

## 2. LBP

### Multisite pain

BMJ Open. 2017 Jun 6;7(5):e015312. doi: 10.1136/bmjopen-2016-015312.

#### **The influence of multisite pain and psychological comorbidity on prognosis of chronic low back pain: longitudinal data from the Norwegian HUNT Study.**

Nordstoga AL<sup>1</sup>, Nilsen TIL<sup>1</sup>, Vasseljen O<sup>1</sup>, Unsgaard-Tøndel M<sup>1,2</sup>, Mork PJ<sup>1</sup>.

Author information

Abstract

#### *OBJECTIVES:*

This study aimed to investigate the prospective influence of multisite pain, depression, anxiety, self-rated health and pain-related disability on recovery from chronic low back pain (LBP).

#### *SETTING:*

The data is derived from the second (1995-1997) and third (2006-2008) wave of the Nord-Trøndelag Health Study (HUNT) in Norway.

#### *PARTICIPANTS:*

The study population comprises 4484 women and 3039 men in the Norwegian HUNT Study who reported chronic LBP at baseline in 1995-1997.

#### *PRIMARY OUTCOME MEASURES:*

The primary outcome was recovery from chronic LBP at the 11-year follow-up. Persons not reporting pain and/or stiffness for at least three consecutive months during the last year were defined as recovered. A Poisson regression model was used to estimate adjusted risk ratios (RRs) with 95% CIs.

#### *RESULTS:*

At follow-up, 1822 (40.6%) women and 1578 (51.9%) men reported recovery from chronic LBP. The probability of recovery was inversely associated with number of pain sites (P-trend<0.001). Compared with reporting 2-3 pain sites, persons with only LBP had a slightly higher probability of recovery (RR 1.10, 95% CI 0.98 to 1.22 in women and RR 1.10, 95% CI 1.01 to 1.21 in men), whereas people reporting 6-9 pain sites had substantially lower probability of recovery (RR 0.58, 95% CI 0.52 to 0.63 in women and RR 0.70, 95% CI 0.63 to 0.79 in men). Poor/not so good self-rated general health, symptoms of anxiety and depression, and pain-related disability in work and leisure were all associated with reduced probability of recovery, but there was no statistical interaction between multisite pain and these comorbidities.

#### *CONCLUSIONS:*

Increasing number of pain sites was inversely associated with recovery from chronic LBP. In addition, factors such as poor self-rated health, psychological symptoms and pain-related disability may further reduce the probability of recovery from chronic LBP.

## 4. INJECTIONS

### Facet radiofrequency denervation

Spine J. 2017 May 30. pii: S1529-9430(17)30197-3. doi: 10.1016/j.spinee.2017.05.006.

#### **The efficacy of conventional radiofrequency denervation in patients with chronic low back pain originating from the facet joints: a meta-analysis of randomized controlled trials.**

Lee CH<sup>1</sup>, Chung CK<sup>2</sup>, Kim CH<sup>3</sup>.

**BACKGROUND CONTEXT:** Radiofrequency denervation is commonly used for the treatment of chronic facet joint pain that has been refractory to more conservative treatments, although the evidence supporting this treatment has been controversial.

**PURPOSE:** We aimed to elucidate the precise effects of radiofrequency denervation in patients with low back pain originating from the facet joints relative to those obtained using control treatments, with particular attention to consistency in the denervation protocol.

**STUDY DESIGN/SETTING:** A meta-analysis of randomized controlled trials.

**PATIENT SAMPLE:** Adult patients undergoing radiofrequency denervation or control treatments (sham or epidural block) for facet joint disease of the lumbar spine.

**OUTCOME MEASURES:** VAS scores was measured and stratified by response of diagnostic block procedures.

**METHOD:** We searched PubMed, Embase, Web of Science, and the Cochrane Database for randomized controlled trials regarding radiofrequency denervation and control treatments for back pain. Changes in visual analog scale (VAS) pain scores of the radiofrequency group were compared with those of the control group as well as the minimal clinically important difference (MCID) for back pain VAS. Meta-regression model was developed to evaluate the effect of radiofrequency treatment according to responses of diagnostic block while controlling for other variables. We then calculated mean differences and 95% confidence intervals (CIs) using random-effects models.

#### **RESULTS:**

We included data from seven trials involving 454 patients who had undergone radiofrequency denervation (231 patients) and control treatments such as sham or epidural block procedures (223 patients). The radiofrequency group exhibited significantly greater improvements in back pain score when compared with the control group for 1-year follow-up. Although the average improvement in VAS scores exceeded the MCID, the lower limit of the 95% CI encompassed the MCID. A subgroup of patients who responded very well to diagnostic block procedures demonstrated significant improvements in back pain relative to the control group at all times. When placed into our meta-regression model, the response to diagnostic block procedure was responsible for a statistically significant portion of treatment effect. Studies published over the last two decades revealed that radiofrequency denervation reduced back pain significantly in patients with facet joint disease compared with the MCID and control treatments.

#### **CONCLUSIONS:**

Conventional radiofrequency denervation resulted in significant reductions in low back pain originating from the facet joints in patients showing the best response to diagnostic block over the first 12 months when compared with sham procedures or epidural nerve blocks.

## 5. SURGERY

### Lumbar surgery prior to hip not as good

Bone Joint J. 2017 Jun;99-B(6):759-765. doi: 10.1302/0301-620X.99B6.BJJ-2016-0577.R2.

#### **Lumbar surgery prior to total hip arthroplasty is associated with worse patient-reported outcomes.**

Eneqvist T<sup>1</sup>, Nemes S<sup>2</sup>, Brisby H<sup>1</sup>, Fritzell P<sup>3</sup>, Garellick G<sup>2</sup>, Rolfson O<sup>2</sup>.

Author information

Abstract

*AIMS:*

The aims of this study were to describe the prevalence of previous lumbar surgery in patients who undergo total hip arthroplasty (THA) and to investigate their patient-reported outcomes (PROMs) one year post-operatively.

*PATIENTS AND METHODS:*

Data from the Swedish Hip Arthroplasty Register and the Swedish Spine Register gathered between 2002 and 2012 were merged to identify a group of patients who had undergone lumbar surgery before THA (n = 997) and a carefully matched one-to-one control group. We investigated differences in the one-year post-operative PROMs between the groups. Linear regression analyses were used to explore the associations between previous lumbar surgery and these PROMs following THA. The prevalence of prior lumbar surgery was calculated as the ratio of patients identified with previous lumbar surgery between 2002 and 2012, and divided by the total number of patients who underwent a THA in 2012.

*RESULTS:*

The prevalence of lumbar surgery prior to THA in 2012 was 3.5% (351 of 10 082). Linear regression analyses showed an association with more pain (B = 4.35, 95% confidence interval (CI) 2.57 to 6.12), worse EuroQol (EQ)-5D index, (B = -0.089, 95% CI -0.112 to -0.066), worse EQ VAS (B = -6.75, 95% CI -8.58 to -4.92), and less satisfaction (B = 6.04, 95% CI 4.05 to 8.02).

*CONCLUSION:*

Lumbar spinal surgery prior to THA is associated with less reduction of pain, worse health-related quality of life, and less satisfaction one year after THA. This is useful information to share in the decision-making process and may help establish realistic expectations of the outcomes of THA in patients who also have previously undergone lumbar spinal surgery. Cite this article: *Bone Joint J* 2017;99-B:759-65.

### 7. PELVIC ORGANS/WOMAN'S HEALTH

#### Maternal voices and pain response

#### **Randomised study showed that recorded maternal voices reduced pain in preterm infants undergoing heel lance procedures in a neonatal intensive care unit**

Acta Paediatrica Chirico G, et al.

In this prospective study, the specialists intended to determine whether recorded maternal voices were safe and effective in limiting pain in preterm infants undergoing heel lance procedures in the neonatal intensive care unit. They found that recorded maternal voices to limit pain in preterm infants undergoing heel lance procedures were safe and effective.

#### Methods

- This prospective, controlled study was conducted from December 2013 to December 2015.
- This study consisted of 40 preterm infants, born at a 26–34 weeks of gestation, at a corrected gestational age 29–36 weeks and randomised them to listen or not listen to a recording of their mother's voice during a painful, routine heel lance for blood collection.
- With the aid of analysis of variance, changes in the infants' Premature Infant Pain Profile, heart rate, oxygen saturation and blood pressure during the procedure were compared.
- Possible side effects, of apnoea, bradycardia, seizures and vomiting, were also recorded.

#### Results

- In investigation, both groups displayed a marked increase in PIPP scores and decrease in oxygen saturation during the procedure, but infants in the treatment group had significantly lower PIPP scores ( $p=0.00002$ ) and lower decreases in oxygen saturation ( $p=0.0283$ ).
- No significant side effects were reported.

**CA supplementation and child bone development**

Bone. 2017 Jun 2. pii: S8756-3282(17)30190-4. doi: 10.1016/j.bone.2017.06.001.

**Long-term effects of maternal calcium supplementation on childhood growth differ between males and females in a population accustomed to a low calcium intake.**

Ward KA<sup>1</sup>, Jarjou L<sup>2</sup>, Prentice A<sup>3</sup>.

## Author information

## Abstract

The importance of adequate calcium intakes for healthy growth and bone development has long been recognised. Recent evidence suggests that calcium supplementation may have sex-specific effects on bone growth in childhood.

The aim was to describe the long-term effects of calcium supplementation in pregnant Gambian women with a low calcium intake (ISCRTN96502494) on offspring height, weight, bone and body composition in childhood, and whether the effects differ by sex. Children of mothers who participated in the original calcium supplementation trial were measured at age 8-12 years using dual-energy X-ray absorptiometry and peripheral quantitative computed tomography. Linear models tested for sex\*supplement interactions before and after adjusting for current age and size in early life. 447 children, aged 9.2(SD 0.9) years, were measured. Significant sex\*supplement interactions ( $p < 0.05$ ) were observed for many of the anthropometric and bone outcomes, Females whose mothers received calcium (F-Ca) were shorter, lighter with smaller bones and less bone mineral than those whose mothers received placebo (F-P), differences (SE) ranged from height = -1.0 (0.5)% to hip BMC -5.5 (2.3)%. Males from mothers in the calcium group (M-Ca) had greater mid-upper arm circumference (MUAC) (+2.0 (1.0)%,  $p = 0.05$ ) and fat mass (+11.6 (5.1)%,  $p = 0.02$ ) and tended towards greater BMC and size than those whose mothers were in the placebo group (M-P). The differences in anthropometry and body composition were robust to adjustment for current height and weight, whereas all bone differences became non-significant. F-P were taller with more BMC than M-P, whereas F-Ca had similar sized bones and mineral content to M-Ca.

Calcium supplementation of pregnant women with low calcium intakes altered the childhood trajectories of growth and bone and body composition development of their offspring in a sex-specific manner, resulting in slower growth among females compared to placebo and accelerated growth among males by age 8-12 years.

**LBP and pregnancy**

Rev. Bras. Anesthesiol. vol.67 no.3 Campinas Mar./June 2017  
http://dx.doi.org/10.1016/j.bjane.2015.08.014

**Low back pain during pregnancy**

Maria Emília Coelho Costa Carvalho<sup>a</sup> Luciana Cavalcanti Lima<sup>a b</sup> Cristovam Alves de Lira Terceiro<sup>a</sup> Deyvid Ravy Lacerda Pinto<sup>a</sup> Marcelo Neves Silva<sup>a</sup> Gustavo Araújo Cozer<sup>a</sup> Tania Cursino de Menezes Couceiro<sup>a c d e f \*</sup>

## ABSTRACT

## Objective:

Low back pain is a common complaint among pregnant women. It is estimated that about 50% of pregnant women complain of some form of back pain at some point in pregnancy or during the postpartum period. The aim of this study was to evaluate the frequency of low back pain during pregnancy and its characteristics.

## Methods:

Cross-sectional study with low-risk pregnant women. After approval by the Human Research Ethics Committee and receiving written informed consent, we included pregnant women over 18 years of age and excluded those with psychiatric disorders, previous lumbar pathologies, and receiving treatment for low back pain.

## Results:

We interviewed 97 pregnant women. The frequency of low back pain was 68%. The mean age was 26.2 years and the median gestational age was 30 weeks. Fifty-eight pregnant women declared themselves as brown (58%). Most (88.6%) were married or living in common-law marriage, 56 (57.7%) worked outside the home, and 71 (73.2%) had completed high school. Low back pain was more frequent during the second trimester of pregnancy (43.9%), referred to as a "burning" sensation in 37.8% of patients, with intermittent frequency in 96.9% of the women. The symptoms got worse at night (71.2%). Resting reduced low back pain in 43.9% of pregnant women, while the standing position for a long time worsened it in 27.2% of patients.

## Conclusion:

Low back pain is common in pregnant women, has specific characteristics, and is more frequent in the second trimester of pregnancy. This indicates the need for prevention strategies that enable better quality of life for pregnant women.

**SI belt helps pain of pregnancy**

J Clin Nurs. 2017 May 25. doi: 10.1111/jocn.13888.

**Pregnancy and pelvic girdle pain: analysis of pelvic belt on pain.**

Bertuit J<sup>1,2</sup>, Van Lint CE<sup>2</sup>, Rooze M<sup>1,3</sup>, Feipel V<sup>1,3</sup>.

**Author information****Abstract****AIMS:**

To analyse pain and functional capacity in women with pelvic girdle pain and to evaluate the effect of pelvic belt on these parameters. Two types of belts were to compare.

**BACKGROUND:**

Pelvic girdle pain is very common during pregnancy. To prevent and relieve pelvic pain, women can use a set of techniques and tools such as a pelvic belt. While scientific evidence is lacking, commercial industries suggest the effectiveness of pelvic belts.

**DESIGN:**

Randomized control trial.

**METHODS:**

Forty-six pregnant women with pelvic girdle pain were evaluated. Pain analysis included a quantitative and a qualitative assessment. A daily activities questionnaire was used for functional capacity evaluation. Women were tested at two times during the pregnancy for a longitudinal evaluation and they used one of two belt models during their pregnancy.

**RESULTS:**

Pelvic pain started between the 14<sup>th</sup> and 21<sup>st</sup> week of pregnancy. Pain intensity was  $60 \pm 20$  mm. Daily activities could increase pain. The use of belts reduced pain. The intensity of pain decreased by 20 mm on a VAS. The daily activities were also easier. However, all these conclusions are valid only if pregnant women used belts regularly on short periods.

**CONCLUSIONS:**

The belts appear to be interesting tools to reduce pelvic pain and improve comfort of pregnant women. This effect might be explained by an analgesic effect with proprioceptive and biomechanical effect. The different types of belts could have differential effects on global, SIJ and back pain during pregnancy, but this hypothesis requires confirmation. This article is protected by copyright. All rights reserved.

**LB massage helps delivery****Effects of low back massage on perceived birth pain and satisfaction**

Complementary Therapies in Clinical Practice

Erdogan SU, et al.

This article was written with the objective to assess the impact of low back massage on perceived birth pain and delivery. It was determined in the study that lower back massage has a significant impact on decreasing labor pain and increasing the satisfaction with birth. Health professionals, who work in the delivery unit, can use massage intervention for reducing pain, shortening delivery time and increasing satisfaction with the birth experience.

**Methods**

- This study was composed as a study–control experimental type.
- Total 62 pregnant women were enrolled in this study sample.
- All the participants were assigned into two group (massage group = 31, control group = 31).
- In this study, massage was applied to the study group in three phases amid intrapartum period.
- The massages were done at the end of latent, active and transition phases (at cervical dilatation 3–4 cm, 5–7 cm, 8–10 cm) correspondingly.
- The VAS scores were assessed three times amid all phases.

**Results**

- In this study, they observed the first mean VAS score was  $5.2 \pm 0.9$  and  $7.3 \pm 1.3$  for massage and control groups, respectively.
- Second VAS score was found as  $6.6 \pm 1.6$  in massage group and  $8.8 \pm 1.0$  in control group.
- The third VAS score was significantly higher in the control group than massage group amid third assessment ( $9.2 \pm 2.4$  vs  $6.7 \pm 2.7$ ) ( $p < 0.05$ ).
- The mean duration of second stage was  $24.6 \pm 12.7$  min in massage group and  $31.7 \pm 20.9$  min in control group ( $p > 0.05$ ).
- The mean scores of satisfaction about delivery were found as  $8.8 \pm 0.7$  in massage group and  $6.9 \pm 0.8$  in control group ( $p < 0.05$ ).



## 8. VISCERA

### Exercise impact on GI function

Aliment Pharmacol Ther. 2017 Jun 7. doi: 10.1111/apt.14157.

#### **Systematic review: exercise-induced gastrointestinal syndrome-implications for health and intestinal disease.**

Costa RJS<sup>1</sup>, Snipe RMJ<sup>1</sup>, Kitic CM<sup>2</sup>, Gibson PR<sup>3</sup>.

Author information

Abstract

#### **BACKGROUND:**

"Exercise-induced gastrointestinal syndrome" refers to disturbances of gastrointestinal integrity and function that are common features of strenuous exercise.

#### **AIM:**

To systematically review the literature to establish the impact of acute exercise on markers of gastrointestinal integrity and function in healthy populations and those with chronic gastrointestinal conditions.

#### **METHODS:**

Search literature using five databases (PubMed, EBSCO, Web of Science, SPORTSdiscus, and Ovid Medline) to review publications that focused on the impact of acute exercise on markers of gastrointestinal injury, permeability, endotoxaemia, motility and malabsorption in healthy populations and populations with gastrointestinal diseases/disorders.

#### **RESULTS:**

As exercise intensity and duration increases, there is considerable evidence for increases in indices of intestinal injury, permeability and endotoxaemia, together with impairment of gastric emptying, slowing of small intestinal transit and malabsorption. The addition of heat stress and running mode appears to exacerbate these markers of gastrointestinal disturbance. Exercise stress of  $\geq 2$  hours at 60%  $VO_{2max}$  appears to be the threshold whereby significant gastrointestinal perturbations manifest, irrespective of fitness status. Gastrointestinal symptoms, referable to upper- and lower-gastrointestinal tract, are common and a limiting factor in prolonged strenuous exercise. While there is evidence for health benefits of moderate exercise in patients with inflammatory bowel disease or functional gastrointestinal disorders, the safety of more strenuous exercise has not been established.

#### **CONCLUSIONS:**

Strenuous exercise has a major reversible impact on gastrointestinal integrity and function of healthy populations. The safety and health implications of prolonged strenuous exercise in patients with chronic gastrointestinal diseases/disorders, while hypothetically worrying, has not been elucidated and requires further investigation.

**Heart pain**

BMJ Open. 2017 May 25;7(5):e015857. doi: 10.1136/bmjopen-2017-015857.

**Chest pain and shortness of breath in cardiovascular disease: a prospective cohort study in UK primary care.**

Barnett LA<sup>1</sup>, Prior JA<sup>1</sup>, Kadam UT<sup>2</sup>, Jordan KP<sup>1</sup>.

Author information

Abstract

**OBJECTIVE:**

To determine characteristics associated with monthly chest pain and shortness of breath (SoB) during activity in cardiovascular disease (CVD) and trajectories of these symptoms over 10 months.

**STUDY DESIGN AND SETTING:**

Baseline questionnaire was sent to patients aged  $\geq 40$  years from 10 UK general practices. Responders were sent monthly questionnaires for 10 months. For patients with CVD (ischaemic heart disease and heart failure), the association of sociodemographic characteristics, pain elsewhere and anxiety and depression with monthly reports of chest pain and SoB during activity were determined using multilevel, multinomial logistic regression. Common symptom trajectories were determined using dual trajectory latent class growth analysis.

**RESULTS:**

661 patients with CVD completed at least 5 monthly questionnaires. Multiple other pain sites (relative risk ratio: 4.03; 95% CI 1.64 to 9.91) and anxiety or depression (relative risk ratio: 3.31; 95% CI 1.89 to 5.79) were associated with reporting weekly chest pain. Anxiety or depression (relative risk ratio: 4.10; 95% CI 2.72 to 6.17), obesity (relative risk ratio: 2.53; 95% CI 1.49 to 4.30), older age (80+: relative risk ratio: 2.51; 95% CI 1.19 to 5.26), increasing number of pain sites (4+: relative risk ratio: 4.64; 95% CI 2.35 to 9.18) and female gender (relative risk ratio: 1.81; 95% CI 1.20 to 2.75) were associated with reporting weekly SoB. Eight symptom trajectories were identified, with SoB symptoms more common than chest pain.

**CONCLUSIONS:**

Potentially modifiable characteristics are associated with the experience of chest pain and SoB. Identified symptom trajectories may facilitate tailored care to improve outcomes in patients with CVD.

## Prebiotics

**Prebiotic Reduces Body Fat and Alters Intestinal Microbiota in Children With Overweight or Obesity**

Alissa C. Nicolucci Megan P. Hume Inés Martínez Shyamchand Mayengbam  
Jens Walter Raylene A. Reimer \

DOI: <http://dx.doi.org/10.1053/j.gastro.2017.05.055>

**Abstract****Background & Aims**

It might be possible to manipulate the intestinal microbiota with prebiotics or other agents to prevent or treat obesity. However, little is known about the ability of prebiotics to specifically modify gut microbiota in children with overweight/obesity or reduce body weight. We performed a randomized controlled trial to study the effects of prebiotics on body composition, markers of inflammation, bile acids in fecal samples, and composition of the intestinal microbiota in children with overweight or obesity.

**Methods**

We performed a single-center, double-blind, placebo-controlled, trial of 2 separate cohorts (March 2014 and August 2014) at the University of Calgary in Canada. Participants included children, 7 – 12 years old, with overweight or obesity (>85th percentile of body mass index) but otherwise healthy. Participants were randomly assigned to groups given either oligofructose-enriched inulin (OI, 8 g/day; n=22) or maltodextrin placebo (isocaloric dose, controls; n=20) once daily for 16 weeks. Fat mass and lean mass were measured using dual-energy-x-ray absorptiometry. Height, weight, and waist circumference were measured at baseline and every 4 weeks thereafter. Blood samples were collected at baseline and 16 weeks, and analyzed for lipids, cytokines, lipopolysaccharide, and insulin. Fecal samples were collected at baseline and 16 weeks; bile acids were profiled using high-performance liquid chromatography and the composition of the microbiota was analyzed by 16S rRNA sequencing and quantitative PCR. The primary outcome was change in percent body fat from baseline to 16 weeks.

**Results**

After 16 weeks, children who consumed OI had significant decreases in body weight z-score (decrease of 3.1%), percent body fat (decrease of 2.4%), and percent trunk fat (decrease of 3.8%) compared to children given placebo (increase of 0.5%, increase of 0.05%, and decrease of 0.3%, respectively). Children who consumed OI also had a significant reduction in level of interleukin 6 (IL6) from baseline (decrease of 15%) compared with the placebo group (increase in 25%). There was a significant decrease in serum triglycerides (decrease of 19%) in the OI group. Quantitative PCR showed a significant increase in *Bifidobacterium* spp. in the OI group compared with controls. 16S rRNA sequencing revealed significant increases in species of the genus *Bifidobacterium* and decreases in *Bacteroides vulgatus* within the group who consumed OI. In fecal samples, levels of primary bile acids increased in the placebo group but not in the OI group over the 16-week study period.

**Conclusions**

In a placebo-controlled, randomized trial, we found a prebiotic (OI) to selectively alter the intestinal microbiota and significantly reduce body weight z-score, percent body fat, percent trunk fat, and serum level of IL6 in children with overweight or obesity. Clinicaltrials.gov no: NCT02125955.

**IBS and intestinal infection**

Gut. 2017 Jun 10. pii: gutjnl-2017-313713. doi: 10.1136/gutjnl-2017-313713.

**Incidence of irritable bowel syndrome and chronic fatigue following GI infection: a population-level study using routinely collected claims data.**

Donnachie E<sup>1</sup>, Schneider A<sup>2</sup>, Mehring M<sup>2</sup>, Enck P<sup>3</sup>.

**Author information****Abstract****OBJECTIVES:**

To investigate the occurrence of postinfectious IBS in routine outpatient care, comparing different types of GI infection and its interaction with psychosomatic comorbidity.

**DESIGN:**

Retrospective cohort study using routinely collected claims data covering statutorily insured patients in Bavaria, Germany. Cases were defined as patients without prior record of functional intestinal disorder with a first-time diagnosis of GI infection between January 2005 and December 2013 and classed according to the type of infection. Each case was matched by age, sex and district of residence to a patient without history of GI infection. Prior psychological disorder (depression, anxiety or stress reaction disorder) was assessed in the 2 years prior to inclusion. Proportional hazards regression models were used to estimate the HRs for GI infection and psychological disorder. Chronic fatigue syndrome (CFS) was assessed as a comparator outcome.

**RESULTS:**

A total of 508 278 patients with first diagnosis of GI infection were identified, resulting in a matched cohort of 1 016 556 patients. All infection types were associated with an increased risk of IBS (HR: 2.19-4.25) and CFS (HR 1.35-1.82). Prior psychological disorder was a distinct risk factor for IBS (HR: 1.73) and CFS (HR: 2.08). Female sex was a further risk factor for both conditions.

**CONCLUSION:**

Psychological disorder and GI infections are distinct risk factors for IBS. The high incidence of non-specific GI infection suggests that postinfectious IBS is a common clinical occurrence in primary care. Chronic fatigue is a further significant sequela of GI infection.

## 14. HEADACHES

### Suicide

Clin J Pain. 2017 Jul;33(7):659-665. doi: 10.1097/AJP.0000000000000440.

#### **A Systematic Review and Meta-Analysis of Migraine and Suicidal Ideation.**

Friedman LE<sup>1</sup>, Gelaye B, Bain PA, Williams MA.

Author information

Abstract

#### *BACKGROUND:*

Previous studies have demonstrated an association between migraine and major depressive disorder. However, relatively little is known about the relationship between suicidal ideation, with or without concurrent depression, and migraine.

#### *OBJECTIVE:*

We conducted a systematic literature review to synthesize the available research focused on investigating the association of migraine with suicidal ideation.

#### *METHODS:*

Relevant research papers were identified through searches of major electronic databases including PubMed, Embase (Elsevier), Web of Science (Thomson Reuters), PsycINFO (EBSCO), and Google Scholar. We performed a meta-analysis to estimate the pooled unadjusted and adjusted odds ratios (ORs) and 95% confidence intervals (95% CI) for the association between migraine and suicidal ideation extracted from each study.

#### *RESULTS:*

A total of 148,977 participants in 6 studies were included in this analysis. Overall, findings from available studies documented elevated odds of suicidal ideation among individuals with migraines. In unadjusted models, the odds of suicidal ideation was 2.49-fold higher among individuals with migraine (OR, 2.49; 95% CI, 2.34-2.65) compared with those without migraine. In multivariate-adjusted models, the pooled adjusted OR of suicidal ideation was 1.31 (OR, 1.31; 95% CI, 1.10-1.55).

#### *CONCLUSIONS:*

A meta-analysis of available studies suggests a modest positive association between migraine and suicidal ideation. Further studies allowing for a more comprehensive investigation of the association between migraine and the full range of suicidal behaviors are warranted. A larger and more robust evidence-base may be useful to inform the clinical screening and diagnoses of comorbid conditions in migraineurs.

**Altitude effects**

Eur J Neurol. 2017 May 29. doi: 10.1111/ene.13334.

**Migraine associated with altitude: results from a population-based study in Nepal.**

Linde M<sup>1,2</sup>, Edvinsson L<sup>3</sup>, Manandhar K<sup>1,4</sup>, Risal A<sup>1,4</sup>, Steiner TJ<sup>1,5</sup>.

Author information

Abstract

**BACKGROUND AND PURPOSE:**

A 1988 pilot study in Peru suggested an association between migraine and chronic exposure to high altitude. This study provides epidemiological evidence corroborating this.

**METHODS:**

In a cross-sectional nationwide population-based study, a representative sample of Nepali-speaking adults were recruited through stratified multistage cluster sampling. They were visited at home by trained interviewers using a culturally adapted questionnaire. The altitude of dwelling of each participant was recorded.

**RESULTS:**

Of 2100 participants, over half [1100 (52.4%)] were resident above 1000 m and almost one quarter [470 (22.4%)] at  $\geq 2000$  m. Age- and gender-standardized migraine prevalence increased from 27.9% to 45.5% with altitude between 0 and 2499 m and thereafter decreased to 37.9% at  $\geq 2500$  m. The likelihood of having migraine was greater (odds ratio, 1.5-2.2;  $P \leq 0.007$ ) at all higher altitudes compared with  $< 500$  m. In addition, all symptom indices increased with altitude across the range  $< 500$  m to 2000-2499 m, i.e. median attack frequency from 1.3 to 3.0 days/month ( $P < 0.001$ ), median duration from 9 to 24 h ( $P < 0.001$ ) and pain intensity [the proportion reporting 'bad pain' (highest intensity)] from 35.5% to 56.9% ( $P = 0.011$ ). Each of these showed a downward trend above 2500 m.

**CONCLUSIONS:**

Dwelling at high altitudes increases not only migraine prevalence but also the severity of its symptoms.

## Deep pressure

Eur J Pain. 2017 Jun 2. doi: 10.1002/ejp.1065.

**Assessment of deep dynamic mechanical sensitivity in individuals with tension-type headache: The dynamic pressure algometry.**

Palacios-Ceña M<sup>1,2</sup>, Wang K<sup>2</sup>, Castaldo M<sup>2,3,4</sup>, Guerrero-Peral Á<sup>5</sup>, Caminero AB<sup>6</sup>, Fernández-de-Las-Peñas C<sup>1,2</sup>, Arendt-Nielsen L<sup>2</sup>.

Author information

Abstract

**BACKGROUND:**

To explore the validity of dynamic pressure algometry for evaluating deep dynamic mechanical sensitivity by assessing its association with headache features and widespread pressure sensitivity in tension-type headache (TTH).

**METHODS:**

One hundred and eighty-eight subjects with TTH (70% women) participated. Deep dynamic sensitivity was assessed with a dynamic pressure algometry set (Aalborg University, Denmark<sup>®</sup>) consisting of 11 different rollers including fixed levels from 500 g to 5300 g. Each roller was moved at a speed of 0.5 cm/s over a 60-mm horizontal line covering the temporalis muscle. Dynamic pain threshold (DPT-level of the first painful roller) was determined and pain intensity during DPT was rated on a numerical pain rate scale (NPRS, 0-10). Headache clinical features were collected on a headache diary. As gold standard, static pressure pain thresholds (PPT) were assessed over temporalis, C5/C6 joint, second metacarpal, and tibialis anterior muscle.

**RESULTS:**

Side-to-side consistency between DPT ( $r = 0.843$ ,  $p < 0.001$ ) and pain evoked ( $r = 0.712$ ;  $p < 0.001$ ) by dynamic algometer was observed. DPT was moderately associated with widespread PPTs ( $0.526 > r > 0.656$ , all  $p < 0.001$ ). Furthermore, pain during DPT was negatively associated with widespread PPTs ( $-0.370 < r < -0.162$ , all  $p < 0.05$ ).

**DISCUSSION:**

Dynamic pressure algometry was a valid tool for assessing deep dynamic mechanical sensitivity in TTH. DPT was associated with widespread pressure sensitivity independently of the frequency of headaches supporting that deep dynamic pressure sensitivity within the trigeminal area is consistent with widespread pressure sensitivity. Assessing deep static and dynamic somatic tissue pain sensitivity may provide new opportunities for differentiated diagnostics and possibly a new tool for assessing treatment effects.

**SIGNIFICANCE:**

The current study found that dynamic pressure algometry in the temporalis muscle was associated with widespread pressure pain sensitivity in individuals with tension-type headache. The association was independent of the frequency of headaches. Assessing deep static and dynamic somatic tissue pain sensitivity may provide new opportunities for differentiated diagnostics and possibly a tool for assessing treatment effects.

## 16. CONCUSSIONS

### Brain changes

#### **Mild traumatic brain injury is associated with increased levels of axonal injury biomarkers in blood**

British Journal of Sports Medicine Shahim P, et al.

This research ascertained if the sports-related concussion correlated with elevated blood biomarkers reflecting axonal injury (total-tau [T-tau], [tau-A] and [tau-C]) and astroglial injury (S100B), along with neurons-specific enolase (NSE). The data illustrated that sports-related concussion in professional ice hockey players was linked with acute axonal and injury. Plasma T-tau could be valuable for the diagnosis and clinical decision-making when an athlete was declared fit to resume the play.

#### Methods

- The design of this research was a multicenter prospective cohort study.
- It comprised of all 12 teams of the top professional ice hockey league, in Sweden.
- The enrollment constituted a sum of 288 players, agreeing to take part in this research.
- Thirty-five players sustained concussions, of whom 28 underwent repeated blood samplings at 1, 12, 36, and 144 hours after the trauma, or when the player returned to play (7->90 days).
- The main measure was the concentrations of T-tau was, tau-A, tau-C, S100B and NSE in blood.

#### Results

- Players with sports-related concussion demonstrated increased levels of the axonal injury biomarker T-tau, compared to the preseason values.
- The highest biomarker concentrations of T-tau were estimated, immediately following a concussion and decreased during rehabilitation.
- No prominent increase was observed in the levels of tau-A, in post-concussion samples compared with preseason values.
- Nevertheless, serum levels of tau-C appeared to be markedly higher in the post-concussion samples, compared with preseason.
- In addition, the levels of the astroglial injury biomarker S100B were raised in players with sports-related concussion instead of the preseason values.
- There appeared to be no prominent variations in the levels of NSE.



**Micro RNA biomarker****Circulating microRNA as novel early biomarker of concussion in elite athletes**

British Journal of Sports Medicine Zhangjie SU, et al.

sponsor

The role of microRNAs, in early and late evaluations of concussed athletes, was comprehensively examined during this research. The findings indicated that miR-425-5p was down-regulated in the early phase, after the sport concussion. It attained normal levels in the late period, thereby pointing that it was possibly a unique microRNA signature for the concussion. Hence, miR-425-5p was presented as a promising biomarker for early analysis of concussion and for monitoring its recovery. Additional research would establish the time course of miR-425-5p normalisation, after the concussion.

**Methods**

- This trial was a prospective observational case control study.
- It was performed at the University research centre, single centre.
- The eligible candidates included 15 concussed athletes divided into 2 groups: Group A (n=9, assessed within a week post-concussion, median 4 days) and B (n=6, assessed over 2 weeks, median 31 days); and 8 age-matched healthy volunteers. Inclusion criteria: male/female elite athletes in contact sports (aged 18-40) who suffered concussion(s) in the games, and being symptomatic with normal neuro-radiological findings at enrolment.
- The main measure was set as levels of microRNAs (miR-21, miR-335, miR-425-5p, and miR-502) being estimated, in blood samples received from all the members.

**Results**

- The miR425-5p was markedly down-regulated in Group A compared with Group B and healthy volunteers (grouping effect  $p=0.014$ ; post hoc tests  $p=0.009$  and  $0.028$ , respectively).
- The level of miR425-5p was associated with the interval between the analysis and concussion ( $r^2=0.88$ ,  $p<0.001$ ).
- There were no variations in other microRNA evaluated between the groups.

**20 A. ROTATOR CUFF****Improved results with surgery**

Knee Surg Sports Traumatol Arthrosc. 2017 May 19. doi: 10.1007/s00167-017-4564-0.

**Improved outcomes with arthroscopic repair of partial-thickness rotator cuff tears: a systematic review.**

Katthagen JC<sup>1,2</sup>, Bucci G<sup>3</sup>, Moatshe G<sup>1,4,5</sup>, Tahal DS<sup>1</sup>, Millett PJ<sup>6,7</sup>.

*PURPOSE:*

The optimum treatment strategy for the surgical management of partial-thickness rotator cuff tears (PTRCT) is evolving. In this study, two research questions were sought to be answered: "Does the repair technique for PTRCTs involving >50% of the tendon thickness have an effect on structural and functional outcomes of arthroscopic repair?" and "Is there a difference in outcomes of arthroscopically treated articular- and bursal-sided PTRCTs?".

*METHODS:*

A systematic review according to the PRISMA statement was conducted to identify all literature published reporting on outcomes of arthroscopic treatment of PTRCTs classified with the Ellman classification with minimum 2-year follow-up. Prospective randomized trials were eligible for quantitative synthesis. A total of 19 studies, published between 1999 and 2015, met the inclusion criteria of this systematic review. Two studies reporting outcomes of articular-sided PTRCTs with prospective randomized study design were included in quantitative synthesis calculations.

*RESULTS:*

Arthroscopic repair of PTRCTs >50% thickness results in significant pain relief and good to excellent functional outcomes. When in situ repair was compared with repair of the tendon after completion to full-thickness RCT, there were no significant differences in functional or structural outcomes or complication rates. The best treatment method for low-grade PTRCTs remains unclear.

*CONCLUSIONS:*

The repair technique (in situ repair versus repair of the tendon after completion to full-thickness RCT) did not significantly affect the outcomes for arthroscopic repair of PTRCTs >50% thickness. The current literature contains evidence for inferior outcomes and higher failure rates after arthroscopic debridement of bursal-sided compared to articular-sided PTRCTs, and some evidence suggests that repair of lower-grade bursal-sided tears may be beneficial over debridement.

*LEVEL OF EVIDENCE: IV.*

## Genetics and RCT

Clin Orthop Relat Res. 2017 Jul;475(7):1904-1910. doi: 10.1007/s11999-017-5271-3. Epub 2017 Feb 3.

### Matrix Metalloproteases 1 and 3 Promoter Gene Polymorphism Is Associated With Rotator Cuff Tear.

Assunção JH<sup>1</sup>, Godoy-Santos AL<sup>2</sup>, Dos Santos MCLG<sup>3</sup>, Malavolta EA<sup>2</sup>, Gracitelli MEC<sup>2</sup>, Ferreira Neto AA<sup>2</sup>.

#### BACKGROUND:

Studies suggest that the collagen degeneration and disordered arrangement of collagen fibers in rotator cuff tears are associated with an increase in activity of matrix metalloproteases 1 and 3 (MMP-1 and MMP-3), and that MMP activity may be in part genetically mediated. The degree to which this might be clinically relevant in patients with rotator cuff tears has not been well characterized.

#### QUESTIONS/PURPOSES:

(1) Is genetic polymorphism of MMP-1 and MMP-3 associated with rotator cuff tears? (2) Are there haplotypes of MMP-1 and MMP-3 correlated with rotator cuff tears? (3) Compared with control subjects, do patients with rotator cuff tears have a higher proportion of relatives with the same disease?

#### METHODS:

We evaluated 64 patients with full-thickness rotator cuff tears and 64 asymptomatic control subjects. Patients younger 65 years, with nontraumatic tears, were included. The tear or integrity of the rotator cuff tear was evaluated by MRI or ultrasonography in all individuals. The patients and control subjects were paired by age. MMP-1 and MMP-3 genotypes were determined using the PCR-restriction fragment length polymorphism assays.

#### RESULTS:

Genetic polymorphisms in MMP-1 and MMP-3 are associated with rotator cuff tear, in which individuals with rotator cuff tears have associated genotypes 1G/2G (patients, 32 of 64 [50%], control subjects, 16 of 64 [25%]; odds ratio [OR], 4.8; 95% CI, 2.1-11.0;  $p < 0.001$ ) and 2G/2G were at great risk (patients, 15 of 64 [23%], control subjects, seven of 64 [11%]; OR, 5.2; 95% CI, 1.8-14.9;  $p < 0.001$ ), and patients with rotator cuff tears were associated with a higher proportion of 2G allele distribution (62 of 128 [48%] versus 30 of 128 [23%];  $p < 0.001$ ). Patients with the 5A/5A genotype are at greater risk of rotator cuff tear (patients, 15 of 64 [23%]; control subjects, four of 64 [6%]; OR, 5.5; 95% CI, 1.4-20.9;  $p = 0.021$ ), and there was higher 5A allele distribution in patients with rotator cuff tears (patients, 68 of 128 [53%]; control subjects, 52 of 128 [41%];  $p = 0.045$ ). Individuals with the haplotype 2G/5A were more likely to have rotator cuff tears develop (patients, 42 of 64 [66%]; control subjects, 17 of 64 [27%]; OR, 5.3; 95% CI, 2.5-11.3;  $p < 0.001$ ). Patients with rotator cuff tears reported, in higher number, the existence of relatives who previously had treatment for rotator cuff tears (19 of 64 [30%] versus four of 64 [6%]; OR, 6.3; 95% CI, 2.0-19.9;  $p = 0.001$ ).

#### CONCLUSIONS:

The genetic polymorphism of MMP-1 and MMP-3 is associated with rotator cuff tear. Individuals with haplotype 2G/5A were more susceptible to rotator cuff tears in the population studied.

#### CLINICAL RELEVANCE:

Knowledge of the genetic markers related to rotator cuff tears can enable identification of susceptible individuals and increase understanding of the pathogenesis of tendon degeneration.

**Critical shoulder angle and tears****June 2017** Volume 33, Issue 6, Supplement, Page e4**Higher Critical Shoulder Angle Increases the Risk of Re-tear after Rotator Cuff Repair**Christine Johnson, M.D. Grant Garcia, M.D. Joseph Liu, M.D. Ryan Degen, M.D., M.Sc.,  
F.R.C.S.C. Lawrence Gulotta, M.D. Joshua Dines, M.D.

SS-09 May 18, 2017, 9:25 AM

DOI: <http://dx.doi.org/10.1016/j.arthro.2017.04.032>

No evaluation has been done on CSAs relationship with re-tear after repair. Our purpose was to evaluate if higher CSA is associated with re-tears after rotator cuff repair (RCR).

**Methods**

This was a retrospective review of 76 patients who had undergone RCR with postoperative ultrasounds. Ultrasounds were graded no re-tear (NT), partial thickness re-tear (PT) or full thickness re-tear (FT). Preoperative radiographs were used to measure CSA, glenoid inclination (GI), lateral acromial angle (LAA) and acromion index (AI).

**Results**

Average age was 61.9 yrs (45.3-74.9). On ultrasound, 57 shoulders (74.0%) had NT, 11 (14.2%) had PT, and 8 (10.3%) had FT. There was no significant difference in re-tear rate by age, gender or tension of repair. Average CSA for the NT group was significantly lower at  $34.3 \pm 2.9$  deg than FT group at  $38.6 \pm 3.5$  deg ( $P < 0.01$ ). If CSA was greater than 38 degrees the odds ratio of having a full thickness re-tear was 14.8 ( $p < 0.01$ ). In addition, higher CSA inversely correlated with postoperative ASES scores ( $p < 0.03$ ). Average glenoid Inclination was significantly lower in the NT group at  $12.3 \pm 2.7$  deg compared to  $17.3 \pm 2.6$  deg in the FT group ( $p < 0.01$ ). If glenoid inclination was greater than 14 degrees the odds ratio of having developing a FT re-tear was 15.0 ( $p < 0.01$ ).

**Conclusion**

At short-term follow up, higher CSA significantly increased the risk of a full thickness re-tear after rotator cuff repair. Also, increasing CSA correlated with worse postoperative ASES scores. This radiograph marker may help manage expectations for rotator cuff tear patients.

## 26. CARPAL TUNNEL SYNDROME

### Acupuncture

#### **The acupuncture effect on median nerve morphology in patients with carpal tunnel syndrome: An ultrasonographic study**

Evidence-based Complementary and Alternative Medicine

Ural FG, et al.

This article was written with the objective to investigate the acupuncture impact on the cross-sectional area (CSA) of the median nerve at the wrist in patients with carpal tunnel syndrome (CTS) and, also, to distinguish whether clinical, electrophysiological, and ultrasonographic changes demonstrate any association. After acupuncture therapy, the patients with CTS might have both clinical and morphological improvement.

#### Methods

- For this research, they conducted an ultrasonographic study.
- 45 limbs of 27 female patients were arbitrarily partitioned into two groups (acupuncture and control).
- In this study, all patients utilized night wrist splint. In the acupuncture group, patients received additional acupuncture therapy.
- Visual analog scale (VAS), Duruöz Hand Index (DHI), Quick Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire scores, electrophysiologic measurements, and median nerve CSAs were noted before and after the treatment in both groups,

#### Results

- The current study showed that the VAS, DHI, Quick DASH scores, and electrophysiological measurements were enhanced in both groups.
- In this study, the median nerve CSA significantly reduced in the acupuncture group, whereas there was no change in the control group.

**27. HIP****Hip morphology differences**

Eur Radiol. 2017 Jul;27(7):3042-3049. doi: 10.1007/s00330-016-4667-x. Epub 2016 Dec 12.

**Bony morphology of the hip in professional ballet dancers compared to athletes.**

Mayes S<sup>1,2</sup>, Ferris AR<sup>3</sup>, Smith P<sup>4</sup>, Garnham A<sup>5</sup>, Cook J<sup>6</sup>.

Author information

Abstract

**OBJECTIVES:**

To compare hip bony morphology between ballet dancers and a sporting control group and to determine the relationship with hip pain.

**METHODS:**

Thirty-three professional ballet dancers and 33 age- and sex-matched athletes completed questionnaires, including the Copenhagen Hip and Groin Outcome Score (HAGOS), and underwent clinical testing and 3.0-T magnetic resonance imaging to measure acetabular coverage with lateral centre edge angles, femoral head-neck junction concavity with alpha angles at anterior and superior positions, femoral neck-shaft angles, and acetabular version angles.

**RESULTS:**

Bony morphological measures fell within normal ranges. Dancers had higher neck-shaft angles (dancers  $134.6 \pm 4.6^\circ$ /athletes  $130.8 \pm 4.7^\circ$ ,  $p = 0.002$ ), lower acetabular version angles ( $13.5 \pm 4.7^\circ/17.1 \pm 4.7^\circ$ ,  $p = 0.003$ ), lower superior alpha angles ( $38.9 \pm 6.9^\circ/46.7 \pm 10.6^\circ$ ,  $p < 0.001$ ), similar anterior alpha angles ( $43.6 \pm 8.1/46 \pm 7^\circ$ ,  $p = 0.2$ ), and similar lateral centre edge angles ( $28.8 \pm 4.6^\circ/30.8 \pm 4.5^\circ$ ,  $p = 0.07$ ) compared to athletes. Abnormal morphology was detected in dancers: 3% acetabular dysplasia (athletes 0), 15% borderline dysplasia (6%), 24% cam morphology (33%), 24% coxa valga (6%), and 21% acetabular retroversion (18%). The HAGOS pain scores correlated moderately with acetabular version ( $r = -0.43$ ,  $p = 0.02$ ) in dancers, with no other correlation between pain and morphological parameters in either group.

**CONCLUSIONS:**

Professional ballet dancers have hip bony morphology that differentiates them from athletes. Hip pain correlated poorly with bony morphology.

**KEY POINTS:**

- Ballet dancers have hip bony morphology that may allow extreme hip motion.
- Morphological parameter means fell within normal reference intervals in dancers.
- Bony morphology correlates poorly with hip pain.
- The risk of hip injury due to abnormal morphology requires prospective studies.

**31. KNEE****Fibular head**

Osteoarthritis Cartilage. 2017 Jun 2. pii: S1063-4584(17)31022-1. doi: 10.1016/j.joca.2017.05.013. [Epub ahead of print]

**Associations between proximal tibiofibular joint types and knee osteoarthritic changes in older adults.**

Lu M<sup>1</sup>, Han W<sup>2</sup>, Wang K<sup>3</sup>, Zhu Z<sup>2</sup>, Antony B<sup>2</sup>, Cicuttini F<sup>4</sup>, Yin Z<sup>5</sup>, Jones G<sup>2</sup>, Ding C<sup>6</sup>.

**Author information****Abstract****PURPOSE:**

To describe the cross-sectional associations between proximal tibiofibular joint (PTFJ) type configurations and knee joint structural abnormalities in older adults.

**METHODS:**

A total of 967 community-based participants were studied. T1-weighted fat-suppressed MRI with spoiled gradient recalled echo sequence was utilized to assess the PTFJ type configurations. Knee cartilage volume, cartilage defects, bone marrow lesions and osteophytes were measured. Linear regression and binary logistic regression analyses were used to examine the associations between PTFJ type configurations and knee joint cartilage volume as well as knee structural abnormalities, respectively, after adjustment for potential confounders.

**RESULTS:**

Seven PTFJ types including plane (49.4%), trochoid (31.9%), double trochoid (4.3%), saddle (5.4%), condylar (5.3%), trochlear (3.5%) and ball & socket (0.2%) were observed. Plane type was used as the comparator. In multivariable analyses, irregular joint types (comprising the five uncommon joint types) were associated negatively with cartilage volume, and positively with knee cartilage defects, bone marrow lesions and osteophytes in the lateral (but not medial) compartments. In contrast, trochoid type was only associated with reduced femoral cartilage volume, but not with knee cartilage defects, bone marrow lesions and osteophytes.

**CONCLUSIONS:**

Irregular PTFJ joint shapes are associated with osteoarthritic changes in the lateral, but not medial, tibiofemoral compartment in older adults. The causal relationship needs to be examined in future longitudinal studies.

**32 A. KNEE/ACL****Kinesio taping helps pain**

Clin J Sport Med. 2017 May;27(3):260-265. doi: 10.1097/JSM.0000000000000345.

**Does Kinesiology Taping Improve the Early Postoperative Outcomes in Anterior Cruciate Ligament Reconstruction? A Randomized Controlled Study.**

Chan MC<sup>1</sup>, Wee JW, Lim MH.

Author information

Abstract

**OBJECTIVE:**

The efficacy of kinesiology taping in arthroscopic knee surgery has not been reported. The objective of this study is to investigate the efficacy of kinesiology taping in the early postoperative phase after anterior cruciate ligament reconstruction (ACLR). We hypothesized that kinesiology taping reduces knee pain and swelling and improves knee range of movement and functional outcome.

**DESIGN:**

Randomized controlled study.

**SETTING:**

Primary Institutional Hospital.

**PATIENTS:**

Sixty subjects who underwent an elective ACLR with or without concurrent meniscectomy were randomized into intervention (with kinesiology taping postsurgery) and control groups.

**INTERVENTIONS:**

Subjects from both groups received standardized postoperative physiotherapy. Subjects from the intervention group received additional kinesiology taping on the first and second weeks postsurgery, each application lasting 5 days.

**MAIN OUTCOME MEASURES:**

Pain visual analogue score (VAS), total range of motion (ROM) of the knee, Lysholm-Tegner scale, and mid patella circumferential girth were measured before the surgery and at the first, second, and sixth week postsurgery.

**RESULTS:**

Within each group, statistically significant differences were found in all study parameters in both groups. Comparison of the study parameters between both groups revealed no statistical significance at various time points except the reduction of pain in the taping group in the early postoperative phase (between the first and second week) ( $P < 0.05$ ).

**CONCLUSIONS:**

This is the first randomized controlled study investigating the efficacy of kinesiology taping in arthroscopic knee surgery. Our study showed that kinesiology taping reduced pain in the early postoperative period after ACLR. There was no statistical significance in the reduction of swelling or improvement of knee score and total range of motion with kinesiology taping.



**32 B. KNEE/PCL****Conservative care of tears**

Bone Joint J. 2017 Jun;99-B(6):774-778. doi: 10.1302/0301-620X.99B6.37953.

**Successful return to sports in athletes following non-operative management of acute isolated posterior cruciate ligament injuries: medium-term follow-up.**

Agolley D<sup>1</sup>, Gabr A<sup>2</sup>, Benjamin-Laing H<sup>2</sup>, Haddad FS<sup>3</sup>.

Author information

Abstract

*AIMS:*

The aim of this study was to report the outcome of the non-operative treatment of high-grade posterior cruciate ligament (PCL) injuries, particularly Hughston grade III injuries, which have not previously been described.

*PATIENTS AND METHODS:*

This was a prospective study involving 46 consecutive patients who were athletes with MRI-confirmed isolated PCL injuries presenting within four weeks of injury. All had Hughston grade II (25 athletes) or III (21 athletes) injuries. Our non-operative treatment regimen involved initial bracing, followed by an individualised rehabilitation programme determined by the symptoms and physical signs. The patients were reviewed until they had returned to sports-specific training, and were reviewed again at a mean of 5.2 years (3 to 9).

*RESULTS:*

The mean time to return to sports-specific training was 10.6 weeks and the mean time to return to full competitive sport was 16.4 weeks (10 to 40). A total of 42 patients (91.3%) were playing at the same or higher level of sport two years after the injury, with a mean Tegner activity score of 9 (5 to 10). At five years, 32 patients (69.5%) were playing at the same or higher level of sport, and 38 patients (82.6%) were playing at a competitive level, with a mean Tegner activity score of 9 (5 to 10).

*CONCLUSIONS:*

Medium-term review of a series of athletes suggests that commencing the non-operative management of isolated, Hughston grade II and III PCL injuries within four weeks of injury gives excellent functional outcomes with a high proportion returning to the same or higher level of sport. Cite this article: *Bone Joint J* 2017;99-B:774-8.

**37. OSTEOARTHRITIS/KNEE****Alignment**

Gait Posture. 2017 May 24;57:46-51. doi: 10.1016/j.gaitpost.2017.05.024.

**Dynamic and static knee alignment at baseline predict structural abnormalities on MRI associated with medial compartment knee osteoarthritis after 2 years.**

Mahmoudian A<sup>1</sup>, van Dieën JH<sup>2</sup>, Bruijn SM<sup>3</sup>, Baert IAC<sup>4</sup>, Faber GS<sup>5</sup>, Luyten FP<sup>6</sup>, Verschueren SMP<sup>7</sup>.

Author information

Abstract

**BACKGROUND:**

Dynamic and static varus alignment, both, have been reported as risk factors associated with structural progression of knee osteoarthritis. However the association of none of the static and dynamic alignment with structural, clinical, and functional progression associated with knee osteoarthritis has not been assessed yet in a longitudinal study.

**METHODS:**

Forty-seven women with early and established medial knee osteoarthritis were evaluated. Static and dynamic alignment as well as MRI detected structural features, clinical, and functional characteristics of patients were assessed at baseline and at 2 years follow-up. Associations between baseline static and dynamic alignment with structural, functional, and clinical characteristics at the time of entry, as well as the changes over 2 years were evaluated.

**FINDINGS:**

Both static and dynamic varus alignment at baseline were significantly associated with osteoarthritis related tibio-femoral joint structural abnormalities detected on MRI, at the time of entry. Only the magnitude of varus thrust at baseline was predictive of the changes in the presence of meniscal maceration over two years. None of the static or dynamic measures of knee joint alignment were associated with clinical characteristics associated with medial knee osteoarthritis.

**INTERPRETATION:**

The key finding of this study is that both frontal plane dynamic and static alignment, are associated with structural abnormalities in patients with medial knee osteoarthritis.

## 38 B. FOOT TYPES

### Foot morphology and balance

Gait Posture. 2017 May 25;57:52-56. doi: 10.1016/j.gaitpost.2017.05.027. [Epub ahead of print]

#### **Foot muscle morphology is related to center of pressure sway and control mechanisms during single-leg standing.**

Zhang X<sup>1</sup>, Schütte KH<sup>2</sup>, Vanwanseele B<sup>3</sup>.

Author information

Abstract

Maintaining balance is vitally important in everyday life. Investigating the effects of individual foot muscle morphology on balance may provide insights into neuromuscular balance control mechanisms. This study aimed to examine the correlation between the morphology of foot muscles and balance performance during single-leg standing. Twenty-eight recreational runners were recruited in this study. An ultrasound device was used to measure the thickness and cross-sectional area of three intrinsic foot muscles (abductor hallucis, flexor digitorum brevis and quadratus plantae) and peroneus muscles. Participants were required to perform 30s of single-leg standing for three trials on a force plate, which was used to record the center of pressure (COP). The standard deviation of the amplitude and ellipse area of the COP were calculated. In addition, stabilogram diffusion analysis (SDA) was performed on COP data. Pearson correlation coefficients were computed to examine the correlation between foot muscle morphology and traditional COP parameters as well as with SDA parameters. Our results showed that larger abductor hallucis correlated to smaller COP sway, while larger peroneus muscles correlated to larger COP sway during single-leg standing. Larger abductor hallucis also benefited open-loop dynamic stability, as well as supported a more efficient transfer from open-loop to closed loop control mechanisms.

These results suggest that the morphology of foot muscles plays an important role in balance performance, and that strengthening the intrinsic foot muscles may be an effective way to improve balance.

## 44. RHUMATOID ARTHRITIS

### Impact of smoking

#### **Relationship between smoking and structural damage, autoimmune antibodies, and disability in rheumatoid arthritis patients**

Archives of Rheumatology

Sivas F, et al.

sponsor

An analysis was designed to evaluate the association between smoking and structural damage, autoimmune antibodies, and disability in rheumatoid arthritis (RA) patients. While smoking is known as a poor prognostic factor in RA, no correlation was observed between disease activity and smoking in the study. Nevertheless, less radiographic damage was found in never smokers. Smoking does not appear to correlate with RA disease activity but it may be effective in the long-term joint damage.

#### Methods

- Analysts designed a cross-sectional study including 165 RA patients (36 males, 129 females; mean age  $52.4 \pm 12.8$  years; range 21 to 82 years).
- They recorded disease duration, age at disease onset, smoking habits, rheumatoid factor (RF), and anti-cyclic citrullinated peptide levels.
- They computed morning stiffness, pain with visual analog scale, Health Assessment Questionnaire Scores And Disease Activity Score 28.
- They further assessed patients' standard hand radiographs.

#### Results

- They categorized patients were divided three groups according to their smoking habits.
- In this analysis, 99 patients (60%) were never smokers, 45 patients (27.3%) were long-term smokers and 21 patients (12.7%) were new smokers.
- They compared three groups for disease activity.
- They found that disease activity score 28 scores were  $3.2 \pm 1.2$ ,  $3.2 \pm 1.3$ , and  $3.2 \pm 1.4$ , respectively ( $p > 0.05$ ).
- It was showed that the erosion score ( $2.6 \pm 5.8$ ,  $7.1 \pm 10.9$ , and  $11.1 \pm 19.2$ , respectively) and joint space narrowing score ( $9.9 \pm 7.3$ ,  $18.6 \pm 14.9$ , and  $17.3 \pm 12.3$ , respectively) according to modified Sharp method were significantly lower in never smokers group than other groups ( $p < 0.05$ ).
- The data indicated that RF titrations were  $55.2 \pm 58.9$ ,  $60.5 \pm 63.1$ , and  $84.9 \pm 71.5$ , respectively, and levels of long-term smokers group were significantly higher than the other groups ( $p < 0.05$ ).
- Furthermore, Joint space narrowing score was  $16.2 \pm 11.9$  and  $6.4 \pm 10.4$  in RF (+) and RF (-) patients, respectively ( $p < 0.05$ ).
- No significant relationship was found between anti-cyclic citrullinated peptide levels and others parameters.

**45 A. MANUAL THERAPY LUMBAR & GENERAL****MT and LBP in pregnancy****Osteopathic manipulative treatment for low back and pelvic girdle pain during and after pregnancy: A systematic review and meta-analysis**

Helge Franke, D.O. Jan-David Franke, B.Sc Sebastian Belz, M.Sc D.O. Gary Fryer, PhD.,  
B.Sc(Osteopathy)

DOI: <http://dx.doi.org/10.1016/j.jbmt.2017.05.014>

**Background**

To examine the effectiveness of osteopathic manipulative treatment (OMT) for low back pain (LBP) in pregnant or postpartum women.

**Methods**

Randomized controlled trials unrestricted by language were reviewed. Outcomes were pain and functional status. Mean difference (MD) or standard mean difference (SMD) and overall effect size were calculated.

**Results**

Of 102 studies, 5 examined OMT for LBP in pregnancy and 3 for postpartum LBP. Moderate-quality evidence suggested OMT had a significant medium-sized effect on decreasing pain (MD, -16.65) and increasing functional status (SMD, -0.50) in pregnant women with LBP. Low-quality evidence suggested OMT had a significant moderate-sized effect on decreasing pain (MD, -38.00) and increasing functional status (SMD, -2.12) in postpartum women with LBP.

**Conclusions**

This review suggests OMT produces clinically relevant benefits for pregnant or postpartum women with LBP. Further research may change estimates of effect, and larger, high-quality randomized controlled trials with robust comparison groups are recommended.

**Aquatic MFR****Aquatic myofascial release applied after high intensity exercise increases flexibility and decreases pain**

Viviane Ramos Costa Lêdo Ana Paula Xavier, MSc. Cesar Augustus Zocoler de Souza, MSc , Susi Mary de Souza Fernandes, MSc Étria Rodrigues , Érico Chagas Caperuto, PhD.

DOI: <http://dx.doi.org/10.1016/j.jbmt.2017.05.013>

**Abstract****Objectives**

investigate aquatic myofascial release (AMR) effects on flexibility and delayed onset muscle soreness, after high intensity exercises.

Study Design: 15 participants, control (CON) and intervention (INT), 3 moments, pre (Pre), after (Post) and 50 minutes after (Post 50/Post AMR). 6 exercises, 5 sets, 15 reps at 85% of 1 maximum repetition, followed, or not, by 50 minutes of AMR. Variables: Heart rate, lactate, rate of perceived exertion, pain and flexibility.

Results: Pain perception decreased in all moments (CON $4.47\pm 2.36$ ; INT $1.13\pm 1.46$ ,  $p=0.0002$ ). Flexibility only increased for the fingertip to floor test in both phases in the Post50/Post AMR compared to Post (CON $14.33\pm 9.19$ Pre,  $15.07\pm 9.37$ Post ( $p=0.7$ ) and  $12.8\pm 4.69$ Post50 ( $p=0.4$ ); INT $14.53\pm 9.06$ Pre,  $13.87\pm 9.88$ Post ( $p=0.2$ ) and  $11.03\pm 8.96$ Post AMR ( $p=0.001$ )). The Well's bench improved only for the Post AMR compared to Pre in the INT phase (INT $24.79\pm 9.91$ Pre;  $27.67\pm 9.46$ Post AMR  $p=0.0000023$ ).

Conclusion: We concluded that AMR is effective to reduce pain perception and to improve flexibility of the studied population submitted to a high intense exercise session.

## 48 A. STM

## Cupping therapy for knee OA

**Cupping therapy for treating knee osteoarthritis: The evidence from systematic review and meta-analysis**

Complementary Therapies in Clinical Practice

Lee EY, et al.

The researchers conducted this meta-analysis to assess the available evidence from randomized controlled trials (RCTs) of cupping therapy for treating patients with knee osteoarthritis (KOA). In patients with KOA, only weak evidence can bolster the hypothesis that cupping therapy can adequately enhance the treatment efficacy and physical function.

## Methods

- From their inception until January 2017, the researchers searched the following databases: PubMed, Embase, the Cochrane Central Register of Controlled Trials and four Chinese databases [WanFang Med Database, Chinese BioMedical Database, Chinese WeiPu Database, and China National Knowledge Infrastructure (CNKI)].
- They included only the RCTs related to the effects of cupping therapy on KOA in this systematic review.
- Using RevMan 5.3 software, a quantitative synthesis of RCTs will be conducted.
- In this meta-analysis, study selection, data extraction, and validation was performed independently by 2 reviewers.
- To evaluate the methodological quality of the trials, Cochrane criteria for risk-of-bias were used.

## Results

- The inclusion criteria was met by 7 RCTs, and most were of low methodological quality.
- In the dry cupping therapy plus the Western medicine therapy group, study participants demonstrated significantly greater improvements in the pain [MD = -1.01, 95%CI (-1.61, -0.41),  $p < 0.01$ ], stiffness [MD = -0.81, 95%CI (-1.14, -0.48),  $p < 0.01$ ] and physical function [MD = -5.53, 95%CI (-8.58, -2.47),  $p < 0.01$ ] domains of Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) compared to participants in the Western medicine therapy group, with low heterogeneity ( $\text{Chi}^2 = 0.00$   $p = 1.00$ ,  $I^2 = 0\%$  in pain;  $\text{Chi}^2 = 0.45$   $p = 0.50$ ,  $I^2 = 0\%$  in stiffness;  $\text{Chi}^2 = 1.09$   $p = 0.30$ ,  $I^2 = 9\%$  in physical function).
- It failed, however, to do so on a Visual Analog Scale (VAS) [MD = -0.32, 95%CI (-0.70, 0.05),  $p = 0.09$ ].
- Also, meta-analysis of 4 RCTs suggested favorable statistically significant effects of wet cupping therapy plus western medicine on response rate [MD = 1.06, 95%CI (1.01, 1.12),  $p = 0.03$ ; heterogeneity:  $\text{Chi}^2 = 1.13$ ,  $p = 0.77$ ,  $I^2 = 0\%$ ] and Lequesne Allogofunctional Index (LAI) [MD = -2.74, 95%CI (-3.41, -2.07),  $p < 0.01$ ; heterogeneity:  $\text{Chi}^2 = 2.03$ ,  $p = 0.57$ ,  $I^2 = 0\%$ ] when compared with Western medicine therapy alone.

**52. EXERCISE****Pain during exercise?**

Br J Sports Med. 2017 Jun 8. pii: bjsports-2016-097383. doi: 10.1136/bjsports-2016-097383.

**Should exercises be painful in the management of chronic musculoskeletal pain? A systematic review and meta-analysis.**

Smith BE<sup>1,2</sup>, Hendrick P<sup>3</sup>, Smith TO<sup>4</sup>, Bateman M<sup>1</sup>, Moffatt F<sup>3</sup>, Rathleff MS<sup>5,6</sup>, Selfe J<sup>7</sup>, Logan P<sup>2</sup>.

Author information

Abstract

**BACKGROUND:**

Chronic musculoskeletal disorders are a prevalent and costly global health issue. A new form of exercise therapy focused on loading and resistance programmes that temporarily aggravates a patient's pain has been proposed. The object of this review was to compare the effect of exercises where pain is allowed/encouraged compared with non-painful exercises on pain, function or disability in patients with chronic musculoskeletal pain within randomised controlled trials.

**METHODS:**

Two authors independently selected studies and appraised risk of bias. Methodological quality was evaluated using the Cochrane risk of bias tool, and the Grading of Recommendations Assessment system was used to evaluate the quality of evidence.

**RESULTS:**

The literature search identified 9081 potentially eligible studies. Nine papers (from seven trials) with 385 participants met the inclusion criteria. There was short-term significant difference in pain, with moderate quality evidence for a small effect size of -0.27 (-0.54 to -0.05) in favour of painful exercises. For pain in the medium and long term, and function and disability in the short, medium and long term, there was no significant difference.

**CONCLUSION:**

Protocols using painful exercises offer a small but significant benefit over pain-free exercises in the short term, with moderate quality of evidence. In the medium and long term there is no clear superiority of one treatment over another. Pain during therapeutic exercise for chronic musculoskeletal pain need not be a barrier to successful outcomes. Further research is warranted to fully evaluate the effectiveness of loading and resistance programmes into pain for chronic musculoskeletal disorders.



**Choice in exercise**

Med Sci Sports Exerc. 2017 May 23. doi: 10.1249/MSS.0000000000001330.

**Providing Choice in Exercise Influences Food Intake at the Subsequent Meal.**

Beer NJ<sup>1</sup>, Dimmock JA, Jackson B, Guelfi KJ.

Author information

Abstract

The benefits of regular exercise for health are well established; however, certain behaviors following exercise, such as unhealthy or excessive food consumption, can counteract some of these benefits.

**PURPOSE:**

To investigate the effect of autonomy support (through the provision of choice) in exercise - relative to a no-choice condition with matched energy expenditure - on appetite and subsequent energy intake.

**METHODS:**

Fifty-eight men and women (body mass index:  $22.9 \pm 2.3$  kg.m, peak oxygen consumption:  $52.7 \pm 6.4$  ml.kg.min) completed one familiarization session and one experimental trial, in which they were randomized to either a choice or no choice exercise condition using a between-subjects yoked design. Ad libitum energy intake from a laboratory test meal was assessed after exercise, together with perceptions of mood, perceived choice, enjoyment, and value.

**RESULTS:**

Despite similar ratings of perceived appetite across conditions ( $P > 0.05$ ), energy intake was significantly higher following exercise performed under the no choice condition ( $2456 \pm 1410$  kJ) compared with the choice condition ( $1668 \pm 1215$  kJ;  $P = 0.026$ ;  $d = 0.60$ ). In particular, the proportion of energy intake from unhealthy foods was significantly greater following exercise in the no choice condition ( $1412 \pm 1304$  kJ) compared with the choice condition ( $790 \pm 861$  kJ;  $P = 0.037$ ,  $d = 0.56$ ). Participants in the choice condition also reported higher perceptions of choice ( $P < 0.001$ ), enjoyment ( $P = 0.008$ ), and value ( $P = 0.009$ ) relating to the exercise session, while there were no between-condition differences in mood ( $P > 0.05$ ).

**CONCLUSION:**

A lack of choice in exercise is associated with greater energy intake from 'unhealthy' foods in recovery. This finding highlights the importance of facilitating an autonomy supportive environment during exercise prescription and instruction.

### MS pain and yoga

#### **Musculoskeletal pain associated with recreational yoga participation: A prospective cohort study with 1-year follow-up**

Journal of Bodywork & Movement Therapies

Campo M, et al.

This prospective cohort study intends to investigate the association between musculoskeletal pain and recreational yoga participation. The authors conclude that yoga can cause musculoskeletal pain. Participants may benefit by divulgence of practice to their healthcare experts and by informing teachers of injuries they may have prior to participation. Likewise, yoga teachers ought to discuss the risks for injury with their students.

#### Methods

- The authors conducted a prospective cohort study with 1-year follow-up.
- They collected data via electronic questionnaires, 1 year apart.
- For this study, outcomes included incidence and impact of pain caused by yoga and prevalence of pain caused, exacerbated, unaffected, and improved by yoga.
- Predictors included age, experience, hours of participation, and intensity of participation.

#### Results

- The authors enrolled 354 participants from 2 suburban yoga studios.
- 10.7% was the incidence rate of pain caused by yoga.
- More than 33% of incident cases resulted in lost yoga participation time and/or symptoms lasting more than 3 months.
- As per the outcomes, none of the risk factors at baseline increased the risk for subsequent incident cases of pain caused by yoga.

**53. CORE****Multifidus size in LBP****Multifidus muscle size in adolescents with and without back pain using ultrasonography**

Nahid Rahmani, PT, PhD (Assistant Professor Ali Kiani, PT, MSc (Physiotherapist),  
Mohammad Ali Mohseni-Bandpei, PT, PhD (Professor, Visiting Professor)  
Iraj Abdollahi, PT, PhD (Associate Professor)

DOI: <http://dx.doi.org/10.1016/j.jbmt.2017.05.016>

**Objective**

The purposes of this study were; a) to compare multifidus muscle cross sectional area (CSA) in male adolescents suffering from low back pain (LBP) with healthy male adolescents using ultrasonography (US), and b) to assess the correlation between multifidus muscle size and demographic variables.

**Methods**

A random sample of 40 healthy boys (as a control group) and 40 boys with LBP (as an experimental) at the age range of 15-18 years was recruited in the present cohort study. Multifidus muscle dimensions including CSA, antero-posterior and medio-lateral dimensions were measured at level of L5 in both groups using US.

**Results**

The results of an independent t-test to compare multifidus muscle size between experimental and control groups showed a significant difference between the two groups in terms of CSA, antero-posterior and medio-lateral dimensions so that the experimental group had smaller muscle size than the control group. A significant correlation was found between height, weight and body mass index (BMI) and multifidus muscle size, but no significant correlation was observed between age and muscle size. Pain intensity and functional disability index was significantly correlated with muscle size in the experimental group.

**Conclusions**

According to the results, multifidus muscle size was decreased in 15 to 18 years old male adolescents suffering from LBP compared with their healthy counterparts. Further studies are needed to support the findings of the present study.

**54. POSTURE****Asymmetries**

Eur Spine J. 2017 Jun 3. doi: 10.1007/s00586-017-5156-x.

**Coronal plane trunk asymmetry is associated with whole-body sagittal alignment in healthy young adolescents before pubertal peak growth.**

Dolphens M<sup>1</sup>, Vleeming A<sup>2,3</sup>, Castelein R<sup>4</sup>, Vanderstraeten G<sup>2,5</sup>, Schlösser T<sup>4</sup>, Plasschaert F<sup>6</sup>, Danneels L<sup>2</sup>.

Author information

Abstract

**PURPOSE:**

To investigate coronal plane trunk asymmetry (TA) and its association with sagittal postural alignment in healthy subjects before pubertal peak growth.

**METHODS:**

In this cross-sectional baseline study, 1190 healthy pre-peak growth velocity subjects were included. Coronal plane TA was evaluated using back surface topography. Whole-body sagittal alignment (previously validated and objectively classified as neutral, sway-back or leaning-forward) and sagittal spinopelvic profile (trunk lean, lumbar lordosis, thoracic kyphosis, sacral inclination and length of the posteriorly inclined thoracolumbar segment) were determined, as were height, proportion of trunk to body length, body mass index, generalized joint laxity, and handedness.

**RESULTS:**

Logistic regression analysis yielded overall sagittal posture class to be independently associated with coronal plane TA: having a leaning-forward posture associated with a nearly three times higher odds of coronal TA ( $p < 0.001$ ) compared to neutrals. A sway-back was 2.2 times more likely to show TA ( $p = 0.016$ ) than a neutral, yet only in boys. Significant associations with coronal TA were also found for trunk lean, thoracic kyphosis and body mass index. These correlations, however, were gender and posture class specific. The spinal region where asymmetry is seen, varies according to the whole-body sagittal alignment type: primary thoracic curves were the most frequent in leaning-forwards, whereas primary curves in the lumbar or declive thoracolumbar segment were the most common in sway-backs.

**CONCLUSIONS:**

In immature spines without known scoliosis, coronal plane TA is associated with whole-body sagittal alignment. It is more often seen in non-neutral than neutral sagittal posture types. Whether adolescent idiopathic scoliosis is related with postural characteristics before pubertal growth peak, should be addressed in future prospective studies.

**56. ATHLETICS****Ski injury prevention**

Open Access J Sports Med. 2017 May 11;8:113-122. doi: 10.2147/OAJSM.S133811. eCollection 2017.

**Injuries and illnesses in a cohort of elite youth alpine ski racers and the influence of biological maturity and relative age: a two-season prospective study.**

Müller L<sup>1</sup>, Hildebrandt C<sup>1,2</sup>, Müller E<sup>3</sup>, Oberhoffer R<sup>2</sup>, Raschner C<sup>1</sup>.

Author information

Abstract

**BACKGROUND:**

Studies on injuries and illnesses involving youth ski racers younger than 15 years are lacking in the literature. The aim of this study was prospectively to assess the incidence, prevalence, and severity of traumatic and overuse injuries, as well as illnesses of elite youth ski racers with regard to sex, biological maturity status, and relative age.

**SUBJECTS AND METHODS:**

A prospective, longitudinal cohort design was used to monitor the anthropometrics, training characteristics, traumatic and overuse injuries, and illnesses of 82 elite youth ski racers (51 males, 31 females, age 9-14 years) over 2 consecutive years. The exact training exposure (skiing and athletic) was recorded. Relative age and estimated biological maturity status were assessed.

**RESULTS:**

Relatively low injury incidence or prevalence (traumatic, 0.86/1,000 hours of training; overuse, 0.28/1,000 hours) and comparably high illness prevalence (2.4/athlete) were reported. The knee was the most commonly affected body part (traumatic injuries 36.5%, overuse injuries 82%). A high number of bone fractures were revealed (46%), while no stress fractures occurred; 66% of the illnesses were respiratory tract infections. No differences were found between males and females, the differing maturity groups, or relative age quartiles. Early-maturing athletes had comparably low traumatic and overuse-injury rates. Relatively younger athletes had low traumatic injury rates.

**CONCLUSION:**

The injury-prevention measures implemented in the training process of youth ski racers seem to contribute to a low incidence of injury. Biological maturity status should be considered in the training process to prevent injuries in late-maturing athletes.

**59. PAIN****Self-management****What Are the Barriers and Facilitators for the Self-Management of Chronic Pain with and without Neuropathic Characteristics?**

Elizabeth G. Mann, PhD, RN Margaret B. Harrison, PhD, RN Sandra LeFort, PhD, RN ,  
Elizabeth G. VanDenKerkhof, DrPH, RN

DOI: <http://dx.doi.org/10.1016/j.pmn.2017.04.006>

**Abstract**

Chronic pain requires affected individuals to self-manage their health.

This study compared barriers and facilitators of self-management in two groups of people with chronic pain: those with and without neuropathic characteristics. A cross-sectional survey study of community-dwelling Canadians was conducted. The sample (n = 710) included randomly selected participants who reported chronic pain. The Self-Report Leeds Assessment of Neuropathic Symptoms and Signs was used to screen for neuropathic characteristics. Barriers and facilitators of self-management included self-efficacy (Pain Self-Efficacy Questionnaire), depression (Patient Health Questionnaire 9), social support and relationship with health care provider (Chronic Illness Resources Survey), and pain intensity (numeric rating scale). Participants were asked which factors they felt made pain management easier or harder.

Statistical analyses included frequency, percent, relative risk (RR), and 95% confidence intervals (CI). Self-confidence to manage pain was the most commonly perceived self-management barrier/facilitator by both groups; however, participants with neuropathic characteristics (n = 188) were more likely to report low self-efficacy than those without neuropathic characteristics (n = 522) (RR = 2.1, CI = 1.62-2.72, ref = high self-efficacy). Participants with neuropathic characteristics were also more likely to screen positive for depression (RR = 2.30, CI = 1.73-3.06, ref = no/mild depression).

There were no group differences in social support and relationship with health professional, but 40.8% felt they were not involved as equal partners in decision making and goal setting related to their care. Health professionals should consider collaborative decision making when seeking to support self-management abilities. Addressing low self-efficacy and depression may be especially important for supporting self-management by individuals with neuropathic characteristics.

**60. COMPLEX REGIONAL PAIN****Onset**

Eur J Pain. 2017 Jun 2. doi: 10.1002/ejp.1064.

**Painful swelling after a noxious event and the development of complex regional pain syndrome 1: A one-year prospective study.**

Brunner F<sup>1</sup>, Bachmann LM<sup>2</sup>, Perez RSGM<sup>3,4</sup>, Marinus J<sup>4,5</sup>, Wertli MM<sup>6,7</sup>.

Author information

Abstract

**BACKGROUND:**

The timing of diagnosis of complex regional pain syndrome (CRPS) 1 remains a challenge due to the large heterogeneity of clinical presentations. We describe the distribution and differences in outcomes and clinical manifestations between time points and patient groups with and without CRPS 1 following an initiating event.

**METHODS:**

Prospective cohort study with a consecutive registration of patients presenting with painful swelling of the affected extremity after an initiating event and follow-up visits after 3, 6 and 12 months.

**RESULTS:**

Forty-two patients were enrolled (37 females, mean age 55.1 years). At baseline, 35 participants (83%, females n = 30) fulfilled the diagnostic criteria for CRPS 1. At 3 months, 19 out of the initial 35 CRPS 1 patients (54%) did not meet the diagnostic criteria anymore. Besides our inclusion criteria of a painful swelling, early manifestations indicating a CRPS 1 primarily include an impaired quality of life (SF-35, EQ5-D), more pain (NRS, MPQ) and restricted range of motion.

**CONCLUSIONS:**

CRPS 1 develops within 8 weeks following a noxious event. Although many CRPS 1 patients reach partial remission within the first 3 months, signs and symptoms do not improve significantly at 1 year. In order to identify prognostic risk factors large prospective cohort studies are needed.

**SIGNIFICANCE:**

This prospective cohort study follows patients with complaints most suspected for complex regional pain syndrome (CRPS) 1. CRPS 1 develops within 8 weeks following a noxious event. Although many CRPS 1 patients reach partial remission within the 3 months, symptoms do not improve significantly at 1 year.

**61. FIBROMYALGIA****Pain modulation**

Clin J Pain. 2017 Jul;33(7):611-619. doi: 10.1097/AJP.0000000000000447.

**Impaired Pain Modulation in Fibromyalgia Patients in Response to Social Distress Manipulation.**

Canaipa R<sup>1</sup>, Castro-Caldas A, Moreira JM, Pimentel-Santos F, Branco JC, Treister R.

Author information

Abstract

**OBJECTIVES:**

Fibromyalgia (FM), a chronic pain condition, is associated with abnormalities in pain modulation. A growing body of evidence has shown that social distress modulates pain sensitivity. The current study aimed to assess the effects of social distress manipulation on pain in FM patients compared with positive (rheumatoid arthritis, RA) and negative (pain-free) controls.

**MATERIALS AND METHODS:**

FM, RA patients and pain-free controls (PFC) were recruited. Demographic, medical, and psychological data were collected. Each participant was exposed to 3 study conditions in a random order: the inclusion (positive social effects) and exclusion (negative social effects) conditions of Cyberball, a game that manipulates social distress, and a control condition. Pain sensitivity in response to nociceptive electrical and thermal (cold) stimuli was assessed before and during each study condition.

**RESULTS:**

In response to electrical stimuli, pain decreased in both the inclusion and exclusion conditions in PFC and RA groups, whereas inclusion conditions significantly increased pain in the FM group. Social manipulation (inclusion or exclusion) did not affect pain sensitivity as measured in response to thermal stimulation.

**DISCUSSION:**

These results are in line with previous studies demonstrating altered pain inhibition in FM patients, and suggest that unlike PFC or other non-"stress-related" chronic pain conditions, being socially included may increase pain perception in FM patients. Possible underlying mechanisms and clinical relevance are discussed.



**Juvenile**

Clin J Pain. 2017 Jul;33(7):620-626. doi: 10.1097/AJP.0000000000000444.

**Pressure Pain Threshold and Anxiety in Adolescent Females With and Without Juvenile Fibromyalgia: A Pilot Study.**

King CD<sup>1</sup>, Jastrowski Mano KE, Barnett KA, Pfeiffer M, Ting TV, Kashikar-Zuck S.

**Author information****Abstract****OBJECTIVES:**

Reduced pain thresholds have been documented in adult fibromyalgia, but there are no quantitative studies of altered pain sensitivity in adolescents with juvenile fibromyalgia (JFM). The current study examined differences in pressure pain sensitivity between adolescent females with JFM and healthy controls. The relationship between levels of anxiety and pain were also examined.

**METHODS:**

A total of 34 JFM (15.4±1.4 y old) and 31 controls (14.5±1.3 y old) completed self-report measures of pain and anxiety. Pressure pain threshold was assessed (palm and forehead sites) with a hand-held algometer. Participants indicated the first sensation of pain and then rated the intensity of pain on a Numerical Rating Scale.

**RESULTS:**

Adolescents with JFM exhibited greater sensitivity to pressure pain compared with controls. While the difference between JFM and controls was only observed at the forehead, the intensity of pain produced by the pressure algometry at both sites was significantly higher in the JFM participants compared with controls. Correlations between clinical pain and anxiety were significant for the JFM group only. No relationships were observed between anxiety and pressure pain for either group.

**DISCUSSION:**

This study is a first step toward investigating mechanisms of altered pain processing in adolescents with JFM. Adolescents with JFM were found to be more sensitive to pressure pain than their healthy peers, which suggests a propensity for sensitization of peripheral and/or central nociceptive information often reported in adult fibromyalgia, and which does not appear to be affected by anxiety.

**62 A. NUTRITION/VITAMINS****Fruits and vegetables**

Eur J Nutr. 2017 May 30. doi: 10.1007/s00394-017-1469-0.

**Effect of increasing fruit and vegetable intake by dietary intervention on nutritional biomarkers and attitudes to dietary change: a randomised trial.**

Duthie SJ<sup>1,2</sup>, Duthie GG<sup>3</sup>, Russell WR<sup>3</sup>, Kyle JAM<sup>4</sup>, Macdiarmid JI<sup>4</sup>, Rungapamestry V<sup>3</sup>, Stephen S<sup>3</sup>, Megias-Baeza C<sup>3</sup>, Kaniewska JJ<sup>3</sup>, Shaw L<sup>4</sup>, Milne L<sup>3</sup>, Bremner D<sup>3</sup>, Ross K<sup>3</sup>, Morrice P<sup>3</sup>, Pirie LP<sup>3</sup>, Horgan G<sup>5</sup>, Bestwick CS<sup>3</sup>.

Author information

Abstract

*PURPOSE:*

Low fruit and vegetable consumption is linked with an increased risk of death from vascular disease and cancer. The benefit of eating fruits and vegetables is attributed in part to antioxidants, vitamins and phytochemicals. Whether increasing intake impacts on markers of disease remains to be established. This study investigates whether increasing daily intake of fruits, vegetables and juices from low (approx. 3 portions), to high intakes (approx. 8 portions) impacts on nutritional and clinical biomarkers. Barriers to achieving the recommended fruit and vegetable intakes are also investigated.

*METHOD:*

In a randomised clinical trial, the participants [19 men and 26 women (39-58 years)] with low reported fruit, juice and vegetable intake (<3 portions/day) were randomised to consume either their usual diet or a diet supplemented with an additional 480 g of fruit and vegetables and fruit juice (300 ml) daily for 12 weeks. Nutritional biomarkers (vitamin C, carotenoids, B vitamins), antioxidant capacity and genomic stability were measured pre-intervention, at 4-, 8- and 12 weeks throughout the intervention. Samples were also taken post-intervention after a 6-week washout period. Glucose, homocysteine, lipids, blood pressure, weight and arterial stiffness were also measured. Intake of fruit, fruit juice and vegetables was reassessed 12 months after conducting the study and a questionnaire was developed to identify barriers to healthy eating.

*RESULTS:*

Intake increased significantly in the intervention group compared to controls, achieving 8.4 portions/day after 12 weeks. Plasma vitamin C (35%), folate (15%) and certain carotenoids [ $\alpha$ -carotene (50%) and  $\beta$ -carotene (70%) and lutein/zeaxanthin (70%)] were significantly increased ( $P < 0.05$ ) in the intervention group. There were no significant changes in antioxidant capacity, DNA damage and markers of vascular health. Barriers to achieving recommended intakes of fruits and vegetables measured 12 months after the intervention period were amount, inconvenience and cost.

*CONCLUSION:*

While increasing fruit, juice and vegetable consumption increases circulating level of beneficial nutrients in healthy subjects, a 12-week intervention was not associated with effects on antioxidant status or lymphocyte DNA damage.

**Dark chocolate**

*Appetite*. 2017 May 29;116:544-551. doi: 10.1016/j.appet.2017.05.050.

**Consumption of dark chocolate attenuates subsequent food intake compared with milk and white chocolate in postmenopausal women.**

Marsh CE<sup>1</sup>, Green DJ<sup>2</sup>, Naylor LH<sup>3</sup>, Guelfi KJ<sup>3</sup>.

Author information

Abstract

**BACKGROUND:**

Chocolate has a reputation for contributing to weight gain due to its high fat, sugar and calorie content. However, the effect of varying concentrations of cocoa in chocolate on energy intake and appetite is not clear.

**OBJECTIVE:**

To compare the acute effect of consuming an isocaloric dose of dark, milk and white chocolate on subsequent energy intake, appetite and mood in postmenopausal women.

**METHODS:**

Fourteen healthy postmenopausal women ( $57.6 \pm 4.8$ yr) attended an introductory session followed by three experimental trials performed in a counterbalanced order at a standardised time of day, each separated by one week. Ad libitum energy intake, perceived appetite, mood and appetite-related peptides were assessed in response to consumption of 80% cocoa [dark chocolate], 35% cocoa [milk chocolate] and cocoa butter [white chocolate] (2099 kJ), prepared from a single-origin cacao bean.

**RESULTS:**

Ad libitum energy intake was significantly lower following dark ( $1355 \pm 750$  kJ) compared with both milk ( $1693 \pm 969$  kJ;  $P = 0.008$ ) and white ( $1842 \pm 756$  kJ;  $P = 0.001$ ) chocolate consumption. Blood glucose and insulin concentrations were transiently elevated in response to white and milk chocolate consumption compared with the dark chocolate ( $P < 0.05$ ), while pancreatic polypeptide was elevated in response to higher cocoa content chocolate (dark and milk) compared with white chocolate ( $P < 0.05$ ). No differences in active ghrelin or leptin were observed between conditions, nor was mood altered between conditions ( $P > 0.05$ ).

**CONCLUSIONS:**

Dark chocolate attenuates subsequent food intake in postmenopausal women, compared to the impact of milk and white chocolate consumption.

**French fry's increase mortality risk**

Am J Clin Nutr. 2017 Jun 7. pii: ajcn154872. doi: 10.3945/ajcn.117.154872.

**Fried potato consumption is associated with elevated mortality: an 8-y longitudinal cohort study.**

Veronese N<sup>1,2</sup>, Stubbs B<sup>3,4,5,6</sup>, Noale M<sup>7</sup>, Solmi M<sup>2,8</sup>, Vaona A<sup>9</sup>, Demurtas J<sup>10</sup>, Nicetto D<sup>11</sup>, Crepaldi G<sup>7</sup>, Schofield P<sup>6</sup>, Koyanagi A<sup>12</sup>, Maggi S<sup>7</sup>, Fontana L<sup>13,14,15</sup>.

**Author information****Abstract**

**Background:** Few studies have assessed the association between potato consumption and mortality.

**Objective:** We investigated whether potato consumption (including fried and unfried potatoes) is associated with increased premature mortality risk in a North American cohort.

**Design:** A longitudinal analysis included 4440 participants aged 45-79 y at baseline with an 8-y follow-up from the Osteoarthritis Initiative cohort study. Potato consumption (including fried and unfried potatoes) was analyzed by using a Block Brief 2000 food-frequency questionnaire and categorized as  $\leq 1$  time/mo, 2-3 times/mo, 1 time/wk, 2 times/wk, or  $\geq 3$  times/wk. Mortality was ascertained through validated cases of death. To investigate the association between potato consumption and mortality, Cox regression models were constructed to estimate HRs with 95% CIs, with adjustment for potential confounders.

**Results:** Of the 4400 participants, 2551 (57.9%) were women with a mean  $\pm$  SD age of  $61.3 \pm 9.2$  y. During the 8-y follow-up, 236 participants died. After adjustment for 14 potential baseline confounders, and taking those with the lowest consumption of potatoes as the reference group, participants with the highest consumption of potatoes did not show an increased risk of overall mortality (HR: 1.11; 95% CI: 0.65, 1.91). However, subgroup analyses indicated that participants who consumed fried potatoes 2-3 times/wk (HR: 1.95; 95% CI: 1.11, 3.41) and  $\geq 3$  times/wk (HR: 2.26; 95% CI: 1.15, 4.47) were at an increased risk of mortality. The consumption of unfried potatoes was not associated with an increased mortality risk.

**Conclusions:** The frequent consumption of fried potatoes appears to be associated with an increased mortality risk. Additional studies in larger sample sizes should be performed to confirm if overall potato consumption is associated with higher mortality risk. This trial was registered at clinicaltrials.gov as [NCT00080171](#).