

## 2. LBP

### Impact of anger

#### **The impact of perceived discrimination, injustice beliefs, and sleep disturbance on anger experience in chronic low back pain**

D. Bissell M. Ziadni J. Sturgeon K. Martin A. Guck Z. Trost

DOI: <http://dx.doi.org/10.1016/j.jpain.2017.02.333>

Recurrent feelings of anger are associated with negative outcomes across a variety of pain conditions.

Recent research on societal-level influences on pain experience has supported a relationship between anger and perceived racial/ethnic discrimination, as well as perceived injustice regarding chronic pain experiences. Recent findings have likewise indicated that sleep quality may play an important role in pain-related outcomes and related processes (i.e., discrimination). Despite evidence of individual relationships between these variables, the cumulative impact of discrimination, injustice, and sleep appraisals on individuals' anger experience have not yet been formally examined in the context of chronic pain. The current study sought to examine the relationship between these variables in a path analytic framework. The current study utilized cross-sectional data from 137 individuals with chronic low back pain (31.4% African American, 31.4% Hispanic; 37.2% Non-Hispanic whites). Participants' self-reported anger was positively associated with ethnic/racial discrimination, perceived injustice in relation to pain, and self-reported sleep disturbance. The relationship between anger and ethnic/racial discrimination was mediated by perceived injustice ratings, above and beyond the impact of pain intensity and participant race (which were included as covariates). Analyses did not support a relationship between sleep disturbance and ethnic/racial discrimination; however, the strong positive relationship between sleep disturbance with anger and perceived injustice suggest that sleep disturbance may be a downstream consequence of the effects of both discrimination and pain-related injustice appraisals.

These results are among the first to explore the multifactorial influences on anger experience in chronic back pain, with attention to socially and biologically-related appraisal processes. These findings also highlight perceptions of discrimination and injustice as potential targets for intervention as a means of enhancing outcomes in chronic pain treatment.

**Communication skills**

Arch Phys Med Rehabil. 2017 Mar 28. pii: S0003-9993(17)30183-1. doi: 10.1016/j.apmr.2017.02.025.

**Communication Skills Training for Practitioners to Increase Patient Adherence to Home-based Rehabilitation for Chronic Low Back Pain: Results of a Cluster Randomized Controlled Trial.**

Lonsdale C<sup>1</sup>, Hall AM<sup>2</sup>, Murray A<sup>3</sup>, Williams GC<sup>4</sup>, McDonough SM<sup>5</sup>, Ntoumanis N, University C, Owen K<sup>6</sup>, Schwarzer R<sup>7</sup>, Parker P<sup>8</sup>, Kolt GS<sup>9</sup>, Hurley DA<sup>10</sup>.

Author information

Abstract

**OBJECTIVE:**

To assess the effect of an intervention designed to enhance physiotherapists' communication skills on chronic low back pain patients' adherence to home-based rehabilitation recommendations.

**DESIGN:**

Cluster randomized controlled trial.

**SETTING:**

Publicly funded physiotherapy clinics in Dublin, Ireland; **PARTICIPANTS:** Physiotherapists (N = 53) and patients with chronic low back pain (N = 255, 54% female, M age = 45.3 years).

**INTERVENTIONS:**

Patients received publicly funded individual physiotherapy care. In the control arm, care was delivered by a physiotherapist who had completed a 1-hour workshop on evidence-based chronic low back pain management. Patients in the experimental arm received care from physiotherapists who had also completed 8 hours of communications skills training.

**MAIN OUTCOME MEASURE:**

Patient-reported adherence to their physiotherapist's recommendations regarding home-based rehabilitation, measured at 1, 4, 12, and 24 weeks after initial treatment session. Pain and pain-related function measured at baseline, 4, 12 and 24 weeks.

**RESULTS:**

Linear mixed model analysis showed the experimental arm patients' ratings of adherence were greater than controls (overall mean difference = .41 [95% CI = .10 to .72, d = .28, p = .01). Moderation analyses showed that men, regardless of intervention, showed improvements in pain-related function over time. Only women in the experimental condition showed functional improvements; female controls saw little change in function over time. The CONNECT intervention did not influence patients' pain, regardless of their sex.

**CONCLUSIONS:**

Communication skills training for physiotherapists had short-term positive effects on patient adherence. This training may provide a motivational basis for behavior change and could be a useful component in complex interventions to promote adherence. Communication skills training may also improve some clinical outcomes for women, but not men.

## Use of alternative medicine

**Chronic low back pain patients' use of, level of knowledge of and perceived benefits of complementary medicine: A cross-sectional study at an academic pain center**  
**BMC Complementary and Alternative Medicine**

Dubois J, et al.

Sponsor

This study's goal was to examine the frequency of use of complementary medicine (CM) by chronic low back pain (cLBP) patients, the perceived effects of these therapies, patients' knowledge regarding CM, and patient–physician communication regarding CM. In this sample, more than 75% of cLBP patients did use CM to treat their cLBP. The outcomes demonstrated that in terms of perceived usefulness, the most commonly used therapies were not necessarily the highest rated and these results emphasize the importance of developing integrative pain centers in which patients may obtain advice regarding CM treatments.

Methods

- From November 2014 to February 2015, the researchers conducted a cross-sectional survey.
- They distributed a questionnaire to 238 consecutive patients consulting for cLBP at the Pain Center of Lausanne University Hospital, Switzerland.
- They used poisson regression model to examine patients' level of knowledge regarding various CMs, and the logistic regression model was used to assess CM use for cLBP.

Results

- In this study, the questionnaire was returned by 168 cLBP patients (response rate: 70.6%).
- For cLBP, lifetime prevalence of CM use was 77.3%.
- Osteopathy (48.8%), massage (45.2%) and acupuncture (31.6%) were the most commonly used therapies, rated for their usefulness on a 0–10 scale as a mean  $\pm$  SD of  $5.4 \pm 2.7$ ,  $5.9 \pm 2.5$  and  $3.8 \pm 3.2$ , respectively.
- Osteopathy was the best CM treatment known by patients, followed by massage and acupuncture.
- 78% of participants reported being very or somewhat likely to try CM if their doctors proposed CM as a treatment for cLBP.
- For cLBP, respondents with CM health insurance were more likely to use CM (OR = 2.26; 95% CI: 1.07–4.78;  $p = 0.031$ ).
- Compared with respondents having experienced cLBP for 1 year or less, respondents having experienced cLBP for more than 5 years were more likely to use CM to treat their cLBP (OR = 2.84; 95% CI: 1.02–7.88;  $p = 0.044$ ).

**Neighborhood walking**

Prev Med. 2017 Mar 18;99:257-263. doi: 10.1016/j.ypmed.2017.03.003.

**Neighborhood walkability moderates the association between low back pain and physical activity: A co-twin control study.**

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Author information

**Abstract**

The aim of this study was to investigate whether neighborhood walkability moderates the association between low back pain (LBP) and physical activity (PA), using a co-twin design to control for genetics and shared environmental factors. A cross-sectional analysis was performed on 10,228 twins from the Washington State Twin Registry with available data on LBP from recruitment surveys between 2009 and 2013. LBP within the past 3 months was our exposure variable. Our outcome variables were sufficient moderate or vigorous-intensity PA (MVPA, defined as at least 75 min of vigorous-intensity PA, or 150 min of moderate-intensity PA per week), and walking ( $\geq 150$  min per week). Neighborhood walkability, estimated using the commercially available Walk Score<sup>®</sup>, was our moderator variable. After controlling for the influence of genetics and shared environment, individuals reporting LBP were significantly less likely to engage in sufficient MVPA if they lived in a neighborhood with high walkability (OR=0.59, 95% CI: 0.36-0.96). There was no association between LBP and sufficient MVPA for individuals living in a neighborhood with low walkability (OR=1.27, 95% CI: 0.93-1.72), demonstrating that walkability is a significant moderator of the association between LBP and PA (interaction  $p=0.013$ ). These findings were similar for the association between LBP and walking (high walkability OR=0.42, 95% CI: 0.22-0.78; low walkability OR=0.71, 95% CI: 0.46-1.12), although the interaction was not significant ( $p=0.700$ ). Neighborhood walkability moderates the association between LBP and PA. Our results highlight the importance of targeting interventions promoting PA towards individuals with LBP living in a neighborhood with good walkable access to amenities.

**Use of brace does not negatively impact motor control**

Spine J. 2017 Mar 17. pii: S1529-9430(17)30090-6. doi: 10.1016/j.spinee.2017.03.003.

**The impact of continuous use of lumbosacral orthoses on trunk motor performance: a systematic review with meta-analysis.**

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Author information

**Abstract*****BACKGROUND CONTEXT:***

The lumbosacral orthosis (LSO) is prescribed by general practitioners for the management of low back pain. It may be speculated that continuous use of the LSO for a prolonged period reduces mechanical loading to the trunk muscle in daily living and results in impairments of the trunk muscle.

***PURPOSE:***

To investigate whether the trunk motor performances are impaired by continuous use of the lumbosacral orthosis.

***STUDY DESIGN/SETTING:***

Systematic review with meta-analysis.

***METHODS:***

Systematic search in the PubMed, EMBASE, MEDLINE, CINAHL, SCOPUS and Cochrane library, from inception to November 2016. Inclusion criteria were: 1) the use of the LSO for  $\geq 2$  days; 2) the use of a soft LSO designed for musculoskeletal conditions; 3) no co-intervention except education; and 4) measures of trunk motor performance. The following studies were excluded: 1) studies with insufficient data; and 2) studies with poor methodological quality ( $< 9/16$ ) in the modified McMaster Critical Review Form for Quantitative Studies. The GRADE system was used to determine the quality of evidence.

***RESULTS:***

Data of eight studies were analyzed. The most common measures for motor performances were the maximum strength of the trunk flexors and extensors and the endurance and fatigability of the trunk extensors. In all measures, 95% CIs of the pooled standardized mean difference between the control/pre-intervention group and the intervention/post-intervention group included zero. Further, quality of evidence ranged from low to very low in the GRADE system in all findings of the meta-analyses.

***CONCLUSIONS:***

The meta-analyses demonstrated no negative effect by continuous use of the LSO for 1-6 months. However, the quality of evidence ranged from low to very low and more high quality trials are required to draw a definitive conclusion on the impact of continuous use of LSO on trunk motor performances

## 5. SURGERY

### Fusion vs decompression for stenosis

Arch Orthop Trauma Surg. 2017 Mar 30. doi: 10.1007/s00402-017-2685-z.

#### **Effectiveness of decompression alone versus decompression plus fusion for lumbar spinal stenosis: a systematic review and meta-analysis.**

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Author information

Abstract

#### INTRODUCTION:

The debate on efficacy of fusion added to decompression for lumbar spinal stenosis (LSS) is ongoing. No meta-analysis has compared the effectiveness of decompression versus decompression plus fusion in treating patients with LSS.

#### METHODS:

A literature search was performed in the Web of Science, PubMed, Embase, and Springer databases from 1970 to 2016. Relevant references were selected and the included studies were manually reviewed. We included trials evaluating decompression surgery compared to decompression plus fusion surgery in treating patients with LSS. The primary outcomes analyzed were back pain, leg pain, Oswestry Disability Index scores (ODI), the quality-of-life EuroQol-5 Dimensions (EQ-5D), duration of operation, intraoperative blood loss, length of hospital stay, major complications, walking ability, number of reoperation, and finally clinically excellent and good rates. Data analysis was conducted using the Review Manager 5.2 software.

#### RESULTS:

Fifteen studies involving 17,785 patients with LSS were included. The overall effect mean difference (MD) (95% CI) in the differences between pre- and post-operative back pain, leg pain, operative time, intraoperative blood loss, and length of stay were 0.04 (-0.36, 0.44), 0.69 (-0.38, 1.76), -2.04 (-3.12, -0.96), -3.96 (-6.64, -1.27) and -4.21 (-10.03, 1.62) ( $z = 0.18, 1.26, 3.71, 2.89$  and  $1.41$ , respectively;  $P = 0.86, 0.55, 0.0002, 0.004$  and  $0.16$ , respectively) in random effects models. The overall effect MD (95% CI) in ODI, EQ-5D, and walking ability were 0.43 (-1.15, 2.00), 0.01 (-0.01, 0.03) and 0.04 (-0.49, 0.57) ( $z = 0.52, 1.16$  and  $0.15$ , respectively;  $P = 0.59, 0.24$  and  $0.88$ , respectively) in fixed effects models. The overall effect odds ratio (OR) (95% CI) of major complications, number of reoperations, and clinically excellent and good rates between the two groups were 0.70 (0.60, 0.81), 1.04 (0.90, 1.19) and 0.31 (0.06, 1.59) ( $z = 4.63, 0.53$  and  $1.40$ , respectively;  $P < 0.00001, 0.60$  and  $0.16$ , respectively). Our study reveals no difference in the effectiveness between the two surgical techniques.

#### CONCLUSIONS:

The additional fusion in the management of LSS yielded no clinical improvements over decompression alone within a 2-year follow-up period. But fusion resulted in a longer duration of operation, more blood loss, and a higher risk of complications. Therefore, the appropriate surgical protocol for LSS should be discussed further.

## 7. PELVIC ORGANS/WOMAN'S HEALTH

Pelvic pain also widespread

### **Characterization of Whole Body Pain in Urologic Chronic Pelvic Pain Syndrome at Baseline – A MAPP Research Network Study**

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DOI: <http://dx.doi.org/10.1016/j.juro.2017.03.132>

#### **Abstract**

##### **Purpose**

We characterized the location and spatial distribution of whole body pain among patients with urologic chronic pelvic pain syndrome (UCPPS) using a body map; and compared the severity of urinary symptoms, pelvic pain, non-pelvic pain, and psychosocial health among patients with different pain patterns.

##### **Methods**

233 women and 191 men with UCPPS enrolled in a multi-center, one-year observational study completed a battery of baseline measures, including a body map describing the location of pain during the past week. Participants were categorized as having “pelvic pain only” if they reported pain in the abdomen and pelvis only. Participants who reported pain beyond the pelvis were further divided into two sub-groups based on the number of broader body regions affected by pain: an “intermediate” group (1-2 additional regions outside the pelvis) and a “widespread pain” group (3-7 additional regions).

##### **Results**

Of the 424 enrolled patients 25% reported pelvic pain only, and 75% reported pain beyond the pelvis of which 38% reported widespread pain. Participants with greater number of pain locations had greater non-pelvic pain severity ( $p < 0.0001$ ), sleep disturbance ( $p = 0.035$ ), depression ( $p = 0.005$ ), anxiety ( $p = 0.011$ ), psychological stress ( $p = 0.005$ ), negative affect scores ( $p = 0.0004$ ), and worse quality of life ( $p \leq 0.021$ ). No difference in pelvic pain and urinary symptom severity were observed by increasing pain distribution.

##### **Conclusions**

Three-quarters of men and women with UCPPS reported pain outside the pelvis. Widespread pain was associated with greater severity of non-pelvic pain symptoms, poorer psychosocial health and worse quality of life, but not worse pelvic pain or urinary symptoms.

## 8. VISCERA

### IBS and proton inhibitors

Digestion. 2017 Mar 14;95(3):188-193. doi: 10.1159/000455008.

#### **Gastric Acid Suppression Is Associated with an Increased Risk of Adverse Outcomes in Inflammatory Bowel Disease.**

Shah R<sup>1</sup>, Richardson P, Yu H, Kramer J, Hou JK.

Author information

Abstract

#### **BACKGROUND:**

The intestinal microbiota may influence inflammatory bowel disease (IBD) activity. Histamine 2 receptor antagonists (H2RAs) and proton pump inhibitors (PPIs) can alter the intestinal microbiota. The aim of this study was to assess the relationship between H2RAs, PPIs, and IBD-related outcomes.

#### **METHODS:**

We conducted a case-control study of IBD patients using the Veterans Health Affairs databases. Cases were defined by their first instance of an IBD-related hospitalization or surgery and the exposure of interest was H2RA or PPI use 30 days prior to the outcome. Incidence density ratios were calculated using conditional logistic regression.

#### **RESULTS:**

In a cohort of 58,459 patients with IBD, we found 4,887 cases and 9,761 controls with ulcerative colitis (UC) and 4,876 cases and 9,745 controls with Crohn disease (CD). Filled prescriptions for H2RAs were associated with an increased risk of IBD-related hospitalization or surgery in CD patients (adjusted incidence density ratio 1.18; 95% CI 1.03-1.34). A similar association was found for PPIs in UC patients (adjusted incidence density ratio 1.11; 95% CI 1.02-1.21) and CD patients (adjusted incidence density ratio 1.12; 95% CI 1.02-1.22).

#### **CONCLUSIONS:**

H2RAs and PPIs were associated with a modestly increased risk of IBD-related hospitalization or surgery.



**Mast cells and CD**

J Allergy Clin Immunol. 2017 Apr;139(4):1266-1274.e1. doi: 10.1016/j.jaci.2016.08.011. Epub 2016 Sep 13.

**Mast cells are associated with the onset and progression of celiac disease.**

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Author information

## Abstract

**BACKGROUND:**

Celiac disease (CD) is an immune-mediated disorder characterized by an accumulation of immune cells in the duodenal mucosa as a consequence of both adaptive and innate immune responses to undigested gliadin peptides. Mast cells (MCs) are innate immune cells that are a major source of costimulatory signals and inflammatory mediators in the intestinal mucosa. Although MCs have previously been associated with CD, functional studies have never been performed.

**OBJECTIVE:**

We aimed at evaluating the role of MCs in the pathogenesis of CD.

**METHODS:**

Intestinal biopsy specimens of patients with CD were scored according to the Marsh classification and characterized for leukocyte infiltration and MC distribution. Moreover, MC reactivity to gliadin and its peptides was characterized by using in vitro assays.

**RESULTS:**

Infiltrating MCs were associated with the severity of mucosal damage, and their numbers were increased in patients with higher Marsh scores. MCs were found to directly respond to nonimmunodominant gliadin fragments by releasing proinflammatory mediators.

Immunohistochemical characterization of infiltrating MCs and the effects of gliadin peptides on intestinal MCs indicated an increase in proinflammatory MC function in advanced stages of the disease. This was also associated with increased neutrophil accumulation, the prevalence of M1 macrophages, and the severity of tissue damage.

**CONCLUSION:**

We provide a description of the progressive stages of CD, in which MCs are the hallmark of the inflammatory process. Thus the view of CD should be revised, and the contribution of MCs in the onset and progression of CD should be reconsidered in developing new therapeutic approaches.

**Vit D & IBS**

Scand J Immunol. 2017 Mar 22. doi: 10.1111/sji.12547.

**Immunoregulation of inflammatory and inhibitory cytokines by Vitamin D3 in patients with inflammatory bowel diseases (IBD).**

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Author information

**Abstract**

Inflammatory bowel disease (IBD) is a group of idiopathic, chronic and relapsing inflammatory conditions of the gastrointestinal tract, caused by an aberrant and exaggerated immunological response in the gut. Supplementation of Vitamin D3 in IBD patients exerts both direct and indirect regulatory roles on the naïve T-cells, thereby maintaining a balance between inflammatory and inhibitory cytokines. The direct actions of Vitamin D3 on naïve T-cells result in the proliferation of more regulatory T-cells and inhibitory cytokines such as IL-4, IL-10, and IL-5. The binding of vitamin D to dendritic cells through Vitamin D receptors (VDRs) inhibits the action of IL-12 on dendritic cells, resulting in the down-regulation of Th1 and Th17. On the other hand, this interaction favours Th2 and T-reg upregulation and facilitates the maintenance of immune homeostasis between inflammatory and inhibitory cytokines which is essentially significant in the management of IBD patients. The aim of this review was to explore the current and mounting scientific evidence on the roles of Vitamin D3 in immunoregulation of inflammatory and inhibitory cytokines in patients with inflammatory bowel diseases (IBD). An extensive literature search was conducted using keywords such as Vitamin D3\*, IBD\*, inflammatory cytokines\*, inhibitory cytokines\*, naïve-T-cells\*, and antigen presenting cells\* through PubMed, SCOPUS, and MEDLINE search engines. The results of the accumulated bodies of research that have been conducted demonstrate that Vitamin D3 plays a major role not only in the immunoregulation of cytokines involved in the pathogenesis of inflammatory bowel diseases but also in many other inflammatory disorders. This article is protected by copyright. All rights reserved.

**Heliobacter infextions****Sex-differences in the prevalence of *Helicobacter pylori* infection in pediatric and adult populations: systematic review and meta-analysis of 244 studies**

Abdulrazak Ibrahim Samantha Morais Ana Ferro Nuno Lunet Bárbara Peleteiro

DOI: <http://dx.doi.org/10.1016/j.dld.2017.03.019>

**Background**

The main outcome of *Helicobacter pylori* infection, i.e. gastric cancer, is more frequent in men, but there is no comprehensive synthesis of the evidence on a potential role of sex in the acquisition and/or persistence of infection.

**Aims**

To quantify the association between sex and *H. pylori* infection in pediatric and adult populations, through systematic review and meta-analysis.

**Methods**

PubMed® was searched, from inception to September 2015, to identify population-based studies reporting the prevalence and/or incidence of *H. pylori* infection in both sexes. Odds ratios (OR) or data to compute them were extracted; adjusted estimates were preferred, whenever available. The DerSimonian and Laird method was used to compute summary estimates and respective 95% confidence intervals (95%CI), separately for children and adults.

**Results**

Among a total of 244 studies, mostly cross-sectional, male sex was associated with a greater prevalence of *H. pylori* infection, both in children (102 studies, OR = 1.06, 95%CI: 1.01, 1.12,  $I^2 = 43.7\%$ ) and adults (169 studies, OR = 1.12, 95%CI: 1.09, 1.15,  $I^2 = 68.5\%$ ). An underrepresentation of studies showing a negative association between male sex and infection was observed (Egger's test:  $p = 0.006$ ).

**Conclusions**

Although further research is needed to understand the mechanisms by which sex may influence the acquisition and/or persistence of infection, our results support a small contribution of sex differences in the prevalence of infection to the male predominance of *H. pylori*-related outcomes, including gastric cancer.

## IBS QOL

Dig Dis Sci. 2017 Apr 3. doi: 10.1007/s10620-017-4554-6.

**Sex-Related Differences in Clinical Symptoms, Quality of Life, and Biochemical Factors in Irritable Bowel Syndrome.**

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Author information

## Abstract

**BACKGROUND:**

Due to the sex differences in physiological and psychological factors, it can be speculated that clinical presentation of symptoms in male and female patients with irritable bowel syndrome (IBS) might be different.

**AIM:**

To evaluate sex-related differences in clinical symptoms, quality of life, and biochemical factors in IBS.

**METHODS:**

Ninety IBS patients (29 men, 61 women (45 premenopausal, 16 postmenopausal)) were recruited from the outpatient clinic of the University Hospital. All the patients met the Rome III Diagnostic Criteria. The IBS severity score system (IBS-SSS), gastrointestinal (GI) symptoms, IBS specific quality of life (IBS-QoL), and biochemical factors (IL-17, IL-10, TNF $\alpha$ , malondialdehyde (MDA), total antioxidant capacity (TAC)) were assessed.

**RESULTS:**

Diarrhea predominant IBS (IBS-D) was more common in men (44.8%), whereas constipation-predominant IBS (IBS-C) and alternating bowel habits IBS (IBS-A) were more common in women (39.3, 42.6%, respectively). The women had a greater severity of abdominal distention, rumbling, flatulence, and dissatisfaction with bowel habits as compared with men. The scores of IBS-QoL in women were significantly ( $P < 0.05$ ) lower than those in men. Moreover, pro-inflammatory cytokines (IL-17, TNF $\alpha$ ) increased, and anti-inflammatory cytokine (IL-10) decreased in women versus men. In addition, there was no significant difference ( $P > 0.05$ ) between pre- and postmenopausal women in the severity of symptoms. All of the GI symptoms and IBS-SSS have a significant negative correlation with IBS-QoL in both men and women.

**CONCLUSIONS:**

Female with IBS reports a greater severity of IBS symptoms, increased inflammatory cytokines, and has an impaired quality of life compared with male.

**Food avoidance**

Clin Nutr. 2017 Mar 15. pii: S0261-5614(17)30101-2. doi: 10.1016/j.clnu.2017.03.010.

**Food avoidance in patients with inflammatory bowel disease: What, when and who?**

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Author information

## Abstract

**BACKGROUND & AIMS:**

Patients with inflammatory bowel diseases avoid a variety of foods. However, it remains unclear how this behavior varies across patients. This cross-sectional study investigated how the food avoidance pattern in inflammatory bowel disease varies according to disease's activity, disease's subtype, Crohn's location, and prior history of bowel resection, strictures, and fistulae.

**METHODS:**

Outpatients with Crohn's disease (n = 173) and ulcerative colitis (n = 72) reported which food they avoid when they perceive they are in remission or in active disease using a list of 82 food items classified in 10 categories. Medical charts were reviewed for patients' characteristics. Linear regression analyses were used to compare food exclusion rates between patients' subgroups and food categories.

**RESULTS:**

During remission, food exclusion rates varied from 1 to 39%. Most avoided foods were those with capsaicin, meat alternatives, and raw vegetables. Overall, food exclusion rates were 38% higher in Crohn's disease than ulcerative colitis ( $P < 0.001$ ), and 50% higher in stricturing than non-stricturing Crohn's disease ( $P < 0.001$ ). During active disease, food exclusion rates were 69% higher than in remission ( $P < 0.001$ ). Similar differences between subgroups were again observed during active disease though less noticeable than in remission. No association was found with other disease characteristics. Avoided foods were very similar across patients except for alcoholic beverages and foods rich in dietary fibers/residue, which were avoided more specifically during active disease and in Crohn's disease, respectively.

**CONCLUSIONS:**

Food avoidance is common among patients with inflammatory bowel diseases, and most particularly in those with stricturing Crohn's disease. Specificities in avoidance pattern suggest that the clinical response to dietary restrictions may differ according to the disease's characteristics.

### Anti-inflammatory meds and intestinal problems

#### Gastrointestinal toxicity among patients taking selective COX-2 inhibitors or conventional NSAIDs, alone or combined with proton pump inhibitors: A case-control study

Pharmacoepidemiology and Drug Safety  
Bakhriansyah M, et al.

sponsor

The conventional nonsteroidal anti-inflammatory drugs (NSAIDs) with proton pump inhibitors (PPIs) and selective COX-2 inhibitors, with or without PPIs was compared with conventional NSAIDs, in terms of gastrointestinal perforation, ulcers, or bleeding (PUB) risk. Outcomes revealed that selective COX-2 inhibitors with PPIs, selective COX-2 inhibitors, and conventional NSAIDs with PPIs were associated with lower risks of PUB compared with conventional NSAIDs.

#### Methods

- A case-control study was conducted within conventional NSAIDs and/or selective COX-2 inhibitors users identified from the Dutch PHARMO Record Linkage System in the period 1998–2012.
- Cases were patients aged  $\geq 18$  years with a first hospital admission for PUB.
- For each case, up to 4 controls were matched for age and sex at the date a case was hospitalized (index date).
- To calculate odds ratios (Ors) logistic regression analysis was used.

#### Results

- At the index date, 2634 cases and 5074 controls were current users of conventional NSAIDs or selective COX-2 inhibitors.
- Compared with conventional NSAIDs, selective COX-2 inhibitors with PPIs had the lowest risk of PUB (adjusted OR 0.51, 95% confidence interval [CI]: 0.35–0.73) followed by selective COX-2 inhibitors (adjusted OR 0.66, 95% CI: 0.48–0.89) and conventional NSAIDs with PPIs (adjusted OR 0.79, 95% CI: 0.68–0.92).
- Compared with conventional NSAIDs, the risk of PUB was lower for those aged  $\geq 75$  years taking conventional NSAIDs with PPIs compared with younger patients (adjusted interaction OR 0.79, 95% CI: 0.64–0.99).
- However, those aged  $\geq 75$  years taking selective COX-2 inhibitors, the risk was higher compared with younger patients (adjusted interaction OR 1.22, 95% CI: 1.01–1.47).

### 13. CRANIUM/TMJ

#### TMJ and HA

J Manipulative Physiol Ther. 2017 Apr 5. pii: S0161-4754(17)30045-3. doi: 10.1016/j.jmpt.2017.02.006.

#### **Association Between Severity of Temporomandibular Disorders and the Frequency of Headache Attacks in Women With Migraine: A Cross-Sectional Study.**

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Author information

Abstract

#### *OBJECTIVE:*

The aim of this study was to investigate the magnitude of association of the severity of temporomandibular disorders (TMDs) in women with episodic and chronic migraine.

#### *METHODS:*

Thirty-one women with episodic migraine (mean age: 33 years), 21 with chronic migraine (mean age: 35 years) and 32 healthy controls (mean age: 31 years) were included. The Fonseca Anamnestic Index was applied to assess severity of TMDs. TMD severity was considered as follows: no TMD (0-19 points), mild TMD (20-49 points), moderate TMD (50-69 points), and severe TMD (70-100 points). To compare the proportion of TMD severity among groups, a  $\chi^2$  test was performed. Prevalence ratio (PR) was calculated to determine the association of TMD severity and both migraine groups using the control group as the reference.

#### *RESULTS:*

Women with chronic and episodic migraine were more likely to exhibit TMD signs and symptoms of any severity than healthy controls ( $\chi^2 = 30.26$ ;  $P < .001$ ). TMD prevalence was 54% for healthy controls, 78% for episodic migraine, and 100% for chronic migraine. Women with chronic migraine exhibited greater risk of more severe manifestations of TMD than healthy controls (PR: 3.31;  $P = .008$ ). This association was not identified for episodic migraine (PR: 2.18;  $P = .101$ ).

#### *CONCLUSION:*

The presence of TMD signs and symptoms was associated with migraine independently of the frequency; however, the magnitude of the association of more severe TMD was significantly greater in chronic, but not episodic, migraine

**Orthodontic needs**

Community Dent Oral Epidemiol. 2017 Mar 31. doi: 10.1111/cdoe.12299.

**The association of subjective orthodontic treatment need with oral health-related quality of life.**

Kragt L<sup>1,2</sup>, Jaddoe V<sup>2,3,4</sup>, Wolvius E<sup>1,2</sup>, Ongkosuwito E<sup>1,2</sup>.

Author information

**Abstract****OBJECTIVES:**

The existing body of evidence reports an inconsistent association between subjective and objective orthodontic treatment need. The concept of oral health-related quality of life (OHRQoL) might help to explain the differences in subjective and objective orthodontic treatment need. Our aim was to investigate the association of subjective orthodontic treatment with OHRQoL in children.

**METHODS:**

This cross-sectional study was embedded in the Generation R Study, a population-based prospective cohort study. OHRQoL and subjective orthodontic treatment need were assessed by parental questionnaires. Questionnaire items were individually compared among children with no, borderline and definite subjective orthodontic need. The association between subjective orthodontic treatment need and OHRQoL was investigated in multivariate regression analysis with weighted least squares. Differences by sex and levels of objective orthodontic treatment need were evaluated.

**RESULTS:**

In total, 3774 children were included in the analysis. Children with borderline subjective orthodontic treatment need and those with definite subjective orthodontic treatment need had significantly poorer OHRQoL based on the fully adjusted model (adjusted regression coefficient ( $\alpha\beta$ )=-0.49, 95% CI: -0.75, -0.30; ( $\alpha\beta$ )=-1.58, 95% CI: -1.81, -1.58, respectively). The association between subjective orthodontic treatment need and OHRQoL was stronger in girls than in boys and stronger in children with objective orthodontic treatment need than in those with none.

**CONCLUSIONS:**

Oral health-related quality of life is poorer in children with subjective orthodontic treatment need. This has not been investigated before in such a large-population-based study and clearly offers an explanation for the lack of concurrence between objective and subjective orthodontic treatment need.



**Mandibular expansion**

Prog Orthod. 2017 Dec;18(1):9. doi: 10.1186/s40510-017-0163-3. Epub 2017 Apr 3.

**Prediction of Class II improvement after rapid maxillary expansion in early mixed dentition.**

Caprioglio A<sup>1</sup>, Bergamini C<sup>2</sup>, Franchi L<sup>3</sup>, Vercellini N<sup>4</sup>, Zecca PA<sup>4</sup>, Nucera R<sup>5</sup>, Fastuca R<sup>6,7</sup>.  
Author information

## Abstract

**BACKGROUND:**

The aim of this study is to identify cephalometric pretreatment parameters for prediction of Class II improvement induced by rapid maxillary expansion.

**METHODS:**

Lateral cephalograms of 30 patients (mean age  $8.3 \pm 1.6$  years old) showing Class II molar relationship and undergone to rapid maxillary expansion on the upper deciduous molars were traced before treatment, and molar relation changes were evaluated on dental casts before and after treatment. Overall treatment time lasted  $10.2 \pm 2$  months. Good responders (18 subjects, 10 females and 8 males) showed improvement of at least 2.50 mm, and bad responders (12 subjects, 7 females and 5 males) showed no improvement, improvement less than 2.50 mm, or worsening of molar relationship after treatment. Student's t test was used to assess significance of differences between groups, and discriminant analysis allowed identification of predictive pretreatment variables.

**RESULTS:**

Articular angle, superior gonial angle, and mandibular dimensions (Co-Gn, S-Ar, Ar-Go, Go-Me) showed significant differences in the comparison between groups. Mandibular length Co-Gn and superior gonial angle were selected as significant predictive variable for discrimination.

**CONCLUSIONS:**

Patients with smaller mandibular length and more acute superior gonial angle are expected to have more chances to improve molar Class II after rapid maxillary expansion.

## 14. HEADACHES

### HA and sleepiness

J Headache Pain. 2017 Dec;18(1):35. doi: 10.1186/s10194-017-0743-0. Epub 2017 Mar 20.

#### **Association of excessive daytime sleepiness with migraine and headache frequency in the general population.**

Stavem K<sup>1,2,3,4</sup>, Kristiansen HA<sup>5,6</sup>, Kristoffersen ES<sup>5,7</sup>, Kværner KJ<sup>5,8,9</sup>, Russell MB<sup>5,6</sup>.

Author information

Abstract

#### **BACKGROUND:**

Some previous studies have postulated an association between migraine and excessive daytime sleepiness (EDS). This study evaluated the association of EDS with migraine and headache frequency in a general population, after adjusting for potential confounding variables.

#### **METHODS:**

The study was a postal survey of a random age and gender-stratified sample of 40,000 persons aged 20 to 80 years old drawn by the National Population Register in Norway. The questionnaire included questions about migraine, headache, the Epworth sleepiness scale (ESS) and various comorbidities. EDS was defined as ESS > 10. The association of EDS and migraine/headache were analysed by bivariate and multivariable logistic regression analyses.

#### **RESULTS:**

A total of 21,177 persons responded to the ESS and were included in the analyses. The odds ratio (OR) for EDS was increased for migraineurs (1.42 (95% CI 1.31–1.54),  $p < 0.001$ ) compared to non-migraineurs; however, this finding was not significant after adjustment for a number of possible confounders. EDS increased with increasing headache frequency, with an OR of 2.74 (95% CI 2.05–3.65),  $p < 0.001$ ) for those with headache on >179 days per year compared to those without headache in multivariable analysis.

#### **CONCLUSIONS:**

In a general population, the odds for EDS increased significantly with the headache frequency, irrespective of migraine status. EDS was not associated with reported migraine in multivariable analysis

**Daytime sleepiness**

J Headache Pain. 2017 Dec;18(1):35. doi: 10.1186/s10194-017-0743-0. Epub 2017 Mar 20.

**Association of excessive daytime sleepiness with migraine and headache frequency in the general population.**

Stavem K<sup>1,2,3,4</sup>, Kristiansen HA<sup>5,6</sup>, Kristoffersen ES<sup>5,7</sup>, Kværner KJ<sup>5,8,9</sup>, Russell MB<sup>5,6</sup>.

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**CONCLUSIONS:**

In a general population, the odds for EDS increased significantly with the headache frequency, irrespective of migraine status. EDS was not associated with reported migraine in multivariable analysis.

## 16. CONCUSSIONS

### Visible signs

Br J Sports Med. 2017 Apr 4. pii: bjsports-2016-097090. doi: 10.1136/bjsports-2016-097090.

#### **Can visible signs predict concussion diagnosis in the National Hockey League?**

Echemendia RJ<sup>1,2</sup>, Bruce JM<sup>2</sup>, Meeuwisse W<sup>3</sup>, Hutchison MG<sup>4</sup>, Comper P<sup>5</sup>, Aubry M<sup>6</sup>.  
Author information

#### Abstract

##### *BACKGROUND:*

Early identification and evaluation of concussions is critical. We examined the utility of using visible signs (VS) of concussion in predicting subsequent diagnosis of concussion in NHL players.

##### *METHODS:*

VS of concussion were identified through video review. Coders were trained to detect and record specific visual signs while viewing videos of NHL regular season games. 2460 games were reviewed by at least two independent coders across two seasons. The reliability, sensitivity and specificity of these VS were examined.

##### *RESULTS:*

VS were reliably coded with inter-rater agreement rates ranging from 73% to 98.9%. 1215 VS were identified in 861 events that occurred in 735 games. 47% of diagnosed concussions were associated with a VS but 53% of diagnosed concussions had no VS. Of the VS, only loss of consciousness, motor incoordination, and blank/vacant look had positive likelihood ratios greater than 1, indicating a positive association with concussion diagnoses. Slow to get up and clutching of the head were observed frequently but had low positive predictive values. Sensitivity decreased and specificity increased when multiple VS occurred together.

##### *CONCLUSIONS:*

Non-medical personnel can be trained to reliably identify events in which VS occur and to reliably identify specific VS within each of those events. VS can be useful to detect concussion early but they are not enough since more than half of physician diagnosed concussions occurred without the presence of a visual sign. The results underscore the complexity of this injury and highlight the need for comprehensive approaches to injury detection.

**Rest**

Br J Sports Med. 2017 Mar 24. pii: bjsports-2016-097475. doi: 10.1136/bjsports-2016-097475.

**Rest and treatment/rehabilitation following sport-related concussion: a systematic review.**

Schneider KJ<sup>1</sup>, Leddy JJ<sup>2</sup>, Guskiewicz KM<sup>3</sup>, Seifert T<sup>4</sup>, McCrea M<sup>5</sup>, Silverberg ND<sup>6</sup>, Feddermann-Demont N<sup>7,8</sup>, Iverson GL<sup>9</sup>, Hayden A<sup>10</sup>, Makdissi M<sup>11,12</sup>.  
Author information

**Abstract*****AIM OR OBJECTIVE:***

The objective of this systematic review was to evaluate the evidence regarding rest and active treatment/rehabilitation following sport-related concussion (SRC).

***DESIGN:***

Systematic review.

***DATA SOURCES:***

MEDLINE (OVID), CINAHL (EbscoHost), PsycInfo (OVID), Cochrane Central Register of Controlled Trials (OVID), SPORTDiscus (EbscoHost), EMBASE (OVID) and Proquest DissertationsandTheses Global (Proquest) were searched systematically.

***ELIGIBILITY CRITERIA FOR SELECTING STUDIES:***

Studies were included if they met the following criteria: (1) original research; (2) reported SRC as the diagnosis; and (3) evaluated the effect of rest or active treatment/rehabilitation. Review articles were excluded.

***RESULTS:***

Twenty-eight studies met the inclusion criteria (9 regarding the effects of rest and 19 evaluating active treatment). The methodological quality of the literature was limited; only five randomised controlled trials (RCTs) met the eligibility criteria. Those RCTs included rest, cervical and vestibular rehabilitation, subsymptom threshold aerobic exercise and multifaceted collaborative care.

***SUMMARY/CONCLUSIONS:***

A brief period (24-48 hours) of cognitive and physical rest is appropriate for most patients. Following this, patients should be encouraged to gradually increase activity. The exact amount and duration of rest are not yet well defined and require further investigation. The data support interventions including cervical and vestibular rehabilitation and multifaceted collaborative care. Closely monitored subsymptom threshold, submaximal exercise may be of benefit.

**20 A. ROTATOR CUFF****Effectiveness of rehab**

J Shoulder Elbow Surg. 2017 Mar 15. pii: S1058-2746(17)30116-7. doi: 10.1016/j.jse.2017.02.009.

**A systematic review of cost-effective treatment of postoperative rotator cuff repairs.**

Dickinson RN<sup>1</sup>, Kuhn JE<sup>2</sup>, Bergner JL<sup>2</sup>, Rizzone KH<sup>3</sup>.

Author information

Abstract

**OBJECTIVE:**

The Bundled Payments for Care Improvement initiative combines payment of multiple services for episodes of care into 1 bundle. Rotator cuff repair is a likely candidate for future inclusion. The objective of this study was to determine cost-effective, high-quality postoperative rehabilitation dosing and cryotherapy for patients undergoing rotator cuff repair based on systematic review of the literature.

**METHODS:**

Systematic review of level I and level II articles was performed in PubMed, Cochrane Databases, and PEDro. Conference references and bibliographies were also reviewed. For postoperative therapy, keywords included rotator cuff, rotator cuff repair, exercise therapy, exercise, unsupervised, self-care, postoperative period, physical therapy, and physiotherapy; for cryotherapy, keywords included rotator cuff repair, shoulder, cryotherapy, and ice.

**RESULTS:**

Five studies compared postoperative outcomes in participants assigned to supervised therapy vs. unsupervised therapy. Three found no difference between groups. One found improved outcomes in supervised therapy. Limitations included that therapies were not consistently defined and significant methodologic issues were present, decreasing the applicability and validity of the results. Five articles examined cryotherapy outcomes in the postoperative shoulder. Two studies showed improved patient outcomes with cryotherapy vs. no cryotherapy; 2 studies showed no decrease in joint space temperatures at 90 minutes but decrease in temperature at 4 to 23 hours postoperatively. One study indicated that an ice bag and Ace bandage might be as effective as continuous, compressive cryotherapy units using patient-reported outcomes.

**CONCLUSION:**

Further studies are needed to determine effective dosing of physical therapy after rotator cuff repair. Cryotherapy is favorable and cost-effective using simple methods for delivery.

## 21. ADHESIVE CAPSULITIS

### Use of

J Shoulder Elbow Surg. 2017 Mar 31. pii: S1058-2746(17)30064-2. doi: 10.1016/j.jse.2017.01.023.

### **Shoulder activity level in patients with idiopathic adhesive capsulitis.**

Lamplot JD<sup>1</sup>, Lillegraven O<sup>1</sup>, Brophy RH<sup>2</sup>.

Author information

Abstract

#### **BACKGROUND:**

Idiopathic adhesive capsulitis is a common condition resulting in painful multidirectional restriction of motion. Adhesive capsulitis may inhibit shoulder activity level, but this relationship has not been previously studied. This study tested the hypothesis that patients with idiopathic adhesive capsulitis have lower shoulder activity than sex- and age-matched controls.

#### **METHODS:**

Seventy-two eligible patients (37 men and 35 women) with idiopathic adhesive capsulitis completed a validated shoulder activity scale that was compared with sex- and age-matched norms from a healthy population with no history of shoulder disorders. The association of shoulder activity level with patient age, sex, and American Shoulder and Elbow Surgeons and Simple Shoulder Test (SST) scores was evaluated.

#### **RESULTS:**

Overall, 58% of patients actually had higher shoulder activity scores than sex- and age-matched controls. Among patients aged 51 to 70 years, 68% of patients (73% of men and 63% of women) demonstrated higher Shoulder Activity Scale scores compared with controls. The activity level was higher among all patients aged 51 to 70 years compared with controls ( $10.3 \pm 1.48$  vs.  $8 \pm 0.52$ ,  $P = .0067$ ). The difference was significant for men in this age group ( $12.2 \pm 1.7$  vs.  $9 \pm 0.75$ ,  $P = .0042$ ). There was a statistically significant positive correlation of the Shoulder Activity Scale score with the SST score ( $r = 0.31$ ,  $P = .009$ ).

#### **CONCLUSION:**

Patients with idiopathic adhesive capsulitis do not have a lower shoulder activity level than sex- and age-matched controls, and older men may actually have a higher level of shoulder activity than controls. Shoulder activity level is correlated with the SST score in patients with idiopathic adhesive capsulitis.

**26. CARPAL TUNNEL SYNDROME****Improved sleep after surgery**

J Hand Surg Am. 2017 Mar 27. pii: S0363-5023(17)30292-7. doi: 10.1016/j.jhsa.2017.02.009.

**Prospective Evaluation of Sleep Improvement Following Carpal Tunnel Release Surgery.**

Tulipan JE<sup>1</sup>, Kim N<sup>2</sup>, Abboudi J<sup>2</sup>, Jones C<sup>2</sup>, Liss F<sup>2</sup>, Kirkpatrick W<sup>2</sup>, Matzon J<sup>2</sup>, Rivlin M<sup>2</sup>, Wang ML<sup>2</sup>, Ilyas AM<sup>2</sup>.

Author information

Abstract

**PURPOSE:**

Sleep disturbance due to nighttime awakening is a well-documented symptom of carpal tunnel syndrome. While relief of nighttime waking following carpal tunnel release (CTR) has been demonstrated, the effect of CTR on overall sleep quality has not been fully investigated. We hypothesized that CTR would result in significant improvement in overall sleep quality as well as patients' overall satisfaction with their sleep habits.

**METHODS:**

Cases of carpal tunnel syndrome with positive nerve studies, and treated with CTR, were prospectively enrolled. Demographic data, electromyography (EMG) severity, Quick Disabilities of the Arm, Shoulder, and Hand questionnaire, and Insomnia Severity Index (ISI) scale data were collected.

**RESULTS:**

A total of 398 patients were enrolled, with 99% available at 2 weeks and 64% available at 3-month final follow-up. At final follow-up, average Quick Disabilities of the Arm, Shoulder, and Hand score improved significantly from the preoperative value. Average ISI score on all 7 sleep categories on the survey improved significantly from before surgery to the first postoperative visit. However, the total ISI score did not further improve significantly between the 2-week and the 3-month postoperative visits. The ISI score improvements did not correlate with EMG severity.

**CONCLUSIONS:**

Patients undergoing CTR demonstrated significant improvement in mean scores for 7 aspects of sleep quality. Sleep improvement was unrelated to preoperative EMG severity and was experienced within 2 weeks of surgery



**29. OA****Changes in gait**

Gait Posture. 2017 Mar 16;54:248-254. doi: 10.1016/j.gaitpost.2017.03.009.

**Asymptomatic radiographic hip osteoarthritis is associated with gait differences, especially in women: A population-based study.**

Verlinden VJ<sup>1</sup>, de Kruijf M<sup>2</sup>, Bierma-Zeinstra SM<sup>3</sup>, Hofman A<sup>4</sup>, Uitterlinden AG<sup>5</sup>, Ikram MA<sup>6</sup>, van Meurs JB<sup>2</sup>, van der Geest JN<sup>7</sup>.

Author information

Abstract

**BACKGROUND:**

Hip and knee osteoarthritis (OA) are debilitating diseases that impair gait at severe stages. Although associations between OA and gait are established for normal walking, little is known about its relation with turning and tandem (heel-to-toe) walking. Furthermore, it is unknown how asymptomatic OA associates with gait, and whether associations differ by sex. We investigated how symptomatic and asymptomatic hip and knee OA associate with gait in community-dwelling individuals.

**METHODS:**

In 2706 participants of a population-based cohort study, gait was assessed by electronic walkway and summarised into seven gait domains. Hip and knee radiographs were graded for radiographic OA (ROA) using the Kellgren and Lawrence (K&L) score. Linear regression was used to investigate associations between ROA and gait. Analyses were repeated including only participants with asymptomatic ROA, defined as a K&L-score of 2 without pain.

**RESULTS:**

In total, 177 participants (6.5%) had hip ROA and 441 (16.3%) knee ROA. We found no associations of knee ROA with gait. Hip ROA associated with Rhythm, Tandem, and Turning. Furthermore, unilateral hip ROA associated with larger gait asymmetry and gait differences in osteoarthritic and non-osteoarthritic leg, when compared to people without hip ROA. Associations between hip ROA and gait were generally stronger for women than men. Associations for hip ROA remained after restricting to asymptomatic ROA.

**CONCLUSION:**

Hip ROA, but not knee ROA, associates with gait differences in normal walking, turning, and tandem walking in community-dwelling individuals. These associations differ between the sexes, and are already present for asymptomatic ROA.

**32 A. KNEE/ACL**[Return to play](#)**Limb Symmetry Indexes Can Overestimate Knee Function After Anterior Cruciate Ligament Injury**

**Authors:** Elizabeth Wellsandt, DPT, PhD<sup>1,2</sup>, Mathew J. Failla, PT, PhD<sup>2,3</sup>, Lynn Snyder-Mackler, PT, ScD<sup>2</sup>

**Published:** *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:**0 **Issue:**0 **Pages:**1–18 **DOI:**10.2519/jospt.2017.7285

**Study Design**

Prospective cohort.

**Background**

The high risk of second anterior cruciate ligament (ACL) injuries after return-to-sport highlights the importance of return-to-sport decision-making. Objective return-to-sport criteria frequently use limb symmetry indexes (LSI's) to quantify quadriceps strength and hop scores. Whether using the uninvolved limb in LSI's is optimal is unknown.

**Objectives**

To evaluate the uninvolved limb as a reference standard for LSI's utilized in return-to-sport testing and its relationship with second ACL injury rates.

**Methods**

Seventy athletes completed quadriceps strength and 4 single-legged hop tests before ACL reconstruction (ACLR) and 6 months after ACLR. LSI's for each test compared involved limb measures at 6 months to uninvolved measures at 6 months. Estimated pre-injury capacity (EPIC) levels for each test compared involved measures at 6 months to uninvolved measures before ACLR. Second ACL injuries were tracked for a minimum 2-year follow-up after ACLR.

**Results**

Forty (57.1%) patients achieved 90% LSI's for quadriceps strength and all hop tests. Only 20 (28.6%) patients met 90% EPIC levels (comparing involved limb at 6 months after ACLR to uninvolved limb before ACLR) for quadriceps strength and all hop tests. Twenty-four (34.4%) patients who achieved 90% LSI's for all measures 6 months after ACLR did not achieve 90% EPIC levels for all measures. EPIC levels were more sensitive to LSI's in predicting second ACL injuries (LSI's: 0.273 (95% CI: 0.010-0.566); EPIC: 0.818 (95% CI: 0.523-0.949)).

**Conclusion**

LSI's frequently overestimate knee function after ACLR and may be related to second ACL injury risk. These findings raise concern whether the variable ACL return-to-sport criteria utilized in current clinical practice are stringent enough to achieve safe and successful return-to-sport.

### 34. PATELLA

#### Psychological factors

Br J Sports Med. 2017 Mar 20. pii: bjsports-2016-096705. doi: 10.1136/bjsports-2016-096705.

#### **The psychological features of patellofemoral pain: a systematic review.**

Maclachlan LR<sup>1</sup>, Collins NJ<sup>1</sup>, Matthews ML<sup>1</sup>, Hodges PW<sup>1</sup>, Vicenzino B<sup>2</sup>.

#### **Author information**

#### **Abstract**

#### **BACKGROUND:**

Patellofemoral pain (PFP) is prevalent in adolescence and adulthood and often persists. In contrast to other persistent musculoskeletal conditions, for which non-physical, psychological features are implicated, PFP remains largely conceptualised in mechanical terms.

#### **AIMS:**

To (1) identify whether the psychological characteristics of individuals with PFP differs from asymptomatic controls and (2) evaluate the correlations between psychological characteristics and PFP severity.

#### **STUDY DESIGN:**

Systematic review **METHODS:** A systematic review of the literature was conducted according to PRISMA guidelines. The Epidemiological Appraisal Instrument was used to evaluate quality. Studies measuring psychological constructs with patient-reported measures were included. Standardised mean differences were calculated and supported by narrative synthesis.

#### **RESULTS:**

Twenty-five studies were eligible. Quality results ranged from 28.3% to 61.7%. Psychological constructs were reported under four groupings: mental health, cognitive factors, behavioural factors and other factors. There is limited evidence of mental health and cognitive differences in some individuals with PFP. Features demonstrating linear correlations with pain and physical function included anxiety/depression, catastrophising, praying and hoping and pain-related fear.

#### **CONCLUSIONS:**

Anxiety, depression, catastrophising and fear of movement may be elevated in individuals with PFP and correlate with pain and reduced physical function. These results derive from a limited number of studies. Future research should aim to evaluate if and how psychological factors contribute to PFP.

#### **CLINICAL RELEVANCE:**

Patients are likely to benefit from clinician vigilance to the presence of psychological factors.

**35. KNEE/TOTAL****Unicompartmental knee replacement**

Knee Surg Sports Traumatol Arthrosc. 2017 Mar 31. doi: 10.1007/s00167-017-4536-4.

**Satisfactory outcomes following combined unicompartmental knee replacement and anterior cruciate ligament reconstruction.**

Volpin A<sup>1</sup>, Kini SG<sup>2</sup>, Meuffels DE<sup>3</sup>.

Author information

Abstract

**PURPOSE:**

There exist limited options for treatment of patients with combined medial compartment arthritis and anterior cruciate ligament (ACL) deficiency. Ideal treatment is one that offers lasting relief of symptoms not compromising any future surgery. Unicompartmental knee replacement has shown consistently good results in the relatively young and active population, but there is a high reported incidence of failure up to 20%, if performed in ACL-deficient knees. One of the recognized treatment modality is combined ACL reconstruction and unicompartmental arthroplasty. A systematic review was conducted looking at the demographics, techniques, complications and outcome of combined ACL reconstruction with unicompartmental knee arthroplasty.

**METHODS:**

A systematic literature search within the online Medline, PubMed Database, EMBASE, Web of Science, Cochrane and Google Scholar was carried out until October 2016 to identify relevant articles. A study was defined eligible if it met the following inclusion criteria: the surgical procedure combined unicompartmental knee arthroplasty and anterior cruciate ligament reconstruction; patient's clinical and/or functional outcomes were reported; any complications intra-operatively and post-operatively were reported; and the full-text articles, written in English, German, Italian, Dutch or Spanish, were available. Quality and risk of bias assessments were done using standardized criteria set.

**RESULTS:**

A total of 8 studies met the inclusion criteria encompassing 186 patients who were treated with simultaneous ACL reconstruction and unicompartmental knee arthroplasty. The mean age was 50.5 years (range from 44 to 56) with a mean follow-up of 37.6 months (range from 24 to 60). There was an improvement in mean Oxford Score from 27.5 to 36.8. Complications reported included tibial inlay dislocation (n = 3), conversion to a total knee arthroplasty (n = 1), infection requiring two-stage revision (n = 2), deep-vein thrombosis (n = 1), stiffness requiring manipulation under anaesthesia (n = 1), retropatellar pain requiring arthroscopic adhesiolysis (n = 1).

**CONCLUSION:**

Unicompartmental knee arthroplasty combined with ACL reconstruction can be a valid treatment option for selected patients, with combined medial unicompartmental knee osteoarthritis and ACL deficiency.

**LEVEL OF EVIDENCE:**

Systematic Review of Level IV Studies, Level IV.

**Return to sports**

Knee Surg Sports Traumatol Arthrosc. 2017 Mar 24. doi: 10.1007/s00167-017-4529-3.

**Sports activity is maintained or increased following total knee arthroplasty.**

Hepperger C<sup>1,2</sup>, Gföller P<sup>3</sup>, Abermann E<sup>1</sup>, Hoser C<sup>1</sup>, Ulmer H<sup>4</sup>, Herbst E<sup>5</sup>, Fink C<sup>1,2</sup>.

Author information

**Abstract****PURPOSE:**

The purpose of this study was to investigate sports activities and functional abilities in patients following total knee arthroplasty (TKA). It was hypothesized that patients who had undergone TKA would return to a higher activity level as that experienced preoperatively.

**METHODS:**

Two hundred patients were included in this prospective single-cohort study. All the patients completed subjective questionnaires (Tegner Activity Level, Oxford Knee Score, Visual Analog Scale for pain) prior to surgery as well as at 6, 12, and 24 months postoperatively. Additionally, sports behaviour was evaluated. Sports frequency was divided into four categories: more than 5 times a week, 2-3 times a week, occasionally, and no sports activities. Additionally, the patients were asked to state their three favourite summer and winter sports.

**RESULTS:**

All patient-reported outcome scores improved significantly over time ( $p \leq 0.005$ ). The Tegner Activity Level increased significantly from the preoperative state to 24 months postsurgery ( $p = 0.005$ ). Six months after surgery, 43% of the patients returned to the same and 35% to a higher Tegner Activity Level than prior to surgery. Gender-related differences were observed for the Tegner Activity Level showing a higher activity level for the male than for the female patients. Overall, 24 months postsurgery 83% of the patients practiced sports in comparison with 79% prior to surgery.

**CONCLUSIONS:**

Following TKA, the patients were able to increase sports performance, while pain was reduced. Therefore, patients who want to continue their desired sports may safely consider TKA.

**Risk factors**

Knee. 2017 Mar 18. pii: S0968-0160(17)30037-6. doi: 10.1016/j.knee.2017.02.002.

**Patient-related risk factors for infection following knee arthroscopy: An analysis of over 700,000 patients from two large databases.**

Cancienne JM<sup>1</sup>, Mahon HS<sup>1</sup>, Dempsey IJ<sup>1</sup>, Miller MD<sup>1</sup>, Werner BC<sup>2</sup>.

Author information

Abstract

**BACKGROUND:**

To determine patient-related risk factors for infection following knee arthroscopy using two large databases.

**METHODS:**

A private-payer (PP) and Medicare national insurance database were queried for patients undergoing simple knee arthroscopy procedures from 2005 to 2015. Patients undergoing concomitant open or complex procedures with grafts were excluded. Postoperative infection within 90days was assessed using ICD-9 and CPT codes. A multivariate logistic regression analysis was utilized to evaluate patient-related risk factors for postoperative infection. Adjusted odds ratios (OR) and 95% confidence intervals were calculated for each risk factor, with  $P < 0.05$  considered statistically significant.

**RESULTS:**

One hundred thousand three hundred ninety nine patients from the PP database and 629,842 patients from the Medicare database met all inclusion and exclusion criteria. In the PP database, there were 250 patients with documented infections (0.25%); the incidence of infection was similar in the Medicare database (1755 patients, 0.28%). There were numerous patient-related comorbidities and demographics independently associated with a significantly increased risk of postoperative infection that were similar across the PP and Medicare patient populations, respectively, including younger age (OR=1.27, 1.43), morbid obesity (OR=1.26, 1.74), tobacco use (OR=1.34, 1.48), inflammatory arthritis (OR=1.61, 1.60), chronic kidney disease (OR=1.65, 1.14), hemodialysis (OR=1.93, 1.36), depression (OR=2.02, 1.73), and a hypercoagulable disorder (OR=2.76, 1.58).

**CONCLUSION:**

The present study identified numerous patient-related risk factors independently associated with an increased risk of infection following knee arthroscopy in PP and Medicare-aged patients.

**Comparison**

J Orthop Surg Res. 2017 Mar 28;12(1):50. doi: 10.1186/s13018-017-0552-9.

**Unicompartmental knee arthroplasty, is it superior to high tibial osteotomy in treating unicompartmental osteoarthritis? A meta-analysis and systemic review.**

Santoso MB<sup>1</sup>, Wu L<sup>2</sup>.

**Author information****Abstract****BACKGROUND:**

Debate remains whether high tibial osteotomy (HTO) or unicompartmental knee arthroplasty (UKA) is more beneficial for the treatment of unicompartmental knee osteoarthritis. The purpose of this study was to compare the functional results, knee scores, activity levels, and complications between the two procedures.

**METHODS:**

We performed a systematic review of published literature from August 1982 through January 2017. Fifteen papers reporting three prospective randomized trials were subjected to a meta-analysis.

**RESULTS:**

No significant difference between the two groups was noted with respect to free walking (velocity), knee score, deterioration of the contralateral or patellofemoral knee, or revision rate and total knee arthroplasty. However, UKA produced better outcomes compared to HTO in terms of the functional results, pain assessment, and complications, although patients who underwent HTO tended to have slightly better range of motion.

**CONCLUSIONS:**

Valgus HTO provides better physical activity for younger patients whereas UKA is more suitable for older patients due to shorter rehabilitation time and faster functional recovery. Although UKA patients tended to have improved overall long-term outcomes, which may be due to accurate indications and patient selection, both treatment options yielded pleasing results. Therefore, we are unable to conclude that either method is superior.

**37. OSTEOARTHRITIS/KNEE****Role of ex**

APRIL 04, 2017

**The role of muscle strengthening in exercise therapy for knee osteoarthritis: A systematic review and meta-regression analysis of randomized trials**

Seminars in Arthritis and Rheumatism  
Bartholdy C, et al.

A systematic review and meta-regression analysis of randomized trial was conducted to examine if exercise interventions for patients with knee osteoarthritis (OA) following the American College of Sports Medicine (ACSM) definition of muscle strength training differs from other types of exercise, and to analyze associations between changes in muscle strength, pain, and disability. The findings revealed that exercise interventions following the ACSM criteria for strength training serve superior outcomes in knee extensor strength but not in pain or disability. An increase of less than 30% in knee extensor strength is not likely to be clinically beneficial in terms of changes in pain and disability.

**Methods**

- Researchers conducted a systematic search in 5 electronic databases to identify randomized controlled trials comparing exercise interventions with no intervention in knee OA, and reporting changes in muscle strength and in pain or disability assessed as standardized mean differences (SMD) with 95% confidence intervals (95%CI).
- They categorized interventions as ACSM interventions or not-ACSM interventions and compared using stratified random effects meta-analysis models.
- They evaluated correlations between knee extensor strength gain and changes in pain/disability using meta-regression analyses.

**Results**

- In this analysis, researchers enrolled the 45 eligible trials with 4,699 participants and 56 comparisons (22 ACSM interventions).
- They observed a statistically significant difference favoring the ACSM interventions with respect to knee extensor strength (SMD difference: 0.448 [95%CI 0.091 to 0.805]).
- There were no differences regarding effects on pain and disability.
- The meta-regressions showed that increases in knee extensor strength of 30 and 40% would be necessary for a likely concomitant beneficial effect on pain and disability, respectively.



## Fear of movement

APRIL 03, 2017

**Fear of movement and associated factors among adults with symptomatic knee osteoarthritis**

Arthritis Care &amp; Research

Alexander H. Gunn AH, et al.

In this study, researchers intended to evaluate the frequency of and factors associated with fear of movement (FOM) among patients with symptomatic knee osteoarthritis (sxKOA), using the new Brief Fear of Movement (BFOM) measure. The results found that fear of movement was common, and this could negatively impact physical activity among patients with sxKOA. The findings demonstrated that psychological variables were significantly associated with FOM, suggesting behavioral and psychological interventions may decrease FOM and improve outcomes among individuals with sxKOA.

## Methods

- Subjects (n=350) included in a clinical trial completed the BFOM scale prior to randomization.
- Clinicians examined the relationships of BFOM with the following characteristics: age, sex, race, education, pain and activities of daily living (ADL) subscales of the Knee Injury and Osteoarthritis Outcome Score (KOOS), knee symptom duration, depressive symptoms (PHQ-8), history of falls and knee injury, family history of knee problems, self-efficacy for exercise (SEE), and unilateral balance test.
- A proportional odds logistic regression model evaluated multivariable correlations of participant characteristics with a three-level BFOM variable (agreement with 0, 1-2, or  $\geq 3$  items).

## Results

- The data indicated that the majority of participants (77%) agreed with at least 1 item on the BFOM scale, and 36% endorsed 3+ items, suggesting a high degree of FOM.
- Clinicians exhibited evidence that the following remained significant after backward selection: age (odds ratio (OR) = 0.79 per 10-point increase, 95% confidence interval (CI) = 0.66-0.95),
- The evidence showed that KOOS ADL (OR = 0.86 per 10-point increase, 95% CI = 0.76-0.97), PHQ-8 (OR = 1.15, 95% CI = 1.08-1.22), and SEE (OR = 0.87 per 10-point increase, 95% CI = 0.78-0.96).

**45 B. MANUAL THERAPY CERVICAL**

April 2017 Volume 28, Pages 18–24

**Assessment of in vivo 3D kinematics of cervical spine manipulation: Influence of practitioner experience and occurrence of cavitation noise**

Bernard Van Geyt Pierre-Michel Dugailly Paul Klein Yves Lepers Benoît Beyer ,  
Véronique Feipel

DOI: <http://dx.doi.org/10.1016/j.msksp.2017.01.002>

**Highlights**

- 3D kinematics was assessed during cervical manipulation for different practitioners.
- No influence of the side or the level on the kinematics was demonstrated.
- Most parameters were dependent on the practitioner.
- Cavitation occurrence seems to be related to particular kinematics features.

**Background**

Investigations on 3D kinematics during spinal manipulation are widely reported for assessing motion data, task reliability and clinical effects. However the link between cavitation occurrence and specific kinematics remains questionable.

**Objectives**

This paper investigates the 3D head-trunk kinematics during high velocity low amplitude (HVLA) manipulation for different practitioners with respect to the occurrence of cavitation.

**Methods**

Head-trunk 3D motions were sampled during HVLA manipulation in twenty asymptomatic volunteers manipulated by four practitioners with different seniority (years of experience). Four target levels were selected, C3 and C5 on each side, and were randomly allocated to the different practitioners. The data was recorded before, during and after each set of trial in each anatomical plane. The number of trials with cavitation occurrence was collected for each practitioner.

**Results**

The manipulation task was performed using extension, ipsilateral side bending and contra-lateral axial rotation independent of side or target level. The displayed angular motion magnitudes did not exceed normal active ROM. Regardless cavitation occurrence, wide variations were observed between practitioners, especially in terms of velocity and acceleration. Cavitation occurrence was related to several kinematics features (i.e. frontal ROM and velocity, sagittal acceleration) and practitioner experience. In addition, multilevel cavitation was observed regularly.

**Conclusions**

Kinematics of cervical manipulation is dependent on practitioner and years of experience. Cavitation occurrence could be related to particular kinematics features. These aspects should be further investigated in order to improve teaching and learning of cervical manipulation technique.

**51. CFS/BET****Motions in lift task in LBP**

April 2017 Volume 28, Pages 25–31

**Differences in kinematics of the lumbar spine and lower extremities between people with and without low back pain during the down phase of a pick up task, an observational study**

Sara P. Gombatto Natalie D'Arpa Sarah Landerholm Cassandra Mateo Ryan O'Connor  
Jana Tokunaga Lori J. Tuttle

DOI: <http://dx.doi.org/10.1016/j.msksp.2016.12.017>

Highlights

- Group difference in lumbar spine flexion depends on upper vs. lower region.
- LBP subjects flex the lumbar spine more in early ranges of movement than controls.
- LBP subjects display more frontal plane knee movement than controls.
- There were no significant differences in kinematics among movement-based subgroups.

Abstract

**Background** - Limited research exists on lumbar spine and lower extremity movement during functional tasks in people with and without low back pain (LBP).

**Objective** - To determine differences in lumbar spine and lower extremity kinematics in people with and without LBP during the down phase of a pick up task.

**Design** - Cross-sectional, observational study.

**Method** - 35 people (14 M, 21 F,  $26.9 \pm 10.9$  years,  $24.8 \pm 3.2$  kg/m<sup>2</sup>); 18 with and 17 without LBP were matched based on age, gender and BMI. Kinematics of the lumbar spine and lower extremities were measured using 3D motion capture, while subjects picked up an object off the floor. People with LBP were examined and assigned to movement-based LBP subgroups.

Repeated measures ANOVA tests were conducted to determine the effect of group and region on lumbar spine and lower extremity kinematics. A secondary analysis was conducted to examine the effect of LBP subgroup on lumbar spine kinematics.

**Results** - Compared to controls, subjects with LBP displayed greater upper and less lower lumbar flexion ( $P < 0.05$ ), and more lumbar flexion during the first 25% of the pick up task ( $P < 0.01$ ). There were no group differences in frontal or axial plane lumbar spine kinematics. Subjects with LBP displayed more frontal plane movement at the knee than control subjects ( $P < 0.01$ ). There were no significant effects of movement-based LBP subgroup on kinematics ( $P > 0.05$ ).

**Conclusions** - When evaluating movement during a functional task, the clinician should consider regional differences in the lumbar spine, pattern of movement, and lower extremity movement.

## 52. EXERCISE

### Yoga and exercise

BMC Musculoskelet Disord. 2017 Mar 29;18(1):132. doi: 10.1186/s12891-017-1497-1.

#### **Effects of yoga, strength training and advice on back pain: a randomized controlled trial.**

Brämberg EB<sup>1</sup>, Bergström G<sup>2,3</sup>, Jensen I<sup>2</sup>, Hagberg J<sup>2</sup>, Kwak L<sup>2</sup>.

Author information

Abstract

#### *BACKGROUND:*

Among the working population, non-specific low-back pain and neck pain are one of the most common reasons for sickness absenteeism. The aim was to evaluate the effects of an early intervention of yoga - compared with strength training or evidence-based advice - on sickness absenteeism, sickness presenteeism, back and neck pain and disability among a working population.

#### *METHODS:*

A randomized controlled trial was conducted on 159 participants with predominantly (90%) chronic back and neck pain. After screening, the participants were randomized to kundalini yoga, strength training or evidence-based advice. Primary outcome was sickness absenteeism. Secondary outcomes were sickness presenteeism, back and neck pain and disability. Self-reported questionnaires and SMS text messages were completed at baseline, 6 weeks, 6 and 12 months.

#### *RESULTS:*

The results did not indicate that kundalini yoga and strength training had any statistically significant effects on the primary outcome compared with evidence-based advice. An interaction effect was found between adherence to recommendations and sickness absenteeism, indicating larger significant effects among the adherers to kundalini yoga versus evidence-based advice: RR = 0.47 (CI 0.30; 0.74, p = 0.001), strength training versus evidence-based advice: RR = 0.60 (CI 0.38; 0.96, p = 0.032). Some significant differences were also found for the secondary outcomes to the advantage of kundalini yoga and strength training.

#### *CONCLUSIONS:*

Guided exercise in the forms of kundalini yoga or strength training does not reduce sickness absenteeism more than evidence-based advice alone. However, secondary analyses reveal that among those who pursue kundalini yoga or strength training at least two times a week, a significantly reduction in sickness absenteeism was found. Methods to increase adherence to treatment recommendations should be further developed and applied in exercise interventions.

**Anti-inflammatory benefits of exercise**

Br J Sports Med. 2017 Apr;51(8):670-676. doi: 10.1136/bjsports-2016-095999. Epub 2016 Jul 21.

**Effect of exercise training on C reactive protein: a systematic review and meta-analysis of randomised and non-randomised controlled trials.**

Fedewa MV<sup>1</sup>, Hathaway ED<sup>2</sup>, Ward-Ritacco CL<sup>3</sup>.

Author information

**Abstract****PURPOSE:**

C-reactive protein (CRP) is a marker of chronic systemic inflammation frequently used in cardiovascular disease risk assessment. The purpose of this meta-analysis was to provide a quantitative estimate of the magnitude of change in CRP following participation in physical exercise interventions.

**METHODS:**

All studies included in the meta-analysis were peer reviewed and published in English. Human participants were assigned to a non-exercise comparison group or exercise training group, with the intervention lasting  $\geq 2$  weeks. CRP levels were measured at baseline, during and/or after completion of the exercise training programme. Random-effects models were used to aggregate a mean effect size (ES), 95% CIs and potential moderators.

**RESULTS:**

83 randomised and non-randomised controlled trials met the inclusion criteria and resulted in 143 effects (n=3769). The mean ES of 0.26 (95% CI 0.18 to 0.34,  $p < 0.001$ ) indicated a decrease in CRP following exercise training. A decrease in body mass index (BMI;  $\beta = 1.20$ ,  $SE = 0.25$ ,  $p < 0.0001$ ) and %Fat ( $\beta = 0.76$ ,  $SE = 0.21$ ,  $p = 0.0002$ ) were associated with a decrease in CRP, independently accounting for 11.1% and 6.6% of the variation in response, respectively. Exercise training led to a greater reduction in CRP when accompanied by a decrease in BMI (ES=0.38, 95% CI 0.26 to 0.50); however, a significant improvement in CRP occurred in the absence of weight loss (ES=0.19, 95% CI 0.10 to 0.28; both  $p < 0.001$ ).

**CONCLUSIONS:**

These results suggest that engaging in exercise training is associated with a decrease in CRP levels regardless of the age or sex of the individual; however, greater improvements in CRP level occur with a decrease in BMI or %Fat.

**59. PAIN****Medical cannabis use among patients with chronic pain in an interdisciplinary pain rehabilitation program: Characterization and treatment outcomes**

Arya Shah Julia Craner Julie L. Cunningham

DOI: <http://dx.doi.org/10.1016/j.jsat.2017.03.012>**Highlights**

- Patients using cannabis report benefit from a pain rehabilitation program.
- Patients in both the THC and non-THC groups showed improved pain-related adjustment outcomes upon completion of the program.
- There were no group differences between THC and non-THC users at discharge.
- Patients using cannabis may present higher baseline risk for substance use problems.

**Abstract****Introduction**

Cannabis is increasingly being used in the treatment of chronic pain. However, there is a lack of available research in the population of patients with chronic pain who are using cannabis. The current study examines clinical and treatment characteristics for patients who are admitted to a 3-week outpatient interdisciplinary chronic pain rehabilitation program.

**Method**

Participants ( $N = 48$ ) included patients with a positive urine drug screen for 9-carboxy-tetrahydrocannabinol (THC+);  $n = 24$ ) and a matched comparison sample of patients with a negative screen (THC-);  $n = 24$ ). Participants were matched for age, gender, race, education, and current prescription opioid use. Measures of pain, functioning, and quality of life were completed at admission and discharge. Medical chart review was conducted to assess medication and substance use history.

**Results**

Participants with a positive screen for THC were more likely to report a past history of illicit substance use, alcohol abuse, and current tobacco use. Cannabis use was not associated with a significantly lower morphine equivalence level for participants using prescription opioids ( $n = 14$ ). Both groups of participants reported significant improvement in pain severity, pain interference, depressive symptoms, and pain catastrophizing. There were no group- or treatment-related differences in these outcome variables.

**Discussion**

Results provide preliminary evidence that patients with chronic pain using cannabis may benefit from an interdisciplinary chronic pain program. Patients with chronic pain using cannabis may be at higher risk for substance-related negative outcomes, although more research is needed to understand this relationship.

**Keywords:**

Chronic pain, Pain rehabilitation, Medical marijuana, Cannabis, Pain outcomes

### Hypermobility syndrome and pain

*Am J Med.* 2017 Mar 9. pii: S0002-9343(17)30220-6. doi: 10.1016/j.amjmed.2017.02.013.

#### **Joint Hypermobility Syndrome: Recognizing a Commonly Overlooked Cause of Chronic Pain.**

Kumar B<sup>1</sup>, Lenert P<sup>2</sup>.

[Author information](#)

#### Abstract

Joint hypermobility syndrome, also known as Benign Hypermobility Syndrome, is a connective tissue disease characterized by joint instability, chronic pain, and minor skin changes. It shares many clinical features of Ehlers-Danlos Syndrome, Hypermobility Type, enough so that many authorities consider them as one disease process. Approximately 3% of the general population is believed to have joint hypermobility syndrome, but despite this high prevalence, due to lack of awareness, heterogeneity of clinical presentation, and reliance on physical examination for diagnosis, it is largely overlooked by primary care physicians as well as by specialists. This leads to delayed or missed opportunities for diagnosis, and inappropriate interventions that frustrate both providers and patients. We review the literature regarding the pathophysiology, diagnosis, treatment options, and prognosis of joint hypermobility syndrome, and advocate for primary care physicians to consider it in the differential diagnosis of patients with chronic pain.

**Chronic pain and perceived injustice**

April 2017 Volume 18, Issue 4, Supplement, Pages S64–S65

**(360) Perceived injustice is associated with an indicator of aberrant medication use in a chronic pain population**

J. Dickman P. Slepian B. Ankawi C. France  
Ohio University, Athens, OH  
DOI: <http://dx.doi.org/10.1016/j.jpain.2017.02.334>

Understanding and predicting prescription medication misuse and abuse has become a priority for health care professionals and public health officials.

The Pain Medication Questionnaire (PMQ) is a validated predictor of aberrant medication use for individuals with chronic pain. The current study sought to examine associations between the PMQ and commonly used pain-related psychosocial measures, including pain catastrophizing, pain resilience, and perceived injustice. Two samples of individuals who self-reported chronic pain (Sample 1 N = 682, Sample 2 N = 819) were recruited using Amazon's Mechanical Turk and completed an online battery of measures. Hierarchical linear regressions predicting PMQ scores were conducted independently in each sample. Pain intensity, pain interference, and depressive symptoms were entered into the first block of the model, while psychosocial predictors were entered into the second block of the model. In the first sample, the measures in the first block of the model, together, were significantly associated with PMQ scores,  $F(3,679) = 49.96$ ,  $p < 0.001$ ,  $R^2 = 18.1$ . The addition of psychosocial factors in the second block of the model significantly improved model fit,  $\Delta F(3,676) = 31.07$ ,  $p < 0.001$ ,  $\Delta R^2 = 9.9$ . These results were replicated in the second sample (Block 1:  $F(3,816) = 48.08$ ,  $p < 0.001$ ,  $R^2 = 15.0$ ; Block 2:  $\Delta F(3,813) = 24.82$ ,  $p < 0.001$ ,  $\Delta R^2 = 7.1$ ). In both samples, perceived injustice was positively associated with PMQ scores (Sample 1  $B = 0.26$ ,  $p < 0.001$ ; Sample 2  $B = 0.3$ ,  $p < 0.001$ ) after controlling for all other variables in the model.

This provides evidence that perceived injustice is associated with a validated indicator of prescription medication misuse and abuse. These findings may help providers identify individuals at risk for medication misuse and provide a potential target of intervention to reduce misuse.



**Mechanisms of radicular pain**

April 2017 Volume 18, Issue 4, Supplement, Pages S65–S66

**(364) Facilitated pro-nociceptive pain mechanisms in cervicobrachialgia and sciatica compared with localized neck and low back pain patients**

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DOI: <http://dx.doi.org/10.1016/j.jpain.2017.02.338>

Degenerative conditions in low back and neck pain are generally not considered the main cause of symptoms. Recently, identification of relevant anti-nociceptive and pro-nociceptive mechanisms has been considered important for guiding management and treatment of musculoskeletal pain.

Objectives of the present explorative study were to investigate anti-nociceptive and pro-nociceptive pain mechanisms, pain intensity, and psychological distress in patients with chronic low back pain (LBP, N=18), neck pain (N=17), sciatica (N=18), or cervicobrachialgia (N=17). Cuff algometry was performed on the non-painful lower leg to assess pressure pain threshold (cPPT), pressure pain tolerance (cPTT), temporal summation of pain (TSP: increase in pain scores to ten repeated stimulations), and conditioned pain modulation (CPM: increase in cPPT during cuff pain conditioning on the contralateral leg). Heat detection (HDT) and heat pain thresholds (HPT) at the non-painful hand were recorded. Clinical pain intensity (numerical rating scale; NRS) and psychological distress were assessed by questionnaires. Compared with localized neck pain patients, cervicobrachialgia patients demonstrated increased NRS pain scores and reduced HPT and cPTT, reduced CPM, and higher scores of psychological distress ( $P<0.05$ ).

Compared with localized neck pain patients, LBP patients demonstrated increased NRS pain scores and reduced cPTT, and higher scores of psychological distress ( $P<0.05$ ). TSP was increased in patients with sciatica and cervicobrachialgia compared with patients with localized pain (LBP, neck pain;  $P<0.05$ ).

These findings have clinical implications as different underlying mechanisms may require different treatment strategies as illustrated between the mechanistic differences within localized pain (LBP, neck) and between localized pain and referred pain. Future research should investigate interventions tailored towards these mechanisms.

**61. FIBROMYALGIA****Sleep and pain**

April 2017 Volume 18, Issue 4, Supplement, Pages S53–S54

**Sleep and pain sensitivity and its relationship to cellular aging in women with fibromyalgia**

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DOI: <http://dx.doi.org/10.1016/j.jpain.2017.02.207>

Fibromyalgia syndrome (FMS) is a common musculoskeletal pain disorder that presents a serious public health concern and imposes significant costs on society. Sleep disturbance is ubiquitous in FMS and implicated as a potential mechanism for pain and related symptoms.

Recently, the degree of cellular aging has also been implicated in sleep disturbance and chronic pain. In this study, we prospectively evaluated the relationship among sleep, pain sensitivity, and telomere length (TL) in FMS women and healthy sedentary (HS) women. A total of 23 FMS women and age matched 19 HS women were included. Each participant underwent a series of thermal ischemic pain testing, completed questionnaires, and had blood drawing at the laboratory. They also completed a 7-day home actigraphy assessment. Overall, FMS women exhibited significantly lower pain thresholds ( $p < .05$ ) and reported greater FMS-related symptoms ( $p < .05$ ) than did the HS women. Relative to the HS women, FMS women reported greater sleep disturbance with self-report diary ( $p < .05$ ), but not with actigraphy sleep parameters. Telomere lengths were comparable between the groups. There were significant correlations between TL and thermal pain threshold ( $p < .05$ ), with the longer TL associated with greater pain sensitivity. Actigraph WASO (wake after sleep onset) and total time in bed were also significantly associated with longer TL ( $p < .05$ ).

Separate correlational analyses showed differential associations between sleep and pain. For FMS women, greater ischemic pain tolerance was associated with greater WASO and poorer sleep efficiency whereas HS women showed that higher thermal threshold was associated with greater sleep efficiency and decreased WASO. Although preliminary, our data suggests that cellular aging may be uniquely related to pain sensitivity and sleep quality.

**62 A. NUTRITION/VITAMINS****Healthy diet**

Dement Geriatr Cogn Disord. 2017;43(3-4):215-227. doi: 10.1159/000464269. Epub 2017 Mar 22.

**Association of Adherence to a Healthy Diet with Cognitive Decline in European and American Older Adults: A Meta-Analysis within the CHANCES Consortium.**

Berendsen AA<sup>1</sup>, Kang JH, van de Rest O, Jankovic N, Kampman E, Kiefte-de Jong JC, Franco OH, Ikram MA, Pikhart H, Nilsson LM, Brenner H, Boffetta P, Rafnsson SB, Gustafson D, Kyrozi A, Trichopoulos A, Feskens EJ, Grodstein F, de Groot LC.  
Author information

Abstract

*AIM:*

To examine the association between a healthy diet, assessed by the Healthy Diet Indicator (HDI), and cognitive decline in older adults.

*METHODS:*

Data from 21,837 participants aged  $\geq 55$  years from 3 cohorts (Survey in Europe on Nutrition and the Elderly, a Concerted Action [SENECA], Rotterdam Study [RS], Nurses' Health Study [NHS]) were analyzed. HDI scores were based on intakes of saturated fatty acids, polyunsaturated fatty acids, mono- and disaccharides, protein, cholesterol, fruits and vegetables, and fiber. The Telephone Interview for Cognitive Status in NHS and Mini-Mental State Examination in RS and SENECA were used to assess cognitive function from multiple repeated measures. Using multivariable-adjusted, mixed linear regression, mean differences in annual rates of cognitive decline by HDI quintiles were estimated.

*RESULTS:*

Multivariable-adjusted differences in rates in the highest versus the lowest HDI quintile were 0.01 (95% CI -0.01, 0.02) in NHS, 0.00 (95% CI -0.02, 0.01) in RS, and 0.00 (95% CI -0.05, 0.05) in SENECA with a pooled estimate of 0.00 (95% CI -0.01, 0.01),  $I^2 = 0\%$ .

*CONCLUSIONS:*

A higher HDI score was not related to reduced rates of cognitive decline in European and American older adults.

**Milk intake no increase in CV or CA risk**

Am J Epidemiol. 2017 Mar 29;1-15. doi: 10.1093/aje/kww139.

**Dairy Food Intake and All-Cause, Cardiovascular Disease, and Cancer Mortality: The Golestan Cohort Study.**

Farvid MS, Malekshah AF, Pourshams A, Poustchi H, Sepanlou SG, Sharafkhan M, Khoshnia M, Farvid M, Abnet CC, Kamangar F, Dawsey SM, Brennan P, Pharoah PD, Boffetta P, Willett WC, Malekzadeh R.

**Abstract**

We investigated the association between dairy product consumption and all-cause, cardiovascular disease (CVD), and cancer mortality in the Golestan Cohort Study, a prospective cohort study launched in January 2004 in Golestan Province, northeastern Iran. A total of 42,403 men and women participated in the study and completed a diet questionnaire at enrollment. Cox proportional hazards models were used to estimate hazard ratios and 95% confidence intervals. We documented 3,291 deaths (1,467 from CVD and 859 from cancer) during 11 years of follow-up (2004-2015). The highest quintile of total dairy product consumption (versus the lowest) was associated with 19% lower all-cause mortality risk (hazard ratio (HR) = 0.81, 95% confidence interval (CI): 0.72, 0.91; Ptrend = 0.006) and 28% lower CVD mortality risk (HR = 0.72, 95% CI: 0.60, 0.86; Ptrend = 0.005). High consumption of low-fat dairy food was associated with lower risk of all-cause (HR = 0.83, 95% CI: 0.73, 0.94; Ptrend = 0.002) and CVD (HR = 0.74, 95% CI: 0.61, 0.89; Ptrend = 0.001) mortality. We noted 11% lower all-cause mortality and 16% lower CVD mortality risk with high yogurt intake. Cheese intake was associated with 16% lower all-cause mortality and 26% lower CVD mortality risk. Higher intake of high-fat dairy food and milk was not associated with all-cause or CVD mortality.

Neither intake of individual dairy products nor intake of total dairy products was significantly associated with overall cancer mortality. High consumption of dairy products, especially yogurt and cheese, may reduce the risk of overall and CVD mortality.

## Nutrition and CA

Int J Cancer. 2017 Apr 5. doi: 10.1002/ijc.30722.

**Adherence to nutrition-based cancer prevention guidelines and breast, prostate and colorectal cancer risk in the MCC-Spain case-control study.**

Romaguera D<sup>1,2,3</sup>, Gracia-Lavedan E<sup>1,4</sup>, Molinuevo A<sup>4</sup>, de Batlle J<sup>5</sup>, Mendez M<sup>6,7</sup>, Moreno V<sup>4,8,9</sup>, Vidal C<sup>4,8,9</sup>, Castelló A<sup>4,10,11</sup>, Pérez-Gómez B<sup>4,10,11</sup>, Martín V<sup>4,12</sup>, Molina AJ<sup>12</sup>, Dávila-Batista V<sup>12</sup>, Dierssen-Sotos T<sup>4,13</sup>, Gómez-Acebo I<sup>4,13</sup>, Llorca J<sup>4,13</sup>, Guevara M<sup>4,14</sup>, Castilla J<sup>4,14</sup>, Urtiaga C<sup>15</sup>, Llorens-Ivorra C<sup>16</sup>, Fernández-Tardón G<sup>4,17</sup>, Tardón A<sup>4,17</sup>, Lorca JA<sup>18</sup>, Marcos-Gragera R<sup>19</sup>, Huerta JM<sup>4,20</sup>, Olmedo-Requena R<sup>4,21,22</sup>, Jimenez-Moleon JJ<sup>4,21,22</sup>, Altzibar J<sup>23</sup>, de Sanjosé S<sup>4,24</sup>, Pollán M<sup>4,10,11</sup>, Aragonés N<sup>4,10,11</sup>, Castaño-Vinyals G<sup>1,4,25,26</sup>, Kogevinas M<sup>1,4,25,26</sup>, Amiano P<sup>4,15</sup>.

**Author information****Abstract**

Prostate, breast and colorectal cancer are the most common tumours in Spain.

The aim of the present study was to evaluate the association between adherence to nutrition-based guidelines for cancer prevention and prostate, breast and colorectal cancer, in the MCC-Spain case-control study. A total of 1718 colorectal, 1343 breast and 864 prostate cancer cases and 3431 population-based controls recruited between 2007 and 2012, were included in the present study. The World Cancer Research Fund/American Institute for Cancer Research (WCRF/AICR) score based on six recommendations for cancer prevention (on body fatness, physical activity, foods and drinks that promote weight gain, plant foods, animal foods and alcoholic drinks; score range 0–6) was constructed. We used unconditional logistic regression analysis adjusting for potential confounders. One-point increment in the WCRF/AICR score was associated with 25% (95% CI 19%; 30%) lower risk of colorectal, and 15% (7%; 22%) lower risk of breast cancer; no association with prostate cancer was detected, except for cases with a Gleason Score  $\geq 7$  (poorly differentiated/undifferentiated tumours) (OR 0.87, 95% CI 0.76; 0.99).

These results add to the wealth of evidence indicating that a great proportion of common cancer cases could be avoided by adopting healthy lifestyle habits. This article is protected by copyright. All rights reserved.

## Omega 3's

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Dietary intake of polyunsaturated fatty acids and pain in spite of inflammatory control among methotrexate treated early rheumatoid arthritis patients

Arthritis Care & Research

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Aim of this study was to evaluate potential associations between dietary intake of polyunsaturated fatty acids (PUFA) and pain patterns in early rheumatoid arthritis (RA) patients after three months of methotrexate (MTX) treatment. The results of this research showed that omega-3 fatty acid was inversely correlated with, and omega-6 to -3 FA ratio was directly associated with unacceptable and refractory pain, but not with inflammatory pain or systemic inflammation. The inverse correlation between omega-3 FA and refractory pain may have a role in pain suppression in rheumatoid arthritis.

**Methods**

- Researchers recruited 591 early RA patients with methotrexate monotherapy from a population based prospective case-control study, the Epidemiological Investigation of Rheumatoid Arthritis (EIRA).
- In this study, dietary data on polyunsaturated fatty acids (food frequency questionnaires) were linked with data on unacceptable pain (visual analogue scale (VAS) >40mm), non-inflammatory/refractory pain (VAS >40mm and C-reactive protein (CRP) <10mg/L) and inflammatory pain (VAS >40mm and CRP >10mg/L) after three months.
- Thereafter, statistical analysis included logistic regression.

**Results**

- They observed that 125 patients (21.2%) had unacceptable pain, of which 92 patients had refractory pain and 33 patients had inflammatory pain after three months of methotrexate treatment.
- The data showed that omega-3 fatty acid (FA) intake was inversely correlated with unacceptable pain and refractory pain (OR=0.57 [95% CI 0.35-0.95] and OR=0.47 [95% CI 0.26-0.84], respectively).
- They exhibited evidence that omega-6 to -3 FA ratio, but not omega-6 FA alone, was directly correlated with unacceptable pain and refractory pain (OR=1.70 [95% CI 1.03-2.82] and OR=2.33 [95% CI 1.28-4.24], respectively).
- Moreover, polyunsaturated fatty acids was not correlated with neither inflammatory pain nor CRP and erythrocyte sedimentation rate at follow-up.
- Remarkably, the data indicated that omega-3 FA supplementation was not correlated with any pain patterns.

**62 B. CRYOTHERAPY****In total knees****Cryotherapy with Dynamic Intermittent Compression Improves Recovery from Revision Total Knee Arthroplasty**

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**Abstract****Purpose**

The goal of this study was to Assess the efficacy of cryotherapy with dynamic intermittent compression (CDIC) in Relieving post operative pain, decreasing blood loss and improving functional scores after revision total knee arthroplasty (rTKA).

**Methods**

we conducted a prospective case-control study. (Level of evidence: I) to evaluate the efficacy of CDIC on postoperative bleeding, pain and functional outcomes after rTKA. 43 cases were included at a single institution and divided in two groups: a control group without CDIC (n = 19) and an experimental group with CDIC (n = 24). Bleeding was evaluated by calculating total blood loss; pain at rest was evaluated with a visual analogue scale (VAS) on postoperative day 3; function was assessed using the Oxford score at 6 months postoperative. The comparative analysis was performed using Fisher's exact test

**Results**

The CDIC group had significantly lower total blood loss (260 ml vs 465 ml,  $P < 0.05$ ), significantly less pain on day 3 (1 vs 3,  $P < 0.05$ ) and a significantly higher functional score (42 vs 40,  $P < 0.05$ ) than the control group.

**Conclusion**

This is the first report dealing with the use of CDIC after rTKA. According to our results , it improves the recovery of patients who underwent revision TKA, thus it should be integrated into our daily practice.