Towards a greater appreciation of manual therapy challenges in the thoracic spine

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Pain and dysfunction arising from the thoracic spine affects many individuals across the life span.¹⁻⁴ When compared to the cervical and lumbar spinal regions, there has been less research on the prevalence,⁵ risk factors,⁶ biomechanics,⁷ and management of thoracic spine pain.⁸ This region of the spine has not received the kind of attention in the literature that it should.

To launch this special issue on the thoracic spine, the case study by Rendeiro and colleagues⁹ is a timely reminder that more serious underlying pathology may be the source of pain and dysfunction in the thoracic spine. While musculoskeletal disorders are common and may present as pain referral in and around the chest wall, differential diagnosis of visceral disorders is essential. In a recent study involving 100 patients with chest pain presenting at 4 Norwegian casualty clinics, the majority had cardiac disorders but the second most common cause of pain was musculoskeletal dysfunction involving the thoracic spine.¹⁰ Another recent study looked at the clinical characteristics and causes of chest pain in 380 children referred to a pediatric cardiology unit, and found that the most common causes were musculoskeletal (37.1%) and only a very small percentage (0.3%) were cardiac in nature.¹¹ These findings and the case presentation highlight the importance of vigilance in the evaluation of patients presenting with pain in their thoracic spine.

When a musculoskeletal source for pain in the thoracic spine is suspected, an understanding of the biomechanics of the thorax is critical. The contribution by Diane Lee¹² draws attention to the thorax as an integrated system, and provides an excellent synopsis from both the current state of research evidence and clinical expertise, on the biomechanics of the thorax. Her paper concludes with an introduction to the integrated systems model as a way to determine when any noted biomechanical findings might be relevant to a patient's clinical presentation. We are sure that readers will find this paper informative and useful in their clinical practice.

The regional interdependence (RI) approach has received significant research attention, and subsequently, thoracic spine manipulation is now commonly used by clinicians in the management of patients with pain in the neck,¹³⁻¹⁶ shoulder,¹⁷⁻²⁰ and elbow.^{21,22}

McDevitt and colleagues²³ explore the RI concept in their excellent narrative review. They point out that there is emerging evidence to support the RI concept and its application to the treatment of individuals with neck and/or shoulder pain, but they also highlight the fact that questions remain regarding optimal dosage, techniques and the patient populations to which the RI approach should be applied. Their timely contribution is a call for further research to examine both the clinical effectiveness of manual therapy interventions used in the RI approach, as well as the neurophysiological effects resulting from this intervention.

Dry Needling (DN) in the management of myofascial trigger points has garnered much attention of late within the research community.²⁴⁻²⁷ Fernandez-de-las-Penas and colleagues²⁸ provide a contemporary discussion of the role of myofascial trigger points in the thoracic spine. Importantly, they summarize the proper and safe application of DN for the management of myofascial trigger points involved in thoracic spine pain, as well as DN for tendons, entheses, and scar tissues. Finally, they point out that there is a lack of research into this area as no studies have investigated the effectiveness of DN in the thoracic spine.

Although thoracic manipulation is a very commonly used intervention within the manual therapy community, there appears to be very little in the research literature regarding its safety. Puentedura and O'Grady²⁹ provide an update on this topic with their systematic review of serious adverse events associated with thoracic spine manipulation. Although they found only a small number of case reports published in the literature, their findings highlight the fact that serious adverse events *can and do occur* following manipulation of the thoracic spine. They call for more accurate and full reporting of harms associated with thoracic manipulation, and suggest a two pronged approach towards minimizing adverse events. First, they stress the responsibility of clinicians to perform screening examinations and clearly document detailed history and physical examination findings as part of the clinical reasoning process when deciding whether or not to use thoracic spine manipulation techniques. And secondly, clinicians should consider the higher peak forces involved and

attend to their own skill level, and the preferences, demeanor and goals of their patient before applying such manipulation techniques.

Finally, this special issue concludes with a review of chronic pain problems involving the thoracic spine by Louw and Schmidt.³⁰ A therapeutic neuroscience education approach to the management of patients suffering from persistent thoracic spine pain is presented in this paper along with calls for further clinical research into this specific problem. Louw³⁰ focuses on 3 specific thoracic spine issues that require clinical consideration – hypersensitivity of the intercostal nerves following injury to the thoracic spine; posterior primary rami nerves mimicking Cloward areas; and mechanical properties of the thoracic dura and its ligamentous connections. He points out how these 3 clinical issues can activate the pain neuromatrix and lead to S1 reorganization of the thoracic spine's representation within the brain. And he suggests appropriate interventions to address such chronic pain must have value to the patient, and include sensory discrimination, laterality training, tactile stimulation without pain, pain education, exercise, and more.

As guest editors, we postulate that manual therapy for the management of thoracic spine pain and dysfunction is likely under addressed in many professional and post-graduate education programs. If this is so, there is a challenge before us as educators, clinicians, and researchers to turn our attention to this region of the spine as it does affect a significant proportion of the spinal pain population.

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