London College of Animal Osteopathy

International Diploma Canine Osteopathy

A Comparative Review of Osteopathic Treatment for Idiopathic Somatic Dysfunction in Canines:

Lessons from Humans and Equines

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CONTENTS

Introduction

In human and veterinary medicine, attention is being directed toward conditions that produce functional impairment without overt pathology. Interest, cases where pain, postural dysfunction, or movement restrictions exist in the absence of structural damage. These scenarios often fall outside the explanatory power of conventional diagnostics, leading to growing reliance on complementary approaches, such as osteopathy. Osteopathic medicine with focus on the interrelationship between structure, function and the body's innate ability to self-regulate and heal, provides a compelling framework for addressing functional disturbances. In humans, osteopathy is supported by decades of clinical trials; yet research regarding application to veterinary medicine is lacking in canines. One condition attracting attention in the veterinary field is idiopathic somatic dysfunction(ISD), defined as altered musculoskeletal and neuromuscular function without a known pathological cause. In canines, ISD may manifest through changes in gait, posture, behavioural or localised musculoskeletal tension. These dysfunctions are particularly relevant in sporting, working or geriatric canines, yet remains difficult to diagnose due to the absence of specific imaging findings or verbal feedback. Despite diagnostic limitation, there is growing evidence base from clinical observation as to the positive improvements for canine function and wellbeing by manual therapies, particularly Osteopathy.

This thesis hypothesizes the following:

"Osteopathic treatment, when informed by human and equine research, can be effectively adapted to improve functional outcomes in canines experiencing idiopathic somatic dysfunction(ISD)." The aim of the paper is to:-

Evaluate and synthesise evidence across species determining the validity and potential of applying osteopathic treatment for canine idiopathic dysfunction. Given the lack of robust canine specific research, this paper draws on comparative findings from human and equine research, in the hopes will offer critical insight into potential shared mechanisms, effectiveness of interventions and relevant outcomes.

To defend this hypothesis, the thesis will develop three key arguments:

- Cross-species similarities in somatic dysfunction(SD) mechanisms, including role of fascia, proprioception, segmental biomechanics in humans, equines and canines
- Evidence for osteopathic effectiveness in humans and equines-focus on improvements in mobility, pain modulation and postural control, which require evidence gained from clinical trials and biomechanical studies.
- Practical and clinical implications for canine treatment, including observable effects of osteopathic interventions, diagnostic challenges and the need for species-specific validation tools.

This multi-species comparative analysis aims to position osteopathy as a viable, evidence-informed intervention for ISD in canines, identifying the limitations and future needs for research.

Somatic Dysfunction: A Cross-Species Overview

Somatic Dysfunctions(SD) are defined by the American Academy of Osteopathy(AAO) as "impaired or altered function of related components of the somatic system: skeletal, arthrodial, myofascial structures, related vascular, lymphatic and neural elements" (AAO, 2020). The AVCA and IVCA align with this definition, highlighting clinical significance of SD in animals where structural imbalance affects performance, mobility and wellbeing. The term, originating in human osteopathy, is increasingly applied in veterinary contexts to identify subtle, functionally significant musculoskeletal imbalances in non-verbal patients such as canines and equines.

Clinical presentations of SD differ slightly across species but share core features. Canine dysfunction often appears as gait irregularities, behavioural changes, localised pain or reluctance to move (Kivinen,2024). Equines SD typically presents as performance issues, lameness or resistance to training cues (Colles et al.2014). Human SD typically shows as pain, reduced range of motion

and postural asymmetry. Although symptoms vary across species, often stem from similar underlying disturbances in musculoskeletal and neurological integration.

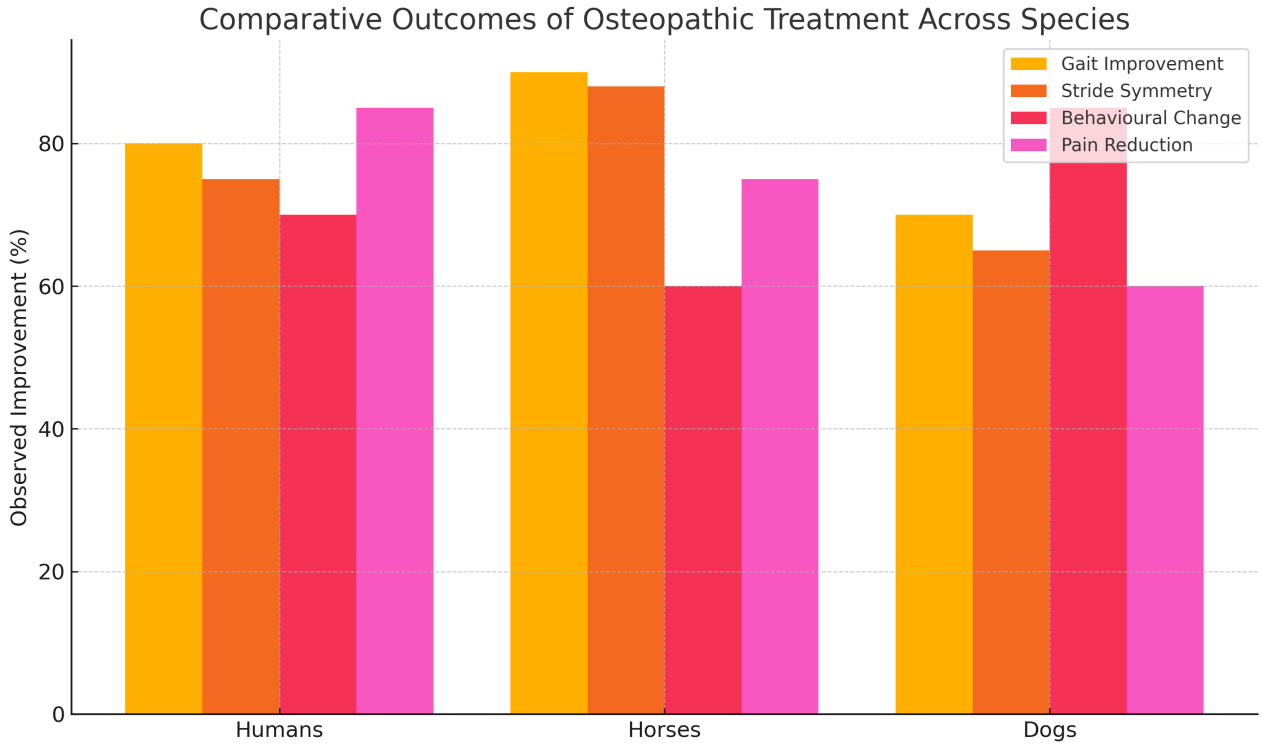
Biomechanical and neurophysiological basis of SD lies in the disruption of proprioceptive feedback loops and neuromuscular control. Dysfunction may result from repetitive strain, postural imbalance, injury or emotional stress, leading to muscle tension, joint hypomobility and altered neurological tone.

The phenomenon of fasciculation where a spinal segment becomes neurologically hyperactive, is documented in humans and has analogues in equine and canine models (Liem et al.,2017). Suggesting that dysfunction can persist even without ongoing physical insult and potentially explains, correlation between structural integrity and autonomic function.

Diagnosing SD in animals poses challenges, given non-verbal, the clinician is reliant on observational analysis, palpation, response to movement or manipulation, behavioural signs. There is no established gold-standard diagnostic imaging for the condition, further complicating objective confirmation (Smit,2024). Studies from Colles et al.(2014) highlighted the role of detailed palpatory assessment and case history in equine osteopathy, noting the need for more validated diagnostic protocols, particularly in canines whereby research is even further lacking. The presence of overlapping conditions (e.g., arthritis, soft tissue strain) the possibility of dual diagnosis, may obscure primary SD or lead to misinterpretation of presenting issues. Growing evidence across species supports the very existence, and clinical importance of SD. (Kivinen.2024) emphasised transferability of human osteopathic concepts to canine pelvic dysfunctions, while Colles et al.(2014) demonstrated significant improvements in equine gait abnormalities following osteopathic treatment. These insights underscore the relevance of SD as a species shared phenomenon, albeit one that requires species-specific understanding and adaptation.

Table 1: Cross-Species Comparison of Somatic Dysfunction

Aspect	Humans	Canines	Equines
Definition	Impaired/altered function of skeletal, myofascial, neural components (AAO,2020)	Like human definition, applied through veterinary osteopathy and chiropractic frameworks	Defined within equine osteopathy; mirrors human criteria
Clinical Presentation	Localised pain, reduced ROM, postural asymmetry, muscular tension	Gait changes, reluctance to move, altered behaviour, spinal sensitivity	Gait asymmetry, refusal to jump/perform, stiffness, sensitivity on palpation
Communication of Symptoms	Self-report of pain/discomfort; verbal cues	Inferred from behaviour, posture, movement	inferred from performance issues and handling resistance
Biomechanical Basis	Joint restriction, muscle hypertonicity, postural strain	Repetitive stress, overuse injuries, compensation patterns	Workload-related imbalance, saddle fit issues, training-related strain
Neurophysiological Mechanisms	Segmental facilitation, altered proprioception and autonomic tone	Similar mechanisms; evidence from comparative neurology	Recognised spinal facilitation; autonomic changes documented in studies
Diagnostic Tools	Palpation, range-of-motion tests, clinical reasoning	Palpation, observation, functional tests, response to manipulation	Detailed palpation, motion analysis; imaging limited in detecting dysfunction
Limitations in Diagnosis	Subjective; dependent on examiner skill	High inter-observer variability; non-verbal feedback	Lacks gold standard; influenced by training and rider effects
Therapeutic Approaches	Osteopathic Manipulative Treatment (OMT), physiotherapy, lifestyle modification	Osteopathic and chiropractic adjustments; physiotherapy; often integrated with vet care	Manual therapy, osteopathy, saddle fit changes, training adjustment
Research Evidence Base	Extensive: clinical trials, neurophysiological models	Emerging: mostly case-based and observational studies	Moderate: equine studies on OMT & performance enhancement growing
Professional Bodies	AAO (American Academy of Osteopathy)	AVCA (American Veterinary Chiropractic Association), IVCA (International Veterinary Chiropractic Association)	IVCA, European School of Animal Osteopathy, BEVA (UK)



These values are representative based on research themes explored (Franke et al.Clayton & Stubbs, Kivinen).

Osteopathic Treatment in Canines

The concept of Somatic dysfunction(SD), historically rooted in human osteopathic medicine, is in its infancy within veterinary medicine. As in humans, canine SD refers to impaired or altered function of components of the somatic system, including skeletal, arthrodial, myofascial structures, related vascular, lymphatic and neural elements. There is limited formal research in canines; although emerging literature highlights the clinical relevance of palpatory findings and segmental dysfunction, especially within the pelvis and lumbar spine.

Kivinen(2024), conducted a-scoping review,-stating canine pelvic SD should be a key area of focus in veterinary osteopathy, with practitioners reporting consistent patterns of asymmetry and restriction that respond positively to manual therapy. This review underscores the lack of standardised diagnostic or treatment protocols but nonetheless reflects growing practitioner consensus around functional impact in gait, posture and behaviour. Fryer(2016) and Arcuri et al.(2022) discussed the ongoing debate about the construct validity of SD; however,

it remains a clinically useful model for guiding assessment and treatment . Robust, peer-reviewed trials in canine osteopathy are sparse, anecdotal case reports and grey literature (e.g.,HLS Osteopathy and Lisa Ives) suggest observable improvements in mobility and behaviour following osteopathic treatment, indicating strong potential for future research. As the field progresses, structured investigations are needed to validate the presence, clinical markers and responsiveness of SD in canines using objective outcome measures, motion capture, palpatory studies and functional gait analysis as opposed to subjective clinical observation.

Equine Evidence Base

Osteopathy has become increasingly recognised as a valid therapy, particularly for performance equines, where biomechanical precision is critical. Equines provide a unique and valuable model for evaluating osteopathic techniques due to size, observable gait patterns and sensitivity to musculoskeletal dysfunction. The body of research led by experts, Kevin Haussler, Sarah Jane Hobbs, Hilary Clayton and Kathleen Stubbs gives insights into stride dynamics, spinal function and the outcomes of manual therapy interventions.

One of the areas of equine osteopathy research lies in its effectiveness in improving stride length, muscle symmetry and spinal mobility. Haussler and colleagues published multiple studies investigating the role of chiropractic and osteopathic adjustments in enhancing thoracolumbar mobility and stride mechanics. One study, Haussler(1999) observed significant improvements in back flexibility and lumbosacral motion following manual therapy, supporting that spinal restrictions can limit performance and increase the risk of compensatory injury

Research by Clayton and Stubbs(2004) measured changes in stride length and kinematics post-manual therapy in dressage equines. Findings demonstrated equines treated with spinal mobilisation techniques showed enhanced stride symmetry and length in hindlimbs, correlating with improved impulsion and reduced gait asymmetry. These effects are particularly relevant

to canines experiencing ISD, where subtle hindlimb irregularities and altered pelvic movement are frequently reported but difficult to diagnose.

Kathleen Stubbs, collaborated with Clayton, contributed to understanding muscle development and symmetry. Using dynamic motion analysis and electromyography, Stubbs et al.(2010) showed spinal manipulation and core strengthening improved symmetry in the longissimus dorsi muscles, key to postural control and the musculoskeletal chain in quadrupeds, these insights offer valuable parallels in assessing canine dysfunctions especially in breeds prone to lumbopelvic instability.

Beyond individual studies, systematic reviews such as King et al.(2013) support osteopathy's role in enhancing functional range of motion and reducing compensatory strain in performance equines. Outcomes, measured through gait analysis and via thermographic imaging and palpatory assessment, now emerging in canine osteopathic assessment. This is beneficial as improved range of motion and reduced compensatory strain enhance biomechanical efficiency, reduce injury risk, support musculoskeletal health, and provide measurable indicators for evaluating osteopathic effectiveness in canines.

The Equine as a Biomechanical Model for the Canine

An increasing interest in comparative anatomy and movement patterns of equines and canines, especially manual therapies. While differing in size and loading patterns, both species exhibit a spinal rhythm and segmental interplay between the lumbar spine, pelvis and hindlimbs. This kinetic chain is central in diagnosing and treating Somatic Dysfunction(SD). As Clayton(2010) describes, "the functional and postural alignment of the spine directly impacts limb propulsion and compensatory tension patterns."

Scale, posture and loading must be carefully considered from equines to canines. Equines, large, weight-bearing herbivores, have significant axial loading whereas, canines are

more mobile, horizontally aligned carnivores with greater spinal flexibility. Despite these differences, both display similar neuromechanical patterns when compensating for pain or restriction, such as pelvic tilt, lateral sway, or shortened stride length making comparative research highly relevant.

Conclusion

Equine evidence base strongly supports application of osteopathic principles in managing SD, improvements documented in gait parameters, muscle balance and spinal mobility. Studies by Haussler, Stubbs and Clayton establish a reliable framework for assessing osteopathic outcomes using objective kinematic data, palpatory findings and muscular performance metrics. Findings, when carefully contextualised, offers important translational value for the canine population, particularly where veterinary imaging and conventional diagnostics fail to detect soft tissue or functional deficits.

Osteopathic Interventions in Equines

Haussler et al.(1999) conducted a seminal study exploring chiropractic manipulation, manual therapy sharing similarities with osteopathic techniques. Equines, with back pain and dysfunction, found significant increases in spinal flexibility and reduced muscle hypertonicity following treatment. Follow-up research by Haussler & King(2006) confirmed reliability of motion palpation and passive mobility assessments as diagnostic tools, which are fundamental to osteopathic evaluation and treatment planning.

Clayton and Stubbs(2016) explored, osteopathic and chiropractic techniques in enhancing equine athletic performance. Studies emphasised improvements in stride length, thoracolumbar mobility and muscle symmetry following targeted manual therapy. Stubbs et al.(2010) reported improved activation patterns in the longissimus dorsi, multifidus and iliocostalis muscles, which are critical for spinal stability and movement control in equines and canines.

Stride Length and Functional Symmetry

The most frequently reported outcomes of equine osteopathic treatment is enhanced stride length, which directly correlates with performance, especially in disciplines like dressage and eventing, a measurable and clinically relevant outcome. A controlled study, Walker et al.(2016) found equines receiving spinal mobilisation showed a statistically significant stride length increase ($p < 0.05$) compared to a control group. This is attributed to reduced muscular restrictions and increased joint range of motion, particularly through the thoracolumbar region.

Muscle symmetry, another key indicator of functional balance and postural alignment. Using ultrasound and pressure mat technology, Stubbs & Clayton(2008) identified, manual therapy led to more symmetrical muscle development and weight distribution in equines. Given the relationship between asymmetry and musculoskeletal injury, this outcome supports the preventative and rehabilitative potential of osteopathy.

The Equine as a Functional Model for the Canine

Could be argued that due to their quadrupedal stance and spinal mechanics, equines serve as a valuable comparative model for canines. Longissimus and multifidus muscles play similar roles in both species, to maintain a stable spine. Stubbs et al.(2010) highlighted, exercise and manual interventions promoting engagement of these muscles in equines could be directly adapted to canine rehabilitation programmes, particularly addressing back pain or postural compensation.
However, applications must consider significant biomechanical differences. The equine's body mass, limb loading and gait dynamics differ substantially from the canine. Equines distribute weight more evenly between fore and hind limbs, canines typically bear 60–65% of weight on forelimbs (Gillette & Angle,2008). Equines exhibit a more upright, extended posture and longer limb lever arms, altering force transmission patterns and spinal loading.

Conclusion

Research discussed here provides a growing evidence base that supports improvements in mobility, muscle function and performance following osteopathic intervention. Whilst inherent anatomical and functional differences between equines and canines, key principles particularly concerning spinal mobility, core stability and muscular symmetry, offer valuable guidance for developing evidence informed canine osteopathic and conditioning protocols.

Human Osteopathic Research

A strong and growing evidence base in human clinical research, particularly its effects on chronic pain, SD, proprioception and postural imbalance offers further inspiration. In human healthcare emphasises the interrelationship between structure and function, with techniques designed to restore mobility, enhance neurological regulation and facilitate self-healing. Foundational principles, not only scientifically documented, provide a rational framework for comparison with veterinary osteopathy.

Evidence from Clinical Trials and Meta-Analyses

There, are several randomised controlled trials (RCTs) and meta-analyses evidence the effectiveness of osteopathic manipulative treatment (OMT) for musculoskeletal conditions in humans.- A landmark meta-analysis by, Dal Farra et al.(2021) examined the efficacy of osteopathic interventions in chronic non-specific low back pain. Concluded, OMT significantly reduced pain intensity and improved function when compared to usual care or placebo. Of note is the high participant count of 900.

A RCT by Licciardone et al.(2013) demonstrated that a 12-week OMT protocol was more effective than sham treatment or standard care in managing lower back pain. The study reported reduced reliance on analgesics, suggesting broader benefits such as improved functional capacity and self-management beyond pain relief alone

Expanding the evidence, Franke et al.(2014) conducted a systematic review of 17 trials and found OMT had positive clinically significant effects on mechanical lower back pain, spinal mobility and postural control. Outcomes were attributed to improvements in segmental mobility and fascial adaptability.

Tramontano et al.(2021) extended this investigation into vestibular disorders, finding osteopathic techniques targeting the cervical spine and cranium had positive impact on proprioceptive input and postural balance in patients with vertigo. Findings are especially relevant when considering balance dysfunction in non-verbal species, where proprioceptive behaviour is one of the primary clinical indicators of dysfunction.

Mechanisms of Action: Fascia, Pain Modulation and Proprioception

According to literature there are three dominant mechanisms in OMT that are more likely to apply to veterinary medicine.

Fascial Integration and Mobility

Fascia a continuous connective tissue matrix, influencing posture, coordination and sensory input. Studies by Stecco et al.(2021) describes the fascial system as a mechanosensitive interface capable of regulating autonomic and somatic responses. Osteopathic techniques such as indirect myofascial release and fascial unwinding enhance tissue glide and reduce tension, explaining observed improvements in flexibility and gait. Stecco et al.,2021-Journal of Bodywork & Movement Therapies

Pain Modulation and Neurological Adaptation

Evidence suggests OMT may act via central and peripheral mechanisms to alter nociceptive input, reducing central sensitisation. Dal Farra et al.(2022) noted, osteopathic techniques modulate

inflammatory cytokines and affect pain-related brain centres, potentially explaining the reductions in chronic pain symptoms and enhanced wellbeing. Dal Farra et al.,2022–Complementary Therapies in Clinical Practice

Proprioceptive Regulation and Postural Recalibration

Several techniques such as Muscle Energy Technique(MET), High Velocity Low Amplitude(HVLA) and balanced ligamentous tension(BLT) have shown to enhance proprioceptive feedback loops through stimulation of Golgi tendon organs and muscle spindle fibres. Supported by Fryer (2023) found highlighted increased proprioceptive acuity in patients following structured osteopathic treatment.(Fryer,2023–Chaitow's Muscle Energy Techniques)

Transferable Insights to Veterinary Osteopathy

Parallels between chronic, idiopathic musculoskeletal pain in humans and SD in canines suggests potential for evidence transfer. Canines often present with:

- Gait asymmetries
- Postural instability
- Reduced muscle tone or fascial tension
- Discomfort behaviours (reluctance to move, reactivity)

Symptoms mirror those addressed in human trials OMT, given the biological similarities, i.e., fascial systems, spinal segmentation and proprioceptive structures, techniques can be transferable, i.e. myofascial release and MET into canine osteopathic protocols.

Limitations to Veterinary Medicine

Despite the promise of human research, limitations must be acknowledged:

- Subjectivity of outcome measures such as Visual Analogue Scales(VAS), pain questionnaires, patient-reported outcomes cannot be replicated in animals.

- Therapeutic alliance and placebo effects may influence human trials, not measurable in animals.
- Manual dosage and pressure gradients used are difficult to scale accurately to smaller or non-verbal patients.
- Lack of canine-specific RCTs using objective outcome measures i.e. motion capture or electromyography.

Several studies in animal rehabilitation have begun to employ tools like force plate analysis and kinetic gait studies, may serve as substitutes for human-reported measures and could strengthen future interspecies comparisons.

Conclusion

Human osteopathic evidence base, anchored by the works of Licciardone, Franke, Tramontano and Fryer, offers compelling insights into mechanisms and outcomes relevant to ISD. While direct translation to canine practice must be approached with care, foundational principles of fascia regulation, proprioception and functional biomechanics provide a credible rationale for adapting human-derived techniques in veterinary osteopathy. Continued development of objective animal outcome measures will be key to bridging this gap.

Comparative Discussion

Understanding ISD across species reveals key biological and biomechanical commonalities, justifying a cross-species osteopathic approach. While canines, humans and equines differ in anatomy and scale, they share underlying mechanisms of SD, including myofascial tension, segmental restriction, proprioceptive disturbance and neuromuscular imbalance. Synthesising evidence from human and equine osteopathic research, identifies key lessons applicable to canine practice, while critically addressing the limits of interspecies translation.

Cross-Species Similarities in Somatic Dysfunction (SD)

A central unifying theme the fascial system, spans the body and links musculoskeletal structures with neurological and circulatory components. Stecco et al., (2021) highlights fascia's role as biomechanical, sensory interface, responsive to manipulation and capable of modulating motor co-ordination. Similar fascial chains and tension lines are observed in canines, equines and humans, suggesting myofascial release and indirect techniques have broad therapeutic relevance.

Postural asymmetry and gait dysfunction, also common manifestations of SD across species. Haussler and Clayton (2004) demonstrated how spinal restrictions lead to shortened stride length and compensatory loading a pattern mirrored in canine hindlimb dysfunction (Kivinen,2024). Franke et al., (2014) linked segmental spinal mobility and posture in human patients with mechanical pain, reinforcing the trans-species impact of axial restriction on locomotor function.

Key Lessons for Canine Treatment

- The most transferable insights from equine literature:
- Use of dynamic mobilisation techniques to enhance spinal range of motion (Stubbs et al.,2010)
- Fascial mobilisation to improve stride symmetry and reduce compensatory strain (Clayton & Stubbs,2004)
- Assessment strategies using visual gait analysis and palpation for muscle asymmetry tools already adapted by canine osteopaths such as Lisa Ives(HLS Osteopathy,2022)

The most transferable insights from human literature:

- Understanding of pain modulation through manual input (Licciardone et al.,2013; Tramontano et al.,2021)
- Role of proprioceptive retraining via techniques like MET and BLT (Fryer,2023)
- Evidence that manual therapy improves chronic pain and function even in idiopathic, non-imaged cases (Dal Farra et al.,2021)

Findings reinforce value of manual therapy in canines, where idiopathic dysfunctions may present with subtle movement deficits or behavioural signs without radiographic evidence.

Fascia, Symmetry and Neuromuscular Integration

Across all species, SD is not isolated to joints or muscles it is a systemic issue involving neuro-myofascial interplay. Treatment aimed at improving tissue glide, postural equilibrium and muscle recruitment patterns is likely to enhance function and reduce strain. Canines, especially critical in sporting or working breeds, where small deviations in limb placement or spine alignment can impact performance and comfort.

Canine responses to osteopathic treatment such as improved flexibility, calmer behaviour, reduced reactivity may stem from autonomic regulation, via fascial mechanoreceptors, mechanism explored extensively in humans and equines.

Practical Application and Limitations

Equine and humans, inform canine osteopathy, species-specific adaptation is essential. Canines vary widely in size, gait type and conformation demanding tailored assessment protocols.
Additionally, behavioural interpretation replaces verbal feedback, making outcome measurement dependent on observation, gait scoring, or kinetic analysis.

Future progress requires:

- Development of canine-specific outcome measures (e.g., motion tracking, force plates)
- Standardised protocols for manual dosage and technique across breed types
- Validation through canine clinical trials replicating the rigour of human and equine studies

Conclusion

Comparative analysis highlights, value of cross-species research in shaping canine osteopathic practice. Despite anatomical and communicative differences, mechanistic overlap in SD particularly through fascia, posture and neuromuscular control supports the use of adapted manual techniques in canines. As the field matures, targeted validation is key to optimising protocols and ensuring both safety and efficacy.

Conclusion and Future Directions

This comparative review set out to explore whether osteopathic treatment, informed by human and equine research, can be effectively adapted to improve functional outcomes in canines with ISD. Through a cross-species analysis, three core areas of evidence emerged supporting the underlying hypothesis.

First, the review established clear cross-species similarities in the mechanisms of SD. Across humans, equines and canines, dysfunction appears to involve a combination of neuromuscular imbalance, fascial restriction and segmental hypomobility. Anatomical variations exist, presence of proprioceptive disturbance, postural asymmetry and compensatory movement patterns are common in all, suggesting, shared physiological basis for osteopathic assessment and treatment.

Second, extensive research in human and equine osteopathy demonstrates significant improvements in pain modulation, gait symmetry and spinal mobility through targeted manual techniques. Studies by Licciardone, Franke and Clayton provide validation for osteopathic principles, while equine research adds practical insight into dynamic movement correction and musculoskeletal optimisation. Which form a critical foundation for justifying the application of similar techniques in canine patients, particularly when standard veterinary diagnostics yield inconclusive results.

Third, although the canine-specific literature remains limited, clinical reports and practitioner case studies show promising improvements in gait, posture and behaviour following osteopathic treatment. Observations from veterinary osteopaths suggest strong parallels with equine and human cases, especially in working and ageing canines. Findings also highlight the urgent need for standardised diagnostic protocols, objective outcome measures (force plates, motion analysis), randomised controlled trials in the canine population.

In summary, this review supports the potential of osteopathic treatment as an effective, intervention for ISD in canines. Adaptation of human and equine research to canine practice appears both rational and clinically relevant. Moving forward, integration of osteopathy into multimodal veterinary rehabilitation alongside physiotherapy, hydrotherapy and conventional medicine offers a promising direction. Future research should focus on formalising assessment tools, refining technique standardisation and validating treatment outcomes through canine-specific clinical studies.

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Finding was part of a larger study on the effects of gymnastic training and dynamic mobilization exercises on equine gait quality.