

## 2. LBP

### Hypnosis helps

J Pain. 2018 Apr 11. pii: S1526-5900(18)30124-X. doi: 10.1016/j.jpain.2018.03.013.

#### **Hypnosis Enhances the Effects of Pain Education in Patients with Chronic Non-Specific Low Back Pain: a Randomized Controlled Trial.**

Rizzo RRN<sup>1</sup>, Medeiros FC<sup>2</sup>, Pires LG<sup>2</sup>, Pimenta RM<sup>2</sup>, McAuley JH<sup>3</sup>, Jensen MP<sup>4</sup>, Costa LOP<sup>2</sup>.

The potential benefits of combining pain education (PE) with clinical hypnosis (CH) has not yet been investigated in individuals with chronic pain. A total of 100 patients with chronic non-specific low back pain were randomized to receive either (1) PE alone or (2) PE plus CH. Outcomes were collected by a blinded assessor at 2 weeks and 3 months after randomization. The primary outcomes were average pain intensity, worst pain intensity (both assessed with 11-point Numerical Rating Scales), and disability (24-item Roland Morris Disability Questionnaire) at 2 weeks. At 2 weeks, participants who received PE plus CH reported lower worst pain intensity (mean difference = 1.35 points, 95% confidence interval [CI] = 0.32 to 2.37) and disability (mean difference = 2.34 points, 95% CI = 0.06 to 4.61), but not average pain intensity (mean difference = 0.67 point, 95% CI = -0.27 to 1.62), relative to participants who received PE alone. PE plus CH participants also reported more global perceived benefits at 2 weeks (mean difference = -1.98 points 95% CI = -3.21 to -0.75).

At three months, participants who received PE plus CH reported lower worst pain intensity (mean difference = 1.32 points, 95% CI = 0.29 to 2.34) and catastrophizing (mean difference = 5.30 points, 95% CI = 1.20 to 9.41). No adverse effects in either treatment condition were reported. This is the first trial showing that adding hypnosis to PE results in improved outcomes over PE alone in patients with chronic non-specific low back pain.

This trial was prospectively registered at [clinicaltrials.gov](https://clinicaltrials.gov): [NCT02638753](https://clinicaltrials.gov/ct2/show/study/NCT02638753) PERSPECTIVE: This study provides evidence supporting the efficacy of another treatment option for teaching patients to self-manage chronic low back pain that has a relatively low cost and that can be offered in groups.

**PT initiation helps LBP**

Phys Ther. 2018 May 1;98(5):336-347. doi: 10.1093/ptj/pzy023.

**Immediate Physical Therapy Initiation in Patients With Acute Low Back Pain Is Associated With a Reduction in Downstream Health Care Utilization and Costs.**

Liu X<sup>1</sup>, Hanney WJ<sup>2</sup>, Masaracchio M<sup>3</sup>, Kolber MJ<sup>4</sup>, Zhao M<sup>5</sup>, Spaulding AC<sup>6</sup>, Gabriel MH<sup>7</sup>.

**BACKGROUND:**

Physical therapy is an important treatment option for patients with low back pain (LBP). However, whether to refer patients for physical therapy and the timing of initiation remain controversial.

**OBJECTIVE:**

The objective of this study was to evaluate the impact of receiving physical therapy and the timing of physical therapy initiation on downstream health care utilization and costs among patients with acute LBP.

**DESIGN:**

The design was a retrospective cohort study.

**METHODS:**

Patients who had a new onset of LBP between January 1, 2009, and December 31, 2013, in New York State were identified and grouped into different cohorts on the basis of whether they received physical therapy and the timing of physical therapy initiation. The probability of service use and LBP-related health care costs over a 1-year period were analyzed.

**RESULTS:**

Among 46,914 patients with acute LBP, 40,246 patients did not receive physical therapy and 6668 patients received physical therapy initiated at different times. After controlling for patient characteristics and adjusting for treatment selection bias, health care utilization and cost measures over the 1-year period were the lowest among patients not receiving physical therapy, followed by patients with immediate physical therapy initiation (within 3 days), with some exceptions. Among patients receiving physical therapy, those receiving physical therapy within 3 days were consistently associated with the lowest health care utilization and cost measures.

**LIMITATIONS:**

This study was based on commercial insurance claims data from 1 state.

**CONCLUSIONS:**

When referral for physical therapy is warranted for patients with acute LBP, immediate referral and initiation (within 3 days) may lead to lower health care utilization and LBP-related costs.

**Self-reported progress**

Disabil Rehabil. 2018 May 9:1-9. doi: 10.1080/09638288.2018.1467503.

**Clinical assessment and patient-reported outcome measures in low-back pain - a survey among primary health care physiotherapists.**

Östhols S<sup>1,2</sup>, Boström C<sup>1,3</sup>, Eva RB<sup>1</sup>.

**PURPOSE:**

We aimed to map the physiotherapy practice in Sweden of clinical tests and patient-reported outcome measures in low-back pain (LBP), and to study advantages and barriers in using patient-reported outcome measures.

**METHODS:**

An online survey was mailed to 4934 physiotherapists in primary health care in Sweden. Multiple choice questions investigated the use of clinical tests and patient-reported outcome measures in assessing patients with LBP. Open questions investigating the advantages and barriers to the use of patient-reported outcome measures were analyzed with content analysis.

**RESULTS:**

The response rate was 25% (n = 1217). Clinical tests were used "always/often" by >60% of the participants, while most patient-reported outcome measures were used by <15%. Advantages in using patient-reported outcome measures were: the clinical reasoning process, to increase the quality of assessment, to get the patient's voice, education and motivation of patients, and communication with health professionals. Barriers were lack of time and knowledge, administrative aspects, the interaction between physiotherapist and patient and, the applicability and validity of the patient-reported outcome measures.

**CONCLUSION:**

Our findings show that physiotherapists working in primary health care use clinical testing in LBP to a great extent, while various patient-reported outcome measures are used to a low-to-very-low extent. Several barriers to the use of patient-reported outcome measures were reported such as time, knowledge, and administrative issues, while important findings on advantages were to enhance the clinical reasoning process and to educate and motivate the patient. Barriers might be changed through education or organizational change-work. To enhance the use of patient-reported outcome measures and thus person-centered care in low-back pain, recommendation, and education on various patient-reported outcome measures need to be advocated. Implications for rehabilitation To increase the effects of rehabilitation in low-back pain, yellow flags, and other factors need to be taken into the consideration in the assessment which means the use of patient-reported outcome measures in addition to clinical testing. The use of patient-reported outcome measures is an advantage in the clinical reasoning process to enhance the quality of assessment and to educate and motivate the patient. Barriers to use patient-reported outcome measures are mainly lack of time and knowledge, and administrative aspects. Through education or organizational change-work, barriers to the use of patient-reported outcome measures might be changed.

### Pain science

Phys Ther. 2018 May 1;98(5):408-423. doi: 10.1093/ptj/pzy022.

#### **Cognitive Functional Therapy: An Integrated Behavioral Approach for the Targeted Management of Disabling Low Back Pain.**

O'Sullivan PB<sup>1</sup>, Caneiro JP<sup>2</sup>, O'Keeffe M<sup>3</sup>, Smith A<sup>4</sup>, Dankaerts W<sup>5</sup>, Fersum K<sup>6</sup>, O'Sullivan K<sup>7</sup>.

Biomedical approaches for diagnosing and managing disabling low back pain (LBP) have failed to arrest the exponential increase in health care costs, with a concurrent increase in disability and chronicity.

Health messages regarding the vulnerability of the spine and a failure to target the interplay among multiple factors that contribute to pain and disability may partly explain this situation. Although many approaches and subgrouping systems for disabling LBP have been proposed in an attempt to deal with this complexity, they have been criticized for being unidimensional and reductionist and for not improving outcomes. Cognitive functional therapy was developed as a flexible integrated behavioral approach for individualizing the management of disabling LBP. This approach has evolved from an integration of foundational behavioral psychology and neuroscience within physical therapist practice.

It is underpinned by a multidimensional clinical reasoning framework in order to identify the modifiable and nonmodifiable factors associated with an individual's disabling LBP. This article illustrates the application of cognitive functional therapy to provide care that can be adapted to an individual with disabling LBP.

### 3. DISC

### 4. INJECTIONS

### 5. SURGERY

### 6. PELVIC GIRDLE

## 7. PELVIC ORGANS/WOMAN'S HEALTH

### Smoking and infant bronchitis

#### **Prenatal and postnatal tobacco smoke exposure and risk of severe bronchiolitis during infancy**

Leili Behrooz Diana S. Balekian Mohammad Kamal Faridi Janice A. Espinola Liam P. Townley  
,  
Carlos A. Camargo

DOI: <https://doi.org/10.1016/j.rmed.2018.05.013>

#### Highlights

- Postnatal smoke exposure increases the risk of severe bronchiolitis in infancy.
- Other risk factors; Hispanic ethnicity, preterm birth and younger maternal age.
- Maternal prenatal smoking did not significantly increase infant bronchiolitis.

#### Abstract

##### Background

Maternal prenatal smoking has adverse effects on the growing fetus including those of respiratory nature. Although postnatal smoke exposure is a risk factor for respiratory infections, the effects of prenatal smoking independent of postnatal smoke exposure are less established. We hypothesized that both maternal prenatal smoking, and postnatal smoke exposure are risk factors for severe bronchiolitis during infancy.

##### Methods

We performed a case-control study of 1353 children born between 1996 and 2011 at a single teaching hospital. Cases were admitted to the same hospital for bronchiolitis during infancy. Maternal prenatal smoking was collected from birth records. Postnatal smoke exposure was collected from review of electronic health records. Multivariable logistic regression was used to evaluate the independent associations of the two smoking variables with severe bronchiolitis.

##### Results

6% of cases were exposed to maternal prenatal smoking, compared with 4% of controls ( $P = 0.10$ ). Postnatal smoke exposure was present in the households of 17% of cases compared with 3% of controls ( $P < 0.001$ ). In a multivariable model with both smoking variables and adjustment for 10 covariates, maternal prenatal smoking was not a significant risk factor for severe bronchiolitis (adjusted OR = 1.02, 95%CI 0.56–1.84). By contrast, postnatal smoke exposure was associated with >300% increased odds (adjusted OR 4.19, 95%CI 2.51–6.98).

##### Conclusions

Although maternal prenatal smoking has many known adverse effects, it was not associated with increased odds of severe bronchiolitis in either unadjusted or multivariable analyses. Postnatal smoke exposure was a consistently strong risk factor. Our findings support ongoing efforts to decrease infant exposure to ambient smoke.

### Vit D

#### **Vitamin D replacement ameliorates serum lipoprotein functions, adipokine profile and subclinical atherosclerosis in pre-menopausal women**

Nutrition, Metabolism & Cardiovascular Diseases — Greco D, et al. | May 17, 2018

Researchers assessed the influence of vitamin D (vitD) normalization by supplementation on HDL cholesterol efflux capacity (CEC), which inversely correlates with cardiovascular (CV) risk, the proatherogenic serum cholesterol loading capacity (CLC), adipokine profile and subclinical atherosclerosis in Healthy premenopausal women with vitD deficiency. Following vitD replacement, restoration of normal levels of serum 25-hydroxyvitamin D (25OHD) and significant improvement in flow-mediated dilation (FMD) and augmentation index (AIx) occurred. Significant improvement in total CEC, with a specific increase in the ABCA1(ATP-binding cassette transporter A1)-mediated CEC, was noted.

A significant reduction was seen in serum CLC, while an increase in levels of adiponectin and decrease in resistin was observed. Overall, vitD supplementation for CV risk prevention was supported.

## 8. VISCERA

### Adolescent impact of lung function

Eur Respir J. 2018 May 10. pii: 1702111. doi: 10.1183/13993003.02111-2017.

#### **Tobacco smoke exposure in early life and adolescence in relation to lung function.**

Thacher JD<sup>1</sup>, Schultz ES<sup>1</sup>, Hallberg J<sup>1,2,3</sup>, Hellberg U<sup>4</sup>, Kull I<sup>1,2,3</sup>, Thunqvist P<sup>2,3</sup>, Pershagen G<sup>1,4</sup>, Gustafsson PM<sup>5,6</sup>, Melén E<sup>1,2</sup>, Bergström A<sup>1,4</sup>.

Maternal smoking during pregnancy is associated with impaired lung function among young children, but less is known about long-term effects and the impact of adolescents' own smoking.

We investigated the influence of maternal smoking during pregnancy, secondhand smoke exposure, and adolescent smoking on lung function at age 16 years. The BAMSE birth cohort collected information on participant's tobacco smoke exposure through repeated questionnaires, and measured saliva cotinine concentrations at age 16. Participants performed spirometry and impulse oscillometry (IOS) at age 16 (n=2295). Exposure to maternal smoking during pregnancy was associated with reduced FEV<sub>1</sub>/FVC of -1.1% (95% CI -2.0 to -0.2). IOS demonstrated greater resistance at R<sub>5-20</sub> Hz in participants exposed to maternal smoking during pregnancy. Adolescents who smoked had reduced FEV<sub>1</sub>/FVC ratios of -0.9% (95% CI -1.8 to -0.1) and increased resistance of 6.5 Pa·L<sup>-1</sup>·s in R<sub>5-20</sub> Hz (95% CI: 0.7 to 12.2). Comparable associations for FEV<sub>1</sub>/FVC were observed for cotinine concentrations, using ≥12 ng·mL<sup>-1</sup> as a cut-off for adolescent smoking.

Maternal smoking during pregnancy was associated with lower FEV<sub>1</sub>/FVC ratios and increased airway resistance. Adolescent smoking also appears to be associated with reduced FEV<sub>1</sub>/FVC ratios and increased peripheral airway resistance.

**Fatty liver disease and sugary beverage****QJM. 2016 Jul;109(7):461-466. doi: 10.1093/qjmed/hcv172. Epub 2015 Sep 18.****Associations of sugar- and artificially sweetened soda with nonalcoholic fatty liver disease: a systematic review and meta-analysis.**Wijarnpreecha K<sup>1</sup>, Thongprayoon C<sup>2</sup>, Edmonds PJ<sup>3</sup>, Cheungpasitporn W<sup>2</sup>.*BACKGROUND/OBJECTIVES:*

Nonalcoholic fatty liver disease (NAFLD) is the major concern of public health worldwide. The risk of NAFLD in subjects who regularly drink soda is controversial. The aim of this study was to assess the association between consumption of sugar-sweetened soda and NAFLD.

*METHODS:*

A literature search was performed using MEDLINE, EMBASE, and Cochrane Database of Systematic Reviews from inception through June 2015. Studies that reported relative risks, odd ratios, or hazard ratios comparing the risk of NAFLD in patients consuming a significant amount of either sugar or artificially sweetened soda vs. those who did not consume soda were included. Pooled risk ratios (RRs) and 95% confidence interval (CI) were calculated using a random-effect, generic inverse variance method.

*RESULTS:*

Seven observational studies were included in our analysis to assess the association between consumption of sugar-sweetened soda and NAFLD. The pooled RR of NAFLD in patients consuming sugar-sweetened soda was 1.53 (95% CI: 1.34-1.75, I(2) = 0). When meta-analysis was limited only to studies with adjusted analysis, the pooled RR of NAFLD was 1.55 (95% CI: 1.36-1.78, I(2) = 0). The data on association between consumption of artificially sweetened soda and NAFLD were limited; one observational study reported no significant increased risk of NAFLD in artificially sweetened soda consumption.

*CONCLUSIONS:*

Our study demonstrates statistically significant association between sugar-sweetened soda consumption and NAFLD. This finding may impact clinical management and primary prevention of NAFLD.



**9. THORACIC SPINE**

**Mobility loss with sedentary lifestyle**

Rehabilitation medicine Research

**What is the effect of prolonged sitting and physical activity on thoracic spine mobility? An observational study of young adults in a UK university setting**

1. Nicola R Heneghan<sup>1</sup>, Gemma Baker<sup>2</sup>, Kimberley Thomas<sup>3</sup>, Deborah Falla<sup>1</sup>, Alison Rushton<sup>1</sup>

**Objective** Sedentary behaviour has long been associated with neck and low back pain, although relatively little is known about the thoracic spine. Contributing around 33% of functional neck movement, understanding the effect of sedentary behaviour and physical activity on thoracic spinal mobility may guide clinical practice and inform research of novel interventions.

**Design** An assessor-blinded prospective observational study designed and reported in accordance with Strengthening the Reporting of Observational Studies in Epidemiology.

**Setting** UK university (June–September 2016).

**Participants** A convenience sample (18–30 years) was recruited and based on self-report behaviours, the participants were assigned to one of three groups: group 1, sitters—sitting >7 hours/day+physical activity<150 min/week; group 2, physically active—moderate exercise >150 min/week+sitting <4 hours/day and group 3, low activity—sitting 2–7 hours/day+physical activity <150 min/week.

**Outcome measures** Thoracic spine mobility was assessed in the heel-sit position using Acumar digital goniometer; a validated measure. Descriptive and inferential analyses included analysis of variance and analysis of covariance for between group differences and Spearman’s rank correlation for post hoc analysis of associations.

**Results** The sample (n=92) comprised: sitters n=30, physically active n=32 and low activity n=30. Groups were comparable with respect to age and body mass index.

Thoracic spine mobility (mean (SD)) was: group 1 sitters 64.75 (1.20), group 2 physically active 74.96 (1.18) and group 3 low activity 68.44 (1.22). Significant differences were detected between (1) sitters and low activity, (2) sitters and physically active (p<0.001). There was an overall effect size of 0.31. Correlations between thoracic rotation and exercise duration (r=0.67, p<0.001), sitting duration (r=-0.29, p<0.001) and days exercised (r=0.45, p<0.001) were observed.

**Conclusions** Findings evidence reduced thoracic mobility in individuals who spend >7 hours/day sitting and <150 min/week of physical activity. Further research is required to explore possible causal relationships between activity behaviours and spinal musculoskeletal health.

**10 A. CERVICAL SPINE 10 B. CERVICAL EXERCISES 11. UPPER C SPINE 12 A. WHIPLASH 12 B. CERVICAL SURGERIES 13 A. CRANIUM 13 B. TMJ/ORAL 13 C. AIRWAYS/SWALLOWING/SPEECH**

**14. HEADACHES****Diffusion rates different in HA's**

AJNR Am J Neuroradiol. 2018 May;39(5):935-941. doi: 10.3174/ajnr.A5582. Epub 2018 Mar 15.

**Brain Diffusion Abnormalities in Children with Tension-Type and Migraine-Type Headaches.**

Santoro JD<sup>1</sup>, Forkert ND<sup>2</sup>, Yang QZ<sup>1</sup>, Pavitt S<sup>1</sup>, MacEachern SJ<sup>3</sup>, Moseley ME<sup>4</sup>, Yeom KW<sup>5</sup>.

**BACKGROUND AND PURPOSE:**

Tension-type and migraine-type headaches are the most common chronic paroxysmal disorders of childhood. The goal of this study was to compare regional cerebral volumes and diffusion in tension-type and migraine-type headaches against published controls.

**MATERIALS AND METHODS:**

Patients evaluated for tension-type or migraine-type headache without aura from May 2014 to July 2016 in a single center were retrospectively reviewed. Thirty-two patients with tension-type headache and 23 with migraine-type headache at an average of 4 months after diagnosis were enrolled. All patients underwent DWI at 3T before the start of pharmacotherapy. Using atlas-based DWI analysis, we determined regional volumetric and diffusion properties in the cerebral cortex, thalamus, caudate, putamen, globus pallidus, hippocampus, amygdala, nucleus accumbens, brain stem, and cerebral white matter. Multivariate analysis of covariance was used to test for differences between controls and patients with tension-type and migraine-type headaches.

**RESULTS:**

There were no significant differences in regional brain volumes between the groups. Patients with tension-type and migraine-type headaches showed significantly increased ADC in the hippocampus and brain stem compared with controls. Additionally, only patients with migraine-type headache showed significantly increased ADC in the thalamus and a trend toward increased ADC in the amygdala compared with controls.

**CONCLUSIONS:**

This study identifies early cerebral diffusion changes in patients with tension-type and migraine-type headaches compared with controls. The hypothesized mechanisms of nociception in migraine-type and tension-type headaches may explain the findings as a precursor to structural changes seen in adult patients with chronic headache.

**15. VESTIBULAR 16. CONCUSSIONS 17. SHOULDER GIRDLE 18. CLAVICLE**

## 19. GLENOHUMERAL/SHOULDER

### Role of psychological factors in shoulder pain

Rehabilitation medicine Research

#### **The role of psychological factors in the perpetuation of pain intensity and disability in people with chronic shoulder pain: a systematic review**

1. Javier Martinez-Calderon<sup>1,2</sup>, Mira Meeus<sup>2,3,4</sup>, Filip Struyf<sup>2</sup>, Jose Miguel orales-Asencio<sup>5</sup>, Gabriel Gijon-Nogueron<sup>6</sup>, Alejandro Luque-Suarez<sup>1</sup>

#### **Abstract**

**Introduction** Chronic shoulder pain is a very complex syndrome, and the mechanisms involved in its perpetuation remain unclear. Psychological factors appear to play a role in the perpetuation of symptoms in people with shoulder chronicity. The purpose of this systematic review is to examine the role of psychological factors in the perpetuation of symptoms (pain intensity and disability) in people with chronic shoulder pain.

**Methods and analysis** A systematic search was performed on PubMed, AMED, CINAHL, PubPsych and EMBASE from inception to July 2017. Longitudinal studies with quantitative designs analysing the role of psychological factors on pain intensity, disability or both were included. The methodological quality of the included studies was evaluated with an adapted version of the Newcastle Ottawa Scale. The level of evidence per outcome was examined using the Grading of Recommendations Assessment, Development and Evaluation approach.

**Results** A total of 27 articles were included with a sample of 11 176 people with chronic shoulder pain. The risk of bias ranges from 7/21 to 13/21 across the studies. The quality of the evidence was very low. High levels of self-efficacy, resilience and expectations of recovery were significantly associated with low levels of pain intensity and disability. Inversely, high levels of emotional distress, depressive symptoms, anxiety, preoperative concerns, fear-avoidance beliefs, somatisation and pain catastrophising were significantly associated with high levels of pain intensity and disability.

**Discussion** Our results suggest that psychological factors may influence the perpetuation of pain intensity and disability, with very low evidence. A meta-analysis was not carried out due to the heterogeneity of the included studies so results should be interpreted with caution.

## 20 A. ROTATOR CUFF

## 20 B. LABRUM

## 21. ADHESIVE CAPSULITIS

### Manual therapy regional interdependence approach

J Man Manip Ther. 2018 May;26(2):109-118. doi: 10.1080/10669817.2018.1432524. Epub 2018 Mar 26.

#### **A pragmatic regional interdependence approach to primary frozen shoulder: a retrospective case series.**

Wong CK<sup>1</sup>, Strang BL<sup>2</sup>, Schram GA<sup>2</sup>, Mercer EA<sup>2</sup>, Kesting RS<sup>2</sup>, Deo KS<sup>2</sup>.

#### **OBJECTIVES:**

Although the shoulder is known to move together with the scapula and other upper quarter joints, the current frozen shoulder clinical practice guidelines describe only physical therapy study treatments directed to the shoulder. None received a strong recommendation, highlighting the need for alternate interventions. This retrospective case series describes a pragmatic regional interdependence approach to frozen shoulder with impairment and functional outcomes, noting whether final ROM approached normal.

#### **METHODS:**

Five consecutive patients referred with frozen shoulder diagnoses attended 11-21 sessions over 5-10 weeks with one physical therapist. Treatment addressed inter-related regions (shoulder, shoulder girdle, scapulothoracic/humerothoracic, and spine) following a pragmatic approach using impairment-based interventions (joint/soft tissue mobilization, muscle stretching/strengthening) as well as patient education, modalities and warm up that addressed individual presentations.

#### **RESULTS:**

All patients improved on all outcomes. Mean shoulder ROM at discharge, the impairment outcome, demonstrated large effect size increases: flexion ( $117 \pm 10$ - $179 \pm 12$ ,  $d = 5.9$ ), abduction ( $74 \pm 8$ - $175 \pm 9$ ,  $d = 9.3$ ), external rotation ( $23 \pm 7$ - $89 \pm 2$ ,  $d = 12.0$ ). The Disability of Arm Shoulder Hand functional outcome score upon follow up demonstrated a large effect size improvement ( $d = 1.5$ ) from  $40.0 \pm 19.4$ - $6.2 \pm 3.7$ . Final ROM approached normal.

#### **DISCUSSION:**

This case series utilized a regional interdependence approach to frozen shoulder that included manual therapy interventions directed to consistent upper quarter body segments. Shoulder ROM was returned to near normal with functional improvements evident months after discharge. A pragmatic regional interdependence approach addressing multiple joints related to shoulder function may benefit other people with frozen shoulder.

## 22 A. IMPINGMENT

## 22 B. INSTABILITY

## 23. SURGERY

### 24. ELBOW

#### Tennis elbow treated with wrist and shoulder ex

J Phys Ther Sci. 2018 Apr;30(4):590-594. doi: 10.1589/jpts.30.590. Epub 2018 Apr 20.

#### **Effects of eccentric control exercise for wrist extensor and shoulder stabilization exercise on the pain and functions of tennis elbow.**

Lee JH<sup>1</sup>, Kim TH<sup>1</sup>, Lim KB<sup>2</sup>.

[Purpose] This study aimed to conduct experiments to examine the effects of wrist eccentric control exercise or shoulder stabilization exercises after a basic direct treatment of the elbow in the treatment of tennis elbow patients in terms of pain and grip strength.

[Subjects and Methods] The subjects were divided into two groups: one group conducted wrist eccentric control exercise and was comprised of 5 male and 4 female subjects, and the other group received shoulder stabilization exercise and was comprised of 5 male and 4 female subjects.

[Results] In the intragroup comparison, both groups showed a significant decrease in pain level and a significant increase in the measurement of the tenderness thresholds of the upper trapezius muscle, lateral epicondyle, and grip strength. In the intergroup comparison, the shoulder stabilization exercise group showed a significantly greater increase in the measurement of the tenderness thresholds of the upper trapezius muscle and grip strength, and the differences were not significant in the pain level and tenderness threshold of the lateral epicondyle.

[Conclusion] Wrist eccentric control exercise and shoulder stabilization exercises can be useful as intervention methods for relief from pain due to lateral epicondylitis and for the improvement of functions impaired by tennis elbow.

### 25. WRIST AND HAND

### 26. CARPAL TUNNEL SYNDROME

### 27. HIP

### 28. REPLACEMENTS

### 29. OA

### 30 A. IMPINGEMENT

### 30 B. LABRUM

### 31. KNEE

**32 A. KNEE/ACL****Prevention programs**

J Sports Sci. 2018 Apr 19:1-10. doi: 10.1080/02640414.2018.1465723.

**Sport-specific biomechanical responses to an ACL injury prevention programme: A randomised controlled trial.**

Taylor JB<sup>1,2</sup>, Ford KR<sup>1</sup>, Schmitz RJ<sup>2</sup>, Ross SE<sup>2</sup>, Ackerman TA<sup>3</sup>, Shultz SJ<sup>2</sup>.

Anterior cruciate ligament (ACL) injury prevention programmes have not been as successful at reducing injury rates in women's basketball as in soccer. This randomised controlled trial (ClinicalTrials.gov #NCT02530333) compared biomechanical adaptations in basketball and soccer players during jump-landing activities after an ACL injury prevention programme. Eighty-seven athletes were cluster randomised into intervention (6-week programme) and control groups.

Three-dimensional biomechanical analyses of drop vertical jump (DVJ), double- (SAG-DL) and single-leg (SAG-SL) sagittal, and double- (FRONT-DL) and single-leg (FRONT-SL) frontal plane jump landing tasks were tested before and after the intervention. Peak angles, excursions, and joint moments were analysed using two-way MANCOVAs of post-test scores while controlling for pre-test scores. During SAG-SL the basketball intervention group exhibited increased peak knee abduction angles ( $p = .004$ ) and excursions ( $p = .003$ ) compared to the basketball control group ( $p = .01$ ) and soccer intervention group ( $p = .01$ ).

During FRONT-SL, the basketball intervention group exhibited greater knee flexion excursion after training than the control group ( $p = .01$ ), but not the soccer intervention group ( $p = .11$ ). Although women's soccer players exhibit greater improvements in knee abduction kinematics than basketball players, these athletes largely exhibit similar biomechanical adaptations to ACL injury prevention programmes.

**32 B. KNEE/PCL**

## 33. MENISCUS

### Conservative management

Br J Sports Med. 2018 May;52(9):557-565. doi: 10.1136/bjsports-2017-098429. Epub 2018 Feb 2.

#### **Risk factors, diagnosis and non-surgical treatment for meniscal tears: evidence and recommendations: a statement paper commissioned by the Danish Society of Sports Physical Therapy (DSSF).**

Thorlund JB<sup>1</sup>, Juhl CB<sup>1,2</sup>, Ingelsrud LH<sup>1,3</sup>, Skou ST<sup>1,4</sup>.

This statement aimed at summarising and appraising the available evidence for risk factors, diagnostic tools and non-surgical treatments for patients with meniscal tears.

We systematically searched electronic databases using a pragmatic search strategy approach. Included studies were synthesised quantitatively or qualitatively, as appropriate. Strength of evidence was determined according to the Grading of Recommendations Assessment Development and Evaluation framework. Low-quality evidence suggested that overweight (degenerative tears, k=3), male sex (k=4), contact and pivoting sports (k=2), and frequent occupational kneeling/squatting (k=3) were risk factors for meniscal tears.

There was low to moderate quality evidence for low to high positive and negative predictive values, depending on the underlying prevalence of meniscal tears for four common diagnostic tests (k=15, n=2474). Seven trials investigated exercise versus surgery (k=2) or the effect of surgery in addition to exercise (k=5) for degenerative meniscal tears. There was moderate level of evidence for exercise improving self-reported pain (Effect Size (ES)-0.51, 95% CI -1.16 to 0.13) and function (ES -0.06, 95% CI -0.23 to 0.11) to the same extent as surgery, and improving muscle strength to a greater extent than surgery (ES -0.45, 95% CI -0.62 to -0.29). High-quality evidence showed no clinically relevant effect of surgery in addition to exercise on pain (ES 0.18, 95% 0.05 to 0.32) and function (ES, 0.13 95% CI -0.03 to 0.28) for patients with degenerative meniscal tears. No randomised trials comparing non-surgical treatments with surgery in patients younger than 40 years of age or patients with traumatic meniscal tears were identified.

Diagnosis of meniscal tears is challenging as all clinical diagnostic tests have high risk of misclassification. Exercise therapy should be recommended as the treatment of choice for middle-aged and older patients with degenerative meniscal lesions. Evidence on the best treatment for young patients and patients with traumatic meniscal tears is lacking.

## 34. PATELLA

## 35. KNEE/TOTAL

## 36. KNEE/EXERCISE

**37. OSTEOARTHRITIS/KNEE****Psychological factors**

BMC Psychol. 2018 May 2;6(1):19. doi: 10.1186/s40359-018-0234-3.

**Psychological health is associated with knee pain and physical function in patients with knee osteoarthritis: an exploratory cross-sectional study.**

Iijima H<sup>1,2,3</sup>, Aoyama T<sup>4</sup>, Fukutani N<sup>4</sup>, Isho T<sup>4,5</sup>, Yamamoto Y<sup>6</sup>, Hiraoka M<sup>7</sup>, Miyanobu K<sup>6</sup>, Jinnouchi M<sup>8</sup>, Kaneda E<sup>6,7,8</sup>, Kuroki H<sup>4</sup>, Matsuda S<sup>9</sup>.

*BACKGROUND:*

Depressive symptoms are a major comorbidity in older adults with knee osteoarthritis (OA). However, the type of activity-induced knee pain associated with depression has not been examined. Furthermore, there is conflicting evidence regarding the association between depression and performance-based physical function. This study aimed to examine (i) the association between depressive symptoms and knee pain intensity, particularly task-specific knee pain during daily living, and (ii) the association between depressive symptoms and performance-based physical function, while considering other potential risk factors, including bilateral knee pain and ambulatory physical activity.

*METHODS:*

Patients in orthopaedic clinics (n = 95; age, 61-91 years; 67.4% female) who were diagnosed with radiographic knee OA (Kellgren/Lawrence [K/L] grade  $\geq 1$ ) underwent evaluation of psychological health using the Geriatric Depression Scale (GDS). Knee pain and physical function were assessed using the Japanese Knee Osteoarthritis Measure (JKOM), 10-m walk, timed up and go (TUG), and five-repetition chair stand tests.

*RESULTS:*

Ordinal logistic regression analysis showed that depression, defined as a GDS score  $\geq 5$  points, was significantly associated with a worse score on the JKOM pain-subcategory and a higher level of task-specific knee pain intensity during daily living, after being adjusted for age, sex, body mass index (BMI), K/L grade, and ambulatory physical activity. Furthermore, depression was significantly associated with a slower gait velocity and a longer TUG time, after adjusting for age, sex, BMI, K/L grade, presence of bilateral knee pain, and ambulatory physical activity.

*CONCLUSIONS:*

These findings indicate that depression may be associated with increased knee pain intensity during daily living in a non-task-specific manner and is associated with functional limitation in patients with knee OA, even after controlling for covariates, including bilateral knee pain and ambulatory physical activity.

**38 A. FOOT AND ANKLE 38 B. FOOT TYPES****38 C. FOOT EXERCISE****39 A. ORTHOTICS****39 B. SHOES**



**40. ANKLE SPRAINS AND INSTABILITY****Exercise on unstable surface helps**

*J Exerc Rehabil.* 2018 Apr 26;14(2):301-305. doi: 10.12965/jer.1836082.041. eCollection 2018 Apr.

Effects of ankle strengthening exercise program on an unstable supporting surface on proprioception and balance in adults with functional ankle instability.

Ha SY<sup>1</sup>, Han JH<sup>1</sup>, Sung YH<sup>1</sup>.

The present study was conducted to investigate the effect of ankle strengthening exercise applied on unstable supporting surfaces on the proprioceptive sense and balance in adults with functional ankle instability.

As for the study method, 30 adults with functional ankle instability were randomly assigned to an ankle strengthening exercise group and a stretching group on unstable supporting surfaces, and the interventions were implemented for 40 min. Before and after the interventions, a digital dual inclinometer was used to measure the proprioceptive sense of the ankle, the Balancia program was used to measure static balance ability, and the functional reach test was used to measure dynamic balance ability. \

In the results, both proprioceptive sense and static dynamic balance ability were significantly different between before and after the intervention in the experimental group ( $P<0.05$ ).

When such results are put together, it can be seen that ankle strengthening exercise applied on unstable supporting surfaces may be presented as an effective treatment method for enhancing the proprioceptive sense and balance ability in adults with functional ankle instability.

**41 A. ACHILLES TENDON AND CALF****Retear functional outcomes**

Knee Surg Sports Traumatol Arthrosc. 2018 Apr 24. doi: 10.1007/s00167-018-4952-0

**Patients with an Achilles tendon re-rupture have long-term functional deficits in function and worse patient-reported outcome than primary ruptures.**

Westin O<sup>1,2</sup>, Nilsson Helander K<sup>3,4,5</sup>, Grävare Silbernagel K<sup>3,6</sup>, Samuelsson K<sup>3,4</sup>, Brorsson A<sup>3,7</sup>, Karlsson J<sup>3,4</sup>.

**PURPOSE:**

The aim of this study was to perform a long-term follow-up of patients treated for an Achilles tendon re-rupture, using established outcome measurements for tendon structure, lower extremity function and symptoms, and to compare the results with those for the uninjured side. A secondary aim was to compare the outcome with that of patients treated for primary ruptures. The hypotheses were that patients with a re-rupture recover well, and have similar long-term outcome as primary ruptures.

**METHODS:**

Twenty patients (4 females) with a mean (SD) age of 44 (10.9) years, ranging from 24 to 64, were included. The patients were identified by reviewing the medical records of all Achilles tendon ruptures at Sahlgrenska University Hospital and Kungsbäcka Hospital, Sweden, between 2006 and 2016. All patients received standardised surgical treatment and rehabilitation. The mean (SD) follow-up was 51 (38.1) months. A test battery of validated clinical and functional tests, patient-reported outcome measurements and measurements of tendon elongation were performed at the final follow-up. This cohort was then compared with the 2-year follow-up results from a previous randomised controlled trial of patients treated for primary Achilles tendon rupture.

**RESULTS:**

There were deficits on the injured side compared with the healthy side in terms of heel-rise height (11.9 versus 12.5 cm,  $p = 0.008$ ), repetitions (28.5 versus 31.7,  $p = 0.004$ ) and drop-jump height (13.2 versus 15.1 cm,  $p = 0.04$ ). There was a significant difference in calf circumference (37.1 versus 38.4 cm,  $p < 0.001$ ) and ankle dorsiflexion on the injured side compared with the healthy side (35.3° versus 40.8°,  $p = 0.003$ ). However, no significant differences were found in terms of tendon length 22.5 (2.5) cm on the injured side and 21.8 (2.8) cm on the healthy side. Compared with primary ruptures, the re-rupture cohort obtained significantly worse results for the Achilles tendon total rupture score, with a mean of 78 (21.2) versus 89.5 (14.6) points, ( $p = 0.007$ ). The re-ruptures showed a higher mean LSI heel-rise height, 94.7% (9.3%) versus 83.5% (11.7%) ( $p < 0.0001$ ), and superior mean LSI eccentric-concentric power, 110.4% (49.8%) versus 79.3% (21%) ( $p = 0.001$ ), than the primary ruptures.

**CONCLUSION:**

The results of this study indicate that patients with an Achilles tendon re-rupture had continued symptoms and functional deficits on the injured side, after a long-term follow-up. Patients with an Achilles tendon re-rupture had worse patient-reported outcomes but similar or superior functional results compared with patients with primary ruptures.

### MT and exercise for

J Sports Med Phys Fitness. 2018 May;58(5):664-668. doi: 10.23736/S0022-4707.17.06952-3. Epub 2017 Feb 21.

#### **The EdUReP approach plus manual therapy for the management of insertional Achilles tendinopathy.**

Sartorio F<sup>1</sup>, Zanetta A<sup>2</sup>, Ferriero G<sup>3</sup>, Bravini E<sup>4</sup>, Vercelli S<sup>5</sup>.

Insertional Achilles tendinopathy (IAT) is a challenging overuse disorder. The aim of this case report was to study the feasibility of a comprehensive rehabilitative approach according to the Education, Unloading, Reloading, and Prevention (EdUReP) framework combined with Instrument-Augmented Soft Tissue Mobilization (I-ASTM).

An active 51-year-old man patient with chronic IAT was studied. Clinical assessment battery was composed by visual analogue scale for pain during the Achilles tendon palpation test, passive straight leg raise test, single leg hop test, Patient-Specific Functional Scale, and Foot and Ankle Ability Measure. The patient was treated over a 8 weeks period using the EdUReP guidelines plus 8 sessions of I-ASTM, applied with a solid instrument to the Achilles tendon and to the muscle fibrotic areas previously identified during evaluation. Clinically significant improvements were observed in all outcome measures, and a resume of patient's usual sports activities without pain or limitations was possible after treatment. Results lasted over a 6-month follow-up.

To the best of our knowledge, this is the first study applying a comprehensive approach based on accurate physical assessment, and using the EdUReP theoretical model. The combination of the EdUReP model and manual therapy was effective in resolving the patient's symptoms and restore his usual sport activities. While these results cannot be generalized, the present findings could provide a valuable foundation for future researches.

### **41 B. COMPARTMENT SYNDROME**

### **42. PLANTAR SURFACE**

### 43. HALLUX VALGUS

#### Mobilization and ex helped

J Am Podiatr Med Assoc. 2018 Apr 23. doi: 10.7547/17-026.

#### **Foot Mobilization and Exercise Program in Combination with Toe Separator Improves Outcomes in Women with Moderate Hallux Valgus at the One-Year Follow-Up: A Randomized Clinical Trial.**

Abdalbary SA<sup>1</sup>.

#### *BACKGROUND:*

Few studies have documented the outcome of conservative treatment of hallux valgus deformities on pain and muscle strength. Our objective in this study was to determine the effects of foot mobilization and exercise program, in combination with use of a toe separator, on symptomatic moderate hallux valgus in female patients.

#### *METHODS:*

As part of the randomized clinical trial, 56 adult female patients with moderate hallux valgus were randomly assigned to one of two groups: 36 sessions for 3 months or no intervention (waiting list). All patients in the treatment group had been treated with mobilization for all the joints of the foot, strengthening exercises for the plantar flexion and abduction of the hallux, toe grip strength, stretching for ankle dorsiflexion, plus use of a toe separator. Outcome measures were pain and American Orthopedic Foot and Ankle Society (AOFAS) scores. Objective measurements included ankle range of motion, plantar flexion and abduction strength, toe grip strength, and radiographic angular measurements. Outcome measures were assessed by comparing pre-treatment, post-treatment, and a one-year follow-up after the intervention, by an assessor blinded to the treatment allocation of the patient. Mixed-model analyses of variance were used for statistical assessment.

#### *RESULTS:*

Patients who were treated with 3 months of foot mobilization and exercise program combined with the use of a toe separator experienced greater improvement in pain  $2.4 \pm 1$ , AOFAS score, ankle range of motion  $74.5 \pm 2$ , plantar flexion and abduction of the hallux strength, toe grip strength, and radiographic angular measurements, than those who did not receive an intervention, at both 3 months and one year post-intervention ( $P < 0.001$  for all comparisons).

#### *CONCLUSIONS:*

The effect of these results support the use of a 'multi-faceted conservative intervention' to treat moderate hallux valgus, although more research is needed to study which aspects of intervention were most effective.

PMID: 29683337 DOI: 10.7547/17-026

### 44. RHUMATOID ARTHRITIS

**45 A. MANUAL THERAPY LUMBAR & GENERAL****Pain thresholds helped with manipulative therapy**

Chiropr Man Therap. 2018 Apr 19;26:11. doi: 10.1186/s12998-018-0181-3. eCollection 2018.

**The regional effect of spinal manipulation on the pressure pain threshold in asymptomatic subjects: a systematic literature review.**

Honoré M<sup>1,2,3</sup>, Leboeuf-Yde C<sup>1,2,3</sup>, Gagey O<sup>1,2</sup>.

**BACKGROUND:**

Spinal manipulation (SM) has been shown to have an effect on pain perception. More knowledge is needed on this phenomenon and it would be relevant to study its effect in asymptomatic subjects.

**OBJECTIVES:**

To compare regional effect of SM on pressure pain threshold (PPT) vs. sham, inactive control, mobilisation, another SM, and some type of physical therapy. In addition, we reported the results for the three different spinal regions.

**METHOD:**

A systematic search of literature was done using PubMed, Embase and Cochrane. Search terms were ((spinal manipulation) AND (experimental pain)); ((spinal manipulative therapy OR spinal manipulation) AND ((experimental pain OR quantitative sensory testing OR pressure pain threshold OR pain threshold)) (Final search: June 13th 2017). The inclusion criteria were SM performed anywhere in the spine; the use of PPT, PPT tested in an asymptomatic region and on the same day as the SM. Studies had to be experimental with at least one external or internal control group. Studies on only spinal motion or tenderness, other reviews, case reports, and less than 15 invited participants in each group were excluded. Evidence tables were constructed with information relevant to each research question and by spinal region. Results were reported in relation to statistical significance and were interpreted taking into account their quality.

**RESULTS:**

Only 12 articles of 946 were accepted. The quality of studies was generally good. In 8 sham controlled studies, a psychologically and physiologically "credible" sham was found in only 2 studies. A significant difference was noted between SM vs. Sham, and between SM and an inactive control. No significant difference in PPT was found between SM and another SM, mobilisation or some type of physical therapy. The cervical region more often obtained significant findings as compared to studies in the thoracic or lumbar regions.

**CONCLUSION:**

SM has an effect regionally on pressure pain threshold in asymptomatic subjects. The clinical significance of this must be quantified. More knowledge is needed in relation to the comparison of different spinal regions and different types of interventions.

**45 B. MANUAL THERAPY CERVICAL**

**45 C. MANUAL THERAPY THORACIC****Manipulation of T spine improves neural mobility**

J Manipulative Physiol Ther. 2018 May;41(4):332-341. doi: 10.1016/j.jmpt.2017.10.006. Epub 2018 Apr 16.

**Immediate Effects of Thoracic Spine Thrust Manipulation on Neurodynamic Mobility.**

Hartstein AJ<sup>1</sup>, Lievre AJ<sup>2</sup>, Grimes JK<sup>3</sup>, Hale SA<sup>2</sup>.

**OBJECTIVE:**

The purpose of this study was to investigate the immediate effects of thoracic spine thrust manipulation (TSM) on the upper limb provocation test (ULPT) and seated slump test (SST) in individuals with identified neurodynamic mobility impairments. A secondary aim was to determine if correlation existed between the perception of effect and improvements in neurodynamic mobility following a thrust manipulation compared with mobilization.

**METHODS:**

A pretest-posttest experimental design randomized 48 adults into 2 groups: TSM or mobilization. Participants with identified neurodynamic mobility impairment as assessed with the ULPT or SST received a pre-assigned intervention (TSM, n = 64 limbs; mobilization, n = 66 limbs). Perception of effect was assessed to determine its influence on outcome. Repeated-measures analysis of variance was used to examine the effects of intervention, and Fisher's exact test and independent t tests were used to determine the influence of perception.

**RESULTS:**

Both the ULPT ( $P < .001$ ) and SST ( $P < .001$ ) revealed improvements at posttest regardless of intervention. The ULPT effect sizes for TSM ( $d = 0.70$ ) and mobilization ( $d = 0.69$ ) groups were medium. For the SST, the effect size for the TSM group ( $d = 0.53$ ) was medium, whereas that for the mobilization group ( $d = 0.26$ ) was small. Participants in the mobilization group with positive perception had significantly greater ( $P < .05$ ) mean neurodynamic mobility changes than those with a negative perception.

**CONCLUSIONS:**

Neurodynamic mobility impairment improved regardless of intervention. The magnitude of change was greater in the ULPT than SST. Although both interventions appeared to yield similar outcomes, individuals who received mobilization and expressed a positive perception of effect exhibited significantly greater changes in neurodynamic mobility than those without a positive perception.

**45 D. MANUAL THERAPY EXTREMITIES****Regional interdependence approach to frozen shoulder**

J Man Manip Ther. 2018 May;26(2):109-118. doi: 10.1080/10669817.2018.1432524. Epub 2018 Mar 26.

**A pragmatic regional interdependence approach to primary frozen shoulder: a retrospective case series.**

Wong CK<sup>1</sup>, Strang BL<sup>2</sup>, Schram GA<sup>2</sup>, Mercer EA<sup>2</sup>, Kesting RS<sup>2</sup>, Deo KS<sup>2</sup>.

**OBJECTIVES:**

Although the shoulder is known to move together with the scapula and other upper quarter joints, the current frozen shoulder clinical practice guidelines describe only physical therapy study treatments directed to the shoulder. None received a strong recommendation, highlighting the need for alternate interventions. This retrospective case series describes a pragmatic regional interdependence approach to frozen shoulder with impairment and functional outcomes, noting whether final ROM approached normal.

**METHODS:**

Five consecutive patients referred with frozen shoulder diagnoses attended 11-21 sessions over 5-10 weeks with one physical therapist. Treatment addressed inter-related regions (shoulder, shoulder girdle, scapulothoracic/humerothoracic, and spine) following a pragmatic approach using impairment-based interventions (joint/soft tissue mobilization, muscle stretching/strengthening) as well as patient education, modalities and warm up that addressed individual presentations.

**RESULTS:**

All patients improved on all outcomes. Mean shoulder ROM at discharge, the impairment outcome, demonstrated large effect size increases: flexion ( $117 \pm 10$ - $179 \pm 12$ ,  $d = 5.9$ ), abduction ( $74 \pm 8$ - $175 \pm 9$ ,  $d = 9.3$ ), external rotation ( $23 \pm 7$ - $89 \pm 2$ ,  $d = 12.0$ ). The Disability of Arm Shoulder Hand functional outcome score upon follow up demonstrated a large effect size improvement ( $d = 1.5$ ) from  $40.0 \pm 19.4$ - $6.2 \pm 3.7$ . Final ROM approached normal.

**DISCUSSION:**

This case series utilized a regional interdependence approach to frozen shoulder that included manual therapy interventions directed to consistent upper quarter body segments. Shoulder ROM was returned to near normal with functional improvements evident months after discharge. A pragmatic regional interdependence approach addressing multiple joints related to shoulder function may benefit other people with frozen shoulder.

**Frozen shoulder**

Physiother Theory Pract. 2018 Apr 16:1-21. doi: 10.1080/09593985.2018.1457118.

**Effectiveness of translational manipulation under interscalene block for the treatment of adhesive capsulitis of the shoulder: A nonrandomized clinical trial.**

Rendeiro DG<sup>1</sup>, Deyle GD<sup>2</sup>, Gill NW 3rd<sup>3</sup>, Majkowski GR<sup>4</sup>, Lee IE<sup>5</sup>, Jensen DA<sup>6</sup>, Wainner RS<sup>7</sup>.

**STUDY DESIGN:**

Nonrandomized controlled trial.

**OBJECTIVE:**

To determine whether translational manipulation under anesthesia/local block (TMUA) adds to the benefit of mobilization and range of motion exercise for improving pain and functional status among patients with adhesive capsulitis of the shoulder (AC).

**BACKGROUND:**

TMUA has been shown to improve pain and dysfunction in patients with AC. This intervention has not been directly compared to physical therapy treatment without TMUA in a prospective trial.

**METHODS:**

Sixteen consecutive patients with a primary diagnosis of AC were divided into two groups. Patients in the first (TMUA) group received a session of translational manipulation under interscalene block, followed by six sessions of manipulation and exercise. Patients in the comparison group received seven sessions of manipulation and exercise. Outcome measures taken at baseline and 3, 6, 12 months and 4 years included Shoulder Pain and Disability Index (SPADI) scores. Four-year outcomes included percent of normal ratings, medication use, and activity limitations.

**RESULTS:**

Both groups showed improved SPADI scores across all follow-up times compared to baseline. The TMUA group showed a greater improvement in SPADI scores than the comparison group at 3 weeks, with no significant differences in SPADI scores at other time points. However, at 4 years, significantly more subjects in the comparison group (5 of 8) had activity limitations versus subjects in the TMUA group (1 of 8). No subject experienced a complication from either intervention protocol.

**CONCLUSION:**

Physical therapy consisting of manual therapy and exercise provides benefit for patients with AC. Translational manipulation under local block may be a useful adjunct to manual therapy and exercise for patients with AC.



**Mobs help lateral tendinopathies**

J Hand Ther. 2018 Apr 25. pii: S0894-1130(17)30289-2. doi: 10.1016/j.jht.2018.01.010.

**Do joint mobilizations assist in the recovery of lateral elbow tendinopathy? A systematic review and meta-analysis.**

Lucado AM<sup>1</sup>, Dale RB<sup>2</sup>, Vincent J<sup>3</sup>, Day JM<sup>4</sup>.

*STUDY DESIGN:*

Systematic review.

*INTRODUCTION:*

No consensus exists as to which are the most effective methods to treat the symptoms associated with lateral elbow tendinopathy (LET). Research has suggested that joint mobilizations may assist in the recovery of patients with LET.

*PURPOSE OF THE STUDY:*

To determine if joint mobilizations are effective in improving pain, grip strength, and disability in adults with LET.

*METHODS:*

Searches in 3 databases were performed to identify relevant clinical trials. Reviewers independently extracted data and assessed the methodological quality. Summary measures of quantitative data were extracted or calculated where possible. Appropriate data were pooled for meta-analysis using a random-effects model.

*RESULTS:*

A total of 20 studies met the inclusion criteria; 7 were included in the meta-analysis. Studies were broadly classified into 3 groups: mobilization with movement (MWM), Mill's manipulation, and regional mobilization techniques. Pooled data across all time periods demonstrated a mean effect size of 0.43 (95% confidence interval [CI]: 0.15-0.71) for MWM on improving pain rating, and 0.31 (95% CI: 0.11-0.51) for MWM on improving grip strength, 0.47 (95% CI: 0.11-0.82) for Mill's manipulation on improving pain rating. A mean effect size of -0.01 (95% CI: -0.27 to -0.26) shows Mill's manipulation did not improve pain free grip strength. Functional outcomes varied considerably among studies. Pain, grip strength, and functional outcomes were improved with regional mobilizations.

*CONCLUSION:*

There is compelling evidence that joint mobilizations have a positive effect on both pain and/or functional grip scores across all time frames compared to control groups in the management of LET.

### 46 A. UPPER LIMB NEUROMOBILIZATION

#### Thoracic manip helps neural mobility

J Manipulative Physiol Ther. 2018 May;41(4):332-341. doi: 10.1016/j.jmpt.2017.10.006. Epub 2018 Apr 16.

#### **Immediate Effects of Thoracic Spine Thrust Manipulation on Neurodynamic Mobility.**

Hartstein AJ<sup>1</sup>, Lievre AJ<sup>2</sup>, Grimes JK<sup>3</sup>, Hale SA<sup>2</sup>.

#### **OBJECTIVE:**

The purpose of this study was to investigate the immediate effects of thoracic spine thrust manipulation (TSM) on the upper limb provocation test (ULPT) and seated slump test (SST) in individuals with identified neurodynamic mobility impairments. A secondary aim was to determine if correlation existed between the perception of effect and improvements in neurodynamic mobility following a thrust manipulation compared with mobilization.

#### **METHODS:**

A pretest-posttest experimental design randomized 48 adults into 2 groups: TSM or mobilization. Participants with identified neurodynamic mobility impairment as assessed with the ULPT or SST received a pre-assigned intervention (TSM, n = 64 limbs; mobilization, n = 66 limbs). Perception of effect was assessed to determine its influence on outcome. Repeated-measures analysis of variance was used to examine the effects of intervention, and Fisher's exact test and independent t tests were used to determine the influence of perception.

#### **RESULTS:**

Both the ULPT ( $P < .001$ ) and SST ( $P < .001$ ) revealed improvements at posttest regardless of intervention. The ULPT effect sizes for TSM ( $d = 0.70$ ) and mobilization ( $d = 0.69$ ) groups were medium. For the SST, the effect size for the TSM group ( $d = 0.53$ ) was medium, whereas that for the mobilization group ( $d = 0.26$ ) was small. Participants in the mobilization group with positive perception had significantly greater ( $P < .05$ ) mean neurodynamic mobility changes than those with a negative perception.

#### **CONCLUSIONS:**

Neurodynamic mobility impairment improved regardless of intervention. The magnitude of change was greater in the ULPT than SST. Although both interventions appeared to yield similar outcomes, individuals who received mobilization and expressed a positive perception of effect exhibited significantly greater changes in neurodynamic mobility than those without a positive perception.

### 46 B. LOWER LIMB NEUROMOBILIZATION

### 47. STRETCHING/MUSCLES

**48 A. STM****HA trigger point rx**

Front Neurol. 2018 Apr 24;9:254. doi: 10.3389/fneur.2018.00254. eCollection 2018.

**Effectiveness of Trigger Point Manual Treatment on the Frequency, Intensity, and Duration of Attacks in Primary Headaches: A Systematic Review and Meta-Analysis of Randomized Controlled Trials.**

Falsiroli Maistrello L<sup>1</sup>, Geri T<sup>1</sup>, Gianola S<sup>2,3</sup>, Zaninetti M<sup>1,4</sup>, Testa M<sup>1</sup>.

**BACKGROUND:**

A variety of interventions has been proposed for symptomatology relief in primary headaches. Among these, manual trigger points (TrPs) treatment gains popularity, but its effects have not been investigated yet.

**OBJECTIVE:**

The aim was to establish the effectiveness of manual TrP compared to minimal active or no active interventions in terms of frequency, intensity, and duration of attacks in adult people with primary headaches.

**METHODS:**

We searched MEDLINE, COCHRANE, Web Of Science, and PEDro databases up to November 2017 for randomized controlled trials (RCTs). Two independent reviewers appraised the risk-of-bias (RoB) and the grading of recommendations, assessment, development, and evaluation (GRADE) to evaluate the overall quality of evidence.

**RESULTS:**

Seven RCTs that compared manual treatment vs minimal active intervention were included: 5 focused on tension-type headache (TTH) and 2 on Migraine (MH); 3 out of 7 RCTs had high RoB. Combined TTH and MH results show statistically significant reduction for all outcomes after treatment compared to controls, but the level of evidence was very low. Subgroup analysis showed a statistically significant reduction in attack frequency (no. of attacks per month) after treatment in TTH (MD -3.50; 95% CI from -4.91 to -2.09; 4 RCTs) and in MH (MD -1.92; 95% CI from -3.03 to -0.80; 2 RCTs). Pain intensity (0-100 scale) was reduced in TTH (MD -12.83; 95% CI from -19.49 to -6.17; 4 RCTs) and in MH (MD -13.60; 95% CI from -19.54 to -7.66; 2 RCTs). Duration of attacks (hours) was reduced in TTH (MD -0.51; 95% CI from -0.97 to -0.04; 2 RCTs) and in MH (MD -10.68; 95% CI from -14.41 to -6.95; 1 RCT).

**CONCLUSION:**

Manual TrPs treatment of head and neck muscles may reduce frequency, intensity, and duration of attacks in TTH and MH, but the quality of evidence according to GRADE approach was very low for the presence of few studies, high RoB, and imprecision of results.

**48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE**

**Sensory changes over trigger points**

Clin J Pain. 2018 May;34(5):409-414. doi: 10.1097/AJP.0000000000000560.

**Exploration of Quantitative Sensory Testing in Latent Trigger Points and Referred Pain Areas.**

Ambite-Quesada S<sup>1,2</sup>, Arias-Buría JL<sup>1</sup>, Courtney CA<sup>3</sup>, Arendt-Nielsen L<sup>2</sup>, Fernández-de-Las-Peñas C<sup>1,2</sup>.

*OBJECTIVE:*

The objective of this study was to investigate somatosensory nerve fiber function by applying different quantitative sensory testing including thermal, mechanical, and vibration thresholds over latent trigger points (TrP) and in its associated referred pain area.

*METHODS:*

A total of 20 patients with unilateral latent TrPs in the extensor carpi radialis brevis were included. Warmth detection threshold (WDT), cold detection threshold (CDT) and heat/cold pain thresholds (HPT, CPT), mechanical detection (MDT) and pain (MPT) thresholds, vibration threshold (VT), and pressure pain thresholds (PPT) were blinded assessed over the TrP, in the referred pain area, and in the respective contralateral mirror areas. A multilevel mixed-model ANOVA with site (TrP, referred pain area) and side (real or contralateral) as within-patient factors and sex as between-patients factor was conducted.

*RESULTS:*

No significant differences for thermal detection (WDT, CDT) or thermal pain thresholds (HPT, CPT) were found (all,  $P_s > 0.141$ ). The assessments over the TrP area showed lower PPT and MDT compared with the mirror contralateral TrP area ( $P < 0.05$ ). MDT were higher ( $P = 0.001$ ) but PPT ( $P < 0.001$ ) and MPT ( $P = 0.032$ ) were lower over the TrP area and contralateral mirror point compared with their respectively referred pain areas. Finally, VT was higher over the TrP area than in the referred pain area and over both mirror contralateral points.

*DISCUSSION:*

Assessing sensory changes over latent myofascial TrPs reveal mechanical hyperesthesia, pressure pain hyperalgesia, and vibration hypoesthesia compared with a contralateral mirror area.

**48 C. MUSCLES**

**49. STRETCHING**

**50 A. MOTOR CONTROL**

**50 B. PNF**

**51. CFS/BET**

**52. EXERCISE****Knee and hip OA helped with exercise**

J Orthop Sports Phys Ther. 2018 Apr 18:1-36. doi: 10.2519/jospt.2018.7877.

**Physical Activity and Exercise Therapy Benefits More Than Just Symptoms and Impairments in People With Hip and Knee Osteoarthritis.**

Skou ST<sup>1,2</sup>, Pedersen BK<sup>3</sup>, Abbott JH<sup>4</sup>, Patterson B<sup>5</sup>, Barton C<sup>5</sup>.

**Synopsis** Hip and knee osteoarthritis (OA) are among the leading causes of global disability, highlighting the need for early, targeted, and effective treatments.

The benefits on symptoms and impairments of exercise therapy in people with hip and knee OA are substantial and supported by high-quality evidence, underlining that it should be part of first line treatment offered to all people with hip and knee OA in clinical practice. Furthermore, unlike other treatments for OA such as analgesia and surgery, exercise therapy is not associated with risk of serious harm. Promoting and helping people with OA become more physically active alongside participating in structured exercise therapy targeting symptoms and impairments is crucial considering the majority of people with hip and knee OA do not meet physical activity recommendations. OA is associated with a range of chronic comorbidities, including type 2 diabetes, cardiovascular disease, and dementia, all of which are associated with chronic low-grade inflammation.

Physical activity and exercise therapy not only improves symptoms and impairments of OA, it is also effective as prevention of at least 35 chronic conditions and as treatment of at least 26 chronic conditions with one of the potential working mechanisms being exercise induced anti-inflammatory effects. Patient education may be crucial to ensure long-term adherence and sustained positive effects on symptoms, impairments, physical activity levels and comorbidities. J Orthop Sports Phys Ther, Epub 18 Apr 2018. doi:10.2519/jospt.2018.7877.

**Cost effectiveness of exercise in LBP and neck pain**

Br J Sports Med. 2018 Apr 20. pii: bjsports-2017-098765. doi: 10.1136/bjsports-2017-098765.

**Cost-effectiveness of exercise therapy in the treatment of non-specific neck pain and low back pain: a systematic review with meta-analysis.**

Miyamoto GC<sup>1,2</sup>, Lin CC<sup>3</sup>, Cabral CMN<sup>1</sup>, van Dongen JM<sup>2</sup>, van Tulder MW<sup>2</sup>.

*OBJECTIVE:*

To investigate the cost-effectiveness of exercise therapy in the treatment of patients with non-specific neck pain and low back pain.

*DESIGN:*

Systematic review of economic evaluations.

*DATA SOURCES:*

The search was performed in 5 clinical and 3 economic electronic databases.

*ELIGIBILITY CRITERIA FOR SELECTING STUDIES:*

We included economic evaluations performed alongside randomised controlled trials. Differences in costs and effects were pooled in a meta-analysis, if possible, and incremental cost-utility ratios (ICUR) were descriptively analysed.

*RESULTS:*

Twenty-two studies were included. On average, exercise therapy was associated with lower costs and larger effects for quality-adjusted life-year (QALY) in comparison with usual care for subacute and chronic low back pain from a healthcare perspective (based on ICUR). Exercise therapy had similar costs and effect for QALY in comparison with other interventions for neck pain from a societal perspective, and subacute and chronic low back pain from a healthcare perspective. There was limited or inconsistent evidence on the cost-effectiveness of exercise therapy compared with usual care for neck pain and acute low back pain, other interventions for acute low back pain and different types of exercise therapy for neck pain and low back pain.

*CONCLUSIONS:*

Exercise therapy seems to be cost-effective compared with usual care for subacute and chronic low back pain. Exercise therapy was not (more) cost-effective compared with other interventions for neck pain and low back pain. The cost-utility estimates are rather uncertain, indicating that more economic evaluations are needed.

### LBP exercise

J Exerc Rehabil. 2018 Apr 26;14(2):168-174. doi: 10.12965/jer.1836070.035. eCollection 2018 Apr.

#### **Low back pain, obesity, and inflammatory markers: exercise as potential treatment.**

da Cruz Fernandes IM<sup>1</sup>, Pinto RZ<sup>2</sup>, Ferreira P<sup>3</sup>, Lira FS<sup>1</sup>.

Low back pain is a health issue with significant impact to patients and society.

This narrative review aims to synthesize the relationship between obesity, low-grade inflammation and low back pain. It is known that a sedentary lifestyle is a risk factor for obesity and related disorders. The adipose tissue of obese people secretes a range of cytokines of character pro- and anti-inflammatory, with many molecular effects. In addition, pro-inflammatory cytokines are sensitizers of C-reactive protein (CRP), a marker of acute inflammation that can be linked to the musculoskeletal pain sensation individuals with back pain. Another inflammatory marker deserves mention, prostaglandin E<sub>2</sub>. Prostaglandin E<sub>2</sub> is important in the process of triggering actions such as pyrexia, sensation of pain and inflammation, which are exhibited in low back pain condition.

The potential for exercises and physical activity to control these mediators and act as a preventative measure for back pain are important because they work as a nonpharmacological strategy to this target audience. There are two types of exercise discussed in this review, the moderate-intensity continuous training and high-intensity interval training.

**53. CORE****McGill stab ex**

J Phys Ther Sci. 2018 Apr; 30(4): 481–485. Published online 2018 Apr 13. doi: 10.1589/jpts.30.481 PMID: 29706690

**Effects of McGill stabilization exercises and conventional physiotherapy on pain, functional disability and active back range of motion in patients with chronic non-specific low back pain**

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[Purpose] The aim of this study was to compare the effects of “McGill stabilization exercises” and “conventional physiotherapy” on pain, functional disability and active back flexion and extension range of motion in patients with chronic non-specific low back pain.

[Subjects and Methods] Thirty four patients with chronic non-specific low back pain were randomly assigned to McGill stabilization exercises group (n=17) and conventional physiotherapy group (n=17). In both groups, patients performed the corresponding exercises for six weeks. The visual analog scale (VAS), Quebec Low Back Pain Disability Scale Questionnaire and inclinometer were used to measure pain, functional disability, and active back flexion and extension range of motion, respectively.

[Results] Statistically significant improvements were observed in pain, functional disability, and active back extension range of motion in McGill stabilization exercises group. However, active back flexion range of motion was the only clinical symptom that statistically increased in patients who performed conventional physiotherapy. There was no significant difference between the clinical characteristics while compared these two groups of patients. [

Conclusion] The results of this study indicated that McGill stabilization exercises and conventional physiotherapy provided approximately similar improvement in pain, functional disability, and active back range of motion in patients with chronic non-specific low back pain. However, it appears that McGill stabilization exercises provide an additional benefit to patients with chronic non-specific low back, especially in pain and functional disability improvement.

**Key words:** McGill stabilization exercises, Physiotherapy, Chronic non-specific low back pain



## 54. POSTURE

### Measurement of sagittal alignment

#### Correlation between the sagittal spinopelvic alignment and degenerative lumbar spondylolisthesis: a retrospective study

- Qi Lai<sup>†</sup>, Tian Gao<sup>†</sup>, Xin Lv, Xuqiang Liu, Zongmiao Wan, Min Dai, Bin Zhang Tao Nie

*BMC Musculoskeletal Disorders* 2018 **19**:151  
<https://doi.org/10.1186/s12891-018-2073-z>

#### Background

Pain and disability associated with degenerative lumbar spondylolisthesis (DLS) results in significant burden on both the patients' quality of life and healthcare costs. Currently, there is controversy regarding the specificity of spinopelvic measures of sagittal plane alignment with respect to DLS. Moreover, the correlation among spinopelvic parameters of sagittal plane alignment remains to be clarified. Our aim in this study was to compare these measurements between patients with single-segment DLS at L5 and a control group with no history of DLS.

#### Methods

Our study group was formed of 132 patients who underwent full length lateral view radiographs of the spine in a relaxed standing posture. Among these, DLS at L5 was identified in 72 patients, forming the DLS group, with no radiographic evidence of lumbar spine disease in the remaining 60 patients, forming the control group. The patient and control groups were balanced with regard to age and sex distribution. The following spinopelvic parameters of sagittal plane alignment were measured: angle of incidence (PI) and tilt (PT) of the pelvis; sacral slope (SS); thoracic kyphosis (TK); lumbar lordosis (LL); and the spinal sagittal vertical axis (SVA). The Meyerding grade of L5 slippage was quantified for each patient in the DLS group.

#### Results

Measures of TK, PI, SS, and LL were significantly greater in the DLS than control group ( $P < 0.05$ ), with no between-group difference in SVA and PT. In the DLS group, the grade of L5 slippage correlated with SS ( $r = 0.873$ ,  $P < 0.0001$ ), PI ( $r = 0.791$ ,  $P < 0.0001$ ) and LL ( $r = 0.790$ ,  $P < 0.0001$ ). Moreover, the measurement for SS correlated more strongly with the PI ( $r = 0.94$ ,  $P < 0.01$ ) than the LL ( $r = 0.69$ ,  $P < 0.01$ ).

#### Conclusion

Measurements of SS, PI, and LL were specifically associated with DLS, with measurements correlating positively with the grade of slippage.

### 55. SCOLIOSIS

### 56. ATHLETICS

### 57. GAIT

### 58. RUNNING

### 59. PAIN

#### Psychological perspective

Phys Ther. 2018 May 1;98(5):315-324. doi: 10.1093/ptj/pzy027.

#### **Understanding the Etiology of Chronic Pain From a Psychological Perspective.**

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The etiology of chronic pain-related disability is not fully understood, particularly from a clinical perspective. Investigations to date have identified risk factors and elucidated some important processes driving the development of persistent pain problems.

Yet this knowledge and its application are not always accessible to practicing physical therapists or other clinicians. This article aims to summarize the main psychological processes involved in the development of chronic pain disability and to derive some guidelines for treatment and future research. To this end, the focus is on the paradox of why coping strategies that are helpful in the short term continue to be used even when-ironically-they maintain the problem in the long term. To aid in summarizing current knowledge, 4 tenets that elucidate the etiology of chronic pain are described. These tenets emphasize that chronic pain disability is a developmental process over time, contextual factors set the stage for this development, underlying transdiagnostic psychological factors fuel this development, and the principles of learning steer the development of pain behaviors. With these tenets, an explanation of how a chronic problem develops for one person but not another is provided.

Finally, hypotheses that can be empirically tested to guide clinical application as well as basic research are generated. In conclusion, understanding the psychological processes underlying the etiology of chronic pain provides testable ideas and a path forward for improving treatment interventions.

**Pain science effective**

Phys Ther. 2018 May 1;98(5):357-368. doi: 10.1093/ptj/pzx092.

**Blended-Learning Pain Neuroscience Education for People With Chronic Spinal Pain: Randomized Controlled Multicenter Trial.**

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**BACKGROUND:**

Available evidence favors the use of pain neuroscience education (PNE) in patients with chronic pain. However, PNE trials are often limited to small sample sizes and, despite the current digital era, the effects of blended-learning PNE (ie, the combination of online digital media with traditional educational methods) have not yet been investigated.

**OBJECTIVE:**

The study objective was to examine whether blended-learning PNE is able to improve disability, catastrophizing, kinesiophobia, and illness perceptions.

**DESIGN:**

This study was a 2-center, triple-blind randomized controlled trial (participants, statistician, and outcome assessor were masked).

**SETTING:**

The study took place at university hospitals in Ghent and Brussels, Belgium.

**PARTICIPANTS:**

Participants were 120 people with nonspecific chronic spinal pain (ie, chronic neck pain and low back pain).

**INTERVENTION:**

The intervention was 3 sessions of PNE or biomedically focused back/neck school education (addressing spinal anatomy and physiology).

**MEASUREMENTS:**

Measurements were self-report questionnaires (Pain Disability Index, Pain Catastrophizing Scale, Tampa Scale for Kinesiophobia, Illness Perception Questionnaire, and Pain Vigilance and Awareness Questionnaire).

**RESULTS:**

None of the treatment groups showed a significant change in the perceived disability (Pain Disability Index) due to pain (mean group difference posteducation: 1.84; 95% CI = -2.80 to 6.47). Significant interaction effects were seen for kinesiophobia and several subscales of the Illness Perception Questionnaire, including negative consequences, cyclical time line, and acute/chronic time line. In-depth analysis revealed that only in the PNE group were these outcomes significantly improved (9% to 17% improvement;  $0.37 \leq \text{Cohen } d \leq 0.86$ ).

**LIMITATIONS:**

Effect sizes are small to moderate, which might raise the concern of limited clinical utility; however, changes in kinesiophobia exceed the minimal detectable difference. PNE should not be used as the sole treatment modality but should be combined with other treatment strategies.

**CONCLUSIONS:**

Blended-learning PNE was able to improve kinesiophobia and illness perceptions in participants with chronic spinal pain. As effect sizes remained small to medium, PNE should not be used as a sole treatment but rather should be used as a key element within a comprehensive active rehabilitation program. Future studies should compare the effects of blended-learning PNE with offline PNE and should consider cost-effectiveness.

**60. COMPLEX REGIONAL PAIN****61. FIBROMYALGIA****Body awareness training helps**

Physiother Theory Pract. 2018 May 3:1-11. doi: 10.1080/09593985.2018.1467520.

**Basic Body Awareness Therapy in patients suffering from fibromyalgia: A randomized clinical trial.**

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**INTRODUCTION:**

The aim of this study is to assess whether Basic Body Awareness Therapy (BBAT) improves musculoskeletal pain, movement quality, psychological function, and quality of life.

**METHODS:**

The effects of BBAT in addition to treatment as usual (TAU) were studied in a randomized controlled trial. Forty-one patients were randomly assigned to a control group (n = 21) and an intervention group (n = 20). Both groups received TAU including pharmacological therapy. The intervention group took part in 10 BBAT sessions. Outcome variables were measured regarding pain, movement quality, psychological function, and quality of life. Outcome measures were assessed before intervention, in posttest, and in follow-ups at 12 and 24 weeks.

**RESULTS:**

The BBAT group showed significant improvement in 'pain' at posttest (p = 0.037) and in 'movement quality' from baseline to 24 weeks (p = 0.000). Intragroup analysis showed significant improvements in the SF-36 body pain subscale at 12 and 24 weeks (p = 0.001, p = 0.014), Hospital Anxiety Depression scale in anxiety subscale at 12 weeks (p = 0.019), State-Trait Anxiety Inventory anxiety questionnaire at 12 and 24 weeks (p = 0.012, p = 0.002), and STAI state at 12 and 24 weeks (p = 0.042, p = 0.004).

**CONCLUSION:**

This study showed that BBAT might be an effective intervention in patients suffering from fibromyalgia in relation to pain, movement quality, and anxiety.

### 62 A. NUTRITION/VITAMINS

### 62 B. CRYOTHERAPY

### 63. PHARMACOLOGY

### 64. ELECTROTHERAPY

#### Use for neck stabilization

Spine (Phila Pa 1976). 2018 Apr 12. doi: 10.1097/BRS.0000000000002663.

#### **Does the Use of Electrotherapies Increase the Effectiveness of Neck Stabilization Exercises for Improving Pain, Disability, Mood, and Quality of life in Chronic Neck Pain? A Randomized, Controlled, Single Blind Study.**

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#### **STUDY DESIGN:**

This study was a prospective, randomized, controlled study.

#### **OBJECTIVE:**

The aim of this study was to determine if transcutaneous electrical nerve stimulation (TENS) or interferential current (IFC) increase the effectiveness of neck stabilization exercises on pain, disability, mood, and quality of life for chronic neck pain (CNP).

#### **SUMMARY OF BACKGROUND DATA:**

Neck pain is one of the three most frequently reported complaints of the musculoskeletal system. Electrotherapies; such as IFC and TENS have been applied solo or combined with exercise for management of neck pain; however, the efficacy of these combinations are unclear.

#### **METHODS:**

A total of 81 patients with CNP were included in this study. Patients were randomly assigned into 3 groups regarding age and gender. First group had neck stabilization exercise (NSE), second group had TENS+ NSE and third group had IFC+ NSE. Pain levels (visual analogue scale (VAS)), limits of cervical range of motion (ROM), quality of life (short form- 36), mood (Beck depression inventory), levels of disability (Neck Pain and Disability Index) and the need for analgesics of all patients were evaluated prior to treatment, at 6th and 12th week follow-up. Physical therapy modalities were applied for 15 sessions in all groups. All participants had group exercise accompanied by a physiotherapist for 3 weeks and an additional 3 weeks of home exercise program.

#### **RESULTS:**

According to the intra-group assessment, the study achieved its purpose of pain reduction, ROM increase, improvement of disability, quality of life, mood, and reduction in drug use in all three

treatment groups ( $p < 0.05$ ). However, clinical outcomes at 6th and 12 th week had no significant difference among the three groups ( $p > 0,05$ ).

**CONCLUSION:**

To conclude, TENS and IFC therapies are effective in the treatment of CNP patients. However they have no additional benefit or superiority over NSE.

### 65. NEUROLOGICAL CONDITIONS