

2. LBP

Psychological interventions

Spine J. 2017 Jul 26. pii: S1529-9430(17)30324-8. doi: 10.1016/j.spinee.2017.07.006.

Effectiveness of psychological interventions delivered by non-psychologists on low back pain and disability: a qualitative systematic review.

Bostick GP¹.

BACKGROUND CONTEXT:

Psychological treatments delivered by non-psychologists have been proposed as a way to increase access to care to address important psychological barriers to recovery in people with low back pain (LBP).

PURPOSE:

Synthesize randomized controlled trials (RCTs) that assess the effectiveness of psychological interventions delivered by non-psychologists in reducing pain intensity and disability in adults with LBP, compared to usual care.

STUDY DESIGN:

Systematic review without meta-analysis **METHODS:** RCTs including adult patients with all types of musculoskeletal LBP were eligible. Interventions included those based on psychological principles and delivered by non-psychologists. The primary outcomes of interest were self-reported pain intensity and disability. Information sources included: Medline, EMBASE and the Cochrane Central Registrar for Controlled Trials. The Cochrane Collaboration's tool for assessing risk of bias was used for the evaluation of internal validity.

RESULTS:

1101 records were identified, 159 were assessed for eligibility, 16 were critically appraised and 11 studies included. Mild to moderate risk of bias was present in the included studies with personnel and patient blinding, treatment fidelity and attrition being the most common sources of bias. Considerable heterogeneity existed for patient population, intervention components and comparison groups. Although most studies demonstrated statistical and clinical improvements in pain and disability, few were statistically superior to the comparison group.

CONCLUSIONS:

Consistent with the broader psychological literature, psychological interventions delivered by non-psychologists have modest effects on low back pain and disability. Additional high quality research is needed to understand what patients are likely to respond to psychological interventions, the appropriate dose to achieve the desired outcome, the amount of training required to implement psychological interventions and the optimal procedures to ensure treatment fidelity.

3. DISC

Disc and PT

Physiother Theory Pract. 2017 Sep;33(9):695-705. doi: 10.1080/09593985.2017.1345026. Epub 2017 Jul 17.

Physiological effects of physical therapy interventions on lumbar intervertebral discs: A systematic review.

Mitchell UH¹, Helgeson K², Mintken P³.

BACKGROUND CONTEXT:

The use of physical therapy has been recommended in the treatment of low back pain based on primarily mechanical and neurophysiological effects. Recent studies have measured the physiological effects of physical therapy interventions, including manual therapy and traction, on the intervertebral discs (IVD), and these findings may have implications for the long-term management or even prevention of low back pain.

PURPOSE:

The objective of this systematic review is to investigate the literature regarding possible physiological effects of physical therapy interventions on the intervertebral disc (IVD).

STUDY DESIGN:

Systematic Review.

METHODS:

A literature search of published articles through December 2014 resulted in the retrieval of 8 clinical studies assessing the influence of physical therapy interventions on the physiology of the IVD.

RESULTS:

Three studies, including two using animal models, investigated the effects of 30-minute intermittent traction on disc height. One in vivo animal study and two studies using human subjects assessed changes of disc height associated with static traction. Three studies investigated the effects of lumbar spine manipulation and mobilization on changes in water diffusion within the IVD. All studies confirmed, either directly or indirectly, that their respective intervention influenced disc physiology primarily through water flow.

CONCLUSION:

Physical therapy interventions may have an effect on the physiology of the IVD, primarily through water diffusion and molecular transport, which are important for the health of the IVD.

7. PELVIC ORGANS/WOMAN'S HEALTH

RA and OC and breast feeding

Ann Rheum Dis. 2017 Aug 17. pii: annrheumdis-2017-211620. doi: 10.1136/annrheumdis-2017-211620.

Oral contraceptives, breastfeeding and the risk of developing rheumatoid arthritis: results from the Swedish EIRA study.

Orellana C¹, Saevarsdottir S^{1,2}, Klareskog L², Karlson EW³, Alfredsson L^{1,4}, Bengtsson C¹.

OBJECTIVES:

To study whether oral contraceptive (OC) use or breastfeeding (BF) influence the risk of rheumatoid arthritis (RA), stratifying the cases by presence/absence of anticitrullinated protein antibodies (ACPA), and whether these factors interact with known risk factors in the development of ACPA-positive RA.

METHODS:

Women aged ≥ 18 years, participants in the population-based case-control Swedish Epidemiological Investigation of RA study (2641 cases/4251 controls), completed an extensive questionnaire regarding OC, BF and potential confounders. We calculated ORs, with 95% CIs, adjusted for age, residential area, smoking and alcohol consumption. Attributable proportion due to interaction (AP) was estimated to evaluate presence of interaction.

RESULTS:

Compared with never users, ever and past OC users had a decreased risk of ACPA-positive RA (OR=0.84 (95% CI 0.74 to 0.96); OR=0.83 (95% CI 0.73 to 0.95), respectively). No significant associations were found for ACPA-negative RA. Long duration of OC use (>7 years vs never use) decreased the risk of both ACPA-positive (p=0.0037) and ACPA-negative RA (p=0.0356). A history of long BF decreased the risk only of ACPA-positive RA in a dose-dependent manner (p=0.0086), but this trend did not remain after adjustments. A significant interaction was observed between the lack of OC use and smoking (AP=0.28 (95% CI 0.14-0.42)) on the risk of ACPA-positive RA. No interactions were found for BF.

CONCLUSIONS:

OC decreased the risk of RA, especially ACPA-positive RA, where an interaction with smoking was observed. A long duration of OC use decreased the risk of both disease subsets. We could not confirm an association between BF and a decreased risk of either ACPA-positive or ACPA-negative RA.

8. VISCERA

Defining IBS

Clin Epidemiol. 2017 Jul 31;9:393-402. doi: 10.2147/CLEP.S141344. eCollection 2017.

Irritable bowel symptoms and the development of common mental disorders and functional somatic syndromes identified in secondary care - a long-term, population-based study.

Poulsen CH^{1,2}, Eplov LF², Hjorthøj C², Eliassen M¹, Skovbjerg S¹, Dantoft TM¹, Schröder A³, Jørgensen T^{1,4,5}.

OBJECTIVE:

Irritable bowel syndrome (IBS) is associated with mental vulnerability, and half of patients report comorbid somatic and mental symptoms. We aimed to investigate the relationship between an IBS symptom continuum and the subsequent development of common mental disorders (CMDs) and functional somatic syndromes (FSSs).

METHODS AND STUDY DESIGN:

A longitudinal population-based study comprising two 5-year follow-up studies, Dan-MONICA 1 (1982-1987) and Inter99 (1999-2004), recruited from the western part of Copenhagen County. The total study population (n = 7,278) was divided into symptom groups according to the degree of IBS definition fulfillment at baseline and/or follow-up and was followed until December 2013 in Danish central registries. Cox regression was used for the analyses, adjusting for age, sex, length of education and cohort membership. In a subsequent analysis, we adjusted for mental vulnerability as a risk factor for both CMDs and FSSs, including IBS.

RESULTS:

Over a 5-year period, 51% patients had no IBS symptoms, 17% patients had IBS symptoms without abdominal pain, 22% patients had IBS symptoms including abdominal pain and 10% patients fulfilled the IBS definition. IBS and IBS symptoms including abdominal pain were significantly associated with the development of CMDs and other FSSs identified in secondary care. When adjusting for mental vulnerability, IBS and IBS symptoms including abdominal pain were no longer associated with CMDs, but the significant relationship to other FSSs remained.

CONCLUSION:

In a clinical setting, the perspective should be broadened to individuals not fulfilling the symptom cluster of IBS but who report frequent abdominal pain. Additionally, it is important to combine symptom-based criteria of IBS with psychosocial markers such as mental vulnerability, because it could guide clinicians in decisions regarding prognosis and treatment.

IBS and anxiety**Symptoms of anxiety and depression are independently associated with inflammatory bowel disease-related disability**

Digestive and Liver Diseases

Chan W, et al.

The aim of this cross-sectional study was to explore the association between symptoms of anxiety and depression, quality of life and disability in a Singaporean inflammatory bowel disease (IBD) cohort and their predictors. The authors found that symptoms of anxiety and depression were common in this Asian cohort of IBD and were strongly correlated with IBD-related disability. They suggested that recognizing psychological issues contributing to disability in IBD is important to ensure holistic care and appropriate treatment.

Methods

- For the purpose of this study, the authors evaluated consecutive IBD subjects' IBD-Disability Index (IBD-DI), Hospital Anxiety and Depression Scale(HADS), and IBD questionnaire(IBDQ).
- Clinical and demographic variables were gathered.
- After that, non-parametric statistical analyses were performed.
- Through multivariate logistic regression, independent predictors of disability were identified.

Results

- Two hundred consecutive subjects were enlisted (males: 69%; median age: 43.8(\pm 15.4) years; ninety-five had Crohn's disease(CD), one hundred five had ulcerative colitis(UC); median IBD duration: 10.8(\pm 9.0) years.) 27% of the cohort had anxiety and/or depression, which worsened disability (IBD-DI: -9(\pm 14) with anxiety vs 6(\pm 13) without anxiety, P
- The findings demonstrated that age at diagnosis, use of prednisolone, stricturing CD and active IBD were significant predictors of disability.
- Results revealed that IBDQ strongly associated with IBD-DI(rs = 0.82, P<0.01).

Increasing rates of IBD and Crohn's

Am J Gastroenterol. 2017 Aug 15. doi: 10.1038/ajg.2017.228.

Dramatic Increase in Incidence of Ulcerative Colitis and Crohn's Disease (1988-2011): A Population-Based Study of French Adolescents.

Ghione S¹, Sarter H^{2,3}, Fumery M⁴, Armengol-Debeir L⁵, Savoye G⁵, Ley D^{1,3}, Spyckerelle C⁶, Pariente B^{3,7}, Peyrin-Biroulet L⁸, Turck D^{1,3}, Gower-Rousseau C^{2,3}; Epimad Group. Collaborators (399)

OBJECTIVES:

Few data are available to describe the changes in incidence of pediatric-onset inflammatory bowel disease (IBD). The aim of this study was to describe changes in incidence and phenotypic presentation of pediatric-onset IBD in northern France during a 24-year period.

METHODS:

Pediatric-onset IBD (<17 years) was issued from a population-based IBD study in France between 1988 and 2011. Age groups and digestive location were defined according to the Paris classification.

RESULTS:

1,350 incident cases were recorded (8.3% of all IBD) including 990 Crohn's disease (CD), 326 ulcerative colitis (UC) and 34 IBD unclassified (IBDU). Median age at diagnosis was similar in CD (14.4 years (Q1=11.8-Q3=16.0)) and UC (14.0 years (11.0-16.0)) and did not change over time. There were significantly more males with CD (females/males=0.82) than UC (females/males=1.25) (P=0.0042). Median time between onset of symptoms and IBD diagnosis was consistently 3 months (1-6). Mean incidence was 4.4/10⁵ for IBD overall (3.2 for CD, 1.1 for UC and 0.1 for IBDU). From 1988-1990 to 2009-2011, a dramatic increase in incidences of both CD and UC were observed in adolescents (10-16 years): for CD from 4.2 to 9.5/10⁵ (+126%; P<0.001) and for UC, from 1.6 to 4.1/10⁵ (+156%; P<0.001). No modification in age or location at diagnosis was observed in either CD or UC.

CONCLUSIONS:

In this population-based study, CD and UC incidences increased dramatically in adolescents across a 24-year span, suggesting that one or more strong environmental factors may predispose this population to IBD. Am J Gastroenterol advance online publication, 15 August 2017; doi:10.1038/ajg.2017.228.

Crohn's disease and smoking

Clin Exp Gastroenterol. 2016 Sep 22;9:307-310. eCollection 2016.

Cigarette smoking adversely affects disease activity and disease-specific quality of life in patients with Crohn's disease at a tertiary referral center.

Quezada SM¹, Langenberg P², Cross RK¹.

PURPOSE:

Smoking has a negative impact on disease activity in Crohn's disease (CD). Smoking may also affect the quality of life, but this has not been evaluated using validated measures over time. We assessed the relationship between smoking and disease-specific quality of life over time in a tertiary referral inflammatory bowel disease cohort.

PATIENTS AND METHODS:

Retrospective cohort study from July 2004 to July 2009 in patients with CD identified from the University of Maryland, Baltimore, Institutional Review Board-approved University of Maryland School of Medicine Inflammatory Bowel Disease Program database. Smoking status was classified as current, former, and never. Age was categorized as <40 years, 40-59 years, and ≥60 years. Index visit disease activity and quality of life was measured with the Harvey-Bradshaw index, and the Short Inflammatory Bowel Disease Questionnaire (SIBDQ). Repeated measures linear regression was used to assess the association between smoking and quality of life over time after adjustment for confounding variables.

RESULTS:

A total of 608 patients were included, of whom 42% were male; 80% were Caucasian; 22% were current smokers; 24% were former smokers; and 54% were never smokers. Over time, adjusted Harvey-Bradshaw index scores declined in all patients, but current smokers had consistently higher scores. After adjustment for sex, age, and disease duration, never smokers had higher mean SIBDQ scores at index visit compared to former and current smokers ($P<0.0001$); all increased over time but SIBDQ scores for never smokers remained consistently highest.

CONCLUSION:

Smoking has a negative impact on disease activity and quality of life in patients with CD. Prospects of improved disease activity and quality of life should be proposed as an additional incentive to encourage smoking cessation in patients with CD.

Appendectomy

Arch Dis Child. 2017 Aug 17. pii: archdischild-2017-313127. doi: 10.1136/archdischild-2017-313127.

Conservative treatment versus surgery for uncomplicated appendicitis in children: a systematic review and meta-analysis.

Kessler U^{1,2}, Mosbahi S¹, Walker B¹, Hau EM², Cotton M³, Peiry B¹, Berger S², Egger B¹.

OBJECTIVES:

To compare conservative treatment with index admission appendicectomy in children with acute uncomplicated appendicitis.

DESIGN:

Systematic review and meta-analysis.

DATA SOURCES:

Medline, Embase and the Cochrane Library (CENTRAL) from 1950 to 18 February 2017.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES:

Studies that assessed both appendicectomy and non-operative management of acute uncomplicated appendicitis in children of less than 18 years of age. Endpoints were postintervention complications, readmission and efficacy (successful outcome of the initial therapy).

RESULTS:

Five studies met the inclusion criteria (conservative treatment n=189; surgical intervention n=253). Compared with patients undergoing index admission appendicectomy, conservative treatment showed a reduced treatment efficacy (relative risk 0.77, 95% CI 0.71 to 0.84; p<0.001) and an increased readmission rate (relative risk 6.98, 95% CI 2.07 to 23.6; p<0.001), with a comparable rate of complications (relative risk 1.07, 95% CI 0.26 to 4.46). Exclusion of patients with faecoliths improved treatment efficacy in conservatively treated patients. One study was randomised, with the remaining four comprising cohorts assembled by patient or physician choice. Different antibiotic regimens were used between investigations. Follow-up varied from 1 to 4 years.

CONCLUSIONS:

Conservative treatment was less efficacious and was associated with a higher readmission rate. Index admission appendicectomy should in the present still be considered to be the treatment of choice for the management of uncomplicated appendicitis in children.

Constipation

Neurogastroenterol Motil. 2017 Aug 10. doi: 10.1111/nmo.13184.

Sacral nerve stimulation for constipation and fecal incontinence in children: Long-term outcomes, patient benefit, and parent satisfaction.

Lu PL¹, Koppen IJN^{1,2}, Orsagh-Yentis DK¹, Leonhart K³, Ambeba EJ³, Deans KJ^{3,4}, Minneci PC^{3,4}, Teich S⁵, Diefenbach KA⁴, Alpert SA⁶, Benninga MA², Yacob D¹, Di Lorenzo C¹.

OBJECTIVE:

To evaluate the long-term efficacy of sacral nerve stimulation (SNS) in children with constipation and describe patient benefit and parent satisfaction.

METHODS:

Using a prospective patient registry, we identified patients <21 years old with constipation treated with SNS for >2 years. We compared symptoms, medical treatment, PedsQL Gastrointestinal Symptom Scale (GSS), Fecal Incontinence Quality of Life Scale (FIQL), and Fecal Incontinence Severity Index (FISI) before SNS and at follow-up. We contacted parents to administer the Glasgow Children's Benefit Inventory (GCBI) and a parent satisfaction questionnaire.

KEY RESULTS:

We included 25 children (52% male, median age 10 years): 16 had functional constipation, six anorectal malformation, two tethered spinal cord, and one Hirschsprung's disease. Defecation frequency did not change after SNS but patients reporting fecal incontinence decreased from 72% to 20% ($P<.01$) and urinary incontinence decreased from 56% to 28% ($P=.04$). Patients using laxatives decreased from 64% to 44% (ns) and patients using antegrade enemas decreased from 48% to 20% ($P=.03$). GSS, most FIQL domains, and FISI were improved at follow-up. Six (24%) patients had complications requiring further surgery. Of the 16 parents contacted, 15 (94%) parents indicated positive health-related benefit and all would recommend SNS to other families.

CONCLUSIONS & INFERENCES:

Sacral nerve stimulation is a promising and durable treatment for children with refractory constipation, and appears particularly effective in decreasing fecal incontinence. Although a quarter of patients experienced complications requiring additional surgery, nearly all parents reported health-related benefit. Future studies to identify predictors of treatment response and complications are needed.

10 B. CERVICAL EXERCISES**Isometric ex and lordosis**

Am J Phys Med Rehabil. 2017 Sep;96(9):621-626. doi: 10.1097/PHM.0000000000000698.

Isometric Exercise for the Cervical Extensors Can Help Restore Physiological Lordosis and Reduce Neck Pain: A Randomized Controlled Trial.

Alpayci M¹, İltter S.

OBJECTIVE:

The aim of this study was to investigate whether isometric neck extension exercise restores physiological cervical lordosis and reduces pain.

DESIGN:

Sixty-five patients with loss of cervical lordosis were randomly assigned to exercise (27 women, 7 men; mean age, 32.82 ± 8.83 yrs) and control (26 women, 5 men; mean age, 33.48 ± 9.67 yrs) groups. Both groups received nonsteroidal anti-inflammatory drugs for 10 days. The exercise group received additional therapy as a home exercise program, which consisted of isometric neck extension for 3 mos. Neck pain severity and cervical lordosis were measured at baseline and at 3 mos after baseline.

RESULTS:

Compared with baseline levels, cervical lordosis angle was significantly improved in the exercise group ($P < 0.001$) but not in the control group ($P = 0.371$) at the end of 3 mos. Moreover, the exercise group was significantly superior to the control group considering the number of patients in whom cervical lordosis angle returned to physiological conditions (85.2% vs. 22.5%; $P < 0.001$). At the end of 3 mos, pain intensity was significantly reduced in both groups compared with baseline levels (for all, $P < 0.001$). Nevertheless, considering the change from baseline to month 3, the reduction in pain was about twice in the exercise group compared with the control group ($P < 0.001$).

CONCLUSIONS:

Isometric neck extension exercise improves cervical lordosis and pain.

Low load axial elongation

Am J Phys Med Rehabil. 2017 Aug;96(8):582-588. doi: 10.1097/PHM.0000000000000721.

The Effect of Different Exercise Programs on Size and Function of Deep Cervical Flexor Muscles in Patients With Chronic Nonspecific Neck Pain: A Systematic Review of Randomized Controlled Trials.

Amiri Arimi S¹, Mohseni Bandpei MA, Javanshir K, Rezasoltani A, Biglarian A.

BACKGROUND:

Neck pain is one of the major public health problems, which has a great impact on people's lives.

OBJECTIVES:

The purpose of this study was to systematically review published studies conducted on the effect of different exercise programs on activity, size, endurance, and strength of deep cervical flexor (DCF) muscles in patients with chronic neck pain.

METHODS:

The PubMed, Science Direct, OVID, Google scholar, Cochrane Library, and Physiotherapy Evidence Databases were searched to determine relevant articles published from 1990 to March 2016. The articles were qualitatively assessed based on the Physiotherapy Evidence Databases scale for randomized controlled trials studies.

RESULTS:

Nine articles were identified and evaluated in the final analysis. Four studies had moderate quality, and five studies had good quality. From those nine studies, eight studies gave support to the effectiveness of specific low-load exercise training on DCF muscles parameters, while one study reported no significant difference between this exercise and other cervical exercise programs.

CONCLUSION:

The results of reviewed studies are in favor of specific low-load craniocervical flexion exercise, which seems to be a highly effective exercise regimen compared to other types of exercises in improving DCF muscles impairments in patients with chronic neck pain.

13 B. TMJ/ORAL**TMD in musicians**

Occup Med (Lond). 2017 May 3. doi: 10.1093/occmed/kqx042.

Evidence-based review on temporomandibular disorders among musicians.

van Selms MKA¹, Ahlberg J², Lobbezoo F¹, Visscher CM¹.

BACKGROUND:

Playing a musical instrument that loads the masticatory system has frequently been linked to temporomandibular disorders (TMDs). Previous literature reviews on this topic do not conform to the current standards of evidence-based medicine.

AIMS:

To investigate the effects of playing a musical instrument (i.e. violin/viola and wind instruments) or singing on the presence of TMDs, based on evidence derived from observational studies.

METHODS:

Databases of Medline, Web of Science and Google Scholar were searched using MeSH and other relevant terms. For each study, a quality assessment was undertaken using a modified version of the Newcastle-Ottawa Scale (NOS).

RESULTS:

Fifteen relevant papers were identified for inclusion in this review. Of the seven possible points that could be scored with the NOS, the majority of these studies scored under half. Based on the available evidence, the purported relationship between the playing of specific musical instruments and TMDs was not as evident as reported in previous literature reviews.

CONCLUSIONS:

There is limited evidence to conclude that playing a wind instrument is a hazard to the temporomandibular system. Furthermore, there is no available evidence to suggest that vocalists experience more TMDs than controls. The studies that investigated the presence of TMDs among violists and violinists yielded ambiguous outcomes; some studies reported no association between the playing of these instruments and the presence of signs and symptoms of TMDs, whereas in studies where a clinical examination was performed (though of lower methodological quality), an association was found.

Splint for TMJ pain**Clinical study of splint therapeutic efficacy for the relief of temporomandibular joint discomfort**

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DOI: <http://dx.doi.org/10.1016/j.jcms.2017.08.019>

Highlights

- Investigation of whether splint therapy relieves discomfort of TMJ.
- Discomfort tended to remit with splint therapy regardless of temporomandibular MRI findings
- Improvement of TMJ discomfort appears in patients with unilateral TMD and/or an apparent organic disorder.

Summary**Purpose**

This study aimed to evaluate the relationship between displacement of the mandibular condyle/disc due to occlusal splint insertion with splint therapy and changes in discomfort of the temporomandibular joint (TMJ), and to clarify the relationships between the outcomes over time of temporomandibular discomfort and TMJ magnetic resonance imaging (MRI) findings at the initiation of splint therapy.

Materials and Methods

A total of 75 patients admitted to hospital with discomfort around the TMJ were evaluated. A visual analogue scale for TMJ discomfort was administered during visits for approximately 3 months following the initiation of splint therapy. At the start of splint therapy, magnetic resonance imaging (MRI) was performed with and without splint insertion, and condyle and disc movements were evaluated. Disc balance, disc position and function, disc configuration, joint effusion, osteoarthritis, and bone marrow were evaluated. Linear regression and multiple regression analyses were used to clarify relationships between changes in discomfort and the factors evaluated.

Results

There was no significant correlation between TMJ discomfort and condyle/disc movement with splint insertion. TMJ discomfort was significantly relieved by splint therapy regardless of temporomandibular MRI findings. Unilateral anterior disc displacement and marked or extensive joint effusion fluid were significantly improved with splint therapy.

Conclusion

Discomfort tended to remit with splint therapy regardless of temporomandibular MRI findings. Improvement of TMJ discomfort appears more likely to occur in patients with unilateral anterior disc displacement and with an apparent organic disorder, such as a joint effusion.

13 C. AIRWAYS/SWALLOWING/SPEECH**Sleep and pain****Effects of sleep changes on pain-related health outcomes in the general population: A systematic review of longitudinal studies with exploratory meta-analysis**

Esther F. Afolalu Fatanah Ramlee Nicole K.Y. Tang

DOI: <http://dx.doi.org/10.1016/j.smr.2017.08.001>

Summary

Emerging longitudinal research has highlighted poor sleep as a risk factor of a range of adverse health outcomes, including disabling pain conditions. In establishing the causal role of sleep in pain, it remains to be clarified whether sleep deterioration over time is a driver of pain and whether sleep improvement can mitigate pain-related outcomes.

A systematic literature search was performed using PubMed MEDLINE, Ovid EMBASE, and Proquest PsycINFO, to identify 16 longitudinal studies involving 61,000 participants. The studies evaluated the effect of sleep changes (simulating sleep deterioration, sleep stability, and sleep improvement) on subsequent pain-related outcomes in the general population. A decline in sleep quality and sleep quantity was associated with a two-to three-fold increase in risk of developing a pain condition, small elevations in levels of inflammatory markers, and a decline in self-reported physical health status. An exploratory meta-analysis further revealed that deterioration in sleep was associated with worse self-reported physical functioning (medium effect size), whilst improvement in sleep was associated with better physical functioning (small effect size).

The review consolidates evidence that changes in sleep are prospectively associated with pain-related outcomes and highlights the need for further longitudinal investigations on the long-term impact of sleep improvements.

Sleep apnea OF weakness

Original Manuscript

Incidence of Obstructive Sleep Apnea in Elderly Edentulous Patients and the Possible Correlation of Serum Serotonin and Apnea-Hypopnea Index

Authors

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DOI: 10.1111/jopr.12654 [View/save citation](#)

Purpose

To estimate the incidence of obstructive sleep apnea (OSA) in elderly edentulous patients (aged 60–65 years) and investigate a correlation of serum serotonin levels with the apnea-hypopnea index (AHI), respiratory effort-related arousal (RERA), and respiratory disturbance index (RDI).
Materials and Methods

381 elderly completely edentulous patients (307 male, 74 female) aged 60 to 65 years with a history of edentulism of 12 to 15 months, seeking oral rehabilitation at the prosthodontic clinic at Saraswati Dental College & Hospital, Lucknow, India, between January 2014 and January 2016 were enrolled for the present study. After application of the inclusion and exclusion criteria of this study, 183 patients (162 male, 21 female) who were found susceptible, were subjected to the BERLIN questionnaire and Epworth Sleepiness Scale (ESS) to assess sleep disordered breathing (SDB) and then put through all-night polysomnography (PSG). On the basis of AHI, RERA, and RDI scores, 156 patients (143 male, 13 female) who tested positive for OSA were classified according to its intensity. All 156 patients underwent body-mass index (BMI) estimation, cephalometry, and intraoral examination for skeletal and soft tissue profile record. Serum serotonin was estimated from whole blood samples for the 156 OSA and the 27 normal patients. The 156 (147 nonobese, 9 obese) OSA-positive patients were provided with complete dentures and were trained to use the same as a modified mandibular advancement device (MAD) during sleep at night. These patients were kept on a quarterly follow-up for 9 months. Data collected was subjected to statistical analysis, and inferences drawn.

Results

The incidence of OSA in elderly edentulous subjects was found to be 32.03% in males and 8.91% in females. A mere 9 out of 156 (5.76%) elderly edentulous OSA patients were found to be obese (Class I) on the basis of BMI estimation. Cephalometry of the patients showed that they had a skeletal class I maxillomandibular relationship. AHI scores of nonobese patients revealed that most of the patients had moderate OSA, followed by mild OSA and severe OSA. Serum serotonin levels ranged from 53 to 83 ng/dL. AHI score of the 9 obese patients were in the moderate to severe range, and their serum serotonin levels were 60 to 70 ng/dL. A correlation between severity of OSA and serum serotonin level was validated in this study.

Conclusion

OSA was found to be prevalent in edentulous subjects due to pharyngeal collapse and decreased neuromuscular control. An inverse relationship of serum serotonin levels and AHI scores was established.

14. HEADACHES

Post traumatic HA's and Migraines

Persistent post-traumatic headache vs. migraine: An MRI study demonstrating differences in brain structure

The Journal of Headache and Pain

Schwedt TJ, et al.

Researchers compared brain structure in individuals with persistent post-traumatic headache (i.e. headache lasting at least 3 months following a traumatic brain injury) attributed to mild traumatic brain injury to that of individuals with migraine. They concluded that persistent post-traumatic headache and migraine were correlated with differences in brain structure, perhaps implying differences in their underlying pathophysiology. To further delineate similarities and differences in brain structure and function that were correlated with post-traumatic headache and migraine and to determine their specificity for each of the headache types, additional studies were needed.

Methods

- For this study, 28 individuals with persistent post-traumatic headache attributed to mild traumatic brain injury and 28 individuals with migraine underwent brain magnetic resonance imaging on a 3 T scanner.
- The researchers calculated regional volumes, cortical thickness, surface area and curvature measurements from T1-weighted sequences and compared between subject groups using ANCOVA.
- They used MRI data from 28 healthy control subjects to interpret the differences in brain structure between migraine and persistent post-traumatic headache.

Results

- When comparing the group of individuals with persistent post-traumatic headache to the group with migraine, differences in regional volumes, cortical thickness, surface area and brain curvature were identified.
- Between groups, structure was different for regions within the right lateral orbitofrontal lobe, left caudal middle frontal lobe, left superior frontal lobe, left precuneus and right supramarginal gyrus ($p < .05$).
- Regarding these regions only, they found differences between individuals with persistent post-traumatic headache and healthy controls within the right lateral orbitofrontal lobe, right supramarginal gyrus, and left superior frontal lobe and no differences when comparing the migraine cohort to healthy controls.

MTP and HA's

Expert Rev Neurother. 2017 Sep;17(9):933-939. doi: 10.1080/14737175.2017.1359088. Epub 2017 Jul 26.

Improving understanding of trigger points and widespread pressure pain sensitivity in tension-type headache patients: clinical implications.

Fernández-De-Las-Peñas C^{1,2,3}, Arendt-Nielsen L³.

INTRODUCTION:

The underlying etiology of tension type headache (TTH) is not understood.

The current paper highlights the etiologic role of muscle trigger points (TrPs) to the development and maintenance of central sensitization in TTH and its clinical repercussion for proper management of these patients. Areas covered: A literature search on Pub Med for English-language published papers between 1990 and May 2017 to provide the most updated data on the topic was conducted.

Current literature suggests that the referred pain elicited by active trigger points (TrPs) contributes to the manifestations of TTH. There is also evidence supporting that TrPs represent a peripheral source of nociception and thereby a driver in the development of central sensitization. In fact, TrPs have been found to be associated with widespread pressure pain sensitivity in TTH. Temporal and spatial summation of TrP nociception suggests that inactivating TrP in the neck, head and shoulder muscles could help these patients; however, current evidence supporting the therapeutic role of TrPs in TTH is conflicting.

Expert commentary: Understanding the role of TrPs in TTH in widespread pain sensitization may help to develop better management regimes and possibly prevent TTH from developing into more chronic conditions.

Resisted training helped

Effect of resistance training on headache symptoms in adults: Secondary analysis of a RCT Manual Therapy

Andersen CH, et al.

An analysis was performed to examine the effect of different time-wise combinations of one weekly hour of strength training for the neck and shoulder muscles on headache frequency, intensity, and use of analgesics. Regardless of the distribution during the week, 1 hour of specific strength training effectively reduced both headache frequency and intensity in office workers. Thus, when implementing specific strength training at the workplace, a large time-wise flexibility existed. However, only supervised training led to a reduction in the use of analgesics for headache.

Methods

- The researchers randomly allocated 573 office workers at the cluster-level to 5 groups; 3 × 20 min a week of minimally supervised (3MS), 1 × 60 (1WS), 3 × 20 (3WS) or 9 × 7 (9WS) min a week of supervised high-intensity strength training for 20 weeks, or to a reference group without training (REF).
- They determined headache frequency, intensity, and use of analgesics in relation to headache by questionnaire at baseline and follow-up.

Results

- The researchers demonstrated reduced headache frequency and intensity of about 50% in all training groups compared with REF at 20-week follow-up ($P < 0.001$) in the intention-to-treat analysis.
- Compared with REF at follow-up, use of analgesics was lower in the supervised training groups (1WS, 3WS, and 9WS), but not in the group with minimal training supervision (3MS).

17. SHOULDER GIRDLE

Kinesio taping helps shoulder function

J Sport Rehabil. 2017 Jul 17:1-26. doi: 10.1123/jsr.2017-0047.

Effects of Rigid and Kinesio Taping on Shoulder Rotation Motions, Posterior Shoulder Tightness, and Posture in Asymptomatic Overhead Athletes: A Randomized Controlled Trial.

Gulpinar D¹, Ozer ST², Yesilyaprak SS³.

CONTEXT:

Alterations in posture and motion patterns are thought to play a role in developing shoulder injuries in overhead athletes. Taping is widely used in the sporting population, but there are limited empirical data regarding its effectiveness.

OBJECTIVES:

To determine and compare the effects of rigid and kinesio taping on shoulder rotation motions, posterior shoulder tightness (PST) and posture in overhead athletes.

DESIGN:

Randomized controlled trial.

SETTING:

Athletic training rooms.

PARTICIPANTS:

Eighty-six asymptomatic elite overhead athletes.

INTERVENTIONS:

Participants were randomly divided into four groups: rigid taping group (RTG) which underwent therapeutic rigid taping, kinesio taping group (KTG) which underwent therapeutic kinesio taping, placebo group which underwent placebo kinesio taping (shoulder&scapular region taping for taping groups), and control group (no taping).

MAIN OUTCOME MEASURES:

Shoulder rotation motions, PST, and head and shoulder posture were evaluated at baseline, immediately after application and 60-72 hours after application for all groups.

RESULTS:

Glenohumeral internal rotation (GIR) increased immediately ($p < .001$) and at 60-72 hours after application in the KTG ($p = .008$), whereas it decreased immediately after application in the RTG ($p < .001$). Immediately after application total rotation range of motion (TROM) increased in the KTG ($p = .023$) and decreased in the RTG ($p < .001$), and there was a difference between groups ($p = .019$). Immediately after application, PST increased in the RTG ($p < .001$); after 60-72 hours, it decreased in the KTG ($p = .035$) and increased in the RTG ($p = .009$). Posture outcomes did not change significantly ($p > .05$).

CONCLUSIONS:

Kinesio taping may improve and rigid taping may worsen GIR and PST in overhead athletes. For increasing TROM, kinesio taping is superior to rigid taping. Taping did not affect posture. Short-term kinesio taping in overhead athletes may be useful to improve GIR, TROM, and PST.

Dyskinesia increases risk of shoulder pain

Br J Sports Med. 2017 Jul 22. pii: bjsports-2017-097559. doi: 10.1136/bjsports-2017-097559.

Scapular dyskinesia increases the risk of future shoulder pain by 43% in asymptomatic athletes: a systematic review and meta-analysis.

Hickey D¹, Solvig V¹, Cavalheri V¹, Harrold M¹, Mckenna L¹.

BACKGROUND:

It is unclear whether the presence of scapular dyskinesia increases the risk of developing shoulder pain in asymptomatic athletes.

OBJECTIVES:

To determine whether the presence of scapular dyskinesia in asymptomatic athletes increases the risk of developing shoulder pain by systematic review and meta-analysis.

METHODS:

A systematic search was conducted in the Cochrane Library, Embase, PubMed, Cumulative Index to Nursing and Allied Health Literature, Allied and Complementary Medicine Database and SPORTDiscus. Prospective studies that assessed athletes for scapular dyskinesia and recorded incidents of shoulder pain were included. Study quality was assessed using the Downs and Black checklist. Meta-analysis was conducted to derive a pooled risk ratio (RR) for the development of shoulder pain in athletes with scapular dyskinesia compared with those without scapular dyskinesia.

RESULTS:

Five studies were included with a total of 419 athletes. Of the athletes with scapular dyskinesia, 35% (56/160) experienced shoulder pain during the follow-up, whereas 25% (65/259) of athletes without scapular dyskinesia experienced symptoms. The presence of scapular dyskinesia at baseline indicated a 43% increased risk of a shoulder pain event over a 9 to 24-month follow-up (RR=1.43, 95% CI 1.05 to 1.93).

CONCLUSIONS:

Athletes with scapular dyskinesia have 43% greater risk of developing shoulder pain than those without scapular dyskinesia.

20 A. ROTATOR CUFF**Biceps added to rotator cuff**

Arthroscopy. 2017 Aug 16. pii: S0749-8063(17)30628-X. doi: 10.1016/j.arthro.2017.05.009.

Comparison of Outcomes 1 Year After Rotator Cuff Repair With and Without Concomitant Biceps Surgery.

Watson ST¹, Robbins CB², Bedi A², Carpenter JE², Gagnier JJ², Miller BS².

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PURPOSE:

To compare the outcomes of patients who undergo a long head of the biceps (LHB) procedure (tenotomy or tenodesis) concomitant with rotator cuff repair (RCR) to those of patients who undergo isolated RCR.

METHODS:

Prospectively collected data were retrospectively reviewed on 80 patients, >18 years old, who underwent repair of a full-thickness rotator cuff tear and with 1-year patient-reported outcome scores collected June 2012 to March 2015. The exclusion criteria were concomitant procedures other than LHB tenotomy, tenodesis, or subacromial decompression; prior shoulder surgery; or other shoulder pathology. The 3 patient groups are as follows: RCR + tenotomy, RCR + tenodesis, and isolated RCR. The primary outcome measures were American Shoulder and Elbow Surgeons (ASES) score, Western Ontario Rotator Cuff (WORC) index, and visual analog scale (VAS) for pain. A t-test measured the mean improvement in LHB patients compared with isolated RCR patients and compared the LHB tenotomy and tenodesis groups. Stepwise linear progression used LHB tenotomy or tenodesis as the primary predictor.

RESULTS:

The biceps procedure group had more female patients (22 vs 7, $P = .01$); otherwise there were no significant baseline differences. The LHB procedure group had significantly worse baseline ASES scores (mean, 48.9 vs 58.7; $P = .032$). All RCR patients showed significant improvement in all 3 outcome measures. Patients who had either LHB tenotomy or tenodesis ($n = 45$) demonstrated significantly greater mean improvement in ASES (mean, 42.7 vs 23.8; $P = .002$), VAS (mean, 49.2 vs 35.7; $P = .020$), and WORC scores (mean, 928 vs 743; $P = .029$) at 1-year follow-up compared with patients who had isolated RCR. ASES scores at 1 year were significantly better in the biceps group (91.6 vs 82.5; $P = .023$). Linear regression found a biceps procedure to be predictive of a significantly greater improvement in ASES score ($P = .01$). Analysis of variance revealed that both the LHB tenotomy ($P = .04$) and tenodesis ($P = .01$) groups demonstrated more favorable improvement in ASES when compared with RCR alone.

CONCLUSIONS:

Patients who underwent a concomitant biceps procedure when indicated at the time of RCR demonstrated inferior baseline patient-reported outcome measures and greater improvement after 1 year, as well as more favorable ASES scores at 1 year compared with isolated RCR patients.

LEVEL OF EVIDENCE:

Level III, retrospective comparative study.

32 A. KNEE/ACL**Electrical stim helps**

Knee Surg Sports Traumatol Arthrosc. 2017 Aug 17. doi: 10.1007/s00167-017-4669-5.

Neuromuscular electrical stimulation is effective in strengthening the quadriceps muscle after anterior cruciate ligament surgery.

Hauger AV¹, Reiman MP², Bjordal JM^{3,4}, Sheets C⁵, Ledbetter L⁶, Goode AP^{2,7,8}.

PURPOSE:

Reduced ability to contract the quadriceps muscles is often found immediately following anterior cruciate ligament (ACL) surgery. This can lead to muscle atrophy and decreased function. Application of neuromuscular electrical stimulation (NMES) may be a useful adjunct intervention to ameliorate these deficits following ACL surgery. The purpose of this review was to determine whether NMES in addition to standard physical therapy is superior to standard physical therapy alone in improving quadriceps strength or physical function following ACL surgery.

METHODS:

A computer-assisted literature search was conducted utilizing PubMed, CINAHL, PEDro and Cochrane Library databases for randomized clinical trials where patients after ACL surgery received NMES with the outcome of muscle strength and/or physical function. Random effect models were used to pool summary estimates using standardized mean differences (SMD) for strength outcomes. Physical function outcomes were assessed qualitatively. Methodological quality was assessed from the Physiotherapy Evidence Database (PEDro)-score.

RESULTS:

Eleven studies met our inclusion criteria; results from six of these were pooled in the meta-analysis showing a statistically significant short-term effect of NMES (4-12 weeks) after surgery compared to standard physical therapy [SMD = 0.73 (95% CI 0.29, 1.16)]. Physical function also improved significantly more in the NMES groups. PEDro scores ranged from 3/10 to 7/10 points.

CONCLUSION:

NMES in addition to standard physical therapy appears to significantly improve quadriceps strength and physical function in the early post-operative period compared to standard physical therapy alone.

35. KNEE/TOTAL**Manipulation****Risk factors, outcomes, and timing of manipulation under anesthesia after total knee arthroplasty**

Journal of Arthroplasty

Newman ET et al.

The study aimed at understanding the risk factors and optimal timing of manipulation under anesthesia (MUA) for total knee arthroplasty (TKA) in patients with knee stiffness. In conclusion, TKA patients undergoing MUAs were younger, more likely to be current smokers, and those who had undergone prior knee surgery. In patients with severe initial postoperative limitations in range of motion, MUA within 6 weeks can allow for final outcomes equivalent to those experienced by similar patients not requiring manipulation.

Methods

- Retrospective review of primary TKAs performed at a single center
- Clinical variables were compared between patients undergoing MUA and those who did not
- MUA group was divided into early (MUA \leq 6 weeks from index) and late ($>$ 6 weeks) subgroups
- Flexion values at multiple time points were compared

Results

- Of 1729 TKAs reviewed, MUA was performed in 62 patients
- Majority of MUA patients were younger (55.2 vs 65.3 years; $P < .001$), with higher rates of current smoking (21.0 vs 7.3%; $P < .001$), and had undergone prior procedure (59.7 vs 40.4%; $P = .002$), mostly arthroscopy; all these variables were matched to control group of patients not requiring MUA
- There was no difference in pre-TKA flexion across groups
- Final flexion in the early MUA group (106.7°) was equivalent to that of controls (115.6°)
- Final flexion in the late MUA group was not equivalent to control group (101.3° ; $P = .001$)

37. OSTEOARTHRITIS/KNEE**Injury and OA**

Rheumatology International pp 1–6

A single recent injury is a potent risk factor for the development of accelerated knee osteoarthritis: data from the osteoarthritis initiative

Authors, Julie E. Davis Lori Lyn Price Grace H. Lo Charles B. Eaton Timothy E. McAlindon Bing Lu Mary F. Barbe Jeffrey B. Driban [Email author](#)

Abstract

We examined the association between previously reported modifiable risk factors for accelerated knee osteoarthritis (AKOA) at the Osteoarthritis Initiative's (OAI) baseline and 48-month visits among adults who develop AKOA between the 48- and 96-month visits.

We conducted a case–control study using data from the OAI baseline to the 96-month visit. Participants had no radiographic knee osteoarthritis (KOA) in the index knee at OAI baseline and 48-month visits [Kellgren–Lawrence (KL) <2]. We classified 2 groups: (1) AKOA: >1 knee developed advance-stage KOA (KL = 3 or 4) between 48- and 96-month visits and (2) No KOA: no KOA and no change in radiographic severity bilaterally over 96 months. We used logistic regression models to evaluate the association between the outcome of AKOA (versus no KOA) and several modifiable risk factors collected at OAI baseline and 48-month visits [body mass index (BMI), systolic blood pressure, comorbidity score, and NSAID use]. We also explored a new injury from baseline to 48 months and from 48- to 96 months.

Adults with greater baseline and 48-month BMI were more likely to develop AKOA. Injury was only associated with AKOA onset when it occurred within 4 years of developing AKOA [prior 2 years: odds ratio = 6.21; 95% confidence interval (CI) 3.40, 11.35; 2–4 years prior: odds ratio = 4.42, 95% CI 2.06, 9.50]. BMI may consistently predispose an adult to AKOA, but certain injuries are likely a catalyst for AKOA.

39 B. SHOES**Rocker shoes****Effects of flexible and rigid rocker profiles on in-shoe pressure**

Gait and Posture

Reints R, et al.

The target of this study was to scrutinize the impact of flexible and rigid rocker profiles on in-shoe pressure. The findings illustrated larger reductions of forefoot plantar pressures with the usage of rigid rockers. However, it led to a worse increase of plantar pressures at the first toe compared to rockers that allow toe dorsiflexion.

Methods

- Data with regard to the in-shoe plantar pressure were yielded for a control shoe and the same shoe with rigid and flexible rockers, with the apex positioned at 50% and 60%.
- Maximum mean pressure (MMP) and force-time integral (FTI) were investigated for seven regions of the foot, for 29 healthy female adults peak plantar pressure (PP).
- Generalized estimate equation examined the impact of different shoes on the outcome measures for these regions.

Results

- A marked increase of PP and FTI was discovered at the first toe for both rigid rockers and the flexible rocker with the apex positioned at 60%, compared to the control shoe.
- MMP, on the other hand, exhibited a prominent rise in rockers with an apex position of 60% ($p < 0.001$).
- PP at the first toe was reported to be considerably lower in flexible rockers when compared to rigid rockers ($p < 0.001$).
- For both central and lateral forefoot, PP and MMP appeared to be notably more reduced in rigid rockers ($p < 0.001$), while for the medial forefoot, there were no variations.

40. ANKLE SPRAINS AND INSTABILITY**Rehabilitation**

J Athl Train. 2017 Aug;52(8):753-765. doi: 10.4085/1062-6050-52.5.01. Epub 2017 Jul 13.

Rehabilitation and Improvement of Health-Related Quality-of-Life Detriments in Individuals With Chronic Ankle Instability: A Meta-Analysis.

Powden CJ¹, Hoch JM², Hoch MC².

OBJECTIVE:

To conduct a systematic review with meta-analysis assessing the effectiveness of conservative rehabilitation programs for improving health-related quality of life (HRQL) in individuals with chronic ankle instability (CAI).

DATA SOURCES:

PubMed, MEDLINE, CINAHL, and SPORTDiscus were searched from inception to January 2016.

STUDY SELECTION:

Studies were included if the researchers examined the effects of a conservative rehabilitation protocol in individuals with CAI, used validated patient-reported outcomes (PROs) to quantify participant-perceived HRQL, and provided adequate data to calculate the effect sizes (ESs) and 95% confidence intervals (CIs). Studies were excluded if the authors evaluated surgical interventions, prophylactic taping, or bracing applications or examined only the immediate effects of 1 treatment session.

DATA EXTRACTION:

Two investigators independently assessed methodologic quality using the Physiotherapy Evidence Database (PEDro) Scale. Studies were considered low quality if fewer than 60% of the criteria were met. Level of evidence was assessed using the Strength of Recommendation Taxonomy. Preintervention and postintervention sample sizes, means, and standard deviations of PROs were extracted.

DATA SYNTHESIS:

A total of 15 studies provided 24 participant groups that were included in the analysis. Seven high-quality studies with a median PEDro score of 50% (range = 10%-80%) and a median level of evidence of 2 (range = 1-2) were identified. The magnitudes of preintervention to postintervention PRO differences were examined using bias-corrected Hedges g ESs. Random-effects meta-analysis was performed to synthesize PRO changes across all participant groups. Positive ES values indicated better PRO scores at postintervention than at preintervention. The α level was set at .05. Meta-analysis revealed a strong ES with a nonoverlapping 95% CI (ES = 1.20, CI = 0.80, 1.60; $P < .001$), indicating HRQL improved after conservative rehabilitation.

CONCLUSIONS:

Based on the quality of the evidence and the results of the meta-analysis, grade A evidence showed that conservative rehabilitation produces large improvements in HRQL for people with CAI.

41 A. ACHILLES TENDON AND CALF**Achilles tendinosis**

Br J Sports Med. 2017 Jul 11. pii: bjsports-2016-097163. doi: 10.1136/bjsports-2016-097163.

Patellar and Achilles tendinopathies are predominantly peripheral pain states: a blinded case control study of somatosensory and psychological profiles.

Plinsinga ML¹, van Wilgen CP^{2,3,4}, Brink MS⁵, Vuvan V¹, Stephenson A¹, Heales LJ^{1,6}, Mellor R¹, Coombes BK⁷, Vicenzino BT¹.

STUDY DESIGN:

Case-control design.

BACKGROUND:

Tendinopathy is characterised by pain on tendon loading. In persistent cases of upper limb tendinopathy, it is frequently associated with central nervous system sensitisation, whereas less commonly linked in the case of persistent lower limb tendinopathies.

OBJECTIVES:

Compare somatosensory and psychological profiles of participants with persistent patellar (PT) and Achilles tendinopathies (AT) with pain-free controls.

METHODS:

A comprehensive battery of Quantitative Sensory Testing (QST) was assessed at standardised sites of the affected tendon and remotely (lateral elbow) by a blinded assessor. Participants completed the Victorian Institute of Sports Assessment, a health-related quality of life questionnaire, the Hospital Anxiety and Depression Scale and the Active Australia Questionnaire. Independent t-test and analysis of covariance (sex-adjusted and age-adjusted) were performed to compare groups.

RESULTS:

Participants with PT and AT did not exhibit differences from controls for the QST at the remote site, but there were differences at the affected tendon site. Compared with controls, participants with PT displayed significantly lower pressure pain threshold locally at the tendon ($p=0.012$) and fewer single limb decline squats before pain onset, whereas participants with AT only displayed fewer single heel raises before pain onset, but this pain was of a higher intensity.

CONCLUSION:

PT and AT appear to be predominantly local not widespread pain states related to loading of tendons without significant features of central sensitisation.

44. RHUMATOID ARTHRITIS**Omega 3's helpful**

Clin Rheumatol. 2017 Sep;23(6):330-339. doi: 10.1097/RHU.0000000000000563.

Omega-3 Fatty Acids in Rheumatic Diseases: A Critical Review.

Akbar U¹, Yang M, Kurian D, Mohan C.

Many clinical trials of omega-3 fatty acids, supplied as fish oil supplements, have been carried out in rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), lupus nephritis, and osteoarthritis (OA) over the past 3 decades.

This review attempts to summarize the highlights of these studies to evaluate the clinical efficacy for omega-3 fatty acids to be added alongside existing treatment regimens. A total of 20 clinical trials have been carried out in RA, of which 16 exhibited significant improvements in multiple disease clinical outcomes. Nine clinical trials have been completed in SLE and lupus nephritis, of which 6 exhibited significant improvements in 1 or more clinical outcomes. A total of 4 clinical trials have been conducted in OA, of which 3 exhibited significant improvements in at least 1 clinical parameter. Multiple mechanisms for the clinical effects of omega-3 fatty acids have been implicated, including the modulation of eicosanoid synthesis toward a more anti-inflammatory profile and suppressed production of proinflammatory cytokines.

Overall, fish oil supplements appear to be a safe and effective agent that could be added to the current treatment regimens in RA. Longer-term trials with larger patient cohort sizes are warranted to establish any long-term benefits of fish oil supplements in SLE, lupus nephritis, and OA.

Pesticides and RA**Childhood residential and agricultural pesticide exposures in relation to adult onset rheumatoid arthritis in women**

American Journal of Epidemiology

Parks CG, et al.

The association between early life pesticide exposures and risk of adult onset rheumatoid arthritis (RA) was investigated. The possibility of a link between adult-onset RA and childhood exposures to residential and agricultural pesticides was highlighted in the findings.

Methods

- Researchers assessed childhood pesticide exposures in adult-onset RA in a national cohort of women ages 35–74 (enrolled 2004–2009) in the Sister Study.
- They compared cases (n = 424), reported at enrollment and confirmed by disease modifying anti-rheumatic drugs or steroid use for RA and ≥ 6 weeks bilateral joint swelling, to 48,919 non-cases.
- Data included pesticide use at the longest childhood residence through age 14, farm residence of ≥ 12 months with agricultural pesticide exposures through age 18, and maternal farm experience.
- In addition, odds ratios (OR) and 95% confidence intervals (CI) were adjusted for age, race/ethnicity, education, smoking, and childhood socioeconomic factors.

Results

- Findings demonstrated that RA cases reported more frequent (monthly+) and direct (personal) residential pesticide use in childhood (ORs ranging from 1.1 for infrequent/indirect to 1.8 for frequent/direct; P-trend = 0.013).
- Researchers observed that, compared to women with no residential farm history, odds of RA increased for those reporting a childhood-only farm residence with personal exposure to pesticides used on crops (OR = 1.8:95% CI: 1.1, 2.9) or livestock (OR = 2.0:95% CI: 1.2, 3.3).

45 A. MANUAL THERAPY LUMBAR & GENERAL**Adverse events**

Musculoskelet Sci Pract. 2017 Aug;30:34-41. doi: 10.1016/j.msksp.2017.05.002. Epub 2017 May 11.

Predictive factors for reporting adverse events following spinal manipulation in randomized clinical trials - secondary analysis of a systematic review.

Gorrell LM¹, Brown B², Lystad RP³, Engel RM⁴.

While spinal manipulative therapy (SMT) is recommended for the treatment of spinal disorders, concerns exist about adverse events associated with the intervention.

Adequate reporting of adverse events in clinical trials would allow for more accurate estimations of incidence statistics through meta-analysis. However, it is not currently known if there are factors influencing adverse events reporting following SMT in randomized clinical trials (RCTs). Thus our objective was to investigate predictive factors for the reporting of adverse events in published RCTs involving SMT. The Physiotherapy Evidence Database (PEDro) and Cochrane Central Register of Controlled Trials (CENTRAL) were searched for RCTs involving SMT. Domains of interest included: sample size; publication date relative to the 2010 CONSORT statement; risk of bias; the region treated; and number of intervention sessions. 7398 records were identified, of which 368 articles were eligible for inclusion. A total of 140 (38.0%) articles reported on adverse events. Articles were more likely to report on adverse events if they possessed larger sample sizes, were published after the 2010 CONSORT statement, had a low risk of bias and involved multiple intervention sessions.

The region treated was not a significant predictor for reporting on adverse events. Predictors for reporting on adverse events included larger sample size, publication after the 2010 CONSORT statement, low risk of bias and trials involving multiple intervention sessions. We recommend that researchers focus on developing robust methodologies and participant follow-up regimens for RCTs involving SMT.

Multimodal treatment

J Manipulative Physiol Ther. 2017 Jul - Aug;40(6):397-403. doi: 10.1016/j.jmpt.2017.06.001. Epub 2017 Jul 21.

A Multimodal Approach for Myofascial Pain Syndrome: A Prospective Study.

Segura-Pérez M¹, Hernández-Criado MT¹, Calvo-Lobo C², Vega-Piris L³, Fernández-Martín R¹, Rodríguez-Sanz D⁴.

OBJECTIVE:

The purpose of this study was to analyze pain intensity in patients with myofascial pain syndrome (MPS) following a multimodal rehabilitation protocol.

METHODS:

A prospective study was carried out following the Template for Intervention Description and Replication criteria. Patients were recruited from the rehabilitation unit of a university hospital in Spain between 2009 and 2013. Patients were included if they had a medical diagnosis of MPS in any of the following regions: cervicobrachial (n = 102), lumbosacral (n = 30), elbow (n = 14), ankle and foot (n = 10), and temporomandibular jaw (n = 1). The multimodal rehabilitation protocol included myofascial trigger point dry needling, spray and stretching, Kinesio taping, eccentric exercise, and patient education. The protocol was applied for 4 weeks (5 sessions) for the active and/or latent myofascial trigger points in each body region. Pain intensity was measured by using the visual analog scale (VAS) immediately before beginning of the study and 1 week after completion of the protocol.

RESULTS:

The study sample comprised 150 patients (mean \pm standard deviation age, 51.5 \pm 1.19 years). Statistically significant differences were obtained for reduction in pain intensity (4 \pm 2.03; P = .002). Clinically relevant reductions (VAS \geq 30 mm; P < .001) were obtained in 78.7% of the interventions. Four treatment sessions reduced the VAS score by 10 mm in 83.55% of the sample. There were no statistically significant differences (P = .064) for reduction in pain intensity in the different body regions.

CONCLUSIONS:

A multimodal rehabilitation protocol showed clinically relevant differences in the reduction in pain intensity in different body regions in patients with MPS.

RX of hip in LBP

J Eval Clin Pract. 2017 Aug;23(4):734-740. doi: 10.1111/jep.12705. Epub 2017 Jan 27.

Effects of manual therapy and exercise targeting the hips in patients with low-back pain-A randomized controlled trial.

Bade M¹, Cobo-Estevez M², Neeley D³, Pandya J⁴, Gunderson T⁵, Cook C⁶.

RATIONALE:

The benefits of providing manual therapy and exercise targeting the hips in individuals with mechanical low-back pain (LBP) are not well established.

OBJECTIVES:

The objective in this study is to determine whether a formal prescriptive treatment protocol for the hips improves outcomes in patients with a primary complaint of mechanical LBP.

METHODS:

Eighty-four (84) subjects (50 males, 46.1 ± 16.2 years) were randomized to 1 of 2 groups: pragmatic treatment of the lumbar spine only (LBP) (n = 39) or pragmatic treatment of the lumbar spine and prescriptive treatment of bilateral hips (LBP + HIP) (n = 45). Pragmatic treatment of the lumbar spine was based upon published clinical guidelines. Prescriptive treatment of the hips involved the use of 3 hip exercises targeting the gluteal musculature and 3 mobilization techniques targeting the hips. Subjects were assessed at baseline, 2 weeks, and at discharge with the following measures: Modified Oswestry Disability Index, Numeric Pain Rating Scale, a global rating of change (GRoC) score, the patient acceptable symptom state (PASS), and patient satisfaction.

RESULTS:

At 2 weeks, significant differences between groups differences were found in GRoC and patient satisfaction ($P < .05$) favoring the LBP + HIP group. At discharge, there were significant differences on the Modified Oswestry Disability Index, numeric pain rating scale, GRoC, and patient satisfaction favoring the LBP + HIP group ($P < .05$). Effect sizes were small to medium.

CONCLUSION:

Our findings suggest that a prescriptive treatment of the hips may be of clinical value to individuals presenting with the primary complaint of mechanical LBP.

45 D. MANUAL THERAPY EXTREMITIES**Shoulder CPR not supported**

J Orthop Sports Phys Ther. 2017 Apr;47(4):252-260. doi: 10.2519/jospt.2017.7100. Epub 2017 Mar 3.

Examination of the Validity of a Clinical Prediction Rule to Identify Patients With Shoulder Pain Likely to Benefit From Cervicothoracic Manipulation.

Mintken PE, McDevitt AW, Michener LA, Boyles RE, Beardslee AR, Burns SA, Haberl MD, Hinrichs LA, Cleland JA.

Study Design Secondary analysis of a randomized controlled trial.

Background Prognostic variables identifying patients with shoulder pain who are likely to respond to cervicothoracic manipulation have been reported; however, they have yet to be validated.

Objective To examine the validity of previously reported prognostic variables in predicting which patients with shoulder pain will respond to cervicothoracic manipulation.

Methods Participants (n = 140) with a report of shoulder pain were randomly assigned to receive either 2 sessions of range-of-motion exercises plus 6 sessions of stretching and strengthening exercises (exercise group), or 2 sessions of cervicothoracic manipulation and range-of-motion exercises followed by 6 sessions of stretching and strengthening exercise (manipulative-therapy-plus-exercise group). Outcomes of disability (Shoulder Pain and Disability Index, shortened version of the Disabilities of the Arm, Shoulder and Hand Questionnaire) and pain (numeric pain-rating scale) were collected at baseline, 1 week, 4 weeks, and 6 months. Time, treatment group, status of predictor variables, and 2-way and 3-way interactions were analyzed using linear mixed models with repeated measures.

Results There were no significant 3-way interactions for either disability (P = .27) or pain scores (P = .70) for time, group, and predictor status for any of the predictor variables.

Conclusion The results of the current study did not validate the previously identified prognostic variables; therefore, we cannot support using these in clinical practice. Further updating of the existing prediction rule may be warranted and could potentially result in new prognostic variables and improved generalizability. Limitations of the study were a mean duration of symptoms of greater than 2 years and a loss to follow-up of 19% at 6 months. Level of Evidence Prognosis, level 1b. Trial prospectively registered March 30, 2012 at www.clinicaltrials.gov (NCT01571674). J Orthop Sports Phys Ther 2017;47(4):252-260. Epub 3 Mar 2017. doi:10.2519/jospt.2017.7100.

Shoulder mobs and muscle activity

Musculoskelet Sci Pract. 2017 Aug;30:25-33. doi: 10.1016/j.msksp.2017.04.010. Epub 2017 May 1.

Differences between clinician- and self-administered shoulder sustained mobilization on scapular and shoulder muscle activity during shoulder abduction: A repeated-measures study on asymptomatic individuals.

Ribeiro DC¹, Sole G², Venkat R², Shemmell J³.

BACKGROUND:

Sustained glenohumeral postero-lateral glide administered by a clinician is commonly used in the management of patients with shoulder pain. This technique reduced shoulder muscle activity in asymptomatic individuals, but it is unknown whether a self-administered version of the mobilization leads to similar neuromuscular response. This study compared the effect of sustained shoulder mobilizations (performed by a physiotherapist) with self-administered mobilization (with a belt) on activity levels of scapular and glenohumeral shoulder muscles.

METHODS:

Twenty-two individuals participated in this study, which had a cross-over, repeated measures design. Seven shoulder muscles (upper and lower trapezius, supraspinatus, infraspinatus, posterior deltoid, middle deltoid, and serratus anterior) were monitored using surface electromyography (SEMG) during shoulder abduction performed with a clinician-administered sustained mobilization, and with self-administered sustained mobilization. Muscle activity levels were measured prior, during and after the sustained glide was applied to the shoulder. Mixed-effect models for repeated measures were used for within- and between-condition comparisons.

RESULTS:

There was no carry-over effect. Within-condition comparisons suggest that both interventions lead to changes in scapular and shoulder muscle activity levels. No differences between clinician-administered and self-administered mobilizations at intervention and follow-up were found for the monitored muscles, with the exception of upper trapezius.

CONCLUSIONS:

In young, asymptomatic individuals, self- or clinician-administered sustained mobilizations reduced activity levels of most scapular and shoulder muscles during shoulder abduction. This effect was observed only while the sustained glides were applied to the shoulder. At the immediate follow-up, muscle activity levels were similar to baseline measurements.

46 A. UPPER LIMB NEUROMOBILIZATION**Median nerve mob.**

Pain Pract. 2017 Jul 22. doi: 10.1111/papr.12614.

Effects of Median Nerve Neural Mobilization in Treating Cervicobrachial Pain: A Randomized Waiting List-controlled Clinical Trial.

Rodríguez-Sanz D¹, López-López D², Unda-Solano F¹, Romero-Morales C¹, Sanz-Corbalán I³, Beltrán-Alacreu H⁴, Calvo-Lobo C⁵.

BACKGROUND:

There is a current lack of sufficiently high-quality randomized controlled clinical trials that measure the effectiveness of neural tissue mobilization techniques such as median nerve neural mobilization (MNNM) and their specific effects on cervicobrachial pain (CP). This study aim was to compare the effectiveness of MNNM in subjects with CP versus a waiting list control group (WLCG).

METHODS:

A single-blinded, parallel, randomized controlled clinical trial was performed ([NCT02596815](#)). Subjects were recruited with a medical diagnosis of CP corroborated by magnetic resonance imaging. In total, 156 individuals were screened, 60 subjects were recruited, and 51 completed the trial. Pain intensity reported using the Numeric Rating Scale for Pain (NRSP; primary outcome), cervical range of motion (CROM) and functionality using the Quick-DASH scale were the outcome measurements. Assessments were conducted at baseline and 1-hour after treatment (1, 15 and 30 intervention days). Therefore, MNNM was implemented with 30-days of follow-up.

RESULTS:

The NRSP values of the MNNM group were significantly ($p < 0.0001$; 95% CI) superior to those obtained in the WLCG. Subjects treated with MNNM reported an NRSP decrease of 3.08 points at discharge. CROM and Quick-DASH outcome values were significantly ($p < 0.0001$; 95%CI) improved only in the MNNM group. Hedges' g showed a very large effect of the MNNM intervention.

CONCLUSION:

MNNM may be superior to no treatment in reducing pain and increasing function in the affected upper limb of subjects with CP. This article is protected by copyright. All rights reserved.

46 B. LOWER LIMB NEUROMOBILIZATION**Effectiveness of neural mob**

J Orthop Sports Phys Ther. 2017 Jul 13:1-76. doi: 10.2519/jospt.2017.7117.

The Effectiveness of Neural Mobilization for Neuro-Musculoskeletal Conditions: A Systematic Review and Meta-Analysis.

Basson A¹, Olivier B¹, Ellis R², Coppieters M^{3,4}, Stewart A¹, Mudzi W¹.

Study Design Systematic review with meta-analysis.

Background Neural mobilization (NM) or neurodynamics is a movement-based intervention aimed at restoring the homeostasis in and around the nervous system. The current level of evidence for NM is largely unknown.

Objectives To determine the efficacy of NM for musculoskeletal conditions with a neuropathic component. Methods Databases were searched for randomised trials investigating the effect of NM for neuro-musculoskeletal conditions. Standard methods for article identification, selection and quality appraisal were used. Where possible, studies were pooled for meta-analysis. Primary outcomes were pain, disability and function.

Results Forty studies were included in this review, of which 17 had a low risk of bias. Meta-analyses could only be performed on self-reported outcomes. For chronic low back pain, disability (Oswestry (0-50): mean difference -9.26; 95%CI: -14.50 - -4.01; p=0.0001) and pain (Intensity (0-10): mean difference -1.78; 95%CI: -2.55 - -1.01; p=0.0001) improved following NM. For chronic neck-arm pain, pain improved (Intensity (0-10): mean difference -1.89; 95%CI: -3.14 - -0.64; p=0.0003) following NM. For carpal tunnel syndrome, NM was not effective for most clinical outcomes (p>0.11), but showed positive neurophysiological effects (e.g., reduced intraneural oedema). Due to a scarcity of studies or conflicting results, the effect of NM remains uncertain for various conditions, such as post-operative low back pain, cubital tunnel syndrome and lateral epicondylalgia.

Conclusion This review reveals benefits of NM for back and neck pain, but the effect of NM for other conditions remains unclear. Due to the limited evidence and varying methodological quality, conclusions may change over time. Level of Evidence Level 1. J Orthop Sports Phys Ther, Epub 13 Jul 2017. doi:10.2519/jospt.2017.7117.

48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE**Help plantar fasciitis****Effectiveness of trigger point dry needling for plantar heel pain: A meta-analysis of seven randomized controlled trials**

Journal of Pain Research

He C, et al.

The effectiveness of myofascial trigger points (MTrPs) needling was assessed in patients with plantar heel pain in this meta-analysis. Because of plantar fasciitis, MTrP needling effectively reduced the heel pain. However, more large-scale, adequately powered, good-quality placebo-controlled trials were needed to provide more trustworthy evidence in this area considering the potential limitations in this study.

Methods

- The clinicians systematically reviewed PubMed, Embase, Web of Science, SinoMed (Chinese BioMedical Literature Service System, People's Republic of China), and CNKI (National Knowledge Infrastructure, People's Republic of China) databases for randomized controlled trials (RCTs) that evaluated the effects of MTrP needling.
- They calculated pooled weighted mean difference (WMD) with 95% CIs for change in visual analog scale (VAS) score.
- Pooled risk ratio (RR) with 95% CIs were calculated for success rate for pain and incidence of adverse events.
- They used a fixed-effects model or random-effects model to pool the estimates, depending on the heterogeneity among the included studies.

Results

- The clinicians yielded 1,941 articles.
- Out of which, only 7 RCTs met the inclusion criteria and were included in this meta-analysis.
- The pooled results demonstrated that compared with control, MTrP needling significantly reduced the VAS score (WMD = -15.50, 95% CI: -19.48, -11.53; $P < 0.001$).
- However, it had a similar success rate for pain with control (risk ratio [RR] = 1.15, 95% CI: 0.87, 1.51; $P = 0.320$).
- Furthermore, MTrP needling was correlated with a similar incidence of adverse events with control (RR = 1.89, 95% CI: 0.38, 9.39; $P = 0.438$).

49. STRETCHING

Stretching and CV function

Sports Med. 2017 Aug 5. doi: 10.1007/s40279-017-0768-1.

Cardiovascular Responses to Skeletal Muscle Stretching: "Stretching" the Truth or a New Exercise Paradigm for Cardiovascular Medicine?

Kruse NT^{1,2}, Scheuermann BW³.

Stretching is commonly prescribed with the intended purpose of increasing range of motion, enhancing muscular coordination, and preventing prolonged immobilization induced by aging or a sedentary lifestyle. Emerging evidence suggests that acute or long-term stretching exercise may modulate a variety of cardiovascular responses. Specifically, at the onset of stretch, the mechanical deformation of the vascular bed coupled with stimulation of group III muscle afferent fibers initiates a cascade of events resulting in both peripheral vasodilation and a heart rate-driven increase in cardiac output, blood pressure, and muscle blood flow.

This potential to increase shear stress and blood flow without the use of excessive muscle energy expenditure may hold important implications for future therapeutic vascular medicine and cardiac health. However, the idea that a cardiovascular component may be involved in human skeletal muscle stretching is relatively new. Therefore, the primary intent of this review is to highlight topics related to skeletal muscle stretching and cardiovascular regulation and function. The current evidence suggests that acute stretching causes a significant macro- and microcirculatory event that alters blood flow and the relationship between oxygen availability and oxygen utilization. These acute vascular changes if performed chronically may result in improved endothelial function, improved arterial blood vessel stiffness, and/or reduced blood pressure. Although several mechanisms have been postulated, an increased nitric oxide bioavailability has been highlighted as one promising candidate for the improvement in vessel function with stretching.

Collectively, the evidence provided in this review suggests that stretching acutely or long term may serve as a novel and alternative low intensity therapeutic intervention capable of improving several parameters of vascular function.

Chronic stretching and muscle performance

Hum Mov Sci. 2017 Aug;54:220-229. doi: 10.1016/j.humov.2017.05.006. Epub 2017 May 18.

Influence of chronic stretching on muscle performance: Systematic review.

Medeiros DM¹, Lima CS².

The aim of the current study was to investigate the influence of chronic stretching on muscle performance (MP) by a systematic review.

The search strategy included MEDLINE, PEDro, Cochrane CENTRAL, LILACS, and manual search from inception to June 2016. Randomized and controlled clinical trials, non-randomized, and single group studies that have analyzed the influence of flexibility training (FT) (using any stretching technique) on MP were included. Differently, studies with special populations (children, elderly, and people with any dysfunction/disease), and articles that have used FT protocols shorter than three weeks or 12 sessions were excluded. The MP assessment could have been performed by functional tests (e.g. jump, sprint, stretch-shortening cycle tasks), isometric contractions, and/or isotonic contractions. Twenty-eight studies were included out of 513. Seven studies evaluated MP by stretch-shortening cycle tasks, Ten studies evaluated MP by isometric contractions, and 13 studies assessed MP by isotonic contractions. We were unable to perform a meta-analysis due to the high heterogeneity among the included studies. In an individual study level analysis, we identified that 14 studies found positive effects of chronic stretching on MP.

The improvements were observed only in functional tests and isotonic contractions, isometric contractions were not affected by FT. Therefore, FT might have an influence on dynamic MP. However, more studies are necessary to confirm whether FT can positively affect MP.

51. CFS/BET**Sitting and LBP**

Spine (Phila Pa 1976). 2017 Jul 11. doi: 10.1097/BRS.0000000000002326.

Do Physical Activities Trigger Flare-ups During an Acute Low Back Pain Episode? A Longitudinal Case-Crossover Feasibility Study.

Suri P¹, Rainville J, de Schepper E, Martha J, Hartigan C, Hunter DJ.

STUDY DESIGN:

Prospective, longitudinal case-crossover study.

OBJECTIVE:

To determine whether physical activities trigger flare-ups of pain during the course of acute low back pain (LBP).

SUMMARY OF BACKGROUND DATA:

There exist no evidence-based estimates for the transient risk of pain flare-ups associated with specific physical activities, during acute LBP.

METHODS:

Participants with LBP of duration < 3 months completed frequent, Internet-based serial assessments at both 3- and 7-day intervals for 6 weeks. At each assessment, participants reported whether they had engaged in specific physical activity exposures, or experienced stress or depression, over the past 24 hours. Participants also reported whether they were currently experiencing a LBP flare-up, defined as 'a period of increased pain lasting at least 2 hours, when your pain intensity is distinctly worse than it has been recently'. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated for associations between potential triggers over the past 24 hours, and the risk of LBP flare-ups, using conditional logistic regression.

RESULTS:

Of 48 participants followed longitudinally, 30 participants had both case ('flare') and control periods and contributed data to the case-crossover analysis. There were 81 flare periods and 247 control periods, an average of 11 periods per participant. Prolonged sitting (> 6 hours) was the only activity that was significantly associated with flare-ups (OR 4.4, 95% CI 2.0-9.7; $p < 0.001$). Having either stress or depression was also significantly associated with greater risk of flare-ups (OR 2.5, 95% CI 1.0-6.0; $p = 0.04$). In multivariable analyses, prolonged sitting (OR 4.2, 95% CI 1.9-9.1; $p < 0.001$), physical therapy (OR 0.4, 95% CI 0.1-1.0; $p = 0.05$), and stress/depression (OR 2.8, 95% CI 1.2-6.7; $p = 0.02$) were independently and significantly associated with LBP flare-up risk.

CONCLUSIONS:

Among participants with acute LBP, prolonged sitting (>6 hours) and stress or depression triggered LBP flare-ups. Physical therapy was a deterrent of flare-ups.

Back schools

Cochrane Database of Systematic Reviews

Back Schools for chronic non-specific low back pain

Patrícia Parreira, Chung-Wei Christine Lin, Christopher G Maher

DOI: 10.1002/14651858.CD011674.pub2 View/save citation

Background Many people with low back pain (LBP) become frequent users of healthcare services in their attempt to find treatments that minimise the severity of their symptoms. Back School consists of a therapeutic programme given to groups of people that includes both education and exercise. However, the content of Back School has changed over time and appears to vary widely today. This review is an update of a Cochrane review of randomised controlled trials (RCTs) evaluating the effectiveness of Back School. We split the Cochrane review into two reviews, one focusing on acute and subacute LBP, and one on chronic LBP. **Objectives** The objective of this systematic review was to determine the effect of Back School on pain and disability for adults with chronic non-specific LBP; we included adverse events as a secondary outcome. In trials that solely recruited workers, we also examined the effect on work status. **Search methods** We searched for trials in the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, Embase, CINAHL, two other databases and two trials registers to 15 November 2016. We also searched the reference lists of eligible papers and consulted experts in the field of LBP management to identify any potentially relevant studies we may have missed. We placed no limitations on language or date of publication. **Selection criteria** We included only RCTs and quasi-RCTs evaluating pain, disability, and/or work status as outcomes. The primary outcomes for this update were pain and disability, and the secondary outcomes were work status and adverse events. **Data collection and analysis** Two review authors independently performed the 'Risk of bias' assessment of the included studies using the 'Risk of bias' assessment tool recommended by The Cochrane Collaboration. We summarised the results for the short-, intermediate-, and long-term follow-ups. We evaluated the overall quality of evidence using the GRADE approach. **Main results** For the outcome pain, at short-term follow-up, we found very low-quality evidence that Back School is more effective than no treatment (mean difference (MD) -6.10, 95% confidence interval (CI) -10.18 to -2.01). However, we found very low-quality evidence that there is no significant difference between Back School and no treatment at intermediate-term (MD -4.34, 95% CI -14.37 to 5.68) or long-term follow-up (MD -12.16, 95% CI -29.14 to 4.83). There was very low-quality evidence that Back School reduces pain at short-term follow-up compared to medical care (MD -10.16, 95% CI -19.11 to -1.22). Very low-quality evidence showed there to be no significant difference between Back School and medical care at intermediate-term (MD -9.65, 95% CI -22.46 to 3.15) or long-term follow-up (MD -5.71, 95% CI -20.27 to 8.84). We found very low-quality evidence that Back School is no more effective than passive physiotherapy at short-term (MD 1.96, 95% CI -9.51 to 13.43), intermediate-term (MD -16.89, 95% CI -66.56 to 32.79), or long-term follow-up (MD -12.86, 95% CI -61.22 to 35.50). There was very low-quality evidence that Back School is no better than exercise at short-term follow-up (MD -2.06, 95% CI -14.58 to 10.45). There was low-quality evidence that Back School is no better than exercise at intermediate-term (MD -4.46, 95% CI -19.44 to 10.52) and long-term follow-up (MD 4.58, 95% CI -0.20 to 9.36). For the outcome disability, we found very low-quality evidence that Back School is no more effective than no treatment at intermediate-term (MD -5.92, 95% CI -12.08 to 0.23) and long-term follow-up (MD -7.36, 95% CI -22.05 to 7.34); medical care at short-term (MD -1.19, 95% CI -7.02 to 4.64) and long-term follow-up (MD -0.40, 95% CI -7.33 to 6.53); passive physiotherapy at short-term (MD 2.57, 95% CI -15.88 to 21.01) and intermediate-term follow-up (MD 6.88, 95% CI -4.86 to 18.63); and exercise at short-term (MD -1.65, 95% CI -8.66 to 5.37), intermediate-term (MD 1.57, 95% CI -3.86 to 7.00), and long-term follow-up (MD 4.54, 95% CI -4.44 to 13.52). We found very low-quality evidence of a small difference between Back School and no treatment at short-term follow-up (MD -

3.38, 95% CI –6.70 to –0.05) and medical care at intermediate-term follow-up (MD –6.34, 95% CI –10.89 to –1.79). Still, at long-term follow-up there was very low-quality evidence that passive physiotherapy is better than Back School (MD 9.60, 95% CI 3.65 to 15.54). Few studies measured adverse effects. The results were reported as means without standard deviations or group size was not reported. Due to this lack of information, we were unable to statistically pool the adverse events data. Work status was not reported.

Authors' conclusions Due to the low- to very low-quality of the evidence for all treatment comparisons, outcomes, and follow-up periods investigated, it is uncertain if Back School is effective for chronic low back pain. Although the quality of the evidence was mostly very low, the results showed no difference or a trivial effect in favour of Back School. There are myriad potential variants on the Back School approach regarding the employment of different exercises and educational methods. While current evidence does not warrant their use, future variants on Back School may have different effects and will need to be studied in future RCTs and reviews.

57. GAIT**Resisted ex and gait**

Exp Gerontol. 2017 Aug 10;97:80-88. doi: 10.1016/j.exger.2017.08.011.

Effect of resistance training volume on walking speed performance in postmenopausal women: A randomized controlled trial.

Nunes PRP¹, Oliveira AA¹, Martins FM¹, Souza AP¹, Orsatti FL².

Low muscle strength and high abdominal fatness play an important role in fast and usual walking speeds decrement in postmenopausal women (PW). Low-volume resistance training (RT) improves muscle strength. However, high-volume RT has shown to improve muscle strength and abdominal fatness in PW. Thus, high-volume RT would elicit greater improvement in fast and usual walking speeds than low-volume RT.

OBJECTIVE:

To confirm whether the high-volume RT is better than the low-volume RT, we performed a randomized controlled trial (clinical trial registration: RBR-8SBBVP) study to investigate the effects of two different RT volumes (three sets vs. six sets) on fast and usual walking speed performances (fast: one-mile walk test and usual: four-meter walk), muscle strength (1RM test), and abdominal fatness (WC - waist circumference; WC/W waist circumference-to-weight ratio; WHtR - waist-to-height ratio; ABSI - A body shape index; BRI - body roundness index; CI - conicity index) in PW.

METHODS:

Thirty-three PW were randomized (simple randomization) in three groups: control group (CT - no exercise), low-volume RT (LV) and high-volume RT (HV). The RT consisted of eight total body exercises at 70% of one repetition maximum for 16 weeks performed three times a week.

RESULTS:

The fast walking speed (6.1% [CI 95% 2.3-9.9]), WC (-4.1% [CI 95% -6.9 to -1.4]), WHtR (-4.2% [CI 95% -7.0 to -1.4]) and BRI (-10.3% [CI 95% -17.3 to -3.4]) improved in the HV when compared to the LV and CT. The WC/W (-3.7% [CI 95% -6.5 to -0.93]), ABSI (-3.8% [CI 95% -6.5 to -1.2]) and CI (-3.9% [CI 95% -6.6 to -1.3]) improved in the HV when compared to the CT. Muscle strength improved similarly in trained groups (LV: 49.1% [CI 95% 42.5-55.6] and HV: 43.7% [CI 95% 33.0-54.5]) when compared with the CT. No differences were observed in usual walking speed.

CONCLUSION:

Our results suggest that high-volume RT (six sets) at 70% of 1RM is necessary to promote an improved fast walking speed performance and abdominal fatness in PW.

58. RUNNING**Changing running patterns**

Gait Posture. 2017 Aug 9;58:240-245. doi: 10.1016/j.gaitpost.2017.08.005.

Changes in gluteal muscle forces with alteration of footstrike pattern during running.

Vannatta CN¹, Kernozek TW², Gheidi N³.

Gait retraining is a common form of treatment for running related injuries. Proximal factors at the hip have been postulated as having a role in the development of running related injuries. How altering footstrike affects hip muscles forces and kinematics has not been described. Thus, we aimed to quantify differences in hip muscle forces and hip kinematics that may occur when healthy runners are instructed to alter their foot strike pattern from their habitual rear-foot strike to a forefoot strike. This may gain insight on the potential etiology and treatment methods of running related lower extremity injury.

Twenty-five healthy female runners completed a minimum of 10 running trials in a controlled laboratory setting under rear-foot strike and instructed forefoot strike conditions. Kinetic and kinematic data were used in an inverse dynamic based static optimization to estimate individual muscle forces during running. Within subject differences were investigated using a repeated measures multi-variate analysis of variance. Peak gluteus medius and minimus and hamstring forces were reduced while peak gluteus maximus force was increased when running with an instructed forefoot strike pattern. Peak hip adduction, hip internal rotation, and heel-COM distance were also reduced.

Therefore, instructing habitual rearfoot strike runners to run with a forefoot strike pattern resulted in changes in peak gluteal and hamstring muscle forces and hip kinematics. These changes may be beneficial to the development and treatment of running related lower extremity injury.

59. PAIN**Pain and central sensitization****Pain experiences of patients with musculoskeletal pain + central sensitization: A comparative Group Delphi Study**

Axel Georg Meender Schäfer, Leonie Johanna Joos, Katharina Roggemann, Kerstin Waldvogel-Röcker, Michael Pfingsten, Frank Petzke

- <https://doi.org/10.1371/journal.pone.0182207>

Objectives

Central sensitization (CS) is regarded as an important contributing factor for chronification of musculoskeletal pain (MSP). It is crucial to identify CS, as targeted multimodal treatment may be indicated. The primary objective of this study was therefore to explore pain experience of individuals with MSP+CS in order to gain a better understanding of symptoms in relation to CS from a patient perspective. The secondary objective was to investigate whether pain experiences of patients with MSP+CS differ from those of individuals with neuropathic pain (NP).

Methods

We conducted a comparative Group Delphi Study including patients with MSP+CS and neuropathic pain (NP). 13 guiding questions were used to gather information about sensory discriminatory, affective and associated bodily, mental and emotional phenomena related to the pain experience of patients. Descriptions were categorized using qualitative content analysis. Additionally, patients completed several pain related questionnaires.

Results

Nine participants with MSP+CS and nine participants with NP participated. The Delphi procedure revealed three main themes: psycho-emotional factors, bodily factors and environmental factors. Descriptions of patients with MSP+CS showed a complex picture, psycho-emotional factors seem to have a considerable impact on pain provocation, aggravation and relief. Impairments associated with mental ability and psyche affected many aspects of daily life. In contrast, descriptions of patients with NP revealed a rather mechanistic and bodily oriented pain experience.

Discussion

Patients with MSP+CS reported distinct features in relation to their pain that were not captured with current questionnaires. Insight in patient's pain experience may help to choose and develop appropriate diagnostic instruments.

62 A. NUTRITION/VITAMINS**Vit. D helps chronic pain**

Scand J Prim Health Care. 2011 Mar; 29(1): 4–5. Published online 2011 Mar. doi: 10.3109/02813432.2010.530738 PMID: PMC3347929

Vitamin D supplementation for patients with chronic pain

Tue Wenzel Kragstrup, MD

A study [1] in a previous issue of the Scandinavian Journal of Primary Health Care (SJPHC) adds to the growing list of publications on vitamin D as a possible treatment for chronic pain. It describes a high prevalence of hypovitaminosis D in patients with non-specific musculoskeletal pain, headache, and fatigue. The conclusion is that general practitioners should maintain awareness of hypovitaminosis D in these patients. The authors are, however, aware that firm conclusions regarding cause and effect cannot be based on a cross-sectional study, which leaves plenty of room for confounding. Vitamin D supply is defined by sun exposure and dietary intake, which may be affected by work, economy, culture, diseases etc. Similarly, chronic pain may be affected by work, economy, culture, diseases etc.

A recent review describes a number of similar epidemiological studies that link low levels of vitamin D to chronic pain [2]. Correlations to the prevalence of chronic pain have also been found for geographical latitude and season of the year [3–5]. Osteomalacia, a clear biological explanation for an association between low vitamin D and pain is, however, infrequent. Any other mechanism has not been clarified, although vitamin D may inhibit inflammatory cytokines [6]. A Cochrane review from 2010 states that the existing randomized controlled trials are too small to support the hypothesis of vitamin D supplementation as a treatment for chronic pain [7].

The article in SJPHC received attention in the general media [8] and the public are increasingly informed about the associations between low vitamin D and chronic pain (and a number of other conditions). The public likes the idea of a natural and understandable explanation and solution to health problems. This may leave doctors working in general practice in limbo. How should we answer the patient who asks about vitamin D deficiency as a possible explanation for her chronic pain?

The desirable level of vitamin D has recently been evaluated to be 75–110 nmol/L [9]. Sun exposure covers most of the vitamin D supply in the summertime (exposure of 50% of the skin for 12 minutes at mid-latitudes at noontime is equivalent to a daily oral dose of 75 microgram (3.000 IU) vitamin D). In Scandinavia sun exposure does not generate vitamin D in the winter. Dietary vitamin D comes mainly from fatty fish and the normal diet does not provide a sufficient amount of vitamin D. Vitamin D supplements are thus important. A normal multivitamin tablet contains 5–10 µg (200–400 IU) vitamin D. The daily intake of vitamin D supplementation required to reach the desirable vitamin D level depends on the actual vitamin D level and may be calculated [10]. In approximation, the vitamin D level increases 1–2 nmol/L for every 1 µg (40 IU) of daily vitamin D supplementation. For example, a person with a vitamin D level of 20–40 nmol/L would need a daily dose of approximately 55 µg (2.200 IU) vitamin D supplementation to reach a level of 80 nmol/L. The maximum safe daily intake (not risking intoxication) is still debated. A recent review found that the upper safe limit for vitamin D consumption might be 250 µg (10.000 IU) daily [11], but most current guidelines set the recommended limit at 50 µg (2.000 IU) daily for adults. Precautions should be taken with patients with sarcoidosis, kidney disease, leukemia, lymphoma, myeloma, hyperparathyroidism, and others at risk of hypercalcaemia. A daily dose of 50 µg (2000 IU) vitamin D can be reached by combining non prescription vitamin D

ABSTRACTS

supplements, which contain up to 35–38 μg (1,400–1,520 IU) of vitamin D. The vitamin D supplements should be offered as vitamin D3 (cholecalciferol) and, for normal healthy adults, without calcium.

It seems reasonable to use vitamin D supplementation (with or without previous measurement of the vitamin D status) with up to 50 μg (2,000 IU) daily for patients with chronic pain. The supplement may not be a cure for the pain, but the study in the SJPHC demonstrates that low levels of vitamin D are common in this group of patients. The treatment is cheap, relatively safe, and there is emerging evidence that vitamin D supplementation has positive effects on public health [12]. Underlying conditions causing the chronic pain should be diagnosed irrespective of vitamin D status.

Vit D and ovarian CA

J Assist Reprod Genet. 2017 Aug 19. doi: 10.1007/s10815-017-1011-6.

Correlation between follicular fluid levels of sRAGE and vitamin D in women with PCOS.

Garg D¹, Grazi R², Lambert-Messerlian GM³, Merhi Z⁴.

PURPOSE:

The pro-inflammatory advanced glycation end products (AGEs) and their anti-inflammatory soluble receptors, sRAGE, play a role in the pathogenesis of PCOS. There is a correlation between vitamin D (vit D) and sRAGE in the serum, whereby vit D replacement increases serum sRAGE levels in women with PCOS, thus incurring a protective anti-inflammatory role.

OBJECTIVE:

This study aims to compare levels of sRAGE, N-carboxymethyl-lysine (CML; one of the AGEs), and 25-hydroxy-vit D in the follicular fluid (FF) of women with or without PCOS, and to evaluate the correlation between sRAGE and 25-hydroxy-vit D in the FF.

MATERIAL AND METHODS:

Women with (n = 12) or without (n = 13) PCOS who underwent IVF were prospectively enrolled.

RESULTS:

Women with PCOS had significantly higher anti-Mullerian hormone levels, higher number of total retrieved and mature oocytes, and higher number of day 3 and day 5 embryos formed. Compared to women without PCOS, women with PCOS had significantly lower FF sRAGE levels. In women with PCOS, in women without PCOS, and in all participants together, there was a significant positive correlation between sRAGE and 25-hydroxy-vit D. sRAGE positively correlated with CML in women without PCOS but not in women with PCOS.

CONCLUSIONS:

In women with PCOS, the low ovarian levels of the anti-inflammatory sRAGE suggest that sRAGE could represent a biomarker and a potential therapeutic target for ovarian dysfunction in PCOS. Whether there is a direct causal relationship between sRAGE and vit D in the ovaries remains to be determined.

Fish intake reduces CV disease**Fish intake is associated with lower cardiovascular risk in a Mediterranean population: Prospective results from the Moli-sani study**

Nutrition, Metabolism & Cardiovascular Diseases
Bonaccio M, et al.

The relation of fish consumption to risk of composite coronary heart disease (CHD) and stroke was investigated in an extensive population-based cohort adhering to Mediterranean Diet. In a general Mediterranean population, an attenuated risk of composite fatal and non-fatal CHD and stroke was observed in association with fish intake. The favourable link was likely to be driven by fatty fish.

Methods

- Researchers prospectively analyzed 20,969 subjects free from cardiovascular disease at baseline, enrolled in the Moli-sani study (2005-2010).
- The Italian version of the EPIC food frequency questionnaire was used to record food intake.
- Multivariable Cox-proportional hazard models were used to calculate hazard ratios.

Results

- Findings showed that during a median follow-up of 4.3 years, a total of 352 events occurred (n of CHD = 287 and n of stroke = 66).
- Researchers observed that after adjustment for a large panel of covariates, fish intake ≥ 4 times per week was associated with 40% reduced risk of composite CHD and stroke (HR=0.60; 95%CI 0.40-0.90), and with 40% lower risk of CHD (HR=0.60; 95%CI 0.38-0.94) as compared with subjects in the lowest category of intake (<2 times/week).
- They also reported a similar trend of protection for stroke risk although results were not significant (HR=0.62; 95%CI 0.26-1.51).
- Data revealed that when fish types were considered, protection against the composite outcome and CHD was confined to fatty fish intake.