

# Manual Therapy Research Review



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## Welcome

IFOMPT has now developed a strong relationship with Physiopedia, so you will now receive the IFOMPT Evidence Release as a consequence of this. As a result of this I have decided to alter the Research Review process. Instead of me looking for relevant articles, I am now going to take the articles from the Evidence Release and appraise a selection of these that may appeal to clinicians. I would also like to encourage members to look at these papers when they come out in Evidence Release and if they would like to do an appraisal they can send it to me for publication in the Manual Therapy Research Review. Not all the papers in the Evidence Release are full text and free to download, so if you want to do an appraisal and don't have the full text contact me and I will get it. Enjoy the first version of Manual Therapy Research Review for 2015! Duncan Reid



## Paper One

**Gross et al (2015). Exercises for Mechanical Neck Disorders. Cervical Overview Group. Cochrane Database of Systematic Reviews 2015, Issue 1. Art. No: CD004250**

**Study Design:** Cochrane Systematic Review

**Purpose:** To assess the effectiveness of exercises to improve pain, disability, function, patient satisfaction, quality of life and global perceived effect in adults with neck pain.

**Selection Criteria:** We included randomised controlled trials (RCTs) comparing single therapeutic exercise with a control for adults suffering from neck pain with or without cervicogenic headache or radiculopathy.

**Results:** Twenty-seven trials (2485 analysed /3005 randomised participants) met our inclusion criteria. For acute neck pain only, no evidence was found.

**For chronic neck pain, moderate quality evidence** supports

- 1) cervico-scapulothoracic and upper extremity strength training improves pain
- 2) scapulothoracic and upper extremity endurance training for a slight beneficial effect on pain
- 3) combined cervical, shoulder and scapulothoracic strengthening and stretching exercises provides some beneficial effect on pain at immediate post treatment and up to long-term follow-up and a medium magnitude of effect improving function at both immediate post treatment and at short-term follow-up
- 4) cervico-scapulothoracic strengthening/stabilisation exercises to improve pain and function at intermediate term
- 5) Mindfulness exercises (Qigong) minimally improved function.

**For chronic cervicogenic headache, moderate quality evidence** supports static-dynamic cervico-scapulothoracic strengthening/endurance exercises including pressure biofeedback immediate post treatment and probably improves pain, function and global perceived effect at long-term follow-up.

**Low grade evidence** supports sustained natural apophyseal glides (SNAG) exercises.

**For acute radiculopathy**, low quality evidence suggests a small benefit for pain reduction at immediate post treatment with cervical stretch/strengthening/stabilization exercises.

**Commentary:** Anita Gross and her team have produced yet another significant review document on the effectiveness of exercises in the management of neck pain. The Cochrane process is very robust and a large number of studies have been included in this review (27). The authors have done a great job at evaluating the research based on the type of exercise interventions applied rather than lumping them all into



heterogeneous 'exercise' group. The findings indicate that there is a lack of high quality evidence supporting the effectiveness of exercise for neck pain. However, there is some evidence that specific strengthening exercises as a part of routine practice for chronic neck pain, cervicogenic headache and radiculopathy may be beneficial. Some research also showed that the use of strengthening and endurance exercises to cervico-scapulothoracic and shoulder regions may be beneficial in reducing pain and improving function in chronic headache. As is often the case the ability to have strong evidence was weakened by studies with small numbers or the exercise was combined with too many other interventions. For this situation to change it would be useful for researchers to be more collaborative across the manual therapy world or at the very least ensure the exercise prescriptions are consistent (exercise type, frequency and duration) across the relevant populations. By doing this the pooled results can strengthen the results and subsequent evidence.

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### Paper Two

**Gianola S, Cattrysse E, Probyn S, Van Roy P. Reproducibility of the Kinematics in Rotational High-Velocity, Low-Amplitude Thrust of the Upper Cervical Spine: A Cadaveric Study. JMMT. 2015 January; 38(1):1-21**

**Purpose:** This study aimed to investigate the reproducibility of the kinematics in rotational high-velocity, low amplitude (HVLA) thrust of the upper cervical spine.

**Methods:** Twenty fresh human cervical specimens were studied in a test-retest situation with 2 manual therapists. Kinematics of C1-C2 and C0-C1 were examined during segmental rotational HVLA manipulation through an ultrasound-based tracking system. The thrust moment was analysed by 3-dimensional aspects: the range of motion of axial rotation, flexion-extension, lateral bending, and the cross-correlation between the axial rotation and the coupled lateral bending components.

**Results:** During rotational HVLA thrust on C1-C2, the main axial rotation demonstrates an intra-examiner relationship varying from almost perfect to fair (intraclass correlation coefficient = 0.71; intra-class correlation coefficient = 0.35) and a substantial interexaminer correlation of 0.73.

**Conclusions:** This study showed substantial levels of reliability for the main axial rotation component of segmental manual rotational HVLA thrust on C1-C2. Intra- and interrater reliability for flexion-extension, lateral bending, and cross-correlation was low.

**Commentary:** This is a nice biomechanical study from Eric Cattrysse and his research group who have done a lot of research to add to the knowledge about the biomechanics and coupling movements of the upper cervical spine. This study shows that when two raters of some 10 years' experience in manual therapy, perform an HVT to the C1/2 joint on a cadaver that they can consistently reproduce the rotational element of the technique, but the elements of side bending and flexion and extension are less reliable. As with many of these studies like this, the intra rater reliability is high and the inter rater reliability is low. Often this poor inter rater reliability is seen as negative but as a therapist, I am keen to know that I can produce the same effect on a patient consistently and this study does confirm this.

The fact that the movements of side bending and flexion and extension were less consistent is not surprising as these are such small movements to detect. The key movement of rotation was consistently applied which is important as that is the dysfunction we would be trying to alter. Minimal movement was found at the C0/1 joint and that is also useful as it means the technique is specific to that C1/2 joint. It would have been good for the authors to include a picture of the technique not just the cadaver set up as that would have made the study more reproducible!

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### Paper Three

**Lim EC, Tay MG. Kinesio Taping in Musculoskeletal Pain and Disability that lasts for more than 4 weeks: Is it time to Peel off the Tape and throw it out with the Sweat? A Systematic Review with Meta-analysis focused on Pain and also Methods of Tape Application. Br J Sports Med. 2015 Jan 16. pii: bjsports-2014-094151**

**Purpose:** To compare the pain and disability in individuals with chronic musculoskeletal pain who were treated with Kinesio taping with those using minimal or other treatment approaches.

**Methods:** Searches of eight major electronic databases were conducted. Data for pain and disability scores were extracted. Meta-analyses (wherever possible) with either a fixed or random effect(s) model, standardised mean differences (SMDs) and tests of heterogeneity were performed.

**Results:** Seventeen clinical-controlled trials were identified and included in the meta-analyses. When compared to minimal intervention, Kinesio taping provided superior pain relief but the pooled disability scores were not significantly different. No significant differences were found when comparing Kinesio taping to other treatment approaches for pain and disability



**Conclusion:** Kinesio taping is superior to minimal intervention for pain relief. Existing evidence does not establish the superiority of Kinesio taping to other treatment approaches to reduce pain and disability for individuals with chronic musculoskeletal pain.

**Commentary:** Kinesio tape has become a very popular adjunct to treatment and has been seen to be worn by high profile athletes competing at the Olympic Games, and the public alike. There have now been several reviews that have compared Kinesio tape to a range of therapies and condition and have yet to show significant benefit. Another recent study by Pdo et al (*J Physiother.* 2014 Jun;60(2):90-6. doi: 10.1016/j.jphys.2014.05.003. Epub 2014 Jun 10) also demonstrates that kinesio tape is not better than conventional tape in the management of people complaining of low back pain. The authors also question some of the assumptions about the actions of this type of tape. Perhaps the studies are asking the wrong question and should investigate the psychological rather than physiological benefits of the tape. These psychological benefits should not be underestimated particularly in high performance sport.

#### Paper Four

**Ardern CL, Taylor NF, Feller JA, Whitehead TS, Webster KE. Sports Participation 2 Years After Anterior Cruciate Ligament Reconstruction in Athletes Who Had Not Returned to Sport at 1 Year: A Prospective Follow-up of Physical Function and Psychological Factors in 122 Athletes. Sports Med.2015 Jan 12. pii: 0363546514563282. [Epub ahead of print]**

**Purpose:** To investigate return-to-sport rates at 2 years after surgery in athletes who had not returned to their pre-injury level sport at 1 year after ACL reconstruction.

**Methods:** A consecutive cohort of competitive- and recreational-level athletes was recruited prospectively before undergoing ACL reconstruction at a private orthopaedic clinic. Participants were followed up at 1 and 2 years after surgery with a sports activity questionnaire that collected information regarding returning to sport, sports participation, and psychological responses. An independent physical therapist evaluated physical function at 1 year using hop tests and the International Knee Documentation Committee knee examination form and subjective knee evaluation

**Results:** A group of 122 competitive- and recreational-level athletes who had not returned to their pre-injury level sport at 1 year after ACL reconstruction participated. Ninety-one percent of the athletes returned to some form of sport after surgery. At 2 years after surgery, 66% were playing sport, with 41% playing their pre injury level of sport and 25% playing a lower level of sport. Having a previous ACL reconstruction to either knee, poorer hop-test symmetry and subjective knee function, and more negative psychological responses were associated with not playing the pre injury level sport at 2 years.

**Conclusion:** Most athletes who were not playing sport at 1 year had returned to some form of sport within 2 years after ACL reconstruction, which may suggest that athletes can take longer than the clinically expected time of 1 year to return to sport. However, only 2 of every 5 athletes were playing their pre-injury level of sport at 2 years after surgery. When the results of the current study were combined with the results of athletes who had returned to sport at 1 year, the overall rate of return to the pre-injury level sport at 2 years was 60%. Demographics, physical function, and psychological factors were related to playing the pre-injury level sport at 2 years after surgery, supporting the notion that returning to sport after surgery is multifactorial.

**Commentary:** Anterior Cruciate ligament rupture is a significant knee injury and whilst not as prevalent as other sports injuries such as the ankle, the long term prognosis is often not great. This study indicated that return to sport is much longer than some guidelines for management suggest, with these often stating return to sport in 6- 9 months (ACC The diagnosis and management of soft tissue injuries to the knee: an evidence based guideline 2003. [http://www.acc.co.nz/PRD\\_EXT\\_CSMP/groups/external\\_communications/documents/guide/wcmz002488.pdf](http://www.acc.co.nz/PRD_EXT_CSMP/groups/external_communications/documents/guide/wcmz002488.pdf)). This current paper indicates that these time frames are too short for those suffering ACL injury to feel confident returning to sport. This is further supported by the fact that inadequate pre or post-operative rehabilitation will lead to strength deficits that will have a long term detrimental effect on function for the knee (Eitzen, Risberg & Holm doi:10.1136/bjism.2008.057059 *Br. J. Sports Med.* published online 17 Mar 2009). As physiotherapist we need to be involved in the rehabilitation of the ACL injured patient for a lot longer than some treatment guidelines suggest.

#### Interested in contributing?

If you would like to make any contributions to the Manual Therapy Research Review please contact Dr Duncan Reid on [duncan.reid@aut.ac.nz](mailto:duncan.reid@aut.ac.nz)

For further information on IFOMPT please visit our website [www.ifompt.org](http://www.ifompt.org)

