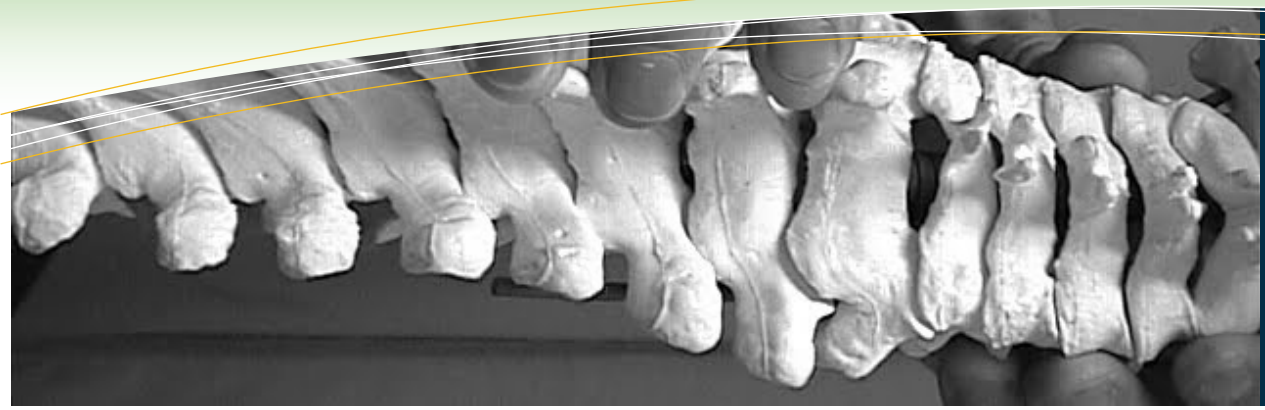
Manual Therapy Research Review



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This issue:

Welcome

The Research Review is growing in popularity. In previous versions I have asked for other physiotherapists to make comment on papers presented in the Evidence Release. In this month's version we have reviews from Dr Helen French and Dr Rob Sillevis. Helen is a manipulative physiotherapist, lecturer and researcher at the Royal College of Surgeons in Ireland. Rob is a Dutch trained manipulative physiotherapist now residing in Cape Coral, USA and is adjunct faculty at the University of St. Augustine for Health Sciences (St. Augustine, FL). T hanks to Rob and Helen for taking the plunge and providing reviews for this June edition. I look forward to others following suit! There are a wide range of papers commented on in this month's review so enjoy! Duncan Reid

Paper One

The Efficacy of Manual Therapy for Rotator Cuff Tendinopathy: A Systematic Review and Meta-analysis

Ariel Desjardins-Charbonneau, Jean-Sébastien Roy, Clermont E. Dionne, Pierre Frémont, Joy C. Macdermid, François Desmeules. J Orthop Sports Phys Ther. 2015; 45(5):330-350

STUDY DESIGN. Systematic review and meta-analysis.
OBJECTICES. To evaluate the efficacy of manual therapy (MT) for patients with rotator cuff (RC) tendinopathy.
BACKGROUND. Rotator cuff tendinopathy is a highly prevalent musculoskeletal disorder, for which MT is a common intervention used by physical therapists. However, evidence regarding the efficacy of MT is inconclusive.
METHODS. A literature search using terms related to shoulder, RC tendinopathy, and MT was conducted in 4 databases to identify randomised controlled trials that compared MT to any other type of intervention to treat RC tendinopathy. Randomised controlled trials were assessed with the Cochrane risk-of-bias tool. Meta-analyses or qualitative syntheses of evidence were performed.
RESULTS. Twenty-one studies were included. The majority had a high risk of bias. Only 5 studies had a score of 69% or greater, indicating a moderate to low risk of bias. A small but statistically significant overall effect for pain reduction of MT compared with a placebo or in addition to another intervention was observed (n = 406), which may or may not be clinically important, given a mean difference of 1.1 (95% confidence interval: 0.6, 1.6) on a 10-cm visual analog scale. Adding MT to an exercise program (n = 226) significantly decreased pain (mean difference, 1.0; 95% confidence interval: 0.7, 1.4), as reported on a 10-cm visual analog scale, which may or may not be clinically important. Based on qualitative analyses, it is unclear whether MT used alone or added to an exercise program improves function.
CONCLUSION. For patients with RC tendinopathy, based on low- to moderate-quality evidence, MT may decrease pain; however, it is unclear whether it can improve function. More methodologically sound studies are needed to make definitive conclusions.
COMMENTARY. This is a well conducted systematic review which aimed to update the evidence regarding the role of manual therapy for RC tendinopathy due to the publication of new randomised controlled trials since the last systematic review on this topic (Braun et al, 2013). ome points are worth noting when considering the results of this review. The definition of RC tendinopathy was quite broad with the inclusion of patients with RC tendinopathy/tendinitis, shoulder impingement syndrome or subacromial bursitis. Studies were excluded if participant had a full-thickness RC tear, calcific tendinopathy or post-surgery.

The manual therapy (MT) interventions were also broad and were defined as 'hands on' techniques which included joint mobilisations, manipulations, neurodynamic techniques, specific soft tissue massage techniques and mobilisations with movement (MWMs) of the shoulder girdle or spine. Outcomes of interest were also varied as all kind of outcomes were considered for inclusion. The characteristics of the included studies are also important to review (as presented in Tables 1 and 2), where a description of the diagnostic criteria is explained for each study. Clinical tests for RC tendinopathy/impingement syndrome are fraught with errors and although a cluster of tests is recommended to determine a clinical diagnosis of shoulder impingement (Michener et al, 2009; Hegedus et al, 2008), these tests still do not provide an accurate structural diagnosis (Lewis, 2008). Just 5 of the 21 included studies has a low risk of bias, therefore caution should be applied when interpreting results. The primary analysis focused on the overall efficacy of manual therapy either alone or conjunction with another intervention compared with placebo or other intervention. Secondary analyses included comparing MT added to exercise with exercise, MT combined with other interventions to a placebo or other interventions and different types of MT.
Results differed to previous reviews, which had found conflicting evidence for the efficacy of MT. In this review, which included more clinical trials, a small significant but unclear clinical improvement in pain but not function was found for MT used alone or in conjunction with other therapy. Adding MT to a multimodal programme did not appear to improve pain, function or shoulder ROM any further, but heterogeneity of the 6 studies included in this analysis limited the conclusions. Two subgroups of patients who may respond well to MT include those with posteroinferior capsular tightness and those with reduced cervicothoracic extension.
Overall, the review does add some evidence for the role of MT in improvement of pain, but not function in RC tendinopathy, but the methodological weakness, in particular the small sample sizes which varied between 7 and 60 participants compromises the possibility of detecting a true effect if one exists. The usual challenges of blinding both participants and treatment providers in MT research also poses some risk of bias to the results. However, random allocation, allocation concealment, use of intention-to-treat analysis and trial adherence should be achievable in RCT's if researchers want to ensure results are meaningful and impactful.

References

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Helen French PhD, MSc, B.Physio, MISCP

Paper Two

The Efficacy of Manual Joint Mobilisation/Manipulation in Treatment of Lateral Ankle Sprains: A Systematic Review

Loudon JK[1],Reiman MP,Sylvain J. *Br J Sports Med* 2014;48:365-370

PURPOSE. Systematically summarise the effectiveness of manual joint techniques in treatment of lateral ankle sprains.
METHODS. This review employed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. A computer-assisted literature search of MEDLINE, CINHAL, EMBASE, OVID and Physiotherapy Evidence Database (PEDro) (January 1966 to March 2013) was used with the following keywords alone and in combination 'ankle', 'sprain', 'injuries', 'lateral', 'manual therapy', and 'joint mobilisation'. The methodological quality of individual studies was assessed using the PEDro scale.
RESULTS. After screening of titles, abstracts and full articles, eight articles were kept for examination. Three articles achieved a score of 10 of 11 total points; one achieved a score of 9; two articles scored 8; one article scored a 7 and the remaining article scored a 5. Three articles examined joint techniques for acute sprains and the remainder examined subacute/chronic ankle sprains. Outcome measures included were pain level, ankle range of motion, swelling, functional score, stabilometry and gait parameters. The majority of the articles only assessed these outcome measures immediately after treatment. No detrimental effects from the joint techniques were revealed in any of the studies reviewed.
CONCLUSIONS. For acute ankle sprains, manual joint mobilisation diminished pain and increased dorsiflexion range of motion. For treatment of subacute/chronic lateral ankle sprains, these techniques improved ankle range-of-motion, decreased pain and improved function.
COMMENTARY. We can applaud the efforts of Loudon and colleagues who presented a current review of the literature evaluating the effect of MT on lateral ankle sprains. Lateral ankle sprains are common in all population groups especially in the athlete group and often encountered in the clinic. Previously, it has been reported that manual therapy is beneficial for this subject group to prevent the development of chronic ankle issues. Only 8 studies satisfied the study criteria with a relative low combined total number of 244 subjects. This low subject number and the fact that all studies included young adults <32 years of age limits the generalisability of their findings. This review evaluated the benefit from joint mobilisation/manipulation as a single intervention. This seems not comparable to standard clinical practice in which MT is combined with other interventions to augment and carry over its effects. Although it appeared that there was some benefit using MT in both the acute and subacute groups, this study doesn't provide evidence supporting either a manipulation or mobilisation approach.

Paper Three

Dose Optimisation for Spinal Treatment Effectiveness: A Randomised Controlled Trial Investigating the Effects of High and Low Mobilisation Forces in Patients with Neck Pain
Snodgrass SJ1, Rivett DA,Sterling M,Vicenzino B. J Orthop Sports Phys Ther.2014 Mar;44(3):141-52. doi: 10.2519/jospt.2014.4778. Epub 2014 Jan 22.

PURPOSE. To determine if force magnitude during posterior-to-anterior mobilisation affects immediate and short-term outcomes in patients with chronic, nonspecific neck pain.
METHODS. Patients with neck pain of at least 3 months in duration (n = 64) were randomised to receive a single treatment of posterior-to-anterior mobilisation applied with 30 N or 90 N of mean peak force (3 sets of 30 seconds) or a placebo (detuned laser) on the spinous process at the painful spinal level. Pressure pain threshold, pain measured with a visual analog scale (range, 0-100 mm), cervical range of motion, and spinal stiffness at the painful spinal level (measured with a custom device and normalised as a percentage of C7 stiffness) were assessed before, immediately after, and at a mean ± SD follow-up of 4.0 ± 1.8 days following treatment. Repeated-measures analysis of covariance and Bonferroni-adjusted post hoc tests determined group differences for each outcome measure after treatment and at follow-up.
RESULTS. At follow-up, the 90-N group had less pain than the 30-N group (mean difference, 11.3 mm; 95% confidence interval: 0.1, 22.6 mm; P = .048) and lower stiffness than the placebo group (mean difference, 17.5%; 95% confidence interval: 4.2%, 30.9%; P = .006). These differences were not present immediately after treatment. There were no significant between-group differences in pressure pain threshold or range of motion after treatment or at follow-up.
CONCLUSION. A specific dose of mobilisation, in terms of applied force, appears necessary for reducing stiffness and potentially pain in patients with chronic neck pain. Changes were not observed immediately after mobilisation, suggesting that its effects are not directly mechanical.
COMMENTS. It has been previously postulated that the effectiveness of joint mobilisation/ manipulation techniques depends on several variables such as: amplitude, direction, speed, and force. Snodgrass and colleagues have provided us with a great study looking at the force component of joint mobilisation in cases of chronic neck pain. The authors have done a great job in describing the intervention and how this was controlled. The PPT outcome measure was validated and shown to be reliable, but there was no clear justification of the three measurement locations. Spinal stiffness at the most painful segment was related to the stiffness of C7 in PA direction, which seems an interesting choice because this typically is not the most mobile cervical segment. It was interesting to note that the high force group reported an increase in pain after the intervention but a decrease in pain at follow up (not significantly different from the placebo group). There was no significant change in ROM between all three groups and only at reassessment was there a significant decrease in stiffness in the high force group. The take home message from this study is the fact that the force component of joint mobilisation does not seem to support the older mechanical model and should be further investigated to help clinicians determine the best mobilisation force while working with subjects with chronic neck pain.

Rob Sillevis, PT, DPT, PhD, OCS, FAAOMPT, MTC, PCC, CFC

Papers Four, Five and Six (Grouped)

Risk Stratification of Patients with Low Back Pain Seen in Physical Therapy Practice
Rodeghero JR , Cook CE, Cleland JA, Mintken PE. Manual; Therapy. 2015 Apr 15. pii: S1356-689X (15)00076-4. doi: 10.1016/j.math.2015.04.007. [Epub ahead of print]

PURPOSE. To identify predictive characteristics related to patients with lumbar impairments who have a high risk of a bad prognosis (lowest functional recovery compared to visit utilisation) as well as those who are at low risk of a bad prognosis (highest functional recovery compared to visit utilisation).

METHODS. Data from 6379 patients with lumbar impairments were analysed to determine predictive characteristics that identify patients who either have a low or high risk of a bad prognosis to physiotherapy care. Multinomial regression was used to identify significant patient characteristics predictive of treatment response.

RESULTS. Statistically significant predictors for high risk categorisation included older age, longer duration of symptoms, surgical history, current use of medications, lower levels of disability at baseline, and insurance categorisation. Statistically significant predictors of low risk categorisation included younger age, male gender, shorter duration of symptoms, no surgical history, higher levels of disability at baseline, and insurance status.

CONCLUSION. Selected variables were associated with both poor and good recovery. Further research on prognosis, efficacy of physiotherapy care, and cost appear warranted for patients with lumbar impairments.

Cognitive Functional Therapy for Disabling, Nonspecific Chronic Low Back Pain: Multiple Case-Cohort Study
O'Sullivan K, Dankaerts W, O'Sullivan L, O'Sullivan PB. Physical; Therapy. 2015 Apr 30. [Epub ahead of print]

BACKGROUND. Multiple dimensions across the biopsychosocial spectrum are relevant in the management of non-specific chronic low back pain (NSCLBP). Cognitive functional therapy is a behaviourally targeted intervention which combines normalisation of movement and abolition of pain behaviours with cognitive reconceptualisation of the NSCLBP problem, while also targeting psychosocial and lifestyle barriers to recovery.

PURPOSE. To examine the effectiveness of cognitive functional therapy for people with disabling NSCLBP who are awaiting an appointment with a specialist medical consultant.

DESIGN. A multiple case (n=26) cohort study consisting of 3 phases (A1-B-A2).

METHODS. Measurement phase A1 was a baseline phase during which pain and functional disability were collected on three occasions over three months for all participants. During phase B, participants entered a cognitive functional therapy intervention program, involving approximately eight treatments over an average of 12 weeks. Finally, phase A2 was a 12 month no-treatment follow-up period.

RESULTS. Statistically significant improvements in both functional disability ($p<0.001$) and pain ($p<0.001$) were observed immediately post-intervention, and maintained over the 12 months follow-up period. These reductions reached clinical significance for both disability and pain. Secondary psychosocial outcomes were significantly ($p<0.01$) improved after the intervention, including depression, anxiety, back beliefs, fear of physical activity, catastrophising and self-efficacy.

CONCLUSIONS. These promising results suggest that cognitive functional therapy should be compared to other conservative interventions for the management of disabling NSCLBP in secondary care settings in large randomised clinical trials.

Biopsychosocial Predictors of Short-term Success Among People with Low Back Pain Referred to a Physiotherapy Spinal Triage Service.

Bath B, Grona SL. J Pain Res. 2015 Apr 23;8:189-202. doi: 10.2147/JPR.S81485. eCollection 2015.

BACKGROUND. A spinal triage assessment service may impact a wide range of patient outcomes. Investigating potential predictors of success or improvement may reveal why some people improve and some do not, as well as help to begin to explain potential mechanisms for improvements. The objective of this study was to determine which factors were associated with improved short-term self-reported pain, function, general health status, and satisfaction in people undergoing a spinal triage assessment performed by physiotherapists.

METHODS. Participants with low back-related complaints were recruited from people referred to a spinal triage assessment program (N=115). Participants completed baseline questionnaires covering a range of sociodemographic, clinical, and psychological features. Self-reported measures of pain, function, quality of life, and satisfaction were completed at 4 weeks following the assessment. Determination of "success" was based on minimal important change scores of select outcome measures. Multivariate logistic regression was used to explore potential predictors of success for each outcome.

RESULTS. Despite the complex and chronic presentation of most participants, some reported improvements in outcomes at 4 weeks post assessment with the highest proportion of participants demonstrating improvement (according to the minimal important change scores) in the Medical Outcomes Survey 36-item short-form version 2 physical component summary score (48.6%) and the lowest proportion of participants having improvements in the Numeric Pain Rating Scale (11.5%). A variety of different sociodemographic, psychological, clinical, and other variables were associated with success or improvement in each respective outcome.

CONCLUSION. There may be a potential mechanism of reassurance that occurs during the spinal triage assessment process as those with higher psychological distress (measured by the Fear Avoidance Beliefs Questionnaire and the Distress and Risk Assessment Measure) were more likely to improve on certain outcomes. The use of an evaluation framework guided by a biopsychosocial model may help determine potential mechanisms of action for a physiotherapy-delivered triage program.

COMMENTARY. I recently attended the WCPT conference in Singapore. There was a great symposium led by Nadine Foster on stratified care in the management of low back pain. The key presenters were Jonathon Hill, Peter O'Sullivan, John Childs and Mark Hancock. The main features of the presentation were that recognition of key factors that influence the prognosis and guide the management of the patient are critical to improved success. I have grouped these three papers above together as all have features of this. The paper by Rodeghero and colleagues indicates that a good or bad prognosis for the outcomes of treatment for low back pain can be predicted from important demographic features determined at baseline. The study O'Sullivan et al indicates that a cognitive functional approach to improve aberrant pain patterns in patients with low back pain is required, and that these are individualised to that patients' needs. The last paper by Bath and Grona once again indicates that identifying the biopsychosocial features of the pain presentation are important in the screening of patients. These three papers also fit well with the processes and outcomes evident in the STarT Back trial undertaken by Hill et al (2012). This study used a stratified approach based on identifying patients as high, medium, or low risk with acute and sub-acute low back pain. A nine item questionnaire is used with patients to clarify the risk status then the care is delivered based on this stratification. This approach has been shown to be clinically effective as well as cost effective!! I would recommend clinicians look strongly at this research and other studies as indicated above that show stratified and individually tailored care based on risk assessment to be very effective.

References

Jonathan C Hill, David G T Whitehurst, Martyn Lewis, Stirling Bryan, Kate M Dunn, Nadine E Foster, Kika Konstantinou, Chris J Main,Elizabeth Mason, Simon Somerville, Gail Sowden, Kanchan Vohora, Elaine M Hay
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