

# Manual Therapy Research Review



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## Welcome

*In this edition of Research Review we have a review of theoretical considerations for chronic pain rehabilitation from Andrea Colombi, an Italian physiotherapist. It is great that individual therapists are engaging with Research Review. For those who would like to do this, just pick a paper from the monthly Evidence Release and provide a commentary on the paper. We will do the rest!! We also cover papers on the effectiveness of exercise in the management of OA of the knee, the effectiveness of manual examination of patients with cervicogenic headache and a new look at how to manage tendon pain. This will be the last review for 2015, so enjoy! Duncan*



## Paper One

**Exercise for osteoarthritis of the knee: a Cochrane systematic review**  
Fransen M, McConnell S, Harmer AR, et al. *Br J Sports Med* doi:10.1136/bjsports-2015-095424

*Note this is an abridged version of a Cochrane Review previously published in the Cochrane Database of Systematic Reviews 2015;1: 10.1002/14651858.CD004376*

**Objective:** To determine whether land-based therapeutic exercise is beneficial for people with knee osteoarthritis (OA) in terms of reduced joint pain or improved physical function and quality of life.

**Methods:** Five electronic databases were searched, up until May 2013. Randomised clinical trials comparing some form of land-based therapeutic exercise with non-exercise control were selected.

**Results:** In total, 54 studies were identified. Pooled results from 44 trials indicated that exercise significantly reduced pain (12 points/100; 95% CI 10 to 15) and improved physical function (10 points/100; 95% CI 8 to 13) to a moderate degree immediately after treatment, while evidence from 13 studies revealed that exercise significantly improved quality of life immediately after treatment with small effect (4 points/100; 95% CI 2 to 5). In addition, 12 studies provided 2-month to 6-month post-treatment sustainability data which showed significantly reduced knee pain (6 points/100; 95% CI 3 to 9) and 10 studies which showed improved physical function (3 points/100; 95% CI 1 to 5).

**Conclusions:** Among people with knee osteoarthritis, land-based therapeutic exercise provides short-term benefit that is sustained for at least 2–6 months after cessation of formal treatment.

**Commentary:** There have been a large number of systematic reviews published that support the use of exercise in the management of OA knee (Larmer et al 2013). Sometimes systematic reviews just state the research was poor quality and that more studies need to be done. Fortunately in this area of research the studies are well constructed and the results positive with respect to exercise management of OA. Sustainable changes over 2-6 months are great for the population with this pathology. It was also indicated that in the long term management of OA, a 'top-up' of care would be ideal at the 6 month mark. The challenge for physiotherapy is often that patients do not know that the profession provides a very powerful alternative to medication and surgery in the form of exercise, and other management strategies.



As the population ages and people are living longer with more chronic long term conditions (OA for example), people are going to need more and more of this type of intervention. This type of review is a great way of promoting the power of physiotherapy for patients and the potential referrers to our services.

\*Reference: Larmer PJ, Reay ND, Aubert ER, Kersten P, A systematic review of guidelines for the physical management of osteoarthritis, ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION (2013), doi: 10.1016/j.apmr.2013.10.011.

## Paper Two

**Review provided by Andrea Colombi**

*Andrea is a research physiotherapist working at "Istituto Scientifico Fondazione Maugeri - Tradate (Varese - Italy) and also works as a Physiotherapist in a Health Center called "Medici in Famiglia" in Milan. She graduated with her physiotherapy degree at University of Pavia (Italy).*

### Abstract

**Theoretical Considerations for Chronic Pain Rehabilitation. Lotze M, Moseley GL. Phys Ther. 2015 Sep;95(9):1316-20. Epub 2015 Apr 16**

Conventional rehabilitation of patients with chronic pain is often not successful and frustrating for the team. However, theoretical developments and substantial advances in our understanding of the neurological aspects of chronic pain, is changing these experiences. Modern theoretical models of pain consider it a perceptual inference that reflects a 'best guess' that protective action is required. We argue that keen observation, and open and respectful clinician-patient and scientist-clinician relationships, have been critical for the emergence of effective rehabilitation approaches and will be critical for further improvements. We emphasise the role in modern pain rehabilitation of reconceptualising the pain itself by Explaining Pain, careful and intentional observation of the person in pain, and the strategic and constant communication of safety. We also suggest that better understanding of the neural mechanisms underpinning chronic pain has directly informed the development of new therapeutic approaches, which are being further refined and tested. Conventional pain treatment, where the clinician strives to find the pain-relieving medication or exercise, or pain management, where the clinician assists the patient to manage life despite unabated pain, is being replaced by pain rehabilitation, where a truly biopsychosocial approach allows the clinician to provide the patient with the knowledge, understanding and skills to reduce both their pain and disability. We briefly overview the key aspects of modern pain rehabilitation and the considerations that should lead our interaction with patients with chronic pain.

**Commentary:** I personally love this topic and this paper, using a pun, 'explain' the way physical therapy (but not only) should take. We have to drop out of structural-pathology model; as we now know that chronic pain is multidimensional, it is modulated by sensory inputs, cognitive, emotional and social factors that can be broadly encompassed by the concept of 'context'.

Pain is the tool our brain uses to protect us from a possible threatening event, but it should be a short-term adaptation. In people with chronic pain, symptoms persist despite the nociceptive stimuli ceases and their CNS function shows differences that are thought to reflect in part 'maladaptive neuroplasticity'. We previously focused our interventions on improving biomechanics, joint alignment, soft tissue relaxation; overlooking pain perception or psychosocial factors.

Also, according to Benedetti's study on placebo effects(1), the role of the clinician is rather a coach than an empathic doctor who is expected to relieve the patient's pain. We have to find the balance, between honouring the patient's pain and suffering, and integrating it with a rehabilitation process aimed at promoting function.

Training should be time-contingent, or load-contingent, not pain-contingent. When pain increases during or after therapy, the patient can be reminded that this is not a symptom of damage, but a protective strategy of an overly protective system.

Indeed, it is notable that in the last two decades the amount of literature on 'health coaching' is augmented with the aim to remind the patient that he/she is responsible for their body and for rehabilitation; encourage the patient to focus attention to healthy aspects of the body; integrate home-work and occupational aspects for daily living; assist the patient in identifying sources of safety; learn and implement coping skills and strategies to relieve pain. The ultimate aim is to give the patient the resources to master his/her own situation, to set attainable goals and to learn the principles of slow and steady progression, all on the platform of a modern understanding of their pain.

(1)Reference

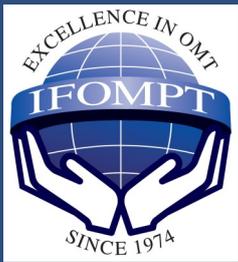
Benedetti F. Placebo and the New Physiology of the Doctor-Patient Relationship. *Physiol Rev* [Internet]. 2013;93(3):1207-46. Available from: <http://physrev.physiology.org/cgi/doi/10.1152/physrev.00043.2012>

## Paper Three

**Physical examination tests for screening and diagnosis of cervicogenic headache: A systematic review. Rubio-Ochoa J, et al. Man Ther. 2015 Sep 21. pii: S1356-689X(15)00182-4. [Epub ahead of print]**

### Abstract

**Introduction:** It has been suggested that differential diagnosis of headaches should consist of a robust subjective examination and a detailed physical examination of the cervical spine. Cervicogenic headache (CGH) is a form of headache that involves referred pain from the neck. To our knowledge, no studies have summarised the reliability and diagnostic accuracy of physical examination tests for CGH.



**Aim:** The aim of this study was to summarise the reliability and diagnostic accuracy of physical examination tests used to diagnose CGH. A systematic review following PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines was performed in four electronic databases (MEDLINE, Web of Science, Embase and Scopus). Full text reports concerning physical tests for the diagnosis of CGH which reported the clinometric properties for assessment of CGH, were included and screened for methodological quality. Quality Appraisal for Reliability Studies (QAREL) and Quality Assessment of Studies of Diagnostic Accuracy (QUADAS-2) scores were completed to assess article quality.

**Results:** Eight articles were retrieved for quality assessment and data extraction. Studies investigating diagnostic reliability of physical examination tests for CGH scored poorer on methodological quality (higher risk of bias) than those of diagnostic accuracy. There is sufficient evidence showing high levels of reliability and diagnostic accuracy of the selected physical examination tests for the diagnosis of CGH. The cervical flexion-rotation test (CFRT) exhibited both the highest reliability and the strongest diagnostic accuracy for the diagnosis of CGH.

**Commentary:** This is a nice review of the reliability of manual testing for patients meeting the criteria for cervico genic headache. The authors of this study include Chad Cook who has done a significant amount of research over the years looking at physical testing and how valid and reliable we are at confirming our diagnoses with relevant tests. In this review the cervical flexion-rotation test (CFRT) (Hall et al 2010) comes out with the greatest accuracy for CGH emanating from the C1/C2 region. The next best study was the passive accessory tests by Jull et al (1997). This study was part of the preparation for the cervico genic headache RCT undertaken by Jull et al in 2002. These are great studies and demonstrate physiotherapists are able to accurately and consistently determine the dysfunctional cervical levels consistent with cervico genic headaches with manual testing.

### Paper Four

**Tendon neuroplastic training: changing the way we think about tendon rehabilitation: a narrative review. Rio E, Kidgell D, Moseley GL, et al. Br J Sports Med Published Online doi:10.1136/ bjsports-2015-095215**

#### Abstract

Tendinopathy can be resistant to treatment and often recurs, implying that current treatment approaches are suboptimal. Rehabilitation programmes that have been successful in terms of pain reduction and return to sport outcomes usually include strength training. Muscle activation can induce analgesia, improving self-efficacy associated with reducing one's own pain. Furthermore, strength training is beneficial for tendon matrix structure, muscle properties and limb biomechanics. However, current tendon rehabilitation may not adequately address the corticospinal control of the muscle, which may result in altered control of muscle recruitment and the consequent tendon load, and this may contribute to recalcitrance or symptom recurrence. Outcomes of interest include the effect of strength training on tendon pain, corticospinal excitability and short interval cortical inhibition. The aims of this concept paper are to: (1) review what is known about changes to the primary motor cortex and motor control in tendinopathy, (2) identify the parameters shown to induce neuroplasticity in strength training and (3) align these principles with tendon rehabilitation loading protocols to introduce a combination approach termed as tendon neuroplastic training. Strength training is a powerful modulator of the central nervous system. In particular, corticospinal inputs are essential for motor unit recruitment and activation; however, specific strength training parameters are important for neuroplasticity. Strength training that is externally paced and akin to a skilled movement task has been shown to not only reduce tendon pain, but modulate excitatory and inhibitory control of the muscle and therefore, potentially tendon load. An improved understanding of the methods that maximise the opportunity for neuroplasticity may be an important progression in how we prescribe exercise-based rehabilitation in tendinopathy for pain modulation and potentially restoration of the corticospinal control of the muscle-tendon complex.

**Commentary:** It is always great when experts from different areas collaborate on challenging topics. This narrative review is a great example, where the tendon experts (Ebony Rio, Craig Purdam, and Jill Cook) have teamed up with pain experts like Lorimer Moseley, to explore other aspects of managing complex tendon pain. I think we have all known that altered motor learning and recruitment is also part of the puzzle but it is great to see the experts talking about this too. This paper will add yet another dimension to your treatment options for patients with tendon pain.

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