

Manual Therapy Research Review



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This issue:

Are manual therapy or booster sessions worthwhile in addition to exercise therapy for knee osteoarthritis: Economic evaluation and 2-year follow-up of a randomised controlled trial. - P1

Pragmatic application of manipulation versus mobilisation to the upper segments of the cervical spine plus exercise for treatment of cervicogenic headache: A randomised clinical trial. - P2

A guide to cranial nerve testing for musculoskeletal clinicians. - P3

Can the neck contribute to persistent symptoms post concussion? Long-term follow-up from a prospective descriptive case series. - P4

Welcome

Welcome to the 24th Edition of the Manual Therapy Research Review. New Zealand, having done so well to stay COVID free is now in the grips of a full country wide lockdown to try and stem the transmission of the Delta variant. On the positive side I have had some time to get the next Research Review to you all!



In this edition, we have a paper by Pryymachenko et al (2021) on the economic effects of booster sessions of exercise and MT on OA of the knee and hip; then a series of studies from the JMMT journal, the first being by Addison Lerner-Lentz looking at manipulation vs mobilisation for cervicogenic headache, a second by Alan Taylor and Roger Kerry on cranial nerve testing, and finally a paper by Kennedy et al on the need to assess and treat the neck in patients with persistent concussion symptoms.

Enjoy, Duncan

Paper One

Pryymachenko Y, Wilson R, Sharma, S Pathak A, Abbott JH (2021). Are manual therapy or booster sessions worthwhile in addition to exercise therapy for knee osteoarthritis: Economic evaluation and 2-year follow-up of a randomised controlled trial. Musculoskeletal Science and Practice 56 102439 doi.org/10.1016/j.msksp.2021.102439

Background: Exercise therapy is known to be an effective intervention for patients with osteoarthritis, however, the evidence is limited as to whether adding manual therapy or booster sessions are cost-effective strategies to extend the duration of benefits.

Objective: To investigate the cost-effectiveness, at 2-year follow-up of adding manual therapy and/or booster sessions to exercise therapy.

Design: 2-by-2 factorial randomised controlled trial.

Methods: Participants with knee osteoarthritis were randomly allocated (1:1:1:1) to: exercise therapy delivered in consecutive sessions within 9 weeks (control group), exercise therapy distributed over 1 year using booster sessions, exercise therapy plus manual therapy delivered within 9 weeks, and exercise therapy plus manual therapy with booster sessions. The primary outcome was incremental cost-effectiveness from health system and societal perspectives interpreted as incremental net monetary benefit (INMB).

Results: Of 75 participants, 66 (88 %) were retained at 1-year and 40 (53 %) at 2-year follow-up. All three interventions were cost-effective from both the health system and societal perspectives (INMBs, at 0.5 × GDP/ capita willingness to pay (WTP) threshold: \$3278 (95%CI -3244 to 9800) and \$3904 (95%CI -2823 to 10,632) respectively for booster sessions; \$2941 (95%CI -3686 to 9568) and \$2618 (95%CI -4005 to 9241) for manual therapy; \$270 (95%CI -6139 to 6679) and \$404 (95%CI -6097 to 6905) for manual therapy with booster sessions).

Conclusion: Manual therapy or booster sessions in addition to exercise therapy are cost-effective at 2-year follow-up. The evidence did not support combining both booster sessions and manual therapy in addition to exercise therapy.

Commentary

It is not unusual for the results of large, randomised control trials to demonstrate that the long-term effects of the trial are diluted over time. This study looked at the economic effects of booster sessions of either exercise or manual therapy and the combination for people with OA of the hip or knee in a 2-year follow up study. The booster exercise sessions consisted of 8 consecutive sessions in the first 9 weeks, 2 booster sessions at 5 months, 1 booster session at 8 months, and 1 booster session at 11 months, for a total of 12 sessions. The manual therapy consisted of procedures intended to modify the quality and range of motion of the knee joint and associated soft tissue structures. Manual therapy interventions were prescribed individually for each participant, based on the physical examination findings. Participants receiving manual therapy were provided twelve 30- to 45-minute sessions of manual therapy in addition to the exercise sessions. The results of the study showed that either the booster exercises or the manual therapy (but not the combination) were cost effective in terms of incremental net monetary benefit.

What I get from this study as a clinician is that given the on-going nature of the condition (OA), booster therapy is essential to manage the condition over time. Two years after the original trial, booster sessions were helpful. This is useful to discuss with the patient as not all patients need or can afford to have a total knee or hip joint replacement. Physiotherapy can provide a cost-effective conservative alternative to surgery. Good information to share with you medical colleagues who are often quick to refer for surgery before exploring conservative care!

Paper Two

Addison Lerner-Lentz, Bryan O'Halloran, Megan Donaldson & Joshua A. Cleland (2020). Pragmatic application of manipulation versus mobilisation to the upper segments of the cervical spine plus exercise for treatment of cervicogenic headache: A randomised clinical trial. Journal of Manual & Manipulative Therapy. DOI: 10.1080/10669817.2020.1834322

Background: The effectiveness of manipulation versus mobilisation for the management of spinal conditions, including cervicogenic headache, is conflicting. However, a pragmatic approach comparing manipulation to mobilisation has not been examined in a patient population with cervicogenic headache.

Objectives: To evaluate the effectiveness of manipulation compared to mobilisation applied in a pragmatic fashion for patients with cervicogenic headache.

Methods: Forty-five (of which 26 females) patients with cervicogenic headache (mean age $47.8 \pm SD 16.9$ years) were randomly assigned to receive either pragmatically selected manipulation or mobilisation. Outcomes were measured at baseline, the second visit, discharge, and 1-month follow-up and included the Neck Disability Index (NDI), Numeric Pain Rating Scale (NPRS), the Headache Impact Test (HIT-6), the Global Rating of Change (GRC), the Patient Acceptable Symptoms Scale (PASS). The primary aim (effects of treatment on disability and pain were examined with a mixed-model analysis of variance (ANOVA), with treatment group (manipulation versus mobilization) as the between subjects variable and time (baseline, 48 hours, discharge and follow-up) as the within subjects variable.

Results: The interaction for the mixed model ANOVA was not statistically significant for NDI ($p = 0.91$), NPRS ($p = 0.81$), or HIT ($p = 0.89$). There was no significant difference between groups for the GRC or PASS.

Discussion and Conclusion: The results suggest that manipulation has similar effects on disability, pain, GRC, and cervical range of motion as mobilization when applied in a pragmatic fashion for patients with cervicogenic headaches.

Clinicaltrials.gov: NCT03919630

Commentary

This a very nice pragmatic study from Josh Cleland's research group investigating the effects of mobilisation vs manipulation to the upper cervical spine in those patients presenting with cervicogenic headache. The key difference in this study was the ability of the clinician to chose mobilisation or manipulation depending on the patients' presenting features. In this way the trial is more closely related to clinical practice and has more generalisable results than previous studies by Dunning et al (2016) and Leaver et al (2010) where both of these studies had a more prescriptive approach to the delivery of the manual therapy.

The results show no differences in the two approaches and both were effective at improvements in headache and function. As with Dunning et al, the follow-up period was short (2 days post intervention) and no adverse effects were reported. These are nice studies that reflect practice and allow for clinical reasoning to take place. As suggested, further studies are needed to look at the decision-making process in more detail to identify other important clinical features in technique selection.

References:

Dunning JR, Butts R, Mourad F, et al. Upper cervical and upper thoracic manipulation versus mobilization and exercise in patients with cervicogenic headache: a multi-center randomized clinical trial. *BMC Musculoskelet Disord.* 2016;17:64.

Leaver AM, Maher CG, Herbert RD, Latimer J, McAuley JH, Jull G, et al. A randomized controlled trial comparing manipulation with mobilization for recent onset neck pain. *Arch Phys Med Rehabil.* 2010;91:1313–8

Paper Three

Alan Taylor, Firas Mourad, Roger Kerry & Nathan Hutting (2021). A guide to cranial nerve testing for musculoskeletal clinicians. *Journal of Manual & Manipulative Therapy*, DOI: 10.1080/10669817.2021.1937813

Background: Neurological examination in musculoskeletal practice is a key element of safe and appropriate orthopaedic clinical practice. With physiotherapists currently positioning themselves as advanced first line practitioners, it is essential that those who treat patients who present with neck/head/or facial pain and associated symptoms, should have an index of suspicion of cranial nerve (CN) dysfunction. They should be able to examine and determine if CN dysfunction is present, and make appropriate clinical decisions based upon those findings

Methods: This paper summarises the functions, potential impairments of the nerves, associated conditions, and basic skills involved in cranial nerve examination.

Results: A summary of cranial nerve examination is provided, which is based on the function of the nerves, this is intended to facilitate clinicians to feel more confident at understanding neural function/impairment, as well as performing and interpreting the examination.

Conclusion: This paper illustrates that CN testing can be performed quickly, efficiently and without the need for complicated or potentially unavailable equipment. An understanding of the CN’s function and potential reasons for impairment is likely to increase the frequency of CN testing in orthopaedic clinical practice and referral if positive findings are encountered.

Commentary

With the IFOMPT International Framework on Examination of the Cervical Region now recommending the testing of the cranial nerves for the right clinical presentation, this is a very timely paper to provide a nice summary of the tests. The paper has very clear graphics to understand the tests all the relevant nerves.

I have a shortened version of this I like to use to ensure the key tests are done, and this is as follows: Cranial nerve quick tests can be summarised in the following rhyme:

- Smell and see (I, II)
- And look around (III, IV, VI)
- Pupils large and smaller (II)
- Smile, hear! (VII, VIII)
- Then say ah ... (X)
- And see if you can swallow (IX)
- If you’re left in any doubt, Shrug and stick your tongue right out (XI, XII)

Note: Cranial Nerve V (Trigeminal) is not included in this rhyme. Recall this is tested with sensory, motor and reflex testing.

Reference

<https://www.ifompt.org/site/ifompt/IFOMPT%20Cervical%20Framework%20final%20September%202020.pdf>

Paper Four

Ewan Kennedy, Cathy Chapple, Dusty Quinn & Steve Tumilty (2021). Can the neck contribute to persistent symptoms post concussion? Long-term follow up from a prospective descriptive case series. *Journal of Manual & Manipulative Therapy*, DOI: 10.1080/10669817.2021.1920276

Objective: To describe individual long-term outcomes of people with persistent symptoms following a concussion who received neck treatment as part of multidisciplinary concussion care. A secondary objective is to report on how participants describe the outcomes of neck treatment

Methods: Long-term follow-up for a subgroup of participants in a prospective case series (n = 11). Data were collected at initial assessment, completion of neck treatment, 6 and 12 months including standard questionnaires (Rivermead post-concussion symptoms questionnaire, neck disability index, dizziness handicap inventory); patient-reported measures of headache, dizziness and neck pain and participant descriptions of the effects of neck treatment.

Results: Grouped measures of post-concussion symptoms were further improved or sustained at 6 and 12 months. Ten of the 11 participants reported neck treatment as a beneficial part of their care and described the effects on the neck, multiple symptoms and their overall recovery. However, seven participants experienced recurrent headache, neck pain or dizziness at 6- or 12-month follow-up.

Conclusion: Long-term follow-up of individuals receiving neck treatment shows improvement across a range of patient reported outcomes, yet highlights frequent recurrence of symptoms. Neck treatment can play a valuable role in people's recovery that extends beyond local effects on the neck.

Commentary

In New Zealand approximately 35,000 people will suffer a concussion (mild traumatic brain injury) and whilst this is often treated as a self-resolving injury, many people still experience symptoms up to a year later (Theadom et al, 2016). A possible reason for this is the neck symptoms can often be missed as a cause of the ongoing issues. A thorough manual therapy assessment of the neck can allow earlier treatment and resolution of these symptoms. This study by Kennedy et al shows this has good effect in people with persistent symptoms with good long term results.

References

Theadom A, Parag V, Dowell T, et al. Persistent problems 1 year after mild traumatic brain injury: a longitudinal population study in New Zealand. *Br J Gen Pract*. 2016;66(642):e16–23

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