

## 2. LBP

### Patient expectations

Physiother Theory Pract. 2018 Feb 16:1-10. doi: 10.1080/09593985.2018.1440676. [

#### **Factors shaping expectations for complete relief from symptoms during rehabilitation for patients with spine pain.**

Bishop MD<sup>1,2</sup>, Mintken P<sup>3,4</sup>, Bialosky JE<sup>1,2</sup>, Cleland JA<sup>5,6</sup>.

##### *OBJECTIVE:*

Patient expectations are related to treatment outcome across a broad variety of patient conditions. Here we sought to examine factors associated with the expectation of complete relief from treatment for spinal pain.

##### *DESIGN:*

Secondary analysis of data pooled from two randomized controlled trials of conservative rehabilitation interventions.

##### *PATIENTS:*

252 patients (103 men, 149 women) with neck (n = 140) or back (n = 112) pain.

##### *METHODS:*

We used logistic regression model with backward elimination to test which patient clinical or demographic factors were most related to the expectation of complete relief.

##### *MAIN OUTCOME MEASURES:*

The expectation of complete recovery, which was collected at the baseline examination visit in the primary trials.

##### *RESULTS:*

The final model examining the contributions of patient and clinical characteristics to the expectation of complete relief included two significant interactions. First, increasing disability was associated with increased odds of expecting complete recovery in women while there was very little change for men across levels of disability (OR 0.9 [95%CI 0.8, 0.9]). Second, patients with low fear and a sudden onset of pain had higher odds of expecting recovery than patients with a gradual onset of pain (OR 0.7 [95%CI 0.5, 0.97]). A main effect for education level of the patient was also significant with better odds for expecting complete recovery for college educated patients compared to those with graduate school education (OR 5.0 [95%CI 1.9, 13.4]).

##### *CONCLUSION:*

The results should assist physical therapists to recognize patients who may have lower expectations of recovery and plan pre-treatment education interventions.

**Education**

Spine (Phila Pa 1976). 2018 Feb 27. doi: 10.1097/BRS.0000000000002619.

**Effectiveness and Downstream Healthcare Utilization for Patients that Received Early Physical Therapy Versus Usual Care for Low Back Pain: A Randomized Clinical Trial.**

Rhon D<sup>1,2</sup>, Miller R<sup>3</sup>, Fritz J<sup>4</sup>.

*STUDY DESIGN:*

Randomized controlled trial **OBJECTIVE.:** Compare early physical therapy versus usual care in patients with low back pain.

*SUMMARY OF BACKGROUND DATA:*

Early physical therapy (PT) has been associated with reduced downstream healthcare utilization in retrospective studies, but not investigated prospectively in the military health system.

*METHODS:*

Military service members seeking care from a general practitioner were recruited. Patients attended a 20-minute self-management class with focus on psychosocial resilience and then randomized to usual care only (UC) versus immediately starting a 3-week physical therapy program (PT). Primary outcome was the Oswestry Disability Index at 1 year. Secondary outcomes included Oswestry scores at 4 and 12-week follow-up, numeric pain rating scale, global rating of change, and healthcare utilization at 1 year. ANCOVA was used to compare differences between groups, significance set at 0.05.

*TRIAL REGISTRATION:*

clinicaltrials.gov: [NCT01556581](https://clinicaltrials.gov/ct2/show/study/NCT01556581) **RESULTS.:** 119 patients (mean age 27.2 years; mean bmi 27.8kg/m; 15.1% female) enrolled (61 randomized to UC; 58 to PT). No between-group differences found on the Oswestry after 1 year. A between-group difference in Oswestry was present at 4 weeks (mean difference=4.4 95%CI: 0.41 to 10.1; p=0.042) favoring PT. Total 1-year mean healthcare costs did not differ significantly between groups (UC \$5037; 95CI \$4171-\$6082 and PT \$5299; 95CI \$4367-\$6431). The portion of total mean healthcare costs related to low back pain was lower for UC (\$1096; 95CI \$855-\$1405) compared to PT (\$2016, 95CI \$1570-\$2590).

*CONCLUSIONS:*

There was no difference between usual care and early PT after 1 year. PT provided greater improvement in disability after 4 weeks. As both groups improved, the impact of the education may have been underestimated. Patients in the PT group utilized greater back-pain-related healthcare resources, but overall healthcare costs did not differ compared to UC.

**Psychosocial factors**

SAGE Open Med. 2018; 6: 2050312118757387. . doi: 10.1177/2050312118757387  
PMCID: PMC5808969

**Psychosocial factors associated with change in pain and disability outcomes in chronic low back pain patients treated by physiotherapist: A systematic review**

Ahmed Alhowimel,<sup>1,2</sup> Mazyad AlOtaibi,<sup>1,2</sup> Kathryn Radford,<sup>2</sup> and Neil Coulson<sup>2</sup>

**Background:**

Almost 80% of people have low back pain at least once in their life. Clinical guidelines emphasize the use of conservative physiotherapy and the importance of staying active. While the psychological factors predicting poor recovery following surgical intervention are understood, the psychosocial factors associated with poor outcomes following physiotherapy have yet to be identified.

**Methods:**

Electronic searches of PubMed, Medline, CINAHL, PsycINFO and EBSCO were conducted using terms relating to psychosocial factors, chronic low back pain, disability and physiotherapy. Papers examining the relationship between psychosocial factors and pain and disability outcomes following physiotherapy were included. Two reviewers selected, appraised and extracted studies independently.

**Results:**

In total, 10 observational studies were identified that suggested an association between fear of movement, depression, self-efficacy and catastrophizing in modifying pain and disability outcomes following physiotherapy.

**Discussion:**

Although limited by methodological shortcomings of included studies, and heterogeneity of physiotherapy interventions and measures of disability and psychosocial outcomes, the findings are consistent with other research in the context of back pain and physiotherapy, which suggest an association between psychosocial factors, including fear of movement, catastrophizing and self-efficacy and pain and disability outcomes in chronic low back pain patients treated by physiotherapist. However, a direct relationship cannot be concluded from this study.

**Conclusion:**

Findings suggest an association between psychosocial factors, including fear of movement, catastrophizing and self-efficacy and pain and disability outcomes in chronic low back pain patients treated by physiotherapist, which warrants further study.

**LBP and activity**

Spine (Phila Pa 1976). 2018 Mar 15;43(6):427-433. doi: 10.1097/BRS.0000000000002326.

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

Suri P<sup>1,2,3,4</sup>, Rainville J<sup>3,4</sup>, de Schepper E<sup>5</sup>, Martha J<sup>3</sup>, Hartigan C<sup>3,4</sup>, Hunter DJ<sup>3,6</sup>.

*STUDY DESIGN:*

Prospective, longitudinal case-crossover study.

*OBJECTIVE:*

The aim of this study was to determine whether physical activities trigger flare-ups of pain during the course of acute low back pain (LBP).

*SUMMARY OF BACKGROUND DATA:*

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

*METHODS:*

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

*RESULTS:*

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

*CONCLUSION:*

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

*LEVEL OF EVIDENCE:* .2 *PMID:* 28700451 *DOI:* 10.1097/BRS.0000000000002326

**7. PELVIC ORGANS/WOMAN'S HEALTH****iodine and conception****Delayed conception in women with low-urinary iodine concentrations: a population-based prospective cohort study**

J L Mills G M Buck Louis K Kannan J Weck Y Wan J Maisog A Giannakou Q WuR Sundaram  
*Human Reproduction*, Volume 33, Issue 3, 1 March 2018, Pages 426–433,<https://doi.org/10.1093/humrep/dex379>

**STUDY QUESTION**

Is iodine deficiency associated with decreased fecundability?

**SUMMARY ANSWER**

Moderate to severe iodine deficiency is associated with a 46% decrease in fecundability.

**WHAT IS KNOWN ALREADY**

Iodine deficiency is common in women of childbearing age but its effect on fecundability has not been investigated.

**STUDY DESIGN, SIZE, DURATION**

The LIFE Study, a population-based prospective cohort study, enrolled 501 women who had discontinued contraception within 2 months to become pregnant between 2005 and 2009.

**PARTICIPANTS/MATERIALS, SETTING, METHODS**

Women reported on risk factors for infertility by interview then kept daily journals of relevant information. Women used fertility monitors to time intercourse relative to ovulation then used home digital pregnancy tests to identify pregnancies on the day of expected menstruation. Urine samples for iodine analysis were collected on enrollment.

**MAIN RESULTS AND THE ROLE OF CHANCE**

Samples were in the deficiency range in 44.3% of participants. The group whose iodine–creatinine ratios were below 50 µg/g (moderate to severe deficiency) had a 46% reduction in fecundity ( $P = 0.028$ ) compared with the group whose iodine–creatinine ratios were in the adequate range: adjusted fecundability odds ratio of becoming pregnant per cycle, 0.54 (95% confidence interval 0.31–0.94).

**Allergies and ADHD**

dPediatr Allergy Immunol. 2018 Mar 9. doi: 10.1111/pai.12888.

**Early food allergy and respiratory allergy symptoms, and attention-deficit/hyperactivity disorder in Chinese children: a cross-sectional study.**

Jiang X<sup>1,2</sup>, Shen C<sup>1</sup>, Dai Y<sup>1</sup>, Jiang F<sup>1</sup>, Li S<sup>1</sup>, Shen X<sup>1</sup>, Hu Y<sup>2</sup>, Li F<sup>1</sup>.

**BACKGROUND:**

The relationship between food allergy and respiratory allergy, and attention-deficit/hyperactivity disorder (ADHD) in children is rarely investigated. Our objective is to determine whether early food allergy and respiratory allergy symptoms are associated with the prevalence of ADHD in Chinese school-age children.

**METHODS:**

This cross-sectional study was conducted in school-age children using cluster-stratified methods from nine cities across China between November and December 2005. A family and social environmental questionnaire including the diagnosis history of ADHD and allergic diseases (food allergy, allergic rhinitis and bronchial asthma), as well as general information was completed by parents.

**RESULTS:**

The prevalence of allergic rhinitis (20.4%) and asthma (11.6%) in the food allergy group were both significantly higher than in the non-food allergy group (9.0% and 2.8%, respectively) (both  $P < 0.001$ ). The multivariable analysis showed that single food allergy (OR=1.53, 95%CI: 1.13-2.05,  $P=0.005$ ), food allergy complicated with allergic rhinitis or asthma (OR=3.36, 95%CI: 2.19-5.14,  $P < 0.001$ ), and food allergy complicated with allergic rhinitis and asthma simultaneously (OR=4.08, 95%CI: 2.05-8.11,  $P < 0.001$ ) were independently associated with the increased risk of ADHD.

**CONCLUSIONS:**

Early food allergy is associated with ADHD in school-age children. Early food allergy and respiratory allergy symptoms independently and synergistically contributed to higher risk of ADHD. Monitoring food allergy in early life could help the early prediction and intervention for the consequent allergy march and ADHD in children. This article is protected by copyright. All rights reserved.

This article is protected by copyright. All rights reserved.

**KEYWORDS:** allergy march; attention-deficit/hyperactivity disorder; food allergy; respiratory allergy PMID: 29524252 DOI:10.1111/pai.12888

## 8. VISCERA

### Link between Celiac disease and schizophrenia

Eur J Gastroenterol Hepatol. 2018 Apr;30(4):442-446. doi: 10.1097/MEG.0000000000001048.

#### **Association between celiac disease and schizophrenia: a meta-analysis.**

Wijarnpreecha K<sup>1</sup>, Jaruvongvanich V<sup>2</sup>, Cheungpasitporn W<sup>3</sup>, Ungprasert P<sup>3,4</sup>.

#### *BACKGROUND/OBJECTIVE:*

Recent epidemiologic studies have suggested that patients with celiac disease might be at an increased risk of schizophrenia. However, the data on this risk remain inconclusive. This meta-analysis was conducted with the aim to summarize all available evidence.

#### *METHODS:*

A literature search was carried out using MEDLINE and Embase database from inception to June 2017. Studies that compared the risk of schizophrenia among patients with celiac disease versus individuals without celiac disease were included. Pooled odds ratio and 95% confidence interval were calculated using a random-effect, generic inverse-variance method.

#### *RESULTS:*

Of the 284 retrieved studies, four met our eligibility criteria and were included in the analysis. We found a higher risk of schizophrenia among patients with celiac disease compared with individuals without celiac disease with the pooled odds ratio of 2.03 (95% confidence interval: 1.45-2.86). The statistical heterogeneity of this study was insignificant (I=0%).

#### *CONCLUSION:*

This systematic review and meta-analysis found a significantly higher risk of schizophrenia among patients with celiac disease.

PMID: 29280918 DOI: 10.1097/MEG.0000000000001048

**13 C. AIRWAYS/SWALLOWING/SPEECH****Sleep training in chronic pain**

Phys Ther. 2018 Feb 7. doi: 10.1093/ptj/pzy020.

**Sleep Disturbances in Chronic Pain: Neurobiology, Assessment, and Treatment in Physical Therapist Practice.**

Nijs J<sup>1</sup>, Mairesse O<sup>2</sup>, Neu D<sup>3</sup>, Leysen L<sup>4</sup>, Danneels L<sup>5</sup>, Cagnie B<sup>6</sup>, Meeus M<sup>7</sup>, Moens M<sup>8</sup>, Ickmans K<sup>9</sup>, Goubert D<sup>10</sup>.

Among people with chronic pain, insomnia is highly prevalent, closely related to the mechanism of central sensitization, characterized by low-grade neuroinflammation, and commonly associated with stress or anxiety; in addition, it often does not respond effectively to drug treatments.

This review article applies the current understanding of insomnia to clinical practice, including assessment and conservative treatment of insomnia in people with chronic pain. Cognitive-behavioral therapy for insomnia can be efficacious for improvements in sleep initiation, sleep maintenance, perceived sleep quality, and pain interference with daily functioning in people with chronic pain. A recent systematic review concluded that with additional training, physical therapist-led cognitive-behavioral interventions are efficacious for low back pain, allowing their implementation within the field.

Cognitive-behavioral therapy for insomnia, as provided to people with chronic pain, typically includes education, sleep restriction measures, stimulus control instructions, sleep hygiene, and cognitive therapy.

**KEYWORDS:** CBT; Insomnia; pain; sensitization; sleep PMID: 29425327 DOI: 10.1093/ptj/pzy020

## 14. HEADACHES

### Prevalence of

Headache. 2015 Jan;55(1):21-34. doi: 10.1111/head.12482. Headache. 2015 Feb;55(2):356.

#### **The prevalence and burden of migraine and severe headache in the United States: updated statistics from government health surveillance studies.**

Burch RC<sup>1</sup>, Loder S, Loder E, Smitherman TA.

**BACKGROUND AND OBJECTIVES:** The US National Center for Health Statistics, which is part of the Centers for Disease Control, conducts ongoing public health surveillance activities. The US Armed Forces also maintains a comprehensive database of medical information. We aimed to identify the most current prevalence estimates of migraine and severe headache in the United States adult civilian and active duty service populations from these national government surveys, to assess stability of prevalence estimates over time, and to identify additional information pertinent to the burden and treatment of migraine and other severe headache conditions.

**METHODS:** We searched for the most current publicly available summary statistics from the National Ambulatory Medical Care Survey, the National Hospital Ambulatory Medical Care Survey, and the National Health Interview Survey (NHIS). Summary data from the Defense Medical Surveillance System were also obtained, and PubMed was also searched for publications reporting summary statistics based on these studies. Data were abstracted, double-checked for accuracy, and summarized over time periods and as a function of demographic variables.

**RESULTS:** 14.2% of US adults 18 or older reported having migraine or severe headache in the previous 3 months in the 2012 NHIS. The overall age-adjusted 3-month prevalence of migraine in females was 19.1% and in males 9.0%, but varied substantially depending on age. The prevalence of migraine was highest in females 18-44, where the 3-month prevalence of migraine or severe headache was 23.5%. The 3-month prevalence of migraine or severe headache has remained relatively stable over the period of 2005-2012, with an average prevalence of 20.2% in females, 9.4% in males, and 14.9% overall [corrected]. During this time, the average female to male sex ratio for migraine or severe headache was 2.17. The unadjusted 1-year prevalence of migraine in active duty US military service members varied from 1% to 1.9% between 1998 and 2010, ranging from 0.7% to 1.2% in males and 3.5% to 6% in females. The 1-year prevalence of "other headache" in this military population ranged from a low of 1.9% in 2003 to a high of 3% in 2010. Headache or pain in the head was the fourth leading cause of visits to the emergency department (ED) in 2009-2010, accounting for 3.1% of all ED visits. Across all ambulatory care settings, migraine accounted for 0.5% of all visits and other headache presentations for 0.4% of all ambulatory care visits. 52.8% of all visits for migraine occurred in primary care settings, 23.2% in specialty outpatient settings, and 16.7% in EDs. In 2010, opioids were administered at 35% of ED visits for headache, while triptans were administered in only 1.5% of visits.

**CONCLUSIONS:** This report summarizes the most recent government statistics on the prevalence and burden of migraine and severe headache in the US civilian and active duty military populations. The prevalence of migraine headaches is high, affecting roughly 1 out of every 7 Americans annually, and has remained relatively stable over the last 8 years. Migraine and headache are leading causes of outpatient and ED visits and remain an important public health problem, particularly among women during their reproductive years.

**KEYWORDS:**epidemiology; headache; migraine; military;  
**prevalence PMID:25600719: 10.1111/head.12482**

**20 A. ROTATOR CUFF****Sleep problems**

Orthop J Sports Med. 2015 Mar; 3(3 Suppl): 2325967115S00001.  
doi: 10.1177/2325967115S00001 PMID: PMC4901558

**Sleep Quality in Patients with Rotator Cuff Disease**

Michael S. Khazzam, MD, Ed Mulligan, DPT, Zachary Shirley, and Meredith Brunette, DPT

**Objectives:**

Sleep disturbance may be an important prognostic variable driving patients to seek treatment for rotator cuff disease related shoulder pain. Currently, little is known on the influence of rotator cuff pathology on sleep. The purpose of this study was to determine which patient factors correlate with sleep disturbance in patients with atraumatic rotator cuff disease.

**Methods:**

A prospective, nonrandomized single surgeon cross-sectional cohort study was performed evaluating the effects of rotator cuff disease on sleep quality. Time-zero prior to treatment intervention outcomes data was collected including the Single Assessment Numeric Evaluation Rating (SANE), American Shoulder and Elbow Score (ASES), Pittsburgh Sleep Quality Index (PSQI), patient demographics and medical comorbidities. Statistical analysis included Pearson correlation and multiple regression analysis to determine which patient reported factors were associated with sleep quality disturbance.

**Results:**

147 shoulders in 131 subjects 66 right 49 left 16 bilateral (66 male, 65 female) with a mean age 56.4 were enrolled. There were 92 subjects with rotator cuff tendinitis, and 34 subjects full thickness rotator cuff tears confirmed on MRI. The mean SANE was 48, VAS 4.85, ASES 52, PSQI 8.26±5.0, and 92% of subjects reported nocturnal shoulder pain. Pearson correlation coefficient determined that female sex (males -0.23, p=0.001), higher pain VAS score (+0.26, p=0.003), depression (+0.39, p<0.0001), presence of low back pain (+0.36, p<0.0001) smoking (+0.22, p=0.01), diabetes (+0.19, p=0.03), presence of osteoarthritis (+0.19, p=0.03), and NSAID use (+0.17, p=0.05) were associated with poor sleep quality. Factors associated with worse sleep quality. Age, SANE, ASES, presence of full thickness RCT, presence of biceps pain, or cervical spine symptoms were not predictive and did not correlate with worse sleep quality.

**Conclusion:**

Based on our findings pain, female gender, depression, presence of low back pain, smoking, diabetes mellitus, and prior NSAID use are all factors associated with worse sleep quality in patients with rotator cuff disease. These results demonstrate that the sleep quality does not seem to correlate with severity of rotator cuff pathology.

**25. WRIST AND HAND****thumb pain and PT**

Musculoskelet Sci Pract. 2018 Feb 21;35:46-54. doi: 10.1016/j.msksp.2018.02.005.

**The effectiveness of physical therapies for patients with base of thumb osteoarthritis: Systematic review and meta-analysis.**

Ahern M<sup>1</sup>, Skyllas J<sup>2</sup>, Wajon A<sup>3</sup>, Hush J<sup>4</sup>.

*BACKGROUND:*

Trapeziometacarpal osteoarthritis (known as base of thumb OA) is a common condition causing pain and disability worldwide.

*OBJECTIVE:*

The purpose of this review was to evaluate the effectiveness of multimodal and unimodal physical therapies for base of thumb osteoarthritis (OA) compared with usual care, placebo or sham interventions.

*DESIGN:*

Systematic review and meta-analysis.

*METHOD:*

We searched MEDLINE (PubMed), CINAHL, Embase, AMED, PEDro, Cochrane Database of Systematic Review, Cochrane Register of Controlled Trials (CENTRAL) from inception to May 2017. Randomized controlled trials involving adults comparing physical therapy treatment for base of thumb OA with an inactive control (placebo or sham treatment) and reported pain, strength or functional outcomes were included. Meta-analyses were performed where possible. Methodological risk of bias was assessed with the Cochrane Risk of Bias tool.

*RESULTS:*

Five papers with low risk of bias were included. Meta-analyses of mean differences (MD) with 95% confidence intervals (95% CI), were calculated for between-group differences in point estimates at 4 weeks post-intervention. Multimodal and unimodal physical therapies resulted in clinically worthwhile improvements in pain intensity (MD 2.9 [95% CI 2.8 to 3.0]; MD 3.1 [95% CI 2.5 to 3.8] on a 0-10 scale, respectively). Hand function improved following unimodal treatments (MD 6.8 points [95% CI 1.7 to 11.9]) on a 0-100 scale) and after a multimodal treatment (MD 20.5 (95%CI -0.7 to 41.7).

*CONCLUSIONS:*

High quality evidence shows unimodal and multimodal physical therapy treatments can result in clinically worthwhile improvements in pain and function for patients with base of thumb OA.

**27. HIP****Psychological factors and hip pain**

Eur J Pain. 2018 Feb 9. doi: 10.1002/ejp.1199.

**Psychological factors not strength deficits are associated with severity of gluteal tendinopathy: A cross-sectional study.**

Plinsinga ML<sup>1</sup>, Coombes BK<sup>2</sup>, Mellor R<sup>1</sup>, Nicolson P<sup>3</sup>, Grimaldi A<sup>1,4</sup>, Hodges P<sup>5</sup>, Bennell K<sup>3</sup>, Vicenzino B<sup>1</sup>.

**BACKGROUND:**

Gluteal tendinopathy is the most common lower limb tendinopathy presenting to general practice. It has a high prevalence amongst middle-aged women and impacts on daily activities, work participation and quality of life. The aim was to compare physical and psychological characteristics between subgroups of severity of pain and disability.

**METHODS:**

A multicentre cross-sectional cohort of 204 participants (mean age 55 years, 82% female) who had a clinical diagnosis of gluteal tendinopathy with magnetic resonance imaging confirmation were assessed. A range of physical and psychosocial characteristics were recorded. Pain and disability were measured with the VISA-G questionnaire. A cluster analysis was used to identify mild, moderate and severe subgroups based on total VISA-G scores. Between-group differences were then evaluated with a MANCOVA, including sex and study site as covariates, followed by a Bonferroni post hoc test. Significance was set at 0.05.

**RESULTS:**

There were significantly higher pain catastrophizing and depression scores in the more severe subgroups. Lower pain self-efficacy scores were found in the severe group compared to the moderate and mild groups. Greater waist girth and body mass index (BMI), lower activity levels and poorer quality of life were reported in the severe group compared to the mild group. Hip abductor muscle strength and hip circumference did not differ between subgroups of severity.

**CONCLUSIONS:**

Individuals with severe gluteal tendinopathy present with psychological distress, poorer quality of life, greater BMI and waist girth. Given these features, the consideration of psychological factors in more severe patients may be important to optimize patient outcomes and reduce healthcare utilization.

**SIGNIFICANCE:**

Patients with severe gluteal tendinopathy exhibit greater psychological distress, poorer quality of life and greater waist girth and BMI when compared to less severe cases. This implies that clinicians ought to consider psychological factors in the management of more severe gluteal tendinopathy.

## Hip adduction correction

**Reduced Hip Adduction Is Associated With Improved Function After Movement-Pattern Training in Young People With Chronic Hip Joint Pain**

**Authors:** Marcie Harris-Hayes, DPT, MSCI<sup>1,2</sup>, Karen Steger-May, MA<sup>3</sup>, Linda R. Van Dillen, PT, PhD, FAPTA<sup>1,2</sup>, Mario Schootman, PhD<sup>4</sup>, Gretchen B. Salsich, PT, PhD<sup>5</sup>, Sylvia Czuppon, DPT, OCS<sup>1,2</sup>, John C. Clohisy, MD<sup>2</sup>, Paul K. Commean, BEE<sup>6</sup>, Travis J. Hillen, MD<sup>7</sup>, Shirley A. Sahrman, PT, PhD, FAPTA<sup>1</sup>, Michael J. Mueller, PT, PhD, FAPTA<sup>1,7</sup>  
28 DOI:10.2519/jospt.2018.7810

**Study Design**

Ancillary analysis, time-controlled randomized clinical trial.

**Background**

Movement pattern training (MPT) has been shown to improve function among patients with chronic hip joint pain (CHJP).

**Objective**

Determine the association among treatment outcomes and mechanical factors associated with CHJP.

**Methods**

Twenty-eight patients with CHJP, 18-40 years, participated in MPT, either immediately after assessment or after a wait-list period. MPT included task-specific training to reduce hip adduction motion during functional tasks and hip muscle strengthening. Hip-specific function was assessed using modified Harris Hip Score (MHHS) and Hip disability and Osteoarthritis Outcome Score (HOOS). 3D kinematic data were used to quantify hip adduction motion, dynamometry to quantify abductor strength, and magnetic resonance imaging to measure femoral head sphericity using alpha angle. Paired t-tests assessed change from pre- to post-treatment. Spearman correlations assessed associations.

**Results**

There was significant improvement in MHHS and HOOS ( $P < .02$ ), adduction motion ( $P = .045$ ) and abductor strength ( $P = .01$ ) between pre- and post-treatment. Reduction in hip adduction motion ( $r = -0.67$ ,  $P < .01$ ) and lower body mass index ( $r = -0.38$ ,  $P = .049$ ) correlated with MHHS improvement. Alpha angle and abductor strength change were not correlated with change in MHHS or HOOS.

**Conclusion**

After MPT, patients reported improvements in pain and function that was associated with their ability to reduce hip adduction motion during functional tasks.

**Level of Evidence** Therapy, level 2b. *J Orthop Sports Phys Ther*, Epub 16 Mar 2018.  
doi:10.2519/jospt.2018.7810 Keyword: femoroacetabular impingement, hip dysplasia, kinematics, movement system, rehabilitation

**29. OA****Glucocorticoid injections**

Clinical and epidemiological research

Extended report

**Intramuscular glucocorticoid injection versus placebo injection in hip osteoarthritis: a 12-week blinded randomised controlled trial**

1. Desirée M J Dorleijn<sup>1</sup>, Pim A J Luijsterburg<sup>1</sup>, Max Reijman<sup>2</sup>, , Sita M A Bierma-Zeinstra<sup>1,2</sup>

**Abstract**

**Objectives** Guidelines recommend intra-articular glucocorticoid injection in patients with painful hip osteoarthritis. However, intra-articular hip injection is an invasive procedure. The efficacy of systemic glucocorticoid treatment for pain reduction in hip osteoarthritis is unknown. This randomised, double-blind, trial assessed effectiveness in hip pain reduction of an intramuscular glucocorticoid injection compared with a placebo injection in patients with hip osteoarthritis.

**Methods** Patients with painful hip osteoarthritis were randomised to either 40 mg triamcinolone acetate or placebo with an intramuscular injection into the gluteus muscle. The primary outcomes were severity of hip pain at rest, during walking (0–10) and WOMAC pain at 2-week postinjection. We used linear mixed models for repeated measurements at 2, 4, 6 and 12 weeks for the intention-to-treat data analysis.

**Results** Of the 107 patients randomised, 106 could be analysed (52 in the glucocorticoid group, 54 in the placebo group). At 2-week follow-up, compared with placebo injection, the intramuscular glucocorticoid injection showed a significant and clinically relevant difference in hip pain reduction at rest (difference  $-1.3$ , 95% CI  $-2.3$  to  $-0.3$ ). This effect persisted for the entire 12-week follow-up. For hip pain during walking, the effect was present at 4-week, 6-week and 12-week follow-ups, and for WOMAC pain the effect was present at 6-week and 12-week follow-up.

**Conclusions** An intramuscular glucocorticoid injection showed effectiveness in patients with hip osteoarthritis on one of the three primary outcomes at 2-week postinjection. All primary outcomes showed effectiveness from 4 to 6 weeks, up to a 12-week follow-up.

**Trial registration number** NTR2966.

<http://dx.doi.org/10.1136/annrheumdis-2017-212628>

**32 A. KNEE/ACL****Patella tendon superior**

Knee Surg Sports Traumatol Arthrosc. 2018 Mar 3. doi: 10.1007/s00167-018-4881-y.

**Bone-patellar tendon-bone autograft could be recommended as a superior graft to hamstring autograft for ACL reconstruction in patients with generalized joint laxity: 2- and 5-year follow-up study.**

Kim SJ<sup>1</sup>, Choi CH<sup>2</sup>, Kim SH<sup>2</sup>, Lee SK<sup>3</sup>, Lee W<sup>2</sup>, Kim T<sup>2</sup>, Jung M<sup>4</sup>.

**PURPOSE:**

The present study aimed to compare 2- and 5-year outcomes of ACL reconstruction between patients with and without generalized joint laxity and to perform comparative evaluation between two types of grafts used for ACL reconstruction in patients with generalized joint laxity.

**METHODS:**

Two hundred and thirty-seven patients who underwent ACL reconstruction from 2001 to 2008 were included. Patients were classified into two groups according to the presence or the absence of generalized joint laxity, and further subdivided into two subgroups based on the type of graft used: bone-patellar tendon-bone (BPTB) or hamstring. Generalized joint laxity was assessed with the Beighton and Horan criteria using a point scoring system. Stability reflected by the Lachman test, pivot-shift test, and anterior translation measured with KT-2000, and functional outcomes reflected by Lysholm knee score, and International Knee Documentation Committee (IKDC) subjective score were investigated. IKDC objective grade and radiographic grade were also assessed. Clinical assessments were conducted preoperatively and at 2 and 5 years after operation.

**RESULTS:**

Two-year follow-up results showed that patients with generalized joint laxity receiving hamstring grafts had poorer outcomes than those without generalized joint laxity. Five-year follow-up results showed that patients with generalized joint laxity experienced poorer outcomes than patients without generalized joint laxity, irrespective of the type of graft. Comparison of grafts used showed that, in patients with generalized joint laxity, BPTB graft provided significantly better stability and functional outcomes than hamstring graft at both 2- and 5-year follow-ups. Comparisons between serial outcomes measured at 2 and 5 years demonstrated that stability and functional outcomes deteriorated over time in patients with generalized joint laxity.

**CONCLUSIONS:**

Less satisfactory stability and functional outcomes were noted in patients with generalized joint laxity, compared to patients without generalized joint laxity. Comparisons of stability and functional outcomes after ACL reconstruction in patients with generalized joint laxity between two different grafts demonstrated that BPTB graft achieves better results than hamstring graft.

### 34. PATELLA

#### Runners

J Appl Biomech. 2018 Feb 27:1-26. doi: 10.1123/jab.2017-0229.

#### **Runners with Patellofemoral Pain Exhibit Greater Peak Patella Cartilage Stress Compared to Pain-Free Runners.**

Liao TC<sup>1,2</sup>, Keyak JH<sup>3</sup>, Powers CM<sup>1</sup>.

The purpose of this study is to determine whether recreational runners with patellofemoral pain (PFP) exhibit greater peak patella cartilage stress compared to pain-free runners.

A secondary purpose was to determine the kinematic and/or kinetic predictors of peak patella cartilage stress during running. Twenty-two female recreational runners participated (12 with PFP and 10 pain-free controls).

Patella cartilage stress profiles were quantified using subject-specific finite element models simulating the maximum knee flexion angle during stance phase of running. Input parameters to the finite element model included subject-specific patellofemoral joint geometry, quadriceps muscle forces, and lower extremity kinematics in the frontal and transverse planes. Tibiofemoral joint kinematics and kinetics were quantified to determine the best predictor of stress using stepwise regression analysis. Compared to the pain-free runners, those with PFP exhibited greater peak hydrostatic pressure (PFP vs. control,  $21.2 \pm 5.6$  MPa vs.  $16.5 \pm 4.6$  MPa) and maximum shear stress ( $11.3 \pm 4.6$  MPa vs.  $8.7 \pm 2.3$  MPa).

Knee external rotation was the best predictor of peak hydrostatic pressure and peak maximum shear stress (38% and 25% of variances, respectively) followed by the knee extensor moment (21% and 25% of variances, respectively).

Runners with PFP exhibit greater peak patella cartilage stress during running compared to pain-free individuals. The combination of knee external rotation and a high knee extensor moment best predicted elevated peak stress during running.

*KEYWORDS: articular cartilage; finite element analysis; tibiofemoral joint kinematics and kinetics PMID:485362 DOI: 10.1123/jab.2017-0229*

**35. KNEE/TOTAL****Neuropathic pain**

PM R. 2018 Feb 13. pii: S1934-1482(17)30703-7. doi: 10.1016/j.pmrj.2018.01.010.

**Development and Persistence of Suspected Neuropathic Pain After Total Knee Arthroplasty in Individuals With Osteoarthritis.**

Fitzsimmons M<sup>1</sup>, Carr E<sup>2</sup>, Woodhouse L<sup>1</sup>, Bostick GP<sup>3</sup>.

**BACKGROUND:** Despite the effectiveness of total knee arthroplasty (TKA) for osteoarthritis (OA), up to 20% will report knee pain 1 year after surgery. One possible reason is the development of neuropathic pain before or after TKA.

**OBJECTIVE:** To longitudinally describe suspected neuropathic pain in patients pre- and post-TKA and to explore relations between pre-TKA suspected neuropathic pain and post-TKA outcomes.

**DESIGN:** Prospective observational study.

**SETTING:**

Participants were recruited from orthopedic surgery clinics prior to inpatient elective primary TKA.

**PARTICIPANTS:**

Convenience sample of 135 patients were assessed for eligibility; 99 were enrolled and 74 completed the 6-month follow-up.

**METHODS:**

Participants completed the Self-Leeds Assessment of Neuropathic Symptoms and Signs (S-LANSS) and outcome measures at baseline (pre-TKA) and 1 and 6 months post-TKA by postal survey. Demographic variables included age, gender, and comorbidities. Descriptive statistics were calculated for the presence of suspected neuropathic pain at each assessment and course of outcomes for various suspected neuropathic pain trajectories. Further, t-tests were used to compare outcomes between those with and without suspected neuropathic pain at each assessment. Multiple linear regressions assessed the relationship between baseline suspected neuropathic pain and 6-month outcomes.

**MAIN OUTCOME MEASUREMENTS:**

Intermittent and Constant Osteoarthritis Pain (ICOAP), Pain Catastrophizing Scale (PCS), and the Patient Health Questionnaire (PHQ-9) for depression.

**RESULTS:**

Suspected neuropathic pain was present in 35.5% of pre-TKA patients, 39.0% at 1 month, and 23.6% at 6 months post-TKA. Those with suspected neuropathic pain had higher scores for ICOAP total pain ( $P = .05$ ), pain catastrophizing ( $P < .01$ ), and depression ( $P < .01$ ) at each assessment. After adjusting for potential confounding, pre-TKA suspected neuropathic pain did not predict ICOAP total pain or PHQ-9 depression scores at 6 months.

**CONCLUSIONS:**

Although 14% of individuals with knee OA had suspected neuropathic pain that persisted 6 months post-TKA and those with suspected neuropathic pain had higher levels of pain, catastrophizing, and depression, the clinical identification of neuropathic pain remains enigmatic. Preoperative suspected neuropathic pain, as measured by S-LANSS, may have limited prognostic value for post-TKA outcomes.

**Results of**

Clin J Pain. 2018 Apr;34(4):332-338. doi: 10.1097/AJP.0000000000000540.

**Longitudinal Postoperative Course of Pain and Dysfunction Following Total Knee Arthroplasty.**

Hadlandsmyth K<sup>1</sup>, Zimmerman MB<sup>2</sup>, Wajid R<sup>3</sup>, Sluka KA<sup>4</sup>, Herr K<sup>3</sup>, Clark CR<sup>5</sup>, Noiseux NO<sup>5</sup>, Callaghan JJ<sup>5</sup>, Raket BA<sup>3</sup>.

**OBJECTIVES:**

Although the majority of patients undergoing total knee arthroplasty (TKA) report substantial improvement in pain and function, a significant subset experience persistent postsurgical pain and dysfunction. Better understanding of the longitudinal postoperative course is needed, including the association between patient status following physical rehabilitation at 6-weeks post-TKA, to 6-months outcomes. This study aims to describe the postoperative course of TKA and examine variables associated with change in pain and functioning between 6-weeks and 6-months post-TKA.

**METHODS:**

In this longitudinal study of 223 participants, assessments of analgesic intake, depression, anxiety, pain catastrophizing, dysfunction, resting and range of motion pain, and pain sensitivity were completed at 6-weeks post-TKA. Analgesic intake, pain ratings, and dysfunction data were also collected at 6-months post-TKA. Pain and dysfunction ratings were divided into none-mild and moderate-severe categories.

**RESULTS:**

Between 6-weeks and 6-months post-TKA, 75% of the sample stayed in the same pain category, 20% improved, and 5% worsened. In terms of functional changes between 6 weeks and 6 months, 65% of the sample stayed in the same functional category, whereas 31% improved and 5% worsened.

**DISCUSSION:**

These findings demonstrate that the majority of patients' pain and functioning remains stable between 6 weeks and 6 months post-TKA. However, a notable subset continues to improve or worsen in pain and functioning and the current study identifies variables associated with these changes.

**37. OSTEOARTHRITIS/KNEE****Dosing of ex helps**

J Orthop Sports Phys Ther. 2018 Mar;48(3):146-161. doi: 10.2519/jospt.2018.7637. Epub 2018 Jan 10.

**The Influence of Exercise Dosing on Outcomes in Patients With Knee Disorders: A Systematic Review.**

Young JL, Rhon DI, Cleland JA, Snodgrass SJ.  
Study Design Systematic review.

**Background** Therapeutic exercise is commonly used to treat individuals with knee disorders, but dosing parameters for optimal outcomes are unclear. Large variations exist in exercise prescription, and research related to specific dosing variables for knee osteoarthritis, patellar tendinopathy, and patellofemoral pain is sparse.

**Objectives** To identify specific doses of exercise related to improved outcomes of pain and function in individuals with common knee disorders, categorized by effect size.

**Methods** Five electronic databases were searched for studies related to exercise and the 3 diagnoses. Means and standard deviations were used to calculate effect sizes for the exercise groups. The overall quality of evidence was assessed using the Physiotherapy Evidence Database scale.

**Results** Five hundred eighty-three studies were found after the initial search, and 45 were included for analysis after screening. Physiotherapy Evidence Database scale scores were "fair" quality and ranged from 3 to 8. For knee osteoarthritis, 24 total therapeutic exercise sessions and 8- and 12-week durations of exercise were parameters most often associated with large effects. An exercise frequency of once per week was associated with no effect. No trends were seen with exercise dosing for patellar tendinopathy and patellofemoral pain.

**Conclusion** This review suggests that there are clinically relevant exercise dosing variables that result in improved pain and function for patients with knee osteoarthritis, but optimal dosing is still unclear for patellar tendinopathy and patellofemoral pain. Prospective studies investigating dosing parameters are needed to confirm the results from this systematic review. Level of Evidence Therapy, level 1a. J Orthop Sports Phys Ther 2018;48(3):146-161. Epub 10 Jan 2018. doi:10.2519/jospt.2018.7637.

**38 A. FOOT AND ANKLE****Active motion following FX**

Clin Rehabil. 2018 Mar;32(3):312-318. doi: 10.1177/0269215517724192. Epub 2017 Aug 14.

**Active controlled motion in early rehabilitation improves outcome after ankle fractures: a randomized controlled trial.**

Jansen H<sup>1</sup>, Jordan M<sup>1</sup>, Frey S<sup>2</sup>, Hölscher-Doht S<sup>1</sup>, Meffert R<sup>1</sup>, Heintel T<sup>1</sup>.

*OBJECTIVE:*

To evaluate the use of active controlled motion (ACM) after unstable ankle fractures needing initial partial weight-bearing.

*DESIGN:*

Prospective randomized controlled trial.

*SETTING:*

Inpatient and outpatient clinic.

*SUBJECTS:*

A total of 50 patients with unstable ankle fractures and the need for partial weight-bearing for six weeks.

*INTERVENTIONS:*

Randomization in two groups: physiotherapy alone or physiotherapy with an additional ACM device.

*MAIN MEASURES:*

Follow-up after 6 and 12 weeks. Range of motion, visual analogue scale for foot and ankle (VAS FA), Philip score, Mazur score, American Orthopaedic Foot & Ankle Society (AOFAS) score and dynamic pedobarography.

*RESULTS:*

Range of motion was better in the ACM group at six weeks (mean  $49^{\circ} \pm 11.1^{\circ}$  vs.  $41.3^{\circ} \pm 8.1^{\circ}$ ). Questionnaires revealed better outcome after six weeks in the VAS FA ( $56 \pm 13.7$  vs.  $40.6 \pm 10.5$ ), Mazur score ( $64.4 \pm 12.3$  vs.  $56.7 \pm 11$ ) and AOFAS score ( $71.2 \pm 12$  vs.  $63.6 \pm 8.7$ ) ( $P > 0.02$  for all). Better outcome after 12 weeks in all questionnaires (VAS FA,  $77.7 \pm 13.8$  vs.  $61.4 \pm 16.3$ ; Philip score,  $79.1 \pm 10.9$  vs.  $60.1 \pm 21.7$ ; Mazur score,  $83.9 \pm 10.7$  vs.  $73.1 \pm 14.1$ ; AOFAS score,  $87.5 \pm 7.9$  vs.  $75.2 \pm 11.7$ ) ( $P < 0.01$  for all). Pressure balance was better under the midfoot region after 12 weeks in the ACM group ( $\Delta P$  4.4 N vs. 34.0 N;  $P = 0.01$ ). The ACM group had an earlier return to work after 10.5 (range, 3-17) versus 14.7 (range, 9-26) weeks ( $P = 0.02$ ).

*CONCLUSION:*

The use of ACM for patients needing initial partial weight-bearing after operatively treated unstable ankle fractures in the first six postoperative weeks leads to better clinical and functional results and an earlier return to work.

**45 A. MANUAL THERAPY LUMBAR & GENERAL****Manipulation sounds**

Joint Bone Spine. 2018 Mar;85(2):239-242. doi: 10.1016/j.jbspin.2017.04.006. Epub 2017 Apr 26.

**Beliefs in the population about cracking sounds produced during spinal manipulation.**

Demoulin C<sup>1</sup>, Baeri D<sup>2</sup>, Toussaint G<sup>2</sup>, Cagnie B<sup>3</sup>, Beernaert A<sup>3</sup>, Kaux JF<sup>4</sup>, Vanderthommen M<sup>4</sup>.

*OBJECTIVES:*

To examine beliefs about cracking sounds heard during high-velocity low-amplitude (HVLA) thrust spinal manipulation in individuals with and without personal experience of this technique.

*METHODS:*

We included 100 individuals. Among them, 60 had no history of spinal manipulation, including 40 who were asymptomatic with or without a past history of spinal pain and 20 who had nonspecific spinal pain. The remaining 40 patients had a history of spinal manipulation; among them, 20 were asymptomatic and 20 had spinal pain. Participants attended a one-on-one interview during which they completed a questionnaire about their history of spinal manipulation and their beliefs regarding sounds heard during spinal manipulation.

*RESULTS:*

Mean age was 43.5±15.4years. The sounds were ascribed to vertebral repositioning by 49% of participants and to friction between two vertebrae by 23% of participants; only 9% of participants correctly ascribed the sound to the formation of a gas bubble in the joint. The sound was mistakenly considered to indicate successful spinal manipulation by 40% of participants. No differences in beliefs were found between the groups with and without a history of spinal manipulation.

*CONCLUSIONS:*

Certain beliefs have documented adverse effects. This study showed a high prevalence of unfounded beliefs regarding spinal manipulation. These beliefs deserve greater attention from healthcare providers, particularly those who practice spinal manipulation.

## Directional preferences

## Original Research Paper

**Pain pattern classification and directional preference are associated with clinical outcomes for patients with low back pain****Richard Yarznbowicz**, Minjing Tao, Alexa Owens , Matt Wlodarski & Jonathan Dolutan

- <https://doi.org/10.1080/10669817.2017.1343538>

**Abstract**

Pain Pattern Classification (PPC) and Directional Preference (DP) have shown merit as reliable and predictable clinical solutions to help reduce the burden posed by low back pain (LBP).

We conducted a prospective, observational cohort study to verify the association between PPC, DP, and clinical outcomes.

We hypothesized that (1) patients who demonstrated DP Centralization (CEN) would have lower pain intensity and disability at follow-up than patients who demonstrated Non-DP Non-CEN, and (2) the prevalence of DP at first examination would be lowest for patients with chronic LBP and are greater than 65 years old. First examination and follow-up data were completed by 639 patients. Clinical outcome measures, including pain intensity and disability, were collected at first examination and follow-up. Baseline comparisons were made between groups with first examination data only and groups with first examination data and follow-up data. A Pearson's chi-squared test was used to determine differences in prevalence rates for the categorical variables, and two-sample *t*-tests were used for the continuous variables. A Turkey's range test was used to determine differences in follow-up pain intensity and disability for LBP dual-classifications. Multiple regression was used to investigate DP prevalence considering risk adjusted factors.

Overall prevalence of DP was 84.5% and prevalence was lowest for patients with sub-acute symptoms. No significant difference existed for the prevalence of DP for patients based on age. Patients classified as DP CEN had, on average, 1.99 pain intensity units less than patients classified as Non-DP Non-CEN at follow-up. Patients classified as DP CEN had, on average, 3.43 RMDQ units less than patients classified as Non-DP Non-CEN at follow-up.

These findings support previous reports, verifying the association between LBP dual-classification schemes and clinical outcomes.

**45 B. MANUAL THERAPY CERVICAL****T spine manip and C spine****Original Research Paper**

The effect of direction specific thoracic spine manipulation on the cervical spine: a randomized controlled trial

**Steve Karas** , Megan J. Olson Hunt , Bill Temes, Martin Thiel, Trenton Swoverland & Brett Windsor

<https://doi.org/10.1080/10669817.2016.1260674>

**Objectives:** To determine the difference on neck outcomes with directional manipulation to the thoracic spine. There is evidence that thoracic spine manipulation is effective in treating patients with neck pain. However, there is no research that determines if the assessment of directional hypomobility and the selection of thrust direction offer improved outcomes.

**Methods:** A total of 69 patients with cervical spine pain were randomly assigned to receive either a manipulation that was consistent with their thoracic spine motion loss (matched) or opposite their motion loss (unmatched). The patient was given care consistent with the orthopedic section guidelines for neck pain and the physical therapist's clinical reasoning. Baseline outcome measures (NPRS, NDI, GROC) were taken and reassessed two days and two weeks after treatment.

**Results:** Both groups had positive results when pain, neck disability index, and global rating of change were assessed. There was no difference between the matched and unmatched groups.

**Discussion:** Directional manipulation of hypomobile thoracic spine segments may not be required to improved outcomes in patients with neck pain. Future studies should assess a variety of factors when determining the best available treatment, including manual therapy procedures, exercise, and patient selection.

**Level of Evidence:** 1b.

**C5 pressure for radicular pain**

Spine (Phila Pa 1976). 2018 Apr 1;43(7):461-466. doi: 10.1097/BRS.0000000000002409.

**Prospective, Randomized, Double-Blind, Placebo-Controlled Clinical Trial Assessing the Effects of Applying a Force to C5 by a Mechanically Assisted Instrument on Referred Pain to the Shoulder.**

Hardas GM<sup>1</sup>, Murrell GAC.

*STUDY DESIGN:*

Randomized, prospective, double-blind, placebo-controlled clinical trial.

*OBJECTIVE:*

To determine the effects of applying a force to C5 of the spine by a mechanically assisted instrument (MAI) in patients with referred shoulder pain.

*SUMMARY OF BACKGROUND DATA:*

Manipulating C5 of the spine is a chiropractic treatment for referred shoulder pain; there are no clinical trials evaluating its efficacy. Outcome measures were patient ranked questionnaires and independent examiner findings. One hundred and twenty-five patients were diagnosed with referred shoulder pain of cervical origin; 65 patients were in the treatment cohort and 60 patients in the placebo cohort.

*METHODS:*

This was a prospective, randomized, double-blind, placebo-controlled trial assessing the effects of applying a force to C5 by a MAI to patients with referred shoulder pain. The treatment cohort had the MAI set at the maximum setting to transmit a force into the spine; the placebo cohort had the MAI turned off. Primary outcome measures were frequency and severity of extreme shoulder pain obtained via a patient-reported questionnaire; secondary outcome measures were patient ranked pain and functional outcomes as well as examiner assessed range of motion and strength. Assessment procedures were completed at 24 weeks posttreatment and data were analyzed with intent-to-treat protocol.

*RESULTS:*

There was a reduction in the frequency but not severity of extreme shoulder pain in the treatment cohort, average ranking reducing from weekly to monthly ( $P < 0.05$ ). Patients treated with the MAI had 10N ( $P = 0.04$ ) better internal rotation strength after 6 months posttreatment. No differences with any other outcome measures between the two cohorts at the 24-week study period.

*CONCLUSION:*

The major effect of applying a MAI to the level of C5 of the spine in referred shoulder pain is improved shoulder strength for internal rotation in this randomized double-blinded clinical trial.

*LEVEL OF EVIDENCE: 2. PMID: 28885296 DOI: 10.1097/BRS.0000000000002409*

**45 C. MANUAL THERAPY THORACIC****Manip**

Altern Ther Health Med. 2018 Feb 10. pii: AT5564.

**Immediate Changes After Manual Therapy in Patients With Persistent, Nonspecific Back Pain: A Randomized Controlled Trial.**

Espí-López GV, Ruescas-Nicolau MA, Sanchez-Sanchez ML, Arnal-Gómez A, Balasch-Bernat M, Marques-Sule E.

**Context** • Thoracic manipulation decreases pain and disability. However, when such manipulation is contraindicated, the use of other manual techniques based on the regional interdependence of the thoracic spine, upper ribs, and shoulders is an alternative approach.

**Objective** • The study intended to investigate the immediate changes resulting from 3 manual therapy treatments on spinal mobility, flexibility, comfort, and pain perception in patients with persistent, nonspecific back pain as well as changes in their sense of physical well-being and their perception of change after treatment.

**Design** • The study was a randomized, double-blind, controlled trial.

**Setting** • The study took place in the Department of Physiotherapy of the Faculty of Physiotherapy at the University of Valencia (Valencia, Spain). **Participants** • Participants were 112 individuals from the community-56.6% female, with a mean age of  $21.8 \pm 0.2$  y-who had persistent, nonspecific back pain. **Intervention** • Participants were randomly assigned to 1 of 3 groups, receiving (1) neurolymphatic therapy (NL group), (2) articular spinal manual therapy (AS group), or (3) articular costal manual therapy (AC group).

**Outcome Measures** • Cervical mobility, lumbar flexibility, comfort, pain perception, and physical well-being were assessed at baseline and immediately postintervention. Perception of change was evaluated postintervention.

**Results** • Between baseline and postintervention, the AC group showed a significant increase in cervical flexion ( $P = .010$ ), whereas the NL and AS groups improved in lumbar flexibility,  $P = .047$  and  $P = .012$ , respectively. For that period, significant changes were found in lumbar comfort for the AS group ( $P < .001$ ) and the NL group ( $P < .026$ ) and in thoracic comfort ( $P < .001$ ) for the AC group. All groups improved in physical well-being and pain perception ( $P < .05$ ). Changes in thoracic comfort, lumbar comfort, and physical well-being differed among the groups, with some differences being statistically significant.

**Conclusions** • All treatments improved pain perception and increased physical well-being. The NL and AS treatments were more effective in lumbar flexibility, the AC treatment in cervical flexion and thoracic comfort, and the NL treatment in lumbar comfort.

PMID: 29428926

**45 D. MANUAL THERAPY EXTREMITIES****Ankle manips**

Phys Ther Sport. 2018 Mar;30:22-28. doi: 10.1016/j.ptsp.2017.12.001. Epub 2017 Dec 20.

**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>.

**Author information****Abstract****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.

**KEYWORDS:**

Ankle instability; Balance; Electromyography; Joint mobilization PMID: 29310055 DOI: 10.1016/j.ptsp.2017.12.001

### Hip mob helps

J Sport Rehabil. 2018 Feb 21:1-17. doi: 10.1123/jsr.2016-0238.

#### **The Effects of Hip Mobilizations on Patient Outcomes: A Critically Appraised Topic.**

Albertin ES<sup>1</sup>, Miley EN<sup>2</sup>, May J<sup>3</sup>, Baker RT<sup>3</sup>, Reordan D<sup>4</sup>.

Clinical Scenario: Hip osteoarthritis currently affects up to 28% percent of the population, and the number of affected Americans is expected to rise as the American population increases and ages.<sup>1,2</sup>

Limited hip range of motion (ROM) has been identified as a predisposing factor to hip osteoarthritis and limited patient function.<sup>3,4</sup> Clinicians often apply therapy techniques, such as stretching and strengthening exercises, to improve hip ROM.<sup>5</sup> Although traditional therapy has been recommended to improve hip ROM, the efficiency of the treatments within the literature are questionable due to lack of high quality studies.<sup>3-8</sup> More recently, clinicians have begun to utilize joint mobilization and the Mulligan Concept (MC) mobilization with movement (MWM) techniques to increase ROM at the hip,<sup>3-8</sup> however, there is a paucity of research on the lasting effects of mobilizations. Given the difficulties in improving ROM immediately (within a single treatment), and with long-lasting results (over the course of months),<sup>3-8</sup>

it is imperative to examine the evidence for the effectiveness of traditional therapy techniques and more novel manual therapy techniques. Focused Clinical Question: Is there evidence to suggest manual mobilizations techniques at the hip are effective at treating hip ROM limitations?

### Knee oa

Physiother Theory Pract. 2018 Feb 26:1-9. doi: 10.1080/09593985.2018.1443360.

#### **A manual physical therapy intervention for symptoms of knee osteoarthritis and associated fall risk: A case series of four patients.**

Allen C PT, DPT, DSc, OCS, FAAOMPT<sup>1</sup>, Sheehan R PhD<sup>2</sup>, Deyle G PT, DPT, DSc, OCS, FAAOMPT<sup>1</sup>, Wilken J PhD, MPT<sup>2</sup>, Gill N PT, DSc, OCS, FAAOMPT<sup>1</sup>.

#### **BACKGROUND AND PURPOSE:**

Patients with knee osteoarthritis (OA) are at an increased risk of falling. Further, the symptoms associated with knee OA are correlated with fall risk. A manual physical therapy (MPT) approach consisting of mobilizing techniques and reinforcing exercise improves the symptoms and functional limitations associated with knee OA. The purpose of this case series is to evaluate an MPT intervention of mobilization techniques and exercise for knee OA on improving symptoms and quantify the secondary benefit of improving stumble recovery.

#### **CASE DESCRIPTION:**

Four patients with symptomatic knee OA and four matched controls completed a fall risk assessment. Following 4 weeks of intervention, patients were reevaluated.

#### **OUTCOMES:**

Initial Western Ontario and McMaster Universities Arthritis Index (WOMAC) scores indicated notable symptoms and functional limitations in all patients. In addition, all patients displayed elevated fall risk and/or impaired stumble responses. Following 4 weeks of intervention, all patients reported meaningful reductions in all three WOMAC subscales and demonstrated improvements in at least two of the three fall risk measures.

#### **DISCUSSION:**

We identified potential connections between symptom relief in patients with knee OA, stumble response, and ultimately fall risk. The results suggest that MPT intervention designed to improve the signs and symptoms of knee OA may lead to a secondary benefit of improved gait stability and stumble response.

**53. CORE****IE injuries and the core**

Phys Ther Sport. 2018 Mar;30:48-56. doi: 10.1016/j.ptsp.2017.08.076. Epub 2017 Aug 24.

**Is core stability a risk factor for lower extremity injuries in an athletic population? A systematic review.**

De Blaiser C<sup>1</sup>, Roosen P<sup>2</sup>, Willems T<sup>2</sup>, Danneels L<sup>2</sup>, Bossche LV<sup>3</sup>, De Ridder R<sup>2</sup>.

**OBJECTIVES:**

To research and summarize the literature regarding the role of core stability as a risk factor in the development of lower extremity injuries in an athletic population.

**METHODS:**

Pubmed, Web of Science and Embase were searched in August 2016 to systematically review studies, which related core muscle functioning and core stability to lower extremity injuries.

**RESULTS:**

Nine articles were included in the systematic review. Various components of core stability were found to be related to lower extremity musculoskeletal injuries in healthy athletic populations. Core strength, core proprioception and neuromuscular control of the core were found to be a risk factor in the development of lower extremity injuries. However, conflicting evidence was found for core endurance as a risk factor for lower extremity injuries.

**CONCLUSION:**

This systematic review provides preliminary evidence for the association between impaired core stability and the development of lower extremity injuries in healthy athletes. Deficits in various aspects of core stability were identified as potential risk factors for lower extremity injuries. As such, core stability needs to be considered when screening athletes.

**KEYWORDS:** ACL injuries; Injury screening; Lumbopelvic hip complex; Overuse injuries; Trunk stability PMID: 29246794 DOI: 10.1016/j.ptsp.2017.08.076

**59. PAIN****Catastrophizing**

J Pain. 2018 Mar;19(3):233-256. doi: 10.1016/j.jpain.2017.09.010. Epub 2017 Nov 6.

**How Can We Best Reduce Pain Catastrophizing in Adults With Chronic Noncancer Pain? A Systematic Review and Meta-Analysis.**

Schütze R<sup>1</sup>, Rees C<sup>2</sup>, Smith A<sup>3</sup>, Slater H<sup>3</sup>, Campbell JM<sup>4</sup>, O'Sullivan P<sup>3</sup>.

Pain catastrophizing (PC), defined as an exaggerated negative cognitive-affective orientation toward pain, is one of the strongest psychological predictors of pain outcomes.

Although regularly included as a process variable in clinical trials, there have been no comprehensive reviews of how it can be modified. Using a registered protocol (PROSPERO 2016 CRD42016042761), we searched MEDLINE, PsychINFO, EMBASE, CINAHL, and CENTRAL up to November 2016 for all randomized controlled trials measuring PC in adults with chronic noncancer pain. Two authors independently screened studies and assessed bias risk using the Cochrane tool. Quality of evidence was rated according to Grading of Recommendations Assessment, Development and Evaluation criteria.

We included 79 studies (n = 9,914), which mostly recruited participants with musculoskeletal pain and had low risk of bias. Meta-analyses (standardized mean difference) showed 9 interventions had efficacy compared with waitlist/usual care or active control, although evidence quality was often low.

The best evidence (moderate-high quality) was found for cognitive-behavioral therapy, multimodal treatment, and acceptance and commitment therapy. Effects were generally of medium strength and had questionable clinical significance. When only the 8 studies targeting people with high PC were included, effects were larger and more consistent. Multimodal treatment showed the strongest effects when all studies were considered, whereas cognitive-behavioral therapy had the best evidence among targeted studies.

**PERSPECTIVE:**

PC is a modifiable characteristic but most interventions produce only modest benefit unless targeted to people with high PC. More research into theory-driven interventions matched to specific patient profiles is required to improve treatment efficacy and efficiency.

**Pain in Achilles and patella tendons**

Br J Sports Med. 2018 Mar;52(5):284-291. doi: 10.1136/bjsports-2016-097163. Epub 2017 Jul 11.

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

Plinsinga ML<sup>1</sup>, van Wilgen CP<sup>2,3,4</sup>, Brink MS<sup>5</sup>, Vuvan V<sup>1</sup>, Stephenson A<sup>1</sup>, Heales LJ<sup>1,6</sup>, Mellor R<sup>1</sup>, Coombes BK<sup>7</sup>, Vicenzino BT<sup>1</sup>.

*STUDY DESIGN:*

Case-control design.

*BACKGROUND:*

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

*OBJECTIVES:*

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

*METHODS:*

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

*RESULTS:*

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

*CONCLUSION:*

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

*LEVEL OF EVIDENCE: Level 4. KEYWORDS: athletic injuries; central sensitization; chronic pain; jumper's knee; pain threshold PMID: 28698221 DOI: 10.1136/bjsports-2016-097163*

### 62 A. NUTRITION/VITAMINS

#### Meat and pulmonary problems

##### **Long-term unprocessed and processed red meat consumption and risk of chronic obstructive pulmonary disease: A prospective cohort study of women**

European Journal of Nutrition — | March 14, 2018

Kaluza J, et al.

Researchers performed an investigation determining the association between long-term red meat consumption and risk of chronic obstructive pulmonary disease (COPD) in a prospective cohort of women with moderate red meat consumption. Findings revealed a positive association between long-term processed red meat and risk of COPD. The association was particularly observed among ex-smokers.

### Cooking meat

#### **Meat cooking methods and risk of type 2 diabetes: Results from 3 prospective cohort studies**

Diabetes Care — | March 14, 2018

Liu G, et al.

An inspection was conducted of the open-flame and/or high-temperature cooking (grilling/barbecuing, broiling, or roasting) and doneness preferences (rare, medium, or well done) for red meat, chicken, and fish in association with type 2 diabetes (T2D) risk among U.S. adults who consumed animal flesh regularly ( $\geq 2$  servings/week). A link was illustrated between open-flame and/or high-temperature cooking for both red meat and chicken with an increased T2D risk, independent of consumption amount, among adults who consumed animal flesh regularly. Findings displayed that these associations remained significant when red meat and chicken were analyzed separately.

**Curcumin for Knee OA**

BMC Complement Altern Med. 2018; 18: 7. doi: 10.1186/s12906-017-2062-z  
PMCID: PMC5761198

**Efficacy and safety of curcumin and its combination with boswellic acid in osteoarthritis: a comparative, randomized, double-blind, placebo-controlled study**

Armine Haroyan,<sup>1,2</sup> Vahan Mukuchyan,<sup>1</sup> Nana Mkrtchyan,<sup>1</sup> Naira Minasyan,<sup>1</sup> Srбуhi Gasparyan,<sup>1</sup> Aida Sargsyan,<sup>1</sup> Mikael Narimanyan,<sup>2</sup> and Areg Hovhannisyan<sup>3</sup>

**Background**

The aim of this clinical trial was to assess the efficacy and safety of curcuminoid complex extract from turmeric rhizome with turmeric volatile oil (CuraMed®) and its combination with boswellic acid extract from Indian frankincense root (Curamin®) vs placebo for the treatment of 40- to 70-year-old patients with osteoarthritis (OA).

**Methods**

The effects of CuraMed® 500-mg capsules (333 mg curcuminoids) and Curamin® 500-mg capsules (350 mg curcuminoids and 150 mg boswellic acid) taken orally three times a day for 12 weeks in 201 patients was investigated in a three-arm, parallel-group, randomized, double-blinded, placebo-controlled trial. Primary outcome efficacy measures included OA physical function performance-based tests, the WOMAC recommended index of joint pain, morning stiffness, limitations of physical function, and the patients' global assessment of disease severity.

**Results**

Favorable effects of both preparations compared to placebo were observed after only 3 months of continuous treatment. A significant effect of Curamin® compared to placebo was observed both in physical performance tests and the WOMAC joint pain index, while superior efficacy of CuraMed vs placebo was observed only in physical performance tests. The effect size compared to placebo was comparable for both treatment groups but was superior in the Curamin® group. The treatments were well tolerated.

**Conclusions**

Twelve-week use of curcumin complex or its combination with boswellic acid reduces pain-related symptoms in patients with OA. Curcumin in combination with boswellic acid is more effective. Combining *Curcuma longa* and *Boswellia serrata* extracts in Curamin® increases the efficacy of OA treatment presumably due to synergistic effects of curcumin and boswellic acid.

### Fish intake and asthma

#### **The role of fish intake on asthma in children: A meta-analysis of observational studies**

Pediatric Allergy and Immunology — | March 13, 2018

Papamichael MM, et al.

The impact of fish intake on asthma in children was determined via a systematic search and meta-analysis. As a result of introducing fish early in life (6-9 months) and regular consumption of all fish (at least once a week), reduction in asthma and wheeze was noted in children up to 4.5 years old. At the same time, it was suggested that fatty fish intake may be beneficial in older children.

**63. PHARMACOLOGY****Opioid use in LBP**

Clin J Pain. 2018 Apr;34(4):297-305. doi: 10.1097/AJP.0000000000000557.

**Associations of Early Opioid Use With Patient-reported Outcomes and Health Care Utilization Among Older Adults With Low Back Pain.**

Gold LS<sup>1</sup>, Hansen RN<sup>2,3</sup>, Avins AL<sup>4</sup>, Bauer Z<sup>1</sup>, Comstock BA<sup>5</sup>, Deyo RA<sup>6</sup>, Heagerty PJ<sup>5</sup>, Rundell SD<sup>1,7</sup>, Suri P<sup>7,8</sup>, Turner JA<sup>7,9</sup>, Jarvik JG<sup>1,3,10</sup>.

*OBJECTIVES:*

The objective of this study was to compare outcomes and health care utilization of older patients who did versus did not fill opioid prescriptions within 90 days of initiating care for low back pain.

*MATERIALS AND METHODS:*

For patients  $\geq 65$  years with new back pain visits, we used propensity scores to match those who filled no opioid prescriptions to those who filled  $\geq 2$  opioid prescriptions within 90 days (and the first opioid prescription within 30 d) of the index visit. Over 24 months, we examined patient-reported outcomes, health care utilization, and subsequent opioid prescription fills.

*RESULTS:*

Among 1954 patients eligible for matching, 238 (12%) filled  $\geq 2$  opioid prescriptions within 90 days; 200 of these were matched to controls. Patients with versus without early opioid prescriptions had similar patient-reported outcomes but were more likely to have filled  $\geq 1$  opioid prescription 18 to 24 months after the index visit (odds ratio [95% confidence interval]=2.4 [1.5-3.9]) and to have had  $\geq 1$  visit to the emergency department in the subsequent 24 months (OR, 1.6; 95% confidence interval, 1.0-2.5).

*DISCUSSION:*

Among older patients with new back pain visits, filling  $\geq 2$  opioid prescriptions within 90 days of the visit was associated with similar back pain-related outcomes but increased likelihood of filling opioid prescriptions 18 to 24 months later compared with matched patients who did not fill early opioid prescriptions.

PMID: 28915153 PMID:PMC5837891 [Available on 2019-04-01] DOI: 10.1097/AJP.0000000000000557