compensatory tension in the neck and shoulders. Dysfunction in the iliopsoas or LS region often leads to bracing through the thoracic and cervical musculature, reducing forelimb freedom and contributing to pain patterns associated with poor saddle fit or excessive girth pressure. Because these regions operate as an integrated kinetic chain, restoring pelvic mobility alone is insufficient. Marlin et al. (2025). When OAB is used to relieve tension and improve mobility in the pelvis and LS junction, it is equally important to address the thoracic region, scapula, and thoracic sling. Applying gentle oscillation to the intertransversarii and related articulations, combined with soft-tissue balancing of the intercostal musculature and subtle positional release techniques through the thoracic structures, helps restore mobility not only locally but throughout the entire axial chain. By releasing these interconnected regions, OAB supports more efficient force transmission from hindquarters to forehand and contributes to the re-establishment of coordinated, symmetrical movement.

4.3 Cervicothoracic and Poll Restrictions

Dyson et al. (2015) explain that restrictions anywhere along the axial skeleton can disrupt the horse’s ability to coordinate the spine as a single functional unit. Restrictions in the cervicothoracic junction or thoracic sling may limit forehand elevation and protraction, resulting in shortened steps and increased distal-limb loading. Persistent restriction in the poll or cervical spine can further disrupt biomechanics. The cervical region contains long muscular chains, including the brachiocephalicus, omotransversarius, longus colli, and the ventral and hyoid-associated fascial chains, that attach directly to the poll, mandible, and upper cervical vertebrae. According to OAB principles, chronic traction or asymmetrical loading in these structures limits poll flexion, cervical rotation, and the neck's ability to act as a balanced counterweight during locomotion (Animal Osteopathy Worldwide, 2024; London College of Animal Osteopathy, n.d.). Because the hyoid apparatus is biomechanically linked to the tongue, mandible, and ventral cervical fascia, dysfunction in this chain can further restrict poll mobility and alter neuromuscular tone. Within an OAB-informed rehabilitation approach, restoring mobility in the poll and cervical region is therefore essential for re-establishing harmony throughout the entire axial chain. Techniques such as gentle oscillation of the upper cervical articulations, soft-tissue balancing of the longus colli and surrounding fascial structures, neck stretches, oscillation and subtle positional release of the hyoid and ventral cervical chain help reduce tension and improve segmental motion. Addressing the poll and cervical region in conjunction with the thoracic sling and cervicothoracic junction supports more efficient force transmission from hindquarters to forehand and allows the neck to resume its role as a dynamic counterbalance during locomotion. By releasing these interconnected regions, OAB contributes to restoring coordinated spinal function and reducing compensatory patterns that arise from chronic cervical or poll restriction.

4.4 OAB Techniques and Expected Outcomes

OAB techniques, including indirect mobilization, gentle oscillation, soft-tissue decompression, pelvic balancing, iliopsoas release, scapular mobilization, rib balancing, serratus ventralis, and pectoral chains, aim to reduce mechanical restrictions that interfere with normal spinal motion and neuromuscular coordination. These interventions are supported by research showing that thoracolumbar stiffness contributes to altered saddle pressures and reduced stride quality (Dyson et al., 2015; MacKechnie-Guire et al., 2019) and that thoracic sling compression affects forelimb kinematics (Marlin et al., 2025). When these restrictions are released, horses typically demonstrate improved thoracolumbar lift, enhanced LS flexion, freer scapular movement, and more symmetrical forelimb protraction, resulting in better balance, propulsion, and overall biomechanical harmony.

4.5 The results, discussion: The Need for Whole-Chain Rehabilitation

Even when one region improves, restoring function in a single area is insufficient. Osteopathic and biomechanical models emphasize that full recovery of locomotion requires addressing restrictions throughout the entire axial skeleton. Any unresolved dysfunction, whether in the thoracolumbar junction, cervicothoracic region, poll, hyoid chain, or thoracic sling, can disrupt the continuity of the kinetic chain and prevent complete biomechanical integration. A key component of effective rehabilitation is therefore the comprehensive evaluation of the entire biomechanical chain, including recognition of pain-related behaviours, postural asymmetries, and compensatory movement patterns. Proper osteopathic assessment allows the practitioner to identify primary and secondary restrictions, determine their interrelationships, and apply targeted OAB techniques to restore mobility across the whole axial system.

However, osteopathic intervention alone cannot fully resolve complex, equipment-related or chronic biomechanical dysfunction. Optimal outcomes depend on a coordinated, multidisciplinary approach. Veterinary assessment and treatment are essential to rule out underlying pathology; qualified saddle fitting ensures that mechanical loading does not perpetuate dysfunction; farriery contributes to postural balance and limb alignment; and structured rehabilitation rebuilds strength, coordination, and neuromuscular control. Within this collaborative framework, OAB plays a complementary role by restoring segmental mobility, reducing muscular guarding, and improving the horse's ability to respond positively to conditioning. Addressing the entire axial chain, rather than isolated regions, supports long-term biomechanical integration and reduces the risk of recurrent pain or compensatory patterns.

5. Summary

Equipment-related factor	Clinical signs and observations	OAB treatment focus
Bridle, bit, and noseband	Head tossing, resistance to flexion, reduced poll and cervical mobility, inconsistent contact, and head-high carriage	OAB treatment directed to the poll and upper cervical region, including the temporomandibular joint, upper cervical articulations, and the hyoid–ventral cervical chain
Narrow saddle tree, panel pressure, and rider imbalance	Shortened forelimb stride, reduced scapular freedom, lateral drift, bucking, reluctance to move forward, and shoulder asymmetry	OAB treatment directed to the cervicothoracic junction, scapula, and thoracic sling, with soft-tissue balancing of the serratus ventralis and pectoral musculature
Girth or cinch design, material, and tension	Discomfort during girthing, reduced thoracic excursion, bucking, ear pinning, biting, kicking out, and collapse during tightening	OAB treatment directed to the ribs, thoracic spine, sternum, pectoral region, and intercostal tissues
Wide saddle tree, inadequate pommel clearance, panel pressure, and inappropriate pad selection	Saddle-region pain, swelling, dry spots, white hairs, grooming sensitivity, muscular atrophy, and saddle instability	OAB treatment directed to the thoracic spine, withers, sternum associated muscle and soft tissues
Saddle bridging and inappropriate tree shape	Hollow back, reduced thoracolumbar lift, soreness, loss of topline, guarding, reduced propulsion, and back tension	OAB treatment directed to the thoracolumbar region, including the thoracic and lumbar spine, ribs, and whole-chain reassessment
Rear saddle fit, rider position, and saddle instability	Reduced hindlimb engagement, decreased impulsion, shortened hindlimb stride, reluctance to	OAB treatment directed to the lumbar spine, lumbosacral region, sacrum, coxofemoral joint, gluteal region,

Equipment-related factor	Clinical signs and observations	OAB treatment focus
	move forward, and resistance in trot or canter	biceps femoris, and iliopsoas, with lumbar and lumbosacral soft-tissue balancing
Asymmetrical saddle slip and rider asymmetry	Difficulty with canter leads, drifting, pelvic asymmetry, fixed hips, reduced propulsion, and canter disunity	OAB pelvic balancing directed to the sacroiliac region, coxofemoral joint, iliopsoas, and lumbar–lumbosacral soft tissues
General tack-related compensation	Toe dragging, stumbling, abnormal hindlimb motion, difficulty lifting a hindlimb, trembling when backing, and repetitive hindlimb resting	OAB assessment and treatment of compensatory chains involving the pelvis, lumbosacral region, and hindlimb articulations
Overall tack configuration, including saddle, girth, pad, bridle, and rider balance	Chronic asymmetry, compensatory posture, reduced performance, recurrent dysfunction, weight shifting, and learned helplessness	Whole-chain OAB approach addressing primary and secondary restrictions from poll to pelvis

6. Conclusion

Biomechanical restriction can disrupt coordinated axial motion, reduce hind-end engagement, limit forelimb protraction, and promote compensatory patterns that affect balance, symmetry, and overall movement quality. The literature review incorporated key research on saddle fit, girth design, and equine biomechanics, including Dyson et al. (2015), MacKechnie-Guire et al. (2019), Marlin et al. (2025), and Becard et al. (2025), as well as practical resources such as saddle-fit templates and case studies from DeClue Equine. Together, these sources provide a comprehensive foundation for understanding how tack influences pain responses, locomotion, and musculoskeletal function.

Scientific evidence increasingly demonstrates that saddle-fit variables, including tree width, saddle position, and girth design, measurably influence pressure distribution and thoracolumbar kinematics, with downstream effects on gait and compensatory strategies. For osteopathic practitioners, recognizing pain patterns and postural changes associated with equipment-related dysfunction is therefore essential. In horses rehabilitating after years of inappropriate tack, correcting the saddle is necessary but may not be sufficient to resolve long-standing restrictions or ingrained movement habits.

Within this rehabilitation context, OAB offers a structured manual therapy approach that can help reduce articular and soft-tissue restrictions, support more symmetrical movement, and facilitate retraining toward efficient locomotion when paired with appropriate conditioning. OAB should be integrated as part of a comprehensive, evidence-informed plan that includes veterinary intervention, qualified saddle fitting, farriery expertise, and progressive reconditioning to prevent recurrence of adverse loading patterns.

7. Bibliography

Becard, B., Sapone, M., Martin, P., Hanne-Poujade, S., Babu, A., Hébert, C., Joly, P., Bertucci, W., & Houel, N. (2025). *Quantification of the effect of saddle fitting on rider–horse biomechanics using inertial measurement units*. Sensors, 25(15), 4712. https://doi.org/10.3390/s25154712

DeClue, A. (Host). (n.d.). *The Horse First: A Veterinary Sport Horse Podcast* [Audio podcast]. Spotify. https://open.spotify.com

DeClue, A. (Host). (2023, August 14). *Understanding thoracolumbar pain in sport horses* [Audio podcast episode]. In *The Horse First: A Veterinary Sport Horse Podcast*. Spotify. https://open.spotify.com

Dyson, S., Berger, J., Ellis, A. D., & Mullard, J. (2018). Development of an ethogram for a pain scoring system in ridden horses (Ridden Horse Pain Ethogram). *Equine Veterinary Journal, 50*(3), 321–328. https://doi.org/10.1111/evj.12780

Dyson, S., Carson, S., & Fisher, M. (2015). *Saddle fitting, recognising an ill-fitting saddle and the consequences of an ill-fitting saddle to horse and rider*. Equine Veterinary Education, 27(10), 533–543. https://doi.org/10.1111/eve.12436

MacKechnie-Guire, R., MacKechnie-Guire, E., Fairfax, V., Fisher, D., Fisher, M., & Pfau, T. (2019). *The effect of tree width on thoracolumbar and limb kinematics, saddle pressure distribution, and thoracolumbar dimensions in sports horses in trot and canter*. Animals, 9(10), 842.

MacKechnie-Guire, R., MacKechnie-Guire, E., Fisher, M., Mathie, H., Bush, R., Pfau, T., & Weller, R. (2018). *Relationship between saddle and rider kinematics, horse locomotion, and thoracolumbar pressures in sound horses*. Journal of Equine Veterinary Science, 69, 43–52.

Marlin, D., Randell, O., Mayhew, E., & Blake, R. (2025). *The effect of girth design and girth tension on saddle–horse pressures and forelimb stride kinematics in rising trot*. Animals, 15(17), 2540. https://doi.org/10.3390/ani15172540 (doi.org in Bing)

Smirnova, K. P., Frill, M. A., Warner, S. E., & Cheney, J. A. (2024). *Shape change in the saddle region of the equine back during trot and walk*. Journal of the Royal Society Interface, 21(215), 20230644.

Animal Osteopathy Worldwide. (2024). *Prof. Stuart McGregor and OAB*.

London College of Animal Osteopathy. (n.d.). *The Osteopathic Articular Balancing Method (OAB)*.

Story, M. R., Haussler, K. K., Nout-Lomas, Y. S., et al. (2021). *Equine cervical pain and dysfunction: Pathology, diagnosis and treatment*. Animals, 11(2), 422.