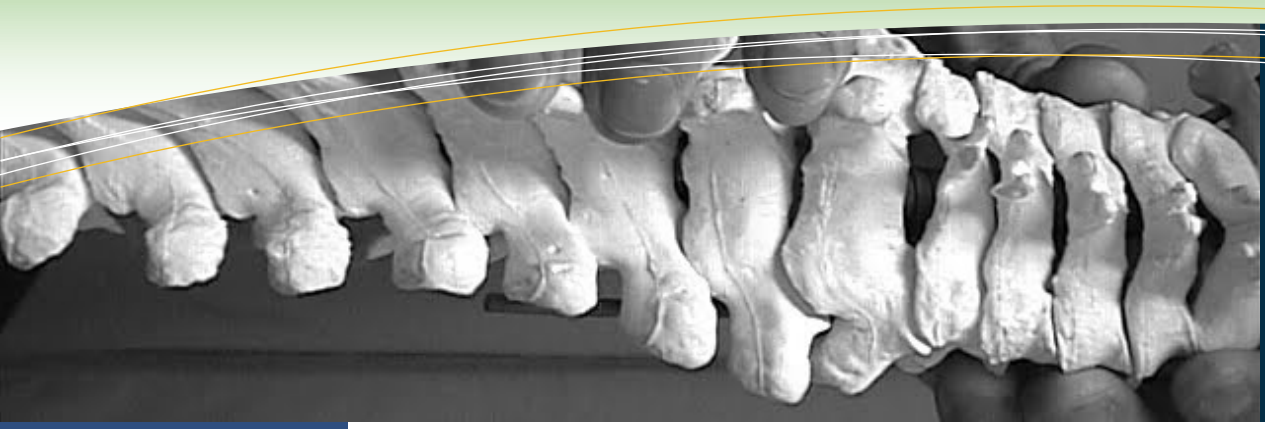
# Manual Therapy Research Review



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## This issue:



## Welcome

*Welcome to the 25th Edition of the Manual Therapy Research Review. Where has 2021 gone! Christmas is fast approaching. I hope you all get a chance for a well-earned break ready to take on what 2022 will throw at us.*

*In this review we have a paper by Heneghan et al (2021) on tele-health and the use on patients and OMPT training, a review by Ribeiro et al (2021) on motion palpation of the SIJ, a study by Sampath et al (2021) on HVT of the thoracic spine and the effect on the autonomic nervous system and, finally, a paper by Swanson et al (2021) on the anatomy and pathophysiology of the cervical disc and the implications for manual therapy.*

*Enjoy, and Merry Christmas to you all. Duncan*

## Paper One

**Nicola R. Heneghan , Jenna Jagodzinska, Isaak Tyros, Wendy Johnson, Madeleine Nazareth, Euson Yeung, Jackie Said, Heather Gillis, Alison Rushton. Telehealth e-mentoring in postgraduate musculoskeletal physiotherapy education: A mixed methods case study. Musculoskeletal Science and Practice 56 (2021) 102448 doi.org/10.1016/j.msksp.2021.102448**

**Background:** Educational standards of advanced musculoskeletal physiotherapy include mentored clinical practice. Whilst traditionally delivered face-to-face, telehealth e-mentoring affords a distinctive andragogy to facilitate mentee development.
**Objective:** To understand the experiences and outcomes of stakeholders participating in musculoskeletal physiotherapy telehealth e-mentoring.
**Design:** A case study design with sequential mixed methods (quantitative patient outcome data and qualitative interviews and a focus group) of a 20-week e-mentored telehealth physiotherapy service. Methods: Data collection comprised 1) Patient experiences and measures of musculoskeletal health 2) Mentee semi-structured interviews 3) Mentor focus group. Data analysis included descriptive statistics (median and IQR) and the Framework Method for qualitative and quantitative data respectively. An exploratory bidirectional approach supported data integration across all participants.
**Results:** Participants included patients (n = 90), mentees (n = 10) and mentors (n = 6). Patients reported improvements (>MCID) in MSK-HQ and Patient Specific Functional Scale, with high scores for Consultation and Relational Empathy and Patient Enablement Instruments. Main themes were a) social learning b) advanced professional practice c) learner experience and d) limitations of telehealth for mentees, and for mentors a) preparedness b) journey of development and c) challenges. Participant data integration resulted in 4 main themes 1) energising/positive experience 2) communications skills valued 3) perceptions of telehealth 4) upskilling required.
**Conclusions:** Telehealth e-mentoring is a valuable alternative to face-to-face mentored physiotherapy practice to support development in advanced musculoskeletal physiotherapy practice.

Findings indicate that technical and professional skills are required, high levels of communication skills were valued, there is a need for re-conceptualisation of musculoskeletal physiotherapeutic interventions.

**Commentary**

The impact of Covid 19 has had a profound effect on how we deliver health care, and telehealth has been an inevitable development required by constant lock downs and restrictions on gatherings and face-to-face consultations. This paper by Heneghan and colleagues investigates the effects of telehealth on post graduate OMPT students and their patients. The findings I am sure resonate with many of you, both treating patients over telehealth, and also trying to educate post graduate OMPT students in these challenging times. Not surprisingly, there are good things that come of this along with challenges. From the teacher-student perspective, there were good interactions in the clinical reasoning space, but also disappointments at not being able to get the hands-on practical skills highly developed. In the student-patient space there were also good clinical interaction despite this being virtual, but also challenges with patients trying to understand what to do via the online instructions with students not being able to fully appreciate the issues with the amount of disability and pain the patient experiences during the testing procedures. There is still a lot of learning in this space, but I also see some of these developments being used in ongoing OMPT education, especially where IFOMPT approved and developing programmes are spread geographically across countries. Using telehealth and on-line learning may be great adjuncts to face-to-face teaching and clinical supervision.

## Paper Two

**Rafael P. Ribeiro, Filipe G. Guerrero, Eduardo N. Camargo, Lucas M. Beraldo, and Claudia T. Candotti. Validity and Reliability of Palpatory Clinical Tests of Sacroiliac Joint Mobility: A Systematic Review and Meta-analysis (J Manipulative Physio Ther 2021;44;307-318)**

**Objective:** The primary objective of this review was to investigate the reliability and validity of palpatory clinical tests of sacroiliac mobility. The secondary objective was to investigate which palpatory clinical tests of sacroiliac mobility exist in the literature.
**Methods:** PubMed, Embase, Scopus, Medline, and the Physiotherapy Evidence Database were searched. There was no restriction on the study design or participants. The data extracted from each study were sample size, study design, and clinical test used. If there was information on reliability values, number of examiners, concurrent validity values, gold standard used, or inferential statistical test used, that was also extracted. For intra-examiner reliability, the data were expressed as k values that were meta-analysed using random effects.
**Results:** Fifteen palpatory clinical tests of sacroiliac mobility were identified from 28 studies; 14 studies performed inferential statistical analysis, all including analysis of inter-examiner reliability, with k values ranging from _0.05 to 0.77. Analysis of intra-examiner reliability was performed in 8 studies, with k values ranging from 0.08 to 0.73. No study included in this systematic review verified the concurrent validity of the tests. Our meta-analysis of intra-examiner reliability showed moderate to good agreement results for the Gillet test (k = 0.46), the standing flexion test (k = 0.61), and the sitting flexion test (k = 0.68).
**Conclusion:** We found 15 palpatory clinical tests of sacroiliac mobility in this systematic review. According to our meta-analysis, only the sitting flexion test obtained a good and statistically significant intra-examiner agreement. Further studies are necessary to evaluate the reliability and validity of these tests.

**Commentary**

There has always been debate in the manual therapy world about the value of motion palpation tests to the SIJ in a joint that normally has very little motion. There are also studies that indicate pain provocation rather than motion palpation are more reliable diagnostic procedures (Laslett et al 2003). The authors of this robust review and meta-analysis state that previous reviews on this topic are now over 20 years old, and a timely update was required. The results still show good intra-rater reliability for the Gillett test and the standing and sitting flexion tests, but poorer outcomes for other tests.
As with many tests in the manual therapy world, I would think a combination of pain provocation and motion testing will lead to more meaningful clinical decision making.

**References**

Laslett M, Young S, Aprill C, McDonald B. Diagnosing painful sacroiliac joints: a validity study of a McKenzie evaluation and sacroiliac provocation tests. Aust J Physiother. 2003;49:89-97.

## Paper Three

**Kesava Kovanur Sampath, Ramakrishnan Mani, Rajesh Katare, Joshua Neale, James Cotter, and Steve Tumilty. Thoracic Spinal Manipulation Effect on Neuroendocrine Response in People With Achilles Tendinopathy: A Randomized Crossover Trial. J Manipulative Physiol Ther 2021;44;420-431**

**Objective:** The purpose of the present study was to determine the neuroendocrine response after a thoracic spinal manipulation in people with achilles tendinopathy.
**Methods:** This was a randomised 2-sequence, 2-period crossover trial. A total of 24 participants, mean (standard deviation) age of 48 (7) years, with a diagnosis of Achilles tendinopathy (>3 mo) were randomly assigned into sequence 1 (sham intervention and then thoracic spinal manipulation) or sequence 2 (thoracic spinal manipulation and then sham intervention). The trial was conducted at a university laboratory with a washout period of 1 week. The primary outcome measure was the testosterone/cortisol (T/C) ratio (salivary samples). The secondary outcome measures included heart rate variability (measured with electrocardiography), and total oxygenation index (nmol/L) of calf muscle and Achilles tendon (measured with near-infrared spectroscopy). A 2-way mixed-model analysis of variance was performed. The statistic of interest was the condition by time interaction.
**Results:** A statistically significant condition by time interaction was found for the T/C ratio (mean difference: −0.16; confidence interval: −0.33 to 0.006; interaction: $P < .05$) and the total oxygenation index (mean difference: 1.35; confidence interval: −1.3 to 4.1; interaction: $P < .05$) of calf muscle but not for Achilles tendon ($P = .6$); however, no difference was found for heart rate variability ($P = .5$).
**Conclusion:** In people with Achilles tendinopathy, thoracic spinal manipulation resulted in immediate increase in the total oxygenation index in the calf muscle followed by an increase in the T/C ratio 6 hours post-intervention.

**Commentary**

This is a very nice paper from some of my physiotherapy colleagues at Otago University, investigating the effects on manipulation to the thoracic spine on the autonomic nervous system. The results indicate the HVY demonstrated an increase in the oxygen saturation of the calf muscle but not the Achilles tendon. This paper builds nicely on trying to understand some of the wider application of manual therapy, not just purely mechanical, and pain modulation models. This fits well with the Bialosky models (2009, 2018). As the authors state, the findings may indicate that SM has the potential to be used as a tool in pain and inflammatory conditions when direct pressure on the area may not be desirable.
This study also received funding from the NZ Manipulative Physiotherapists Association.

**References**

Bialosky, J. E., Bishop, M. D., Price, D. D., Robinson, M. E., & George, S. Z. (2009). The mechanisms of manual therapy in the treatment of musculoskeletal pain: a comprehensive model. Manual therapy, 14 (5), 531-538.
Bialosky, J. E., Beneciuk, J. M., Bishop, M. D., Coronado, R. A., Penza, C. W., Simon, C. B., & George, S. Z. (2018). Unravelling the mechanisms of manual therapy: modelling an approach. journal of orthopaedic & sports physical therapy, 48(1), 8-18.

## Paper Four

**Brian T. Swanson & Douglas Creighton (2021). Cervical Disc Degeneration: Important Considerations for the Manual Therapist. Journal of Manual & Manipulative Therapy, DOI: 10.1080/10669817.2021.2000089**

Cervical disc degeneration (CDD) is a progressive, age-related occurrence that is frequently associated with neck pain and radiculopathy. Consistent with the majority of published clinical practice guidelines (CPG) for neck pain, the 2017 American Physical Therapy Association Neck Pain CPG recommends cervical manipulation as an intervention to address acute, subacute, and chronic symptoms in the 'Neck Pain with Mobility Deficits' category as well for individuals with 'Chronic Neck Pain With Radiating Pain'. While CPGs are evidence-informed statements intended to help optimize care while considering the relative risks and benefits, these guidelines generally do not discuss the mechanical consequences of underlying cervical pathology nor do they recommend specific manipulation techniques, with selection left to the practitioner's discretion. From a biomechanical perspective, disc degeneration represents the loss of structural integrity/failure of the intervertebral disc. The sequelae of CDD include posterior neck pain, segmental hypermobility/instability, radicular symptoms, myelopathic disturbance, and potential vascular compromise. In this narrative review, we consider the mechanical, neurological, and vascular consequences of CDD, including information on the anatomy of the cervical disc and the mechanics of discogenic instability, the anatomic and mechanical basis of radiculitis, radiculopathy, changes to the

intervertebral foramen, the importance of Modic changes, and the effect of spondylotic hypertrophy on the central spinal canal, spinal cord, and vertebral artery. The pathoanatomical and biomechanical consequences of CDD are discussed, along with suggestions which may enhance patient safety.

**Commentary**

This last paper is a very nice narrative review on the anatomy and pathophysiology of the cervical disc. The authors have provided a good summary of the implications for management of patients presenting with systems related to the cervical disc and the implication for manual therapy interventions. In particular I like these four key messages:

1. Degenerative cervical segments are inherently unstable in rotation and translation and should be treated accordingly.
2. Positioning lower cervical segments in mid-range (neutral to slight flexion) during manual interventions maximises space for neural structures without stressing degenerative tissues.
3. Traction based interventions may have less impact on CNS structures while accounting for the altered axis of rotation at the degenerative segment.
4. Reserving thrust manipulation for segments with inherently greater structural stability may enhance the safety of the intervention.

A great read!

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