

Manual Therapy Research Review



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Welcome

Welcome to the 23rd Edition of the Research Review. Apologies for this edition being a little later this year, but I am sure we have all experienced what COVID 19 has thrown at us in the last year. Just as I was ready to start face-to-face teaching in March 2021, we were thrown into another short lockdown here in New Zealand, and we were back to on line teaching. I am sure many of you have not even left this form of teaching over the last year!!



In this review we have a paper by Corkery et al (2020) on the influences of teachers and clinical educators in the use of thrust joint manipulation for those in training programmes in the USA. Next is a commentary on the challenges of open kinetic chain exercises following ACL reconstruction by Nohren and Synder Mackler (2020). We also have two papers, one by Thoomes et al (2021) on cervical lateral glides in patients with cervical radiculopathy and one by Pauw et al (2021) which is a Delphi study investigating the use of manual therapy in headache populations.

Enjoy, Duncan

Paper One

Corkery, M Hensley, C esari C , Yen , S Chui K & Courtney C (2020). Use of thrust joint manipulation by student physical therapists in the United States during clinical education experiences. Journal of Manual & Manipulative Therapy, 28:5, 266-274, DOI: 10.1080/10669817.2020.1720948

Introduction: Thrust joint manipulation (TJM) is used in physical therapy practice and taught in entry-level curricula in the United States (US); however, research regarding implementation by student physical therapists (SPT) is scarce.

Objectives: To explore the use of TJM in SPT clinical education and factors influencing implementation.

Methods: In a cross-sectional exploratory study, accredited physical therapy (PT) programs in the US (n = 227) were invited to participate in an electronic survey. SPTs were queried about TJM use and their clinical instructor's (CI) credentials during their final musculoskeletal clinical experience.

Results: Forty-five programs participated in the study, consisting of 2,147 SPTs. Of those, 414 (19.3%) responses were used for analysis and 69% reported using TJM. SPTs who utilised TJM were more likely to have a CI who used TJM ($p < 0.001$) and/or had advanced certification/training in manual therapy ($p < .001$). A majority of students agreed or strongly agreed that their academic preparation provided them with clinical reasoning tools (84%) and psychomotor skills (69%) necessary to perform TJM. SPT use of TJM was facilitated by CI clinical practice, SPT competence in psychomotor skill, confidence in clinical reasoning, and practice setting. A main barrier to student use of TJM was CI lack of TJM use.

Conclusions: Clinical practice of the CI appears to be a key factor in determining student use of TJM. Level of evidence: 2b

Commentary

This is a very useful paper - not only for those who teach thrust joint manipulation (TJM) but also those who employ new graduates. The survey's main outcome suggests that students undertaking entry level training programmes are heavily influenced in the use of TJM by their academic and clinical instructors. If these two instructor groups do not encourage student TJM use, then the students do not incorporate the skills into clinical practice. More importantly, they found that among students who did not use TJM, the external factors such as CI clinical practice, patient caseload, and practice setting, were less likely to negatively impact TJM use than intrinsic or student-related factors. The student-related factors such as lack of confidence and skill in the TJM techniques did not appear to present as much of a barrier to TJM use. These findings suggest that there would be greater student use of TJM skills if their clinical educators could provide sufficient practice and feedback on motor performance. As well as more time practicing these skills, the people that employ these graduates also need to support and make time for these budding manual therapists to understand who is best to use these skills with and strongly encourage their use with the right clients. If these two stages are not linked, then one can see these skills being lost in clinical practice.

Paper Two

Nohren, B and Snyder Mackler L. Who's afraid of the big bad wolf? Open-chain exercises after anterior cruciate ligament reconstruction. J Orthop Sports Phys Ther 2020;50(9):473-475. doi:10.2519/jospt.2020.0609

Synopsis:

Restoring quadriceps muscle strength is integral to recovery following an anterior cruciate ligament reconstruction. We argue that clinicians should re-evaluate their beliefs about open-chain exercises and measure this important variable to improve outcomes for their patients.

Commentary

This is an excellent opinion piece about the use and timing of open kinetic chain (OKC) exercises in the rehabilitation following anterior cruciate ligament reconstruction. For years I have been told by surgeons these are stressful to the healing graft and should not be carried out until at least the 6-8 week mark post operatively. This is despite the use of early mobilisation post op protocols such as walking from day 1-2 post op and inner range isometric quads exercises. Walking is clearly an open chain exercise and puts stress on the healing graft as do a range of other exercises post operatively. This paper challenges these myths about the use of OKC and makes the following strong recommendations:

- Open-chain exercises following ACLR are safe.
- Open-chain exercises are the only means to isolate the quadriceps.
- Electromechanical dynamometers or a 1-repetition-maximum test using a knee extension machine are the preferred methods to evaluate recovery of quadriceps muscle strength.

Paper Three

Thoomes, E, Ellis, R, Dilley, A, Falla, D and Thoomes De Graaf M. Excursion of the median nerve during a contra-lateral cervical lateral glide movement in people with and without cervical radiculopathy. Musculoskeletal Science and Practice 52 (2021) 102349

Background: A segmental, contra-lateral cervical lateral glide (CCLG) mobilisation technique is effective for patients with cervical radiculopathy (CR). The CCLG technique induces median nerve sliding in healthy individuals, but this has not been assessed in patients with CR.

Objective: This study aimed to 1) assess longitudinal excursion of the median nerve in patients with CR and asymptomatic participants during a CCLG movement, 2) reassess nerve excursions following an intervention at a 3-month follow-up in patients with CR and 3) correlate changes in nerve excursions with changes in clinical signs and symptoms.

Design: Case-control study.

Methods: During a computer-controlled mechanically induced CCLG, executed by the Occiflex™, longitudinal median nerve excursion was assessed at the wrist and elbow with ultrasound imaging (T0) in 20 patients with CR and 20 matched controls. Patients were re-assessed at a 3-month follow-up (T1), following conservative treatment including neurodynamic mobilisation.

Results: There was a significant difference between patients and controls in the excursion of the median nerve at both the wrist (Mdn = 0.50 mm; IQR = 0.13–1.30; 2.10 mm (IQR = 1.42–2.80, $p < 0.05$)) and elbow (Mdn = 1.21 mm (IQR = 0.85–1.94); 3.49 mm (IQR = 2.45–4.24, $p < 0.05$)) respectively at T0.

There was also a significant increase in median nerve excursion at both sites between T0 and T1 in those with CR (Mdn = 1.96, 2.63 respectively). Wilcoxon Signed-Ranks Test indicated median pre-test ranks (Mdn = 0.5, 1.21; $Z = -3.82$, $p < 0.01$; $Z = 3.78$, $p < 0.01$ respectively) and median post-test ranks. There was a strong correlation between improvement in median nerve excursion at the elbow at T1 and improvement in pain intensity ($r = 0.7$, $p < 0.001$) and functional limitations ($r = 0.6$, $p < 0.01$).

Conclusion: Longitudinal median nerve excursion differs significantly between patients with CR and asymptomatic volunteers at baseline, but this difference is no longer present after 3 months of conservative physiotherapy management. Improvement in nerve excursion correlates with improvement in clinical signs and symptoms.

Commentary

The treatment of cervical radiculopathy with conservative manual therapy approaches has been gaining more attention recently. This nice paper from Erik Thoomes (former Exec Member of IFOMPT) and his research team (including current IFOMPT Exec Member, Richard Ellis) has demonstrated that cervical lateral gliding techniques to the cervical spine influence the movement of the median nerve positively in patients with cervical radiculopathy. The use of a clinically applied test and the objectivity of diagnostic ultrasound are great strengths of this study. It is also great to see the links IFOMPT creates and leads to meaningful research with other leaders in this area such as Debra Falla, Andrew Dilley and Marloes Thoomes De Graaf. Great work team!

Paper Four

Pauw, R De Witte, V De Hertogh, W Cnockaert, E Chys, M and Cagnie, B. Consensus among musculoskeletal experts for the management of patients with headache by physiotherapists? A delphi study. *Musculoskeletal Science and Practice* 52 (2021) 102325

Background: Though a large amount of research on the management of headache has been conducted, the clinical effectiveness of these treatments remains unclear.

Objectives: To reach consensus among international musculoskeletal experts on what the most appropriate management is in patients that suffer from headache. Design: Expert group and Delphi-study.

Methods: A total of 11 experts participated in the expert panel groups, where the role of physiotherapy in the management of headache was discussed. Afterwards, 14 of the initial 25 participants in the field of headache completed the whole Delphi study, which was conducted over 4 rounds. The first round aimed to identify clinical indicators and treatments that are useful in patients with headache. These questions were then categorized and ranked during the second, third, and fourth rounds. Consensual agreement was set at $\geq 80\%$.

Results: After the final round, 9 interventions were rated as useful by the participants. In the final extra round, 14 clinical indicators were retrieved as important to decide whether or not to start one of the consensual treatments. The top 3 management strategies were (1) upper cervical spine mobilisations in cervicogenic headache, (2) active mobilisation exercises of the cervical spine in cervicogenic headache, and (3) lifestyle advice in tension-type headache and migraine.

Conclusion: International experts agreed that most scientifically established effective treatments are useful in cervicogenic headache. Consensual agreement on treatments for migraine and tension-type headache were only reached for specific treatments. Their recommendations provide a framework for further research and the clinical management of headache.

Commentary

This Delphi study indicates that a small number of experts (11) from a range of countries were in good agreement with the current literature around the use of manual therapy in the treatment of cervicogenic headache but less so for the use of aerobic exercise in the management of migraine despite good evidence for this. There was very strong consensus (93% agreement) for upper cervical mobilisations and 86% for MWM's in the upper cervical spine. As indicated by the authors although this is a step in the right direction further research looking at the efficacy of musculoskeletal physiotherapy should not only focus on the diagnosed headache-labels of included patients but should include and consider the clinical indicators that might drive the underlying complaints.