

## 2. LBP

### Sedentary life

Occup Environ Med. 2018 Jan 12. pii: oemed-2017-104732. doi: 10.1136/oemed-2017-104732.

#### **Reducing sedentary behaviour to decrease chronic low back pain: the stand back randomised trial.**

Barone Gibbs B<sup>1</sup>, Hergenroeder AL<sup>2</sup>, Perdomo SJ<sup>1</sup>, Kowalsky RJ<sup>3</sup>, Delitto A<sup>2</sup>, Jakicic JM<sup>1</sup>.

#### **OBJECTIVE:**

The Stand Back study evaluated the feasibility and effects of a multicomponent intervention targeting reduced prolonged sitting and pain self-management in desk workers with chronic low back pain (LBP).

#### **METHODS:**

This randomised controlled trial recruited 27 individuals with chronic LBP, Oswestry Disability Index (ODI) >10% and desk jobs (sitting  $\geq 20$  hours/week). Participants were randomised within strata of ODI (>10%-<20%,  $\geq 20\%$ ) to receive bimonthly behavioural counselling (in-person and telephone), a sit-stand desk attachment, a wrist-worn activity-prompting device and cognitive behavioural therapy for LBP self-management or control. Self-reported work sitting time, visual analogue scales (VAS) for LBP and the ODI were assessed by monthly, online questionnaires and compared across intervention groups using linear mixed models.

#### **RESULTS:**

Baseline mean (SD) age was 52 (11) years, 78% were women, and ODI was 24.1 (10.5)%. Across the 6-month follow-up in models adjusted for baseline value, work sitting time was 1.5 hour/day ( $P < 0.001$ ) lower comparing intervention to controls. Also across follow-up, ODI was on average 8 points lower in intervention versus control ( $P = 0.001$ ). At 6 months, the relative decrease in ODI from baseline was 50% in intervention and 14% in control ( $P = 0.042$ ). LBP from VAS was not significantly reduced in intervention versus control, though small-to-moderate effect sizes favouring the intervention were observed (Cohen's  $d$  ranged from 0.22 to 0.42).

#### **CONCLUSION:**

An intervention coupling behavioural counselling targeting reduced sedentary behaviour and pain self-management is a translatable treatment strategy that shows promise for treating chronic LBP in desk-bound employees.

**Sleep and LBP**

Eur J Pain. 2018 Jan;22(1):114-126. doi: 10.1002/ejp.1095. Epub 2017 Aug 27.

**The association between sleep quality, low back pain and disability: A prospective study in routine practice.**

Kovacs FM<sup>1,2</sup>, Seco J<sup>2,3,4</sup>, Royuela A<sup>2,5</sup>, Betegon JN<sup>2,6</sup>, Sánchez-Herráez S<sup>2,6</sup>, Meli M<sup>2,7</sup>, Martínez Rodríguez ME<sup>2,8</sup>, Núñez M<sup>2,9</sup>, Álvarez-Galovich L<sup>2,10</sup>, Moyá J<sup>2,11</sup>, Sánchez C<sup>2,12</sup>, Luna S<sup>2,13</sup>, Borrego P<sup>2,14</sup>, Moix J<sup>2,15</sup>, Rodríguez-Pérez V<sup>2,16</sup>, Torres-Unda J<sup>2,17</sup>, Burgos-Alonso N<sup>2,18</sup>, Gago-Fernández I<sup>2,16</sup>, González-Rubio Y<sup>2,19</sup>, Abraira V<sup>2,20</sup>.

**BACKGROUND:**

The objective of this study was to estimate the association between sleep quality (SQ) and improvements in low back pain (LBP) and disability, among patients treated for LBP in routine practice.

**METHODS:**

This prospective cohort study included 461 subacute and chronic LBP patients treated in 11 specialized centres, 14 primary care centres and eight physical therapy practices across 12 Spanish regions. LBP, leg pain, disability, catastrophizing, depression and SQ were assessed through validated questionnaires upon recruitment and 3 months later. Logistic regression models were developed to assess: (1) the association between the baseline score for SQ and improvements in LBP and disability at 3 months, and (2) the association between improvement in SQ and improvements in LBP and disability during the follow-up period.

**RESULTS:**

Seventy-three per cent of patients were subacute. Median scores at baseline were four points for both pain and disability, as assessed with a visual analog scale and the Roland-Morris Questionnaire, respectively. Regression models showed (OR [95% CI]) that baseline SQ was not associated with improvements in LBP (0.99 [0.94; 1.06]) or in disability (0.99 [0.93; 1.05]), although associations existed between 'improvement in SQ' and 'improvement in LBP' (4.34 [2.21; 8.51]), and 'improvement in SQ' and 'improvement in disability' (4.60 [2.29; 9.27]).

**CONCLUSIONS:**

Improvement in SQ is associated with improvements in LBP and in disability at 3-month follow-up, suggesting that they may reflect or be influenced by common factors. However, baseline SQ does not predict improvements in pain or disability.

**SIGNIFICANCE:**

In clinical practice, sleep quality, low back pain and disability are associated. However, sleep quality at baseline does not predict improvement in pain and disability.

**MSI**

Phys Ther. 2018 Jan 1;98(1):28-39. doi: 10.1093/ptj/pzx094.

**Movement System Impairment-Based Classification Treatment Versus General Exercises for Chronic Low Back Pain: Randomized Controlled Trial.**

Azevedo DC<sup>1</sup>, Ferreira PH<sup>2</sup>, Santos HO<sup>3</sup>, Oliveira DR<sup>3</sup>, de Souza JVL<sup>3</sup>, Costa LOP<sup>4</sup>.

**BACKGROUND:**

Treatment for chronic low back pain (LBP) includes different forms of exercises, that to date have resulted in only small to moderate treatment effects. To enhance the treatment effects, different classification systems have been developed to classify people with LBP into more homogeneous subgroups leading to specific treatments for each subgroup.

**OBJECTIVE:**

The purpose of this study was to compare the efficacy of a treatment based on the Movement System Impairment (MSI) model with a treatment consisting of symptom-guided stretching and strengthening exercises in people with chronic LBP.

**DESIGN:**

The study was a 2-arm, prospectively registered, randomized controlled trial with a blinded assessor.

**SETTING:**

The study setting was a university physical therapy clinic in Brazil.

**PATIENTS:**

A total of 148 participants with chronic LBP participated in the study.

**INTERVENTIONS:**

Participants were randomly allocated to an 8-week treatment of either treatment based on the MSI-based classification system or symptom-guided stretching and strengthening exercises.

**MEASUREMENTS:**

Measures of pain intensity, disability, and global impression of recovery were obtained by a blinded assessor at baseline and at follow-up appointments at 2, 4, and 6 months after randomization.

**RESULTS:**

There were no significant between-group differences for the primary outcomes of pain intensity at 2 months (mean difference = 0.05, 95% CI = -0.90 to 0.80) and disability at 2 months (mean difference = 0.00, 95% CI = -1.55 to 1.56). There also were no statistically significant differences between treatment groups for any of the secondary outcome measures.

**LIMITATIONS:**

Participants and physical therapists were not masked.

**CONCLUSIONS:**

People with chronic LBP had similar improvements in pain, disability, and global impression of recovery with treatment consisting of symptom-guided stretching and strengthening exercises and treatment based on the MSI model.

### CBT for fear avoidance

Arch Phys Med Rehabil. 2017 Dec 13. pii: S0003-9993(17)31398-9. doi: 10.1016/j.apmr.2017.11.003.

#### **Evaluation of Cognitive Behavioral Interventions and Psychoeducation Implemented by Rehabilitation Specialists to Treat Fear-Avoidance Beliefs in Patients with Low Back Pain: A Systematic Review.**

Baez S<sup>1</sup>, Hoch MC<sup>2</sup>, Hoch JM<sup>3</sup>.

#### **OBJECTIVE:**

To systematically locate, critically appraise, and synthesize the available evidence regarding the effectiveness of cognitive behavioral therapies (CBT) and psychoeducation that can be implemented by rehabilitation specialists to treat fear-avoidance beliefs in patients with acute, sub-acute, and chronic low back pain.

#### **DATA SOURCES:**

Electronic databases (CINAHL, PUBMED, PSYCHOLOGY AND BEHAVIOR SCIENCES COLLECTION, SPORTDISCUS, and PSYCH INFO) were searched from inception to September 2017.

#### **STUDY SELECTION:**

Assessment of methodological quality was completed utilizing the Physiotherapy Evidence Database (PEDro) scale. The Strength-of-Recommendation Taxonomy was used to evaluate the quality of evidence.

#### **DATA EXTRACTION:**

Study sample, subject demographics, CBT and/or psychoeducation intervention details, data collection time points, outcome assessments, statistical analysis, results, and conclusions were extracted from each study. In addition, effect sizes were calculated.

#### **DATA SYNTHESIS:**

Five high quality studies (PEDro >6) were included. All included studies evaluated fear-avoidance beliefs. Cognitive behavioral therapies and psychoeducation strategies designed to target patient-specific fears demonstrated clinically meaningful results, while psychoeducation methodologies were not as effective.

#### **CONCLUSION:**

There is inconsistent, patient-oriented evidence (grade B), to support the use of CBTs and/or psychoeducation strategies by rehabilitation specialists to treat fear-avoidance beliefs. Patient-centered and personalized CBTs were most effective to treat these psychosocial factors in patients with LBP when compared to a control treatment.

## CBT implementation

Disabil Rehabil. 2018 Jan;40(1):1-9. doi: 10.1080/09638288.2016.1236155. Epub 2016 Nov 21.

**Physiotherapist-delivered cognitive-behavioural interventions are effective for low back pain, but can they be replicated in clinical practice? A systematic review.**

Hall A<sup>1,2</sup>, Richmond H<sup>2</sup>, Copsey B<sup>2</sup>, Hansen Z<sup>2</sup>, Williamson E<sup>2</sup>, Jones G<sup>2</sup>, Fordham B<sup>2</sup>, Cooper Z<sup>3</sup>, Lamb S<sup>2</sup>.

**PURPOSE:** To determine if physiotherapist-led cognitive-behavioural (CB) interventions are effective for low back pain (LBP) and described sufficiently for replication.

**METHOD:** Randomised controlled trials (RCTs) of patients with LBP treated by physiotherapists using a CB intervention were included. Outcomes of disability, pain, and quality of life were assessed using the GRADE approach. Intervention reporting was assessed using the Template for Intervention Description and Replication.

**RESULTS:** Of 1898 titles, 5 RCTs (n = 1390) were identified. Compared to education and/or exercise interventions, we found high-quality evidence that CB had a greater effect (SMD; 95% CI) on reducing disability (-0.19; -0.32, -0.07), pain (-0.21; -0.33, -0.09); and moderate-quality evidence of little difference in quality of life (-0.06; -0.18 to 0.07). Sufficient information was provided on dose, setting, and provider; but not content and procedural information. Studies tended to report the type of CB component used (e.g., challenging unhelpful thoughts) with little detail on how it was operationalised. Moreover, access to treatment manuals, patient materials and provider training was lacking.

**CONCLUSIONS:** With additional training, physiotherapists can deliver effective CB interventions. However, without training or resources, successful translation and implementation remains unlikely. Researchers should improve reporting of procedural information, provide relevant materials, and offer accessible provider training. Implications for Rehabilitation Previous reviews have established that traditional biomedical-based treatments (e.g., acupuncture, manual therapy, massage, and specific exercise programmes) that focus only on physical symptoms do provide short-term benefits but the sustained effect is questionable. A cognitive-behavioural (CB) approach includes techniques to target both physical and psychosocial symptoms related to pain and provides patients with long-lasting skills to manage these symptoms on their own. This combined method has been used in a variety of settings delivered by different health care professionals and has been shown to produce long-term effects on patient outcomes. What has been unclear is if these programmes are effective when delivered by physiotherapists in routine physiotherapy settings. Our study synthesises the evidence for this context. We have confirmed with high-quality evidence that with additional training, physiotherapists can deliver CB interventions that are effective for patients with back pain. Physiotherapists who are considering enhancing their treatment for patients with low back pain should consider undertaking some additional training in how to incorporate CB techniques into their practice to optimise treatment benefits and help patients receive long-lasting treatment effects. Importantly, our results indicate that using a CB approach, including a variety of CB techniques that could be easily adopted in a physical therapy setting, provides greater benefits for patient outcomes compared to brief education, exercise or physical techniques (such as manual therapy) alone. This provides further support that a combined treatment approach is likely better than one based on physical techniques alone. Notably, we identified a significant barrier to adopting any of these CB interventions in practice. This is because no study provided a description of the intervention or accessible training materials that would allow for accurate replication. Without access to provider training and/or resources, we cannot expect this evidence to be implemented in practice with optimal effects. Thus, we would urge physiotherapists to directly contact authors of the studies for more information on how to incorporate their interventions into their settings.

**Walking helps**

Musculoskelet Sci Pract. 2017 Dec 12;34:38-46. doi: 10.1016/j.msksp.2017.12.003.

**The effects of walking intervention in patients with chronic low back pain: A meta-analysis of randomized controlled trials.**

Sitthipornvorakul E<sup>1</sup>, Klinsophon T<sup>2</sup>, Sihawong R<sup>2</sup>, Janwantanakul P<sup>3</sup>.

**OBJECTIVE:**

The aim of this meta-analysis of randomized controlled trials was to gain insight into the effectiveness of walking intervention on pain, disability, and quality of life in patients with chronic low back pain (LBP) at post intervention and follow ups.

**METHOD:**

Six electronic databases (PubMed, Science Direct, Web of Science, Scopus, PEDro and The Cochrane library) were searched from 1980 to October 2017. The following keywords were used: Walk\* or Pedometer\* or Accelerometer\* or Treadmill\* paired with "Back pain", "Low back pain", "Chronic low back pain", "LBP", or "Backache". Randomized controlled trials in patients with chronic LBP were included if they compared the effects of walking intervention to non-pharmacological interventions. Pain, disability, and quality of life were the primary health outcomes.

**RESULTS:**

Nine studies were suitable for meta-analysis. Data was analyzed according to the duration of follow-up (short-term, < 3 months; intermediate-term, between 3 and 12 months; long-term, > 12 months). Low- to moderate-quality evidence suggests that walking intervention in patients with chronic LBP was as effective as other non-pharmacological interventions on pain and disability reduction in both short- and intermediate-term follow ups.

**CONCLUSIONS:**

Unless supplementary high-quality studies provide different evidence, walking, which is easy to perform and highly accessible, can be recommended in the management of chronic LBP to reduce pain and disability.

## 5. SURGERY

### Smoking and success

Spine (Phila Pa 1976). 2018 Feb 1;43(3):201-206. doi: 10.1097/BRS.0000000000002293.

#### **Do Former Smokers Exhibit a Distinct Profile Before and After Lumbar Spine Surgery?**

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#### **STUDY DESIGN:**

Retrospective longitudinal cohort.

#### **OBJECTIVES:**

To determine if former smokers undergoing lumbar spine surgery have distinct baseline and postoperative patient-reported outcomes (PROs) compared with never smokers and current smokers.

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

Smoking has known deleterious effects on patients undergoing lumbar spine surgery. However, former smokers have not been extensively evaluated. There are few studies regarding the relationship between pack-years or duration of smoking cessation, and subsequent clinical outcome.

#### **METHODS:**

Patients undergoing lumbar spine surgery at three Quality Outcomes Database participating sites were identified. Demographic, surgical and PRO data including pre-op and 12-month post-op back and leg pain scores, Oswestry Disability Index (ODI) and EuroQOL-5D were collected. Smoking status was assessed from individual medical records. Three cohorts, never smokers, former smokers and current smokers, were compared. Association between PROs and quantitative smoking history and duration of pre-op smoking cessation were evaluated in the former smokers.

#### **RESULTS:**

Of 1187 eligible cases, 843 (71%) had complete data, with 477 never, 250 former, and 116 current smokers. Among patients who had a fusion, baseline and 12-month post-op PROs were significantly different between cohorts, with former smokers having intermediate scores between current and never smokers. In the decompression only group, 12-month ODI was worse in the Current smokers, but overall the effects were much less pronounced. There was a significant negative correlation between smoke-free days before surgery and baseline back pain, ODI, 12-month leg pain and ODI and improvement in ODI. However, the correlation coefficients were small.

#### **CONCLUSION:**

Former smokers have distinct baseline and 12-month post-op PROs that are intermediate between those of never smokers and current smokers. Smoking cessation does not entirely mitigate the negative effects of smoking on baseline and postoperative PROs for patients undergoing lumbar fusion surgery. This effect is less pronounced in patients undergoing decompression alone.

## 8. VISCERA

### Antibiotic use and IBS

Inflammatory bowel disease Original Article

#### **Fetal and early life antibiotics exposure and very early onset inflammatory bowel disease: a population-based study**

1. Anne K Örtqvist<sup>1</sup>, Cecilia Lundholm<sup>1</sup>, Jonas Halfvarson<sup>2</sup>, Jonas F Ludvigsson<sup>1,3</sup>, Catarina Almqvist<sup>1,4</sup>

**Objective** Earlier studies on antibiotics exposure and development of IBD (Crohn's disease (CD) and ulcerative colitis (UC)) may have been biased by familial factors and gastroenteritis. We aimed to estimate the association between antibiotics during pregnancy or infantile age and very early onset (VEO) IBD.

**Design** In this cohort study of 827 239 children born in Sweden between 2006 and 2013, we examined the link between exposure to systemic antibiotics and VEO-IBD (diagnosis <6 years of age), using Cox proportional hazard regression models. Information on antibiotics and IBD was retrieved from the nationwide population-based Swedish Prescribed Drug Register and the National Patient Register. We specifically examined potential confounding from parental IBD and gastroenteritis.

**Results** Children exposed to antibiotics during pregnancy were at increased risk of IBD compared with general population controls (adjusted HR (aHR) 1.93; 95% CI 1.06 to 3.50). Corresponding aHRs were 2.48 (95% CI 1.01 to 6.08) for CD and 1.25 (95% CI 0.47 to 3.26) for UC, respectively. For antibiotics in infantile age, the aHR for IBD was 1.11 (95% CI 0.57 to 2.15); for CD 0.72 (95% CI 0.27 to 1.92) and 1.23 (95% CI 0.45 to 3.39) for UC. Excluding children with gastroenteritis 12 months prior to the first IBD diagnosis retained similar aHR for antibiotics during pregnancy and CD, while the association no longer remained significant for IBD.

**Conclusion** We found that exposure to antibiotics during pregnancy, but not in infantile age, is associated with an increased risk of VEO-IBD regardless of gastroenteritis. The risk increase for exposure in pregnancy may be due to changes in the microbiota.

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**Cannabis**

PLoS One. 2017; 12(4): e0176416. Published online 2017 Apr 25. doi: 10.1371/journal.pone.0176416  
PMCID: PMC5404771 .pone.0176416

**Cannabis use is associated with reduced prevalence of non-alcoholic fatty liver disease: A cross-sectional study**

Adeyinka Charles Adejumo,<sup>1,2</sup> Samson Alliu,<sup>3</sup> Tokunbo Opeyemi Ajayi,<sup>4</sup> Kelechi Laurretta Adejumo,<sup>5</sup> Oluwole Muyiwa Adegba,<sup>6</sup> Nnaemeka Egbuna Onyeakusi,<sup>7</sup> Akintunde Micheal Akinjero,<sup>6</sup> Modupeoluwa Durojaiye,<sup>8</sup> and Terence Ndonyi Bukong<sup>1,9,\*</sup>  
Pavel Strnad, Editor

Cannabis use is associated with reduced prevalence of obesity and diabetes mellitus (DM) in humans and mouse disease models.

Obesity and DM are a well-established independent risk factor for non-alcoholic fatty liver disease (NAFLD), the most prevalent liver disease globally. The effects of cannabis use on NAFLD prevalence in humans remains ill-defined. Our objective is to determine the relationship between cannabis use and the prevalence of NAFLD in humans. We conducted a population-based case-control study of 5,950,391 patients using the 2014 Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Survey (NIS) discharge records of patients 18 years and older. After identifying patients with NAFLD (1% of all patients), we next identified three exposure groups: non-cannabis users (98.04%), non-dependent cannabis users (1.74%), and dependent cannabis users (0.22%). We adjusted for potential demographics and patient related confounders and used multivariate logistic regression (SAS 9.4) to determine the odds of developing NAFLD with respects to cannabis use. Our findings revealed that cannabis users (dependent and non-dependent) showed significantly lower NAFLD prevalence compared to non-users (AOR: 0.82[0.76–0.88];  $p < 0.0001$ ). The prevalence of NAFLD was 15% lower in non-dependent users (AOR: 0.85[0.79–0.92];  $p < 0.0001$ ) and 52% lower in dependent users (AOR: 0.49[0.36–0.65];  $p < 0.0001$ ).

Among cannabis users, dependent patients had 43% significantly lower prevalence of NAFLD compared to non-dependent patients (AOR: 0.57[0.42–0.77];  $p < 0.0001$ ). Our observations suggest that cannabis use is associated with lower prevalence of NAFLD in patients. These novel findings suggest additional molecular mechanistic studies to explore the potential role of cannabis use in NAFLD development.

## Cardiovascular risk

**Impact of childhood parent-child relationships on cardiovascular risks in adolescence**  
**Preventive Medicine**

January 19, 2018

Niu Z, et al.

Physicians aimed to determine prospective effects of the childhood parent-child relationships on the development of cardiovascular risks in adolescence. A significant influence of childhood parent-child relationships was found on the development of cardiovascular risks during adolescence. The effect was further modified by both parents' and child's gender.

## Methods

- Physicians conducted this study by using available 917 parent-child dyads from the Study of Early Child Care and Youth Development (1991 to 2006).
- They examined the prospective effects of childhood parent-child relationships of Conflict and Closeness, as well as their categorized combinations (Harmonic, Dramatic, Hostile, and Indifferent) on the development of subscapular and triceps skinfold thickness (SST/TST), body mass index (BMI), systolic and Results
- The growth rate of TST among girls during adolescence was increased due to higher levels of Conflict in the relationship with mothers (slope = 0.05,  $P < 0.001$ ) and fathers (slope = 0.04,  $P=0.03$ ).
- This was not noted among boys.
- Moreover, the maternal-girl dyadic with higher Conflict scores increased girl's growth rate of BMI percentile (slope = 0.10,  $P=0.02$ ).
- However, the paternal-boy dyadic with higher Conflict scores decreased boy's growth rate of BMI percentile (slope = -0.13,  $P=0.04$ ).
- Boy's growth rate of SBP (slope = - 3.15,  $P < 0.001$ ) and DBP (slope = - 4.42,  $P < 0.001$ ) was lowered due to a Hostile maternal-son relationship.
- As per findings, a Dramatic maternal-son relationship increased boy's growth rate of SST (slope = 0.89,  $P < 0.001$ ) and TST (slope = 0.64,  $P=0.03$ ).
- A positive association was found between hostile paternal-daughter relationships with the growth rate of TST (slope = 0.28,  $P=0.03$ ).

**12 A. WHIPLASH****Whiplash compared to other neck pain patients****Association Between Clinical and Neurophysiological Outcomes in Patients With Mechanical Neck Pain and Whiplash-associated Disorders**

Castaldo, Matteo PT<sup>\*,†,‡</sup>; Catena, Antonella PT<sup>\*</sup>; Chiarotto, Alessandro PT, MSc<sup>§</sup>; Villafañe, Jorge H. PT, PhD, MSc<sup>||</sup>; Fernández-de-las-Peñas, César PT, PhD, Dr Med Sci<sup>†,¶</sup>; Arendt-Nielsen, Lars PhD, Dr Med Sci<sup>†</sup>

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**Objectives:** To investigate the association between pain, disability, trigger points (TrPs), and pressure pain thresholds (PPTs) in patients with mechanical neck pain (MNP) or whiplash-associated disorders (WAD).

**Materials and Methods:** In total, 46 MNP and 51 WAD patients underwent a physical examination consisting of cervical range of motion, PPTs in the upper trapezius and tibialis anterior muscles, TrPs examination in the upper trapezius, and collection of clinical data including disability, pain intensity, and spontaneous symptomatic pain area.

**Results:** A significantly moderate positive association between pain and disability was found in both groups ( $P < 0.01$ ). Significantly negative associations between pain intensity and PPT in the upper trapezius ( $P = 0.008$  and  $0.041$ ), pain and PPT in tibialis anterior ( $P = 0.015$  and  $0.038$ ), disability and PPT in upper trapezius (both,  $P = 0.006$ ) were also found in both MNP and WAD groups. Individuals with MNP showed significantly positive association between pain area and disability ( $P = 0.034$ ) and negative association between disability and PPT in the tibialis anterior ( $P = 0.003$ ). Patients with active TrPs in the upper trapezius exhibited higher intensity of neck pain, higher neck disability, and lower PPTs than those with latent TrPs in upper trapezius in both groups.

**Discussion:** The association between pain, disability, and PPTs is common in patients with neck pain regardless of the origin of neck pain. The presence of active TrPs was related to higher pain intensity and related-disability and lower PPTs.

## 12 B. CERVICAL SURGERIES

### Anterior fusions

Spine (Phila Pa 1976). 2018 Feb 1;43(3):207-214. doi: 10.1097/BRS.0000000000002273.

#### **Anterior Cervical Discectomy and Fusion Outcomes over 10 Years: A Prospective Study.**

Buttermann GR<sup>1</sup>.

#### **STUDY DESIGN:**

Prospective cohort study with >10-year follow-up.

#### **OBJECTIVE:**

To assess the long-term, >10-year clinical outcomes of anterior cervical discectomy and fusion (ACDF) and to compare outcomes based on primary diagnosis of disc herniation, stenosis or advanced degenerative disc disease (DDD), number of levels treated, and preexisting adjacent level degeneration.

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

ACDF is a proven treatment for patients with stenosis and disc herniation and results in significantly improved short- and intermediate-term outcomes. Motion preservation treatments may result in improved long-term outcomes but need to be compared to long-term ACDF outcomes reference.

#### **METHODS:**

Patients who had disc herniation, stenosis, and DDD and underwent ACDF with or without decompression were prospectively enrolled and followed for a minimum of 10 years with outcome assessment at various intervals. All 159 consecutive patients had autogenous tricortical iliac crest bone graft and plate instrumentation used. Outcomes included visual analog scale for neck and arm pain, pain drawing, Oswestry Disability Index, and self-assessment of procedure success. Preoperative adjacent-level disc degeneration, pseudarthrosis, and secondary operations were analyzed.

#### **RESULTS:**

For all diagnostic groups, significant outcomes improvement was seen at all follow-up periods for all scales relative to preoperative scores. Outcomes were not related to age, gender, number of levels treated, and minimally to preexisting degeneration at the adjacent level. The use of narcotic pain medication decreased substantially. Neurological deficits almost all resolved. Patient self-reported success ranged from 85% to 95%. Over the long term, additional surgery for pseudarthrosis (10%) occurred in the early follow-up period, and for adjacent segment degeneration (21%), which occurred linearly during the >10-year follow-up period.

#### **CONCLUSION:**

ACDF leads to significantly improved outcomes for all primary diagnoses and was sustained for >10 years' follow-up. Secondary surgeries were performed for pseudarthrosis repair and for symptomatic adjacent-level degeneration.

**13 C. AIRWAYS/SWALLOWING/SPEECH****Sleep apnea and liver enzymes**

Sleep and Breathing pp 1–11 | Cite as

**Association between obstructive sleep apnea and non-alcoholic fatty liver disease: a systematic review and meta-analysis**

- Shanshan Jin Suwen Jiang Airong HuEmail author

The relationship between obstructive sleep apnea (OSA) and non-alcoholic fatty liver disease (NAFLD) has been an issue of great concern.

The primary purpose of this study was to determine the influence of OSA on the levels of liver enzymes including alanine transaminase (ALT) and aspartate transaminase (AST). The secondary purpose was to estimate the effect of OSA on the histological lesions of NAFLD, such as steatosis, lobular inflammation, ballooning degeneration, fibrosis, as well as NAFLD activity score (NAS).

A systematic literature review using PubMed, Cochrane Library, Embase, and Ovid technologies from January 2007 to April 2017 was performed, and 9 studies (2272 participants) that met the selection criteria were evaluated.

The present study demonstrated that OSA was related to ALT levels, but no significant correlation was found with AST levels. The subgroup analysis showed that the severity of OSA was associated with ALT levels, not with AST levels. The meta-regression analysis showed that age, sex, homeostasis model assessment, diabetes mellitus, body mass index, and waist circumference did not have a significant effect on the levels of ALT and AST. OSA was also found to be significantly correlated with steatosis, lobular inflammation, ballooning degeneration, and fibrosis, but was not correlated with NAS.

OSA was independently related to the development and progression of NAFLD in terms of liver enzyme level and histological alterations. Future studies should investigate the possible relevant mechanisms, thereby guiding the exploration of potential therapeutic implications to prevent the progression of disease.

**Sleep and LBP**

Eur J Pain. 2018 Jan;22(1):114-126. doi: 10.1002/ejp.1095. Epub 2017 Aug 27.

**The association between sleep quality, low back pain and disability: A prospective study in routine practice.**

Kovacs FM<sup>1,2</sup>, Seco J<sup>2,3,4</sup>, Royuela A<sup>2,5</sup>, Betegon JN<sup>2,6</sup>, Sánchez-Herráez S<sup>2,6</sup>, Meli M<sup>2,7</sup>, Martínez Rodríguez ME<sup>2,8</sup>, Núñez M<sup>2,9</sup>, Álvarez-Galovich L<sup>2,10</sup>, Moyá J<sup>2,11</sup>, Sánchez C<sup>2,12</sup>, Luna S<sup>2,13</sup>, Borrego P<sup>2,14</sup>, Moix J<sup>2,15</sup>, Rodríguez-Pérez V<sup>2,16</sup>, Torres-Unda J<sup>2,17</sup>, Burgos-Alonso N<sup>2,18</sup>, Gago-Fernández I<sup>2,16</sup>, González-Rubio Y<sup>2,19</sup>, Abraira V<sup>2,20</sup>.

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**METHODS:**

This prospective cohort study included 461 subacute and chronic LBP patients treated in 11 specialized centres, 14 primary care centres and eight physical therapy practices across 12 Spanish regions. LBP, leg pain, disability, catastrophizing, depression and SQ were assessed through validated questionnaires upon recruitment and 3 months later. Logistic regression models were developed to assess: (1) the association between the baseline score for SQ and improvements in LBP and disability at 3 months, and (2) the association between improvement in SQ and improvements in LBP and disability during the follow-up period.

**RESULTS:**

Seventy-three per cent of patients were subacute. Median scores at baseline were four points for both pain and disability, as assessed with a visual analog scale and the Roland-Morris Questionnaire, respectively. Regression models showed (OR [95% CI]) that baseline SQ was not associated with improvements in LBP (0.99 [0.94; 1.06]) or in disability (0.99 [0.93; 1.05]), although associations existed between 'improvement in SQ' and 'improvement in LBP' (4.34 [2.21; 8.51]), and 'improvement in SQ' and 'improvement in disability' (4.60 [2.29; 9.27]).

**CONCLUSIONS:**

Improvement in SQ is associated with improvements in LBP and in disability at 3-month follow-up, suggesting that they may reflect or be influenced by common factors. However, baseline SQ does not predict improvements in pain or disability.

**SIGNIFICANCE:**

In clinical practice, sleep quality, low back pain and disability are associated. However, sleep quality at baseline does not predict improvement in pain and disability.

**20 A. ROTATOR CUFF****Repair comparisons**

J Shoulder Elbow Surg. 2017 Dec 29. pii: S1058-2746(17)30762-0. doi: 10.1016/j.jse.2017.11.016.

**Factors affecting rotator cuff integrity after arthroscopic repair for medium-sized or larger cuff tears: a retrospective cohort study.**

Kim YK<sup>1</sup>, Jung KH<sup>2</sup>, Kim JW<sup>3</sup>, Kim US<sup>1</sup>, Hwang DH<sup>1</sup>.

**BACKGROUND:**

We wished to identify the preoperative prognostic factors associated with structural integrity after repair of medium-sized and larger rotator cuff tears and to determine the cutoff values using receiver operating characteristic curve analysis.

**METHODS:**

The study included 180 patients with medium-sized and larger rotator cuff tears. Each had a minimum 2-year postoperative follow-up by magnetic resonance imaging. We assessed several patient-related and disease-related preoperative factors using univariate and multivariate logistic regression analysis. To determine the cutoff value for the significant variables, receiver operating characteristic curve analysis was performed.

**RESULTS:**

Retears occurred in 28 of the 180 patients (15.6%). Univariate analysis found that retear was significantly affected by the type of work and pattern of tear. The rate of retear was significantly increased in diabetes and with increasing tear size, extent of retraction, delamination, and fatty infiltration. Furthermore, reduced remnant tendon length, distance from the musculotendinous junction to the face of the glenoid, occupation ratio, and acromiohumeral interval were also significant risk factors. In the multivariate analysis, body mass index, diabetes, dyslipidemia, extent of retraction, delamination, distance from musculotendinous junction to face of glenoid, occupation ratio, fatty infiltration of infraspinatus, and acromiohumeral interval remained significant risk factors. The extent of retraction (22.2 mm) and the occupation ratio (53.5%) showed highly accurate cutoff values for predicting retear.

**CONCLUSION:**

Multiple factors influenced the healing process after rotator cuff repair. The best predictors were the extent of retraction and occupation ratio, which could help assist in determining the prognosis after rotator cuff repairs.

## 23. SURGERY

### Total shoulders

J Shoulder Elbow Surg. 2017 Dec 29. pii: S1058-2746(17)30757-7. doi: 10.1016/j.jse.2017.11.011.

#### **Outcomes of reverse shoulder arthroplasty in small- and large-stature patients.**

Matsuki K<sup>1</sup>, King JJ<sup>2</sup>, Wright TW<sup>2</sup>, Schoch BS<sup>3</sup>.

#### **BACKGROUND:**

As the worldwide use of reverse shoulder arthroplasty (RSA) increases, a range of implant sizes may be required to match regional and ethnic variation in patients' stature. Size-mismatched implants may possibly result in poorer surgical outcomes. The purpose of this study was to compare the outcomes of primary RSA in patients at the extreme ends of the growth curve with those in average-stature patients in the United States.

#### **METHODS:**

A multicenter shoulder arthroplasty database was retrospectively reviewed to identify all primary RSAs using a single implant system with a minimum 2-year follow-up. Small patients were defined as the height of <155 cm, tall as >183 cm, and average as 162-178 cm. Active range of motion (ROM), visual analog scale pain score, and patient-reported outcomes (PROs) were compared among the 3 groups.

#### **RESULTS:**

The study included 552 shoulders (130 small, 384 average, and 38 tall stature). Preoperatively, the average height group had significantly less ROM than the other groups, but there were no significant differences in postoperative ROM. This resulted in poorer improvements in postoperative ROM in the small and tall groups, with the small-stature patients having significantly less ROM improvement compared with average-stature patients. However, these differences did not result in poorer PROs between groups.

#### **DISCUSSION:**

Small- and large-stature patients showed inferior improvements in ROM after RSA compared with average-stature patients. Our results suggest that current implants optimize ROM gains for average-stature patients and improve PROs independently of patient stature at a minimum 2-year follow-up.

**32 A. KNEE/ACL****Return to sports 83%****Eighty-three per cent of elite athletes return to preinjury sport after anterior cruciate ligament reconstruction: a systematic review with meta-analysis of return to sport rates, graft rupture rates and performance outcomes**

1. Courtney C H Lai<sup>1</sup>, Clare L Ardern<sup>1,2,3</sup>, Julian A Feller<sup>4</sup>, Kate E Webster<sup>1</sup>

**Objectives** The primary objective was to calculate the rate of return to sport (RTS) following anterior cruciate ligament (ACL) reconstruction in elite athletes. Secondary objectives were to estimate the time taken to RTS, calculate rates of ACL graft rupture, evaluate postsurgical athletic performance and identify determinants of RTS.

**Design** Pooled RTS and graft rupture rates were calculated using random effects proportion meta-analysis. Time to RTS, performance data and determinants of RTS were synthesised descriptively.

**Data sources** MEDLINE, EMBASE, AMED, CINAHL, AMI, PEDro, SPORTDiscus and The Cochrane Library were searched from inception to 19 January 2016. Hand searching of 10 sports medicine journals and reference checking were also performed.

**Eligibility criteria for selecting studies** Studies were included if they reported the ratio of elite athletes who returned to their preinjury level of sport following ACL reconstruction. Twenty-four studies were included.

**Results** The pooled RTS rate was 83% (95% CI 77% to 88%). The mean time to RTS ranged from 6 to 13 months. The pooled graft rupture rate was 5.2% (95% CI 2.8% to 8.3%). Six out of nine studies that included a noninjured control group found no significant deterioration in athletic performance following ACL reconstruction. Indicators of greater athletic skill or value to the team were associated with RTS.

**Summary and conclusions** Eighty-three per cent of elite athletes returned to sport following ACL reconstruction, while 5.2% sustained a graft rupture. Most athletes who returned to sport performed comparably with matched, uninjured controls. This information may assist in guiding expectations of athletes and clinicians following ACL reconstruction.

<http://dx.doi.org/10.1136/bjsports-2016-096836>

### 33. MENISCUS

Sham as good as regular

Ann Rheum Dis. 2018 Feb;77(2):188-195. doi: 10.1136/annrheumdis-2017-211172. Epub 2017 May 18.

**Arthroscopic partial meniscectomy versus placebo surgery for a degenerative meniscus tear: a 2-year follow-up of the randomised controlled trial.**

Sihvonen R<sup>1</sup>, Paavola M<sup>2</sup>, Malmivaara A<sup>3</sup>, Itälä A<sup>4</sup>, Joukainen A<sup>5</sup>, Nurmi H<sup>6</sup>, Kalske J<sup>2</sup>, Ikonen A<sup>2</sup>, Järvelä T<sup>7</sup>, Järvinen TAH<sup>8</sup>, Kanto K<sup>1</sup>, Karhunen J<sup>2</sup>, Knif Sund J<sup>4</sup>, Kröger H<sup>5</sup>, Kääriäinen T<sup>5</sup>, Lehtinen J<sup>1</sup>, Nyrhinen J<sup>6</sup>, Paloneva J<sup>6</sup>, Päiväniemi O<sup>1</sup>, Raivio M<sup>1</sup>, Sahlman J<sup>5</sup>, Sarvilinna R<sup>2</sup>, Tukiainen S<sup>2</sup>, Välimäki VV<sup>2</sup>, Äärimaa V<sup>4</sup>, Toivonen P<sup>9</sup>, Järvinen TLN<sup>9</sup>; FIDELITY (Finnish Degenerative Meniscal Lesion Study) Investigators.

**OBJECTIVE:**

To assess if arthroscopic partial meniscectomy (APM) is superior to placebo surgery in the treatment of patients with degenerative tear of the medial meniscus.

**METHODS:**

In this multicentre, randomised, participant-blinded and outcome assessor-blinded, placebo-surgery controlled trial, 146 adults, aged 35-65 years, with knee symptoms consistent with degenerative medial meniscus tear and no knee osteoarthritis were randomised to APM or placebo surgery. The primary outcome was the between-group difference in the change from baseline in the Western Ontario Meniscal Evaluation Tool (WOMET) and Lysholm knee scores and knee pain after exercise at 24 months after surgery. Secondary outcomes included the frequency of unblinding of the treatment-group allocation, participants' satisfaction, impression of change, return to normal activities, the incidence of serious adverse events and the presence of meniscal symptoms in clinical examination. Two subgroup analyses, assessing the outcome on those with mechanical symptoms and those with unstable meniscus tears, were also carried out.

**RESULTS:**

In the intention-to-treat analysis, there were no significant between-group differences in the mean changes from baseline to 24 months in WOMET score: 27.3 in the APM group as compared with 31.6 in the placebo-surgery group (between-group difference, -4.3; 95% CI, -11.3 to 2.6); Lysholm knee score: 23.1 and 26.3, respectively (-3.2; -8.9 to 2.4) or knee pain after exercise, 3.5 and 3.9, respectively (-0.4; -1.3 to 0.5). There were no statistically significant differences between the two groups in any of the secondary outcomes or within the analysed subgroups.

**CONCLUSIONS:**

In this 2-year follow-up of patients without knee osteoarthritis but with symptoms of a degenerative medial meniscus tear, the outcomes after APM were no better than those after placebo surgery. No evidence could be found to support the prevailing ideas that patients with presence of mechanical symptoms or certain meniscus tear characteristics or those who have failed initial conservative treatment are more likely to benefit from APM.

**34. PATELLA****Foot rx for PFP**

J Sci Med Sport. 2018 Jan;21(1):10-15. doi: 10.1016/j.jsams.2017.05.019. Epub 2017 Jun 28.

**Foot exercises and foot orthoses are more effective than knee focused exercises in individuals with patellofemoral pain.**

Mølgaard CM<sup>1</sup>, Rathleff MS<sup>2</sup>, Andreasen J<sup>3</sup>, Christensen M<sup>3</sup>, Lundbye-Christensen S<sup>4</sup>, Simonsen O<sup>5</sup>, Kaalund S<sup>6</sup>.

**OBJECTIVES:**

To examine the effect of knee targeted exercises compared to knee targeted exercises combined with foot targeted exercises and foot orthoses in patients with patellofemoral pain.

**DESIGN:**

Forty adult individuals (28 women, 12 men) diagnosed with patellofemoral pain and screened for excessive calcaneal eversion were randomized to knee targeted exercises or knee targeted exercises combined with foot targeted exercise and orthoses.

**METHODS:**

The knee targeted exercises were prescribed during three supervised consultations. Individuals were instructed to perform the exercises 3 times per week during a 12-week period. The foot targeted exercises were prescribed for 2 times per week for 12 weeks with one session per week being supervised by a physiotherapist. The primary outcome was the subscale "pain" in the Knee Injury and Osteoarthritis Outcome Score (KOOS) at 4 months.

**RESULTS:**

Individuals randomized to knee targeted exercises combined with foot targeted exercises and foot orthoses had 8.9 points (95%CI: 0.4; 17.4) - NNT=3 (2-16) larger improvement in KOOS pain at the primary endpoint.

**CONCLUSIONS:**

The addition of foot targeted exercises and foot orthoses for 12 weeks was more effective than knee targeted exercises alone in individuals with patellofemoral pain. The effect was apparent after 4 months, but not significantly different after 12 months.

**35. KNEE/TOTAL**

**Motor imaging helps**

Disabil Rehabil. 2017 Dec 24;1-8. doi: 10.1080/09638288.2017.1419289.

**The therapeutic role of motor imagery during the acute phase after total knee arthroplasty: a pilot study.**

Moukarzel M<sup>1,2</sup>, Di Rienzo F<sup>1</sup>, Lahoud JC<sup>2,3</sup>, Hoyek F<sup>2,3</sup>, Collet C<sup>1</sup>, Guillot A<sup>1,4</sup>, Hoyek N<sup>1</sup>.

**PURPOSE:**

The aim of this study was to measure physical and functional outcomes during the acute postoperative recovery in patients who underwent total knee arthroplasty. Motor imagery has been shown to decrease pain and promote functional recovery after both neurological and peripheral injuries. Yet, whether motor imagery can be included as an adjunct effective method into physical therapy programs following total knee arthroplasty remains a working hypothesis that we aim to test in a pilot study.

**METHOD:**

Twenty volunteers were randomly assigned to either a motor imagery or a control group. Pain, range of motion, knee girth as well as quadriceps strength and Timed Up and Go Test time were the dependent variables during pre-test and post-test.

**RESULTS:**

The motor imagery group exhibited larger decrease of ipsilateral pain and knee girth, a slightly different evolution of range of motion and an increase of ipsilateral quadriceps strength compared to the control group. No effects of motor imagery on Timed Up and Go Test scores were observed.

**CONCLUSION:**

Implementing motor imagery practice into the course of physical therapy enhanced various physical outcomes during acute postoperative recovery after total knee arthroplasty. According to this pilot study, motor imagery might be relevant to promote motor relearning and recovery after total knee arthroplasty. Partial effect-sizes should be conducted in the future. Implications for rehabilitation Adding motor imagery to physical therapy sessions during the acute period following total knee arthroplasty:

- Enhances quadriceps strength.
- Alleviates pain.
- Enhances range of motion.
- Does not have any effect on basic functional mobility.
- Does not have any effect on knee girth.

### Anterior knee pain

#### **Different factors conduct anterior knee pain following primary total knee arthroplasty: A systematic review and meta-analysis**

Journal of Arthroplasty | January 15, 2018

sponsor

Duan G, et al.

Researchers undertook this study to find out the risks associated with anterior knee pain (AKP) after primary total knee arthroplasty (TKA). Evidence obtained from this systematic review and meta-analysis included recommendations for using patellar denervation and patellar resurfacing in primary TKA as these strategies were found to be safe and afforded good clinical outcomes in preventing AKP.

Exercising caution was recommended when using an infrapatellar fat pad excision since there was an increased risk of AKP at long-term follow-up (>12 months).

**37. OSTEOARTHRITIS/KNEE****Ex helps**

*Knee*. 2018 Jan 8. pii: S0968-0160(17)30333-2. doi: 10.1016/j.knee.2017.12.003. [Epub ahead of print]

The effect of low-load exercise on joint pain, function, and activities of daily living in patients with knee osteoarthritis.

Peeler J<sup>1</sup>, Ripat J<sup>2</sup>.

[Author information](#)

[Abstract](#)

**BACKGROUND:**

Knee osteoarthritis has a lifetime risk of nearly one in two, with obese individuals being most susceptible. While exercise is universally recognized as a critical component for management, unsafe or ineffective exercise frequently leads to exacerbation of joint symptoms.

**AIM:**

Evaluate the effect of a 12week lower body positive pressure (LBPP) supported low-load treadmill walking program on knee pain, joint function, and performance of daily activities in patients with knee osteoarthritis (OA).

**DESIGN:**

Prospective, observational, repeated measures investigation.

**SETTING:**

Community based, multidisciplinary musculoskeletal medicine clinic.

**PATIENTS:**

Thirty-one patients, aged 50-75, with a BMI  $\geq 25\text{kg}/\text{m}^2$  and radiographic confirmed mild to moderate knee OA.

**INTERVENTION:**

Twelve week LBPP treadmill walking exercise regimen.

**OUTCOME MEASURES:**

The Knee Injury and Osteoarthritis Outcome Score (KOOS) and the Canadian Occupational Performance Measure (COPM) were used to quantify joint symptoms and patient function; isokinetic thigh muscle strength was evaluated; and a 10-point VAS was used to quantify acute knee pain while walking. Baseline and follow-up data were compared in order to examine the effect of the 12week exercise intervention.

**RESULTS:**

There was a significant difference between baseline and follow-up data: KOOS and COPM scores both improved; thigh muscle strength increased; and acute knee pain during full weight bearing walking diminished significantly.

**CONCLUSIONS:**

Participation in a 12week LBPP supported treadmill walking exercise regimen significantly enhanced patient function and quality of life, as well as the ability to perform activities of daily living that patient's self-identified as being important, yet difficult to perform.

**Balance not effected by catastrophizing**

J Manipulative Physiol Ther. 2017 Dec 14. pii: S0161-4754(16)30111-7. doi: 10.1016/j.jmpt.2017.08.002.

**Association of Pain Catastrophizing With Static Balance, Mobility, or Functional Capacity in Patients With Knee Osteoarthritis: A Blind Cross-sectional Study.**

Gomes CAF<sup>1</sup>, Dibai-Filho AV<sup>2</sup>, Biasotto-Gonzalez DA<sup>3</sup>, Politti F<sup>3</sup>, Camillo de Carvalho PT<sup>3</sup>.

**OBJECTIVE:**

The aim of this study was to investigate whether catastrophizing is associated with static balance, mobility, and functional capacity in patients with knee osteoarthritis.

**METHODS:**

A blind, cross-sectional study was conducted involving 60 volunteers (males and females), ages 40 to 80 years, with a diagnosis of knee osteoarthritis. Patients were recruited from a physical therapy clinic in the city of São Paulo, Brazil. The following measures were used for the evaluations: Pain-Related Self-Statement Scale, Functional Reach Test, Timed Up and Go Test, Lower Extremity Functional Scale, and Western Ontario and McMaster University Osteoarthritis Index. In statistical analysis, histograms were created to determine distribution of data. Spearman's correlation coefficients ( $r_s$ ) were then calculated to determine the strength of the associations among the variables.

**RESULTS:**

No significant correlation was found between the Pain-Related Self-Statement Scale score and the other clinical measures employed in the present study: Functional Reach Test ( $r_s = 0.151$ ;  $P = .249$ ), Timed Up and Go Test ( $r_s = -0.147$ ;  $P = .264$ ), Lower Extremity Functional Scale ( $r_s = 0.023$ ;  $P = .860$ ), and Western Ontario and McMaster University Osteoarthritis ( $r_s = -0.222$ ;  $P = .088$ ).

**CONCLUSIONS:**

In this study, catastrophizing was not associated with static balance, mobility, or functional capacity in patients with knee osteoarthritis.

## Neuroimaging

**A Functional Neuroimaging Study of Expectancy Effects on Pain Response in Patients with Knee Osteoarthritis**

Randy L. Gollub Irving Kirsch Nasim Maleki Ajay D. Wasan Robert R. Edwards Yiheng Tu  
Ted J. Kaptchuk Jian Kong

DOI: <http://dx.doi.org/10.1016/j.jpain.2017.12.260>

**Highlights**

- We used fMRI to explore the effect of acupuncture in older knee OA patients.
- Pain decreased after both real and sham acupuncture when patients expected relief.
- fMRI activity associated with pain relief differed for real and sham acupuncture.
- More activation was found in DLPFC, OPFC and insula/putamen after real acupuncture.
- More activation was found in the sACC and OPFC after sham acupuncture.
- Expectancy may work by distinct mechanisms when coupled with different treatments.

**Abstract**

Placebo treatments and healing rituals share much in common, such as the effects of expectancy, and have been used since the beginning of human history to treat pain. Previous mechanistic neuroimaging studies investigating the effects of expectancy on placebo analgesia have used young, healthy volunteers.

Using functional magnetic resonance imaging (fMRI), we aimed to investigate the neural mechanisms by which expectancy evokes analgesia in older adults living with a chronic pain disorder and determine whether there are interactions with active treatment. In this fMRI study, we investigated the brain networks underlying expectancy in participants with chronic pain due to knee osteoarthritis (OA) after verum (genuine) and sham electroacupuncture (EA) treatment before and after experiencing calibrated experimental heat pain using a well-tested expectancy manipulation model.

We found that expectancy significantly and similarly modulates the pain experience in knee OA patients in both verum (n=21, 11 female; mean  $\pm$  SD age 57 $\pm$ 7 years) and sham (n=22, 15 female; mean  $\pm$  SD age 59 $\pm$ 7 years) acupuncture treatment groups. However, there were different patterns of changes in fMRI indices of brain activity associated with verum and sham treatment modalities specifically in the lateral prefrontal cortex. We also found that continuous EA in knee OA patients can evoke significant regional coherence decreases in pain associated brain regions.

Our results suggest that expectancy modulates the experience of pain in knee OA patients but may work through different pathways depending on the treatment modality and, we speculate, on pathophysiological states of the participants.

## 40. ANKLE SPRAINS AND INSTABILITY

### Test for instability

Clin J Sport Med. 2017 Dec 22. doi: 10.1097/JSM.0000000000000535.

### Ability of Functional Performance Tests to Identify Individuals With Chronic Ankle Instability: A Systematic Review With Meta-Analysis.

Rosen AB<sup>1</sup>, Needle AR<sup>2</sup>, Ko J<sup>3</sup>.

#### OBJECTIVE:

The purpose of this systematic review with meta-analysis was to determine the effectiveness of functional performance tests (FPTs) in differentiating between individuals with chronic ankle instability (CAI) and healthy controls.

#### DATA SOURCES:

The National Library of Medicine Catalog (PubMed), the Cumulative Index for Nursing and Allied Health Literature (CINAHL), and the SPORTDiscus, from inception to June 2017 were searched. Search terms consisted of: "Functional Performance Test\*" OR "Dynamic Balance Test\*" OR "Postural Stability Test\*" OR "Star Excursion Balance Test\*" OR "Hop Test\*" AND "Ankle Instability" OR "Ankle Sprain." Included articles assessed differences in FPTs in patients with CAI compared with a control group.

#### MAIN RESULTS:

Included studies were assessed for methodological quality and level of evidence. Individual and mean effect sizes were also calculated for FPTs from the included articles. Twenty-nine studies met the criteria and were analyzed. The most common FPTs were timed-hop tests, side-hop, multiple-hop test, single-hop for distance, foot-lift test, and the Star Excursion Balance Tests (SEBTs). The side-hop ( $g = -1.056$ ,  $P = 0.009$ ,  $n = 7$ ), timed-hop tests ( $g = -0.958$ ,  $P = 0.002$ ,  $n = 9$ ), multiple-hop test ( $g = 1.399$ ,  $P < 0.001$ ,  $n = 3$ ), and foot-lift tests ( $g = -0.761$ ,  $P = 0.020$ ,  $n = 3$ ) demonstrated the best utility with large mean effect sizes, whereas the SEBT anteromedial ( $g = 0.326$ ,  $P = 0.022$ ,  $n = 7$ ), medial ( $g = 0.369$ ,  $P = 0.006$ ,  $n = 7$ ), and posteromedial ( $g = 0.374$ ,  $P < 0.001$ ,  $n = 13$ ) directions had moderate effects.

#### CONCLUSIONS:

The side-hop, timed-hopping, multiple-hop, and foot-lift seem the best FPTs to evaluate individuals with CAI. There was a large degree of heterogeneity and inconsistent reporting, potentially limiting the clinical implementation of these FPTs. These tests are cheap, effective, alternatives compared with instrumented measures.

## 41 A. ACHILLES TENDON AND CALF

### Return to sports

Sports Med. 2017 Dec 16. doi: 10.1007/s40279-017-0833-9.

### **Return to Sport in Athletes with Midportion Achilles Tendinopathy: A Qualitative Systematic Review Regarding Definitions and Criteria.**

Habets B<sup>1,2</sup>, van den Broek AG<sup>3</sup>, Huisstede BMA<sup>3</sup>, Backx FJG<sup>3</sup>, van Cingel REH<sup>4,5</sup>.

#### **BACKGROUND:**

Midportion Achilles tendinopathy (AT) can cause long-term absence from sports participation, and shows high recurrence rates. It is important that the decision to return to sport (RTS) is made carefully, based on sharply delimited criteria. Lack of a well-defined definition and criteria hampers the decision to RTS among athletes with AT, and impedes comparison of RTS rates between different studies.

#### **OBJECTIVE:**

The aim of this study was to systematically review the literature for definitions of, and criteria for, RTS in AT research.

#### **STUDY DESIGN:**

Qualitative systematic review.

#### **METHODS:**

The PubMed, EMBASE, Cochrane, CINAHL, PEDro, and Scopus electronic databases were searched for articles that reported on the effect of a physiotherapeutic intervention for midportion AT. Article selection was independently performed by two researchers. Qualitative content analysis was used to analyze the included studies and extract definitions of, and criteria for, RTS.

#### **RESULTS:**

Thirty-five studies were included in the content analysis, showing large variety in both the definitions and criteria. Thirty-two studies reported a definition of RTS, but only 19 studies described the criteria for RTS. The content analysis revealed that 'reaching pre-injury activity/sports level, with the ability to perform training and matches without limitations', 'absence of pain', and 'recovery' were the main content categories used to define RTS. Regarding the criteria for RTS, eight different content categories were defined: (1) 'level of pain'; (2) 'level of functional recovery'; (3) 'recovery of muscle strength'; (4) 'recovery of range of motion'; (5) 'level of endurance of the involved limb'; (6) 'medical advice'; (7) 'psychosocial factors'; and (8) 'anatomical/physiological properties of the musculotendinous complex'. Many criteria were not clearly operationalized and lacked specific information.

#### **CONCLUSIONS:**

This systematic review shows that RTS may be defined according to the pre-injury level of sports (including both training and matches), but also with terms related to the absence of pain and recovery. Multiple criteria for RTS were found, which were all related to level of pain, level of functional recovery, muscular strength, range of motion, endurance, medical advice, psychosocial factors, or anatomical/physiological properties of the Achilles tendon. For most of the criteria we identified, no clear operationalization was given, which limits their validity and practical usability. Further research on how RTS after midportion AT should be defined, and which criteria should be used, is warranted.

**45 A. MANUAL THERAPY LUMBAR & GENERAL****Touch**

*Qual Health Res.* 2018 Jan;28(2):200-212. doi: 10.1177/1049732317707726. Epub 2017 May 11.

**Experience of Touch in Health Care: A Meta-Ethnography Across the Health Care Professions.**

Kelly MA<sup>1</sup>, Nixon L<sup>1</sup>, McClurg C<sup>1</sup>, Scherpbier A<sup>2</sup>, King N<sup>3</sup>, Dornan T<sup>2,4</sup>.

Touch mediates health professionals' interactions with patients.

Different professionals have reported their practices but what is currently lacking is a well-theorized, interprofessional synthesis. We systematically searched eight databases, identified 41 studies in seven professions-nursing (27), medicine (4), physiotherapy (5), osteopathy (1), counseling (2), psychotherapy (1), dentistry (1)-and completed a meta-ethnographic line-of-argument synthesis. This found that touch is caring, exercises power, and demands safe space. Different professions express care through the medium of touch in different ways. They all, however, expect to initiate touch rather than for patients to do so. Various practices negotiate boundaries that define safe spaces between health care professions and patients. A metaphor-the waltz-integrates the practice of touch.

Health care professionals connect physically with patients in ways that form strong relationships between them while "dance steps" help manage the risk that is inherent in such an intimate form of connection.

**45 B. MANUAL THERAPY CERVICAL****Manip for FHP****Upper thoracic spine mobilization and mobility exercise versus upper cervical spine mobilization and stabilization exercise in individuals with forward head posture: a randomized clinical trial**

- Juchul Cho, Eunsang Lee and Seungwon Lee

<https://doi.org/10.1186/s12891-017-1889-2>

**Background**

Although upper cervical and upper thoracic spine mobilization plus therapeutic exercises are common interventions for the management of forward head posture (FHP), no study has directly compared the effectiveness of cervical spine mobilization and stabilization exercise with that of thoracic spine mobilization and mobility exercise in individuals with FHP.

**Methods**

Thirty-two participants with FHP were randomized into the cervical group or the thoracic group. The treatment period was 4 weeks, with follow-up assessment at 4 and 6 weeks after the initial examination. Outcome measures including the craniocervical angle (CVA), cervical range of motion, numeric pain rating scale (NPRS), pressure pain threshold, neck disability index (NDI), and global rating of change (GRC) were collected. Data were examined with a two-way repeated-measures analysis of variance (group  $\times$  time).

**Results**

Participants in the thoracic group demonstrated significant improvements ( $p < .05$ ) in CVA, cervical extension, NPRS, and NDI at the 6-week follow-up compared with those in the cervical group. In addition, 11 of 15 (68.8%) participants in the thoracic group compared with 8 of 16 participants (50%) in the cervical group showed a GRC score of +4 or higher at the 4-week follow-up.

**Conclusions**

The combination of upper thoracic spine mobilization and mobility exercise demonstrated better overall short-term outcomes in CVA (standing position), cervical extension, NPRS, NDI, and GRC compared with upper cervical spine mobilization and stabilization exercise in individuals with FHP.

**45 D. MANUAL THERAPY EXTREMITIES****Ankle mobs for instability**

Phys Ther Sport. 2017 Dec 20;30:22-28. doi: 10.1016/j.ptsp.2017.12.001.

**The effect of additional joint mobilization on neuromuscular performance in individuals with functional ankle instability.**

Shih YF<sup>1</sup>, Yu HT<sup>2</sup>, Chen WY<sup>2</sup>, Liao KK<sup>3</sup>, Lin HC<sup>4</sup>, Yang YR<sup>2</sup>.

**OBJECTIVES:**

To examine the effects of joint mobilization and exercise training on neuromuscular performance in individuals with functional ankle instability (FAI).

**DESIGN:**

A cross-sectional study.

**PARTICIPANTS:**

Forty five subjects with FAI were randomized into three groups: control (CG, n=15, 27.9±6.6yr), training (TG, n=15, 26.9±5.8yr) and mobilization with training group (MTG, n=15, 26.5±4.8yr).

**INTERVENTION:**

Four weeks of neuromuscular training for TG; neuromuscular training and joint mobilization for MTG.

**MAIN OUTCOME MEASURES:**

Electromyography of the peroneus longus (PL), tibialis anterior (TA), and soleus (SOL) and the reaching distance of the Y balance test (YBT), dorsiflexion range of motion (DFROM), Cumberland ankle instability tool (CAIT), and global rating scale (GRS). Two-way repeated measures MANOVA were used with the significance level  $p < .05$ .

**RESULTS:**

MANOVA found significant group by time interactions on posterolateral reaching distance ( $p = .032$ ), PL activation ( $p = .006-.03$ ), DFROM ( $p < .001$ ), CAIT ( $p < .001$ ) and GRS ( $p < .001$ ). The post hoc tests indicated significantly improved PL muscle activity and posterolateral reaching distance for MTG compared to TG ( $p = .004$ ) and CG ( $p = .006$ ).

**CONCLUSION:**

Joint mobilization resulted in additional benefits on self-reported ankle instability severity, dorsiflexion mobility, and posterolateral balance performance in individuals with FAI, but its effects on general improvement, muscle activation, and other balance tasks remained uncertain.

**MWM for ankle stiffness**

J Back Musculoskelet Rehabil. 2017 Dec 29. doi: 10.3233/BMR-170963.

**The immediate effects of two manual therapy techniques on ankle musculoarticular stiffness and dorsiflexion range of motion in people with chronic ankle rigidity: A randomized clinical trial.**

Hidalgo B<sup>1</sup>, Hall T<sup>2</sup>, Berwart M<sup>3</sup>, Biernaux E<sup>3</sup>, Detrembleur C<sup>3</sup>.

**OBJECTIVE:**

Ankle rigidity is a common musculoskeletal disorder affecting the talocrural joint, which can impair weight-bearing ankle dorsiflexion (WBADF) and daily-life in people with or without history of ankle injuries. Our objective was to compare the immediate effects of efficacy of Mulligan Mobilization with Movement (MWM) and Osteopathic Mobilization (OM) for improving ankle dorsiflexion range of motion (ROM) and musculoarticular stiffness (MAS) in people with chronic ankle dorsiflexion rigidity.

**DESIGN:**

A randomized clinical trial with two arms.

**METHODS:**

Patients were recruited by word of mouth and via social network as well as posters, and analyzed in the neuro musculoskeletal laboratory of the "Université Catholique de Louvain-la-Neuve", Brussels, Belgium.

**PARTICIPANTS:**

67 men (aged 18-40 years) presenting with potential chronic non-specific and unilateral ankle mobility deficit during WBDF were assessed for eligibility and finally 40 men were included and randomly allocated to single session of either MWM or OM.

**INTERVENTIONS:**

Two modalities of manual therapy indicated for hypothetic immediate effects in chronic ankle dorsiflexion stiffness, i.e. MWM and OM, were applied during a single session on included patients.

**MAIN OUTCOME MEASURES:**

Comprised blinding measures of MAS with a specific electromechanical device (namely: Lehmann's device) producing passive oscillatory ankle joint dorsiflexion and with clinical measures of WBADF-ROM as well.

**RESULTS:**

A two-way ANOVA revealed a non-significant interaction between both techniques and time for all outcome measures. For measures of MAS: elastic-stiffness ( $p=0.37$ ), viscous-stiffness ( $p=0.83$ ), total-stiffness ( $p=0.58$ ). For WBADF-ROM: toe-wall distance ( $p=0.58$ ) and angular ROM ( $p=0.68$ ). Small effect sizes between groups were determined with Cohen's  $d$  ranging from 0.05 to 0.29. One-way ANOVA demonstrated non-significant difference and small to moderate effects sizes ( $d=0.003-0.58$ ) on all outcome measures before and after interventions within both groups. A second two-way ANOVA analyzed the effect of each intervention on the sample categorized according to injury history status, and demonstrated a significant interaction between groups and time only for viscous stiffness ( $p=0.04$ ,  $d=-0.55$ ).

**CONCLUSION:**

A single session of MWM and OM targeting the talocrural joint failed to immediately improve all measures in.

**46 A. UPPER LIMB NEUROMOBILIZATION****CTS**

Arch Phys Med Rehabil. 2018 Jan 4. pii: S0003-9993(17)31465-X. doi: 10.1016/j.apmr.2017.12.005.

**Neurodynamic techniques versus "sham" therapy in the treatment of carpal tunnel syndrome; a randomized placebo-controlled trial.**

Wolny T<sup>1</sup>, Linek P<sup>2</sup>.

**OBJECTIVES:**

To evaluate the efficacy of neurodynamic techniques used as the sole therapeutic component compared with "sham" therapy in the treatment of mild and moderate carpal tunnel syndromes (CTS).

**DESIGN:**

Single blinded, randomized placebo-controlled trial.

**SETTING:**

Several medical clinics in the south of Poland.

**PARTICIPANTS:**

Volunteer sample of 150 patients diagnosed with CTS.

**MAIN OUTCOME MEASURES:**

Symptom severity (SSS) and Functional status (FSS) of Boston Carpal Tunnel Questionnaire (BCTQ).

**INTERVENTION:**

Neurodynamic techniques were used in the NT (neurodynamic techniques) group, and "sham" therapy was used in the ST ("sham" therapy) group. In neurodynamic techniques, the neurodynamic sequence were used and sliding and tension techniques were used. In "sham" therapy, no neurodynamic sequences were used and therapeutic procedures were performed in an intermediate position. Therapy was conducted twice weekly for a total of 20 therapy sessions.

**RESULTS:**

A baseline assessment revealed no inter-group differences in all examined parameters ( $p > 0.05$ ). After therapy, there was significant intra-group improvement in NCS (sensory and motor conduction velocity, motor latency) only for the NT group ( $p < 0.01$ ). After therapy, intra-group significant changes also occurred for the NT group in pain assessment, 2PD, SSS and FSS (in all cases  $p < 0.01$ ). There were no group differences in assessment of grip and pinch strength ( $p > 0.05$ ).

**CONCLUSION:**

The use of neurodynamic techniques has a better therapeutic effect compared to "sham" therapy in the treatment of mild and moderate forms of CTS.

**48 A. STM****MR on suboccipitals**

Am J Phys Med Rehabil. 2018 Jan;97(1):16-22. doi: 10.1097/PHM.0000000000000790.

**Effects of Myofascial Release on Pressure Pain Thresholds in Patients With Neck Pain: A Single-Blind Randomized Controlled Trial.**

Rodríguez-Huguet M<sup>1</sup>, Gil-Salú JL, Rodríguez-Huguet P, Cabrera-Afonso JR, Lomas-Vega R.

**OBJECTIVE:**

This study aimed to investigate the efficacy of myofascial release therapy (MRT) for improving pressure pain thresholds (PPTs) and pain in patients with mechanical neck pain.

**DESIGN:**

Forty-one participants with neck pain were randomly allocated to either a MRT group (five sessions) or a physical therapy (PT) group (ten sessions) for 2 wks. The multimodal PT program included ultrasound therapy (US), transcutaneous electric nerve stimulation, and massage. Visual analog scale (VAS) and PPTs in suboccipital and upper trapezius muscles were measured at baseline, at the end of treatment, and at 1 month follow-up.

**RESULTS:**

At the end of treatment, significant mean differences in VAS (-0.99, 95% confidence interval [CI] = -1.82 to -0.16), in both left (0.28, 95% CI = 0.06 to 0.50) and right (0.40, 95% CI = 0.16 to 0.63) suboccipital PPTs and in the right trapezius PPT (0.38, 95% CI = 0.07 to 0.69) were observed. At 1-month follow-up, significant mean differences were found for VAS (-1.85, 95% CI = -2.76 to -0.94) and both left (0.46, 95% CI = 0.12 to 0.80) and right (0.38, 95% CI = 0.06 to 0.69) suboccipital PPTs.

**CONCLUSIONS:**

This study provides evidence that MRT could be better than a multimodal PT program for short-term improvement of pain and PPTs in patients with neck pain.

**MR and tension HA's**

Physiother Res Int. 2017 Dec 20. doi: 10.1002/pri.1700.

**The effect of myofascial release and microwave diathermy combined with acupuncture versus acupuncture therapy in tension-type headache patients: A pragmatic randomized controlled trial.**

Georgoudis G<sup>1,2</sup>, Felah B<sup>2,3</sup>, Nikolaidis P<sup>4</sup>, Damigos D<sup>3</sup>.

**BACKGROUND AND PURPOSE:**

Nonpharmacological therapies for tension-type headache (TTH) and cervicogenic cephalalgia are often a treatment choice, despite the weak to moderate evidence. The aim of this study was to compare the effectiveness of an acupuncture/stretching protocol versus acupuncture/stretching plus physiotherapy techniques, in patients with TTH cephalalgia.

**METHODS:**

A single-blind, prospective, multicentre, randomized controlled trial was designed considering the pragmatic situation of administering such protocols and treating the 44 headache patients participating in this study. The patients were randomly assigned in 2 treatment groups (control group, n = 20, acupuncture/stretching; experimental group, n = 24, acupuncture/stretching plus physiotherapy) and completed 10 treatment sessions within 4 weeks with measurements taking place before treatment, after the fifth treatment and after the 10th treatment. The mechanical pressure pain threshold (PPT) was considered as the main outcome measure, using a mechanical algometer to measure 7 bilateral somatic points. Acupuncture in both groups included 17-20 acupuncture points, whereas stretching was initially taught and subsequently self-administered (self-stretches), following a standardized set of movements of the cervical spine. Physiotherapy consisted of microwave diathermy and myofascial release with hands-on techniques.

**RESULTS/FINDINGS:**

An improvement was noted in both groups/treatments regarding the main outcome measure PPT, all the way from the first to fifth and the 10th treatment, at all measuring sites and at all measurements in both groups ( $p < .001$ ). When comparing the 2 groups, differences were noted after the 10th treatment ( $p < .05$ ).

**DISCUSSION:**

In conclusion, patients with TTH headache were benefited from acupuncture and stretching but further PPT improvements were evidenced when physiotherapy hands-on techniques were added. In clinical terms, the combination of physiotherapy in the form of myofascial release and microwave diathermy with acupuncture and stretching in order to improve the analgesic effect (PPT) is strongly recommended.

**Myofascial pain syndrome**

Pain Med. 2017 Dec 15. doi: 10.1093/pm/pnx315.

**Validity and Reliability of Clinical Examination in the Diagnosis of Myofascial Pain Syndrome and Myofascial Trigger Points in Upper Quarter Muscles.**

Mayoral Del Moral O<sup>1,2</sup>, Torres Lacomba M<sup>2</sup>, Russell IJ<sup>3</sup>, Sánchez Méndez Ó<sup>1</sup>, Sánchez Sánchez B<sup>1</sup>.

**OBJECTIVES:**

To determine whether two independent examiners can agree on a diagnosis of myofascial pain syndrome (MPS). To evaluate interexaminer reliability in identifying myofascial trigger points in upper quarter muscles. To evaluate the reliability of clinical diagnostic criteria for the diagnosis of MPS. To evaluate the validity of clinical diagnostic criteria for the diagnosis of MPS.

**DESIGN:**

Validity and reliability study.

**SETTING:**

Provincial Hospital. Toledo, Spain.

**PARTICIPANTS:**

Twenty myofascial pain syndrome patients and 20 healthy, normal control subjects, enrolled by a trained and experienced examiner.

**METHODS:**

Ten bilateral muscles from the upper quarter were evaluated by two experienced examiners. The second examiner was blinded to the diagnosis group. The MPS diagnosis required at least one muscle to have an active myofascial trigger point. Three to four days separated the two examinations. The primary outcome measure was the frequency with which the two examiners agreed on the classification of the subjects as patients or as healthy controls. The kappa statistic (K) was used to determine the level of agreement between both examinations, interpreted as very good (0.81-1.00), good (0.61-0.80), moderate (0.41-0.60), fair (0.21-0.40), or poor ( $\leq 0.20$ ).

**RESULTS:**

Interexaminer reliability for identifying subjects with MPS was very good (K = 1.0). Interexaminer reliability for identifying muscles leading to a diagnosis of MPS was also very good (K = 0.81). Sensitivity and specificity showed high values for most examination tests in all muscles, which confirms the validity of clinical diagnostic criteria in the diagnosis of MPS.

**CONCLUSIONS:**

Interrater reliability between two expert examiners identifying subjects with MPS involving upper quarter muscles exhibited substantial agreement. These results suggest that clinical criteria can be valid and reliable in the diagnosis of this condition

**Trigger point ID**

Arch Phys Med Rehabil. 2018 Jan;99(1):49-56. doi: 10.1016/j.apmr.2017.06.020. Epub 2017 Jul 24.

**Inter- and Intraexaminer Reliability in Identifying and Classifying Myofascial Trigger Points in Shoulder Muscles.**

Nascimento JDSD<sup>1</sup>, Albuquerque-Sendín F<sup>2</sup>, Vigolvin LP<sup>1</sup>, Oliveira WF<sup>1</sup>, Sousa CO<sup>3</sup>.

**OBJECTIVE:**

To determine inter- and intraexaminer reliability of examiners without clinical experience in identifying and classifying myofascial trigger points (MTPs) in the shoulder muscles of subjects asymptomatic and symptomatic for unilateral subacromial impact syndrome (SIS).

**DESIGN:**

Within-day inter- and intraexaminer reliability study.

**SETTING:**

Physical therapy department of a university.

**PARTICIPANTS:**

Fifty-two subjects participated in the study, 26 symptomatic and 26 asymptomatic for unilateral SIS.

**INTERVENTIONS:**

Two examiners, without experience for assessing MTPs, independent and blind to the clinical conditions of the subjects, assessed bilaterally the presence of MTPs (present or absent) in 6 shoulder muscles and classified them (latent or active) on the affected side of the symptomatic group. Each examiner performed the same assessment twice in the same day.

**MAIN OUTCOME MEASURES:**

Reliability was calculated through percentage agreement, prevalence- and bias-adjusted kappa (PABAK) statistics, and weighted kappa.

**RESULTS:**

Intraexaminer reliability in identifying MTPs for the symptomatic and asymptomatic groups was moderate to perfect (PABAK, .46-1 and .60-1, respectively). Interexaminer reliability was between moderate and almost perfect in the 2 groups (PABAK, .46-.92), except for the muscles of the symptomatic group, which were below these values. With respect to MTP classification, intraexaminer reliability was moderate to high for most muscles, but interexaminer reliability was moderate for only 1 muscle (weighted  $\kappa=.45$ ), and between weak and reasonable for the rest (weighted  $\kappa=.06-.31$ ).

**CONCLUSIONS:**

Intraexaminer reliability is acceptable in clinical practice to identify and classify MTPs. However, interexaminer reliability proved to be reliable only to identify MTPs, with the symptomatic side exhibiting lower values of reliability.

### STM Axillary web syndrome

Physiother Theory Pract. 2018 Jan;34(1):74-78. doi: 10.1080/09593985.2017.1368755. Epub 2017 Aug 30.

#### **Treatment of axillary web syndrome using instrument assisted soft tissue mobilization and thoracic manipulation for associated thoracic rotation dysfunction.**

Crane P<sup>1</sup>, Ladden J<sup>1</sup>, Monica D<sup>2</sup>.

#### **PURPOSE:**

There is a paucity of research that investigates physical therapy management for patients with axillary web syndrome (AWS) and thoracic rotation dysfunction. The purpose of this case report is to describe the management of a patient with AWS and thoracic rotation dysfunction using an impairment-based approach that includes instrument assisted soft tissue mobilization (IASTM), thoracic manipulation, and stretching.

#### **CASE DESCRIPTION:**

The patient was a 48-year-old female with a past medical history of bilateral breast cancer with a bilateral latissimus dorsi flap reconstruction. The patient was referred to physical therapy with chief complaints of right shoulder pain with reaching and an inability to resume running due to right shoulder and scapula pain. The patient was seen in outpatient physical therapy for four visits over four weeks. Treatment consisted of IASTM, thoracic manipulation, stretching exercises, and home exercise program instruction.

#### **OUTCOMES:**

Upon discharge, the patient had improved right shoulder and thoracic range of motion, decreased pain, and improved function on the patient specific functional scale (PSFS).

#### **CONCLUSION:**

Utilization of an impairment-based physical therapy approach to treat a patient with AWS and thoracic dysfunction yielded positive outcomes. Further research on the efficacy of IASTM and physical therapy management of AWS is warranted.

**Myositis**

Int J Rheum Dis. 2018 Jan 5. doi: 10.1111/1756-185X.13257.

**Prevalence and predictors of asymptomatic vertebral fractures in inflammatory myositis.**

Gupta L1, Lawrence A1, Edavalath S1, Misra R1.

**AIM:**

To assess the frequency and risk factors of asymptomatic vertebral fractures in inflammatory myositis.

**PATIENTS AND METHODS:**

Dorsal and lumbar spine lateral radiographs were taken for adults with inflammatory myositis and scored using Genant's semi-quantitative technique. Demographic data, weight, height, postmenopausal status, duration of corticosteroid use, drug intake, co-morbidities and past history of fractures were recorded. Bone mineral density (BMD) was assessed using dual-energy X-ray absorptiometry (DEXA). Myositis Damage Index (MDI) was also assessed. All results are expressed in median and interquartile range.

**RESULTS:**

One hundred patients (82 female) with myositis of median age 35.5 (28.5-46) years and disease duration 3.0 (1.81-8.0) years were studied. Thirty-five patients had adult dermatomyositis (DM), 26 polymyositis, 31 connective tissue disease-associated myositis and eight had juvenile onset myositis. Seventeen were postmenopausal women. Forty-six patients had asymptomatic vertebral fractures and 19 had more than one fracture. Half the fractures occurred in those with disease duration of <5 years. Of the 69 fractures, 47 (68.1%), 16 (23.2%) and 6 (8.7%) were mild, moderate and severe, respectively. The 11th and 12th thoracic vertebrae were together the most commonly (30.4%) affected. Of the 70 who underwent BMD assessment, 62.7% were osteopenic and 26.9% were osteoporotic. T scores of DEXA scan at the lower third of the radius correlated negatively with fracture number ( $r = -0.27$  (-0.50 to -0.005),  $P = 0.04$ ). Gender, age, disease duration, years of corticosteroid intake, body mass index, years post-menopause and MDI had no correlation with number of fractures.

**CONCLUSION:**

Patients with inflammatory myositis have high prevalence of asymptomatic vertebral fractures.

**54. POSTURE****Upper T mob in FHP****Upper thoracic spine mobilization and mobility exercise versus upper cervical spine mobilization and stabilization exercise in individuals with forward head posture: a randomized clinical trial**

- Juchul Cho, Eunsang Lee and Seungwon Lee

<https://doi.org/10.1186/s12891-017-1889-2>

**Background**

Although upper cervical and upper thoracic spine mobilization plus therapeutic exercises are common interventions for the management of forward head posture (FHP), no study has directly compared the effectiveness of cervical spine mobilization and stabilization exercise with that of thoracic spine mobilization and mobility exercise in individuals with FHP.

**Methods**

Thirty-two participants with FHP were randomized into the cervical group or the thoracic group. The treatment period was 4 weeks, with follow-up assessment at 4 and 6 weeks after the initial examination. Outcome measures including the craniocervical angle (CCA), cervical range of motion, numeric pain rating scale (NPRS), pressure pain threshold, neck disability index (NDI), and global rating of change (GRC) were collected. Data were examined with a two-way repeated-measures analysis of variance (group  $\times$  time).

**Results**

Participants in the thoracic group demonstrated significant improvements ( $p < .05$ ) in CCA, cervical extension, NPRS, and NDI at the 6-week follow-up compared with those in the cervical group. In addition, 11 of 15 (68.8%) participants in the thoracic group compared with 8 of 16 participants (50%) in the cervical group showed a GRC score of +4 or higher at the 4-week follow-up.

**Conclusions**

The combination of upper thoracic spine mobilization and mobility exercise demonstrated better overall short-term outcomes in CCA (standing position), cervical extension, NPRS, NDI, and GRC compared with upper cervical spine mobilization and stabilization exercise in individuals with FHP.

**57. GAIT****Impact of leg length on gait**

Gait Posture. 2017 Dec 28;61:73-80. doi: 10.1016/j.gaitpost.2017.12.024.

**The effect of simulated leg length discrepancy on lower limb biomechanics during gait.**

Khamis S<sup>1</sup>, Carmeli E<sup>2</sup>.

Understanding the effects of leg length discrepancy (LLD) on the biomechanics of gait and determining as to what extent of LLD alters gait is essential.

A total of 91 biomechanical data were assessed from 14 lower limbs of healthy individuals walking under random conditions: shod only and with a 5, 10, 15, 20, 30 and 40 mm sole lift. Lower limb kinematics and dynamic leg length (DLL) were measured by a motion capture system. Hotelling's T-Square test was used to evaluate the differences in DLLs throughout the gait cycle in conjunction with differences between the sides based on the maximal stance phase and minimal swing phase DLLs.

Kinematics were compared using the one-way blocked analysis of variance and Post-hoc analysis by the paired t-test. Significant dynamic shortening of the longer limb, mainly during the swing phase, and significant change in maximal stance and minimal swing phase DLL relationship started at a 10 mm lift condition ( $p < 0.05$ ). Thirteen kinematic variables produced a significant angular main effect ( $p < 0.05$ ), with a more flexed position of the longer limb and extended shorter limb beginning at a 5 mm lift. An increase in hip abduction and external foot rotation during the swing phase was also found.

This study demonstrates that simulated LLD, as low as 5 mm, causes biomechanical changes in the lower limbs during gait revealed in both kinematics and dynamic leg length, suggesting that LLD, as small as 5-10 mm, should not be ignored.

**59. PAIN****Pain questionnaire**

Clin J Pain. 2018 Feb;34(2):113-121. doi: 10.1097/AJP.0000000000000514.

**Brief Psychological Screening Questions Can be Useful for Ruling Out Psychological Conditions in Patients With Chronic Pain.**

Vaegter HB<sup>1,2</sup>, Handberg G<sup>1</sup>, Kent P<sup>3,4</sup>.

**OBJECTIVES:**

Psychological symptoms are highly prevalent in chronic pain patients. Timely and accurate identification may enable individualized treatment and improve outcomes. The aims of this study were to (1) investigate the concurrent validity of brief psychological screening questions assessing anxiety, fear of movement, stress, pain catastrophization, and depression in chronic pain patients, and (2) to determine screening question cut-points at which the likely probability of having these psychological states was <10%.

**MATERIALS AND METHODS:**

Responses to 1-item or 2-item screening questions within each of these 5 psychological constructs were compared with those of validated full-length questionnaires in 894 patients with diverse chronic pain conditions.

**RESULTS:**

Compared with scores from full-length questionnaires, brief screening question scores had correlations between 0.54 and 0.66, and area under the curve between 0.79 and 0.83. At the dichotomized threshold scores that we chose, the posttest probability after a negative test result ranged from 6.5% to 8.6% for all these psychological constructs, except fear of movement. The pretest probability was so high (70%) for fear of movement that no threshold resulted in a posttest probability (negative test result) that was below 10%.

**DISCUSSION:**

Use of these screening tests and scoring thresholds would have correctly identified that between 38.5% and 60.5% of the sample were unlikely to have these psychological states (true negatives), with a false-negative rate between 3.4% and 5.3%. This would allow clinicians to focus on whether there are other patient attributes in those patients requiring more thorough investigation using comprehensive validated questionnaires or structured clinical interviews.

**61. FIBROMYALGIA****Pain management**

Clin J Pain. 2018 Feb;34(2):122-129. doi: 10.1097/AJP.0000000000000526.

**Pain-related Activity Management Patterns and Function in Patients With Fibromyalgia Syndrome.**

Racine M<sup>1</sup>, Galán S<sup>2,3,4</sup>, de la Vega R<sup>2,5</sup>, Tomé Pires C<sup>2,3,4</sup>, Solé E<sup>2,3,4</sup>, Nielson WR<sup>6</sup>, Miró J<sup>2,3,4,5,7</sup>, Moulin DE<sup>1</sup>, Jensen MP<sup>5</sup>.

**OBJECTIVES:**

To clarify the importance of avoidance, pacing, and overdoing pain-related activity management patterns as predictors of adjustment in patients with fibromyalgia syndrome.

**METHODS:**

A total of 119 tertiary care patients with fibromyalgia syndrome who agreed to be part of an activity management pain program completed a survey, which requested information about demographics, pain intensity and pain interference, psychological and physical function, and pain-related activity management patterns. Hierarchical regression analyses were used to identify the unique contributions of the 3 different pain-related activity management patterns (avoidance, pacing, and overdoing) to the prediction of pain interference, psychological function, and physical function.

**RESULTS:**

The avoidance pattern was a significant and unique predictor of worse psychological and physical function as well as greater pain interference. Pacing was significantly associated with less pain interference and better psychological function, whereas overdoing was not found to predict patient functioning.

**DISCUSSION:**

The findings confirm the importance of pain-related activity management patterns as predictors of patient function, and support the necessity of addressing these factors in chronic pain treatment. In addition, the results suggest that targeting increases in activity pacing and decreases in pain avoidance, specifically, might yield the best patient outcomes. However, further research to evaluate this possibility is necessary.