

## 2. LBP

### Pain sensitivity

#### **Individual Variation in Pain Sensitivity and Conditioned Pain Modulation in Acute Low Back Pain: Impact of Stimulus Type, Sleep, Psychological and Lifestyle Factors.**

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PlumX Metrics

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#### Highlights

- Enhanced sensitivity consistent with generalized hyperalgesia was observed
- Acute back pain includes four subgroups with sensitivity and modulation profiles
- Various factors including sleep and alcohol explain some variation in presentation

#### Abstract

Generalised hyperalgesia and impaired pain modulation are reported in chronic low back pain (LBP).

Few studies have tested whether these features are present in the acute-phase. This study aimed to test for differences in pain presentation in early-acute LBP and evaluate the potential contribution of other factors to variation in sensitivity. Individuals within two weeks of onset of acute LBP (N=126) and pain-free controls (N=74) completed questionnaires related to their pain, disability, behaviour and psychological status before undergoing conditioned pain modulation (CPM) and pain threshold (heat, cold and pressure) testing at the back and forearm/thumb. LBP participants were more sensitive to heat and cold at both sites and pressure at the back than controls, without differences in CPM.

Only those with high-pain (numerical rating scale,  $NRS \geq 4$ ) were more sensitive to heat at the forearm and pressure at the back. Four subgroups with distinct features were identified: “high sensitivity”, “low CPM efficacy”, “high sensitivity/low CM efficacy”, and “low sensitivity/high CPM efficacy”. Various factors such as sleep and alcohol were associated with each pain measure.

Results provide evidence for generalised hyperalgesia in many, but not all, individuals during acute LBP, with variation accounted for by several factors.

Specific pain phenotypes provide candidate features to test in longitudinal studies of LBP outcome.

## 7. PELVIC ORGANS/WOMAN'S HEALTH

### Pelvic floor training effective

Physiotherapy. 2018 Mar;104(1):91-97. doi: 10.1016/j.physio.2017.06.003. Epub 2017 Jun 23.

#### **Impact of pelvic floor muscle training on sexual function of women with urinary incontinence and a comparison of electrical stimulation versus standard treatment (IPSU trial): a randomised controlled trial.**

Jha S<sup>1</sup>, Walters SJ<sup>2</sup>, Bortolami O<sup>2</sup>, Dixon S<sup>2</sup>, Alshreef A<sup>2</sup>.

#### **AIMS:**

To evaluate the clinical and cost-effectiveness of electric stimulation plus standard pelvic floor muscle training compared to standard pelvic floor muscle training alone in women with urinary incontinence and sexual dysfunction.

#### **METHODS:**

Single centre two arm parallel group randomised controlled trial conducted in a Teaching hospital in England. Participants were women presenting with urinary incontinence and sexual dysfunction. The interventions compared were electric stimulation versus standard pelvic floor muscle training.

#### **OUTCOME MEASURES:**

included Prolapse and Incontinence Sexual function Questionnaire (PISQ) physical function dimension at post-treatment (primary); other dimensions of PISQ, SF-36; EQ-5D, EPAQ, resource use, adverse events and cost-effectiveness (secondary outcomes).

#### **RESULTS:**

114 women were randomised (Intervention n=57; Control group n=57). 64/114 (56%).

#### **PARTICIPANTS:**

had valid primary outcome data at follow-up (Intervention 30; Control 34). The mean PISQ-PF dimension scores at follow-up were 33.1 (SD 5.5) and 32.3 (SD 5.2) for the Intervention and Control groups respectively; with the Control group having a higher (better) score. After adjusting for baseline score, BMI, menopausal status, time from randomisation and baseline oxford scale score the mean difference was -1.0 (95% CI: -4.0 to 1.9; P=0.474). There was no differences between the groups in any of the secondary outcomes at follow-up. Within this study, the use of electrical stimulation was cost-effective with very small incremental costs and quality adjusted life years (QALYs).

#### **CONCLUSIONS:**

In women presenting with urinary incontinence in conjunction with sexual dysfunction, physiotherapy is beneficial to improve overall sexual function. However no specific form of physiotherapy is beneficial over another. Trial registration ISRCTN09586238.

**Breast feeding**

J Pediatr. 2018 Mar 13. pii: S0022-3476(17)31770-5. doi: 10.1016/j.jpeds.2017.12.073

**The Effect of Early Limited Formula on Breastfeeding, Readmission, and Intestinal Microbiota: A Randomized Clinical Trial.**

Flaherman VJ<sup>1</sup>, Narayan NR<sup>2</sup>, Hartigan-O'Connor D<sup>2</sup>, Cabana MD<sup>3</sup>, McCulloch CE<sup>4</sup>, Paul IM<sup>5</sup>.

**OBJECTIVE:**

To determine whether using 10 mL formula after each breastfeeding before copious maternal milk production affects breastfeeding duration, readmission, and intestinal microbiota through 1 month of age.

**STUDY DESIGN:**

In this randomized controlled trial, we enrolled 164 exclusively breastfeeding newborns, 24-72 hours old, whose weight loss was  $\geq 75$ th percentile for age, and whose mothers had not yet begun mature milk production. Enrolled newborns were assigned randomly to either supplement breastfeeding with early limited formula (ELF), 10 mL of formula after each breastfeeding stopped at the onset of copious maternal milk production (intervention), or to continue exclusive breastfeeding (control). Outcomes assessed through 1 month included breastfeeding duration, readmission, and intestinal microbiota.

**RESULTS:**

At 1 week of age, 95.8% of infants receiving ELF and 93.5% of control infants were still breastfeeding ( $P > .5$ ); readmission occurred for 4 (4.8%) control infants and none of the infants receiving ELF ( $P = .06$ ). At 1 month of age, 86.5% of infants receiving ELF and 89.7% of control infants were still breastfeeding ( $P > .5$ ); 54.6% of infants receiving ELF and 65.8% of controls were breastfeeding without formula ( $P = .18$ ). ELF did not lead to decreased abundance of Lactobacillus or Bifidobacterium and was not associated with expansion of Clostridium.

**CONCLUSION:**

In this population of healthy newborns with weight loss  $\geq 75$ th percentile, ELF did not interfere with breastfeeding at 1 month, breastfeeding without formula at 1 month, or intestinal microbiota. ELF may be an important therapeutic option for newborns with the potential to reduce readmission rates.

**TRIAL REGISTRATION:**

Clinicaltrials.gov NCT02313181.

## 8. VISCERA

### Supragastric belching

J Neurogastroenterol Motil. 2015 Jul; 21(3): 398–403. doi: 10.5056/jnm15002  
PMCID: PMC4496903 PMID: 26130635

#### **Supragastric Belching: Prevalence and Association With Gastroesophageal Reflux Disease and Esophageal Hypomotility**

Nikolaos Koukias, Philip Woodland, Etsuro Yazaki, and Daniel Sifrim\*

##### Background/Aims

Supragastric belching (SGB) is a phenomenon during which air is sucked into the esophagus and then rapidly expelled through the mouth. Patients often complain of severely impaired quality of life. Our objective was to establish the prevalence of excessive SGB within a high-volume gastrointestinal physiology unit, and evaluate its association with symptoms, esophageal motility and gastroesophageal reflux disease.

##### Methods

We established normal values for SGB by analyzing 24-hour pH-impedance in 40 healthy asymptomatic volunteers. We searched 2950 consecutive patient reports from our upper GI Physiology Unit (from 2010–2013) for SGB. Symptoms were recorded by a standardized questionnaire evaluating for reflux, dysphagia, and dyspepsia symptoms. We reviewed the predominant symptoms, 24-hour pH-impedance and high-resolution esophageal manometry results.

##### Results

Excessive SGB was defined as > 13 per 24 hours. We identified 100 patients with excessive SGB. Ninety-five percent of these patients suffered from typical reflux symptoms, 86% reported excessive belching, and 65% reported dysphagia. Forty-one percent of patients with excessive SGB had pathological acid reflux. Compared to the patients with normal acid exposure these patients trended towards a higher number of SGB episodes. Forty-four percent of patients had esophageal hypomotility. Patients with hypomotility had a significantly higher frequency of SGB compared to those with normal motility ( $118.3 \pm 106.1$  vs  $80.6 \pm 75.7$ ,  $P = 0.020$ ).

##### Conclusions

Increased belching is rarely a symptom in isolation. Pathological acid exposure and hypomotility are associated with more SGB frequency. Whether SGB is a disordered response to other esophageal symptoms or their cause is unclear.

**Post cardiac arrest**

Resuscitation. 2018 Apr;125:12-15. doi: 10.1016/j.resuscitation.2018.01.036. Epub 2018 Feb 3.

**Women have worse cognitive, functional, and psychiatric outcomes at hospital discharge after cardiac arrest.**

Agarwal S<sup>1</sup>, Presciutti A<sup>2</sup>, Verma J<sup>2</sup>, Pavol MA<sup>2</sup>, Anbarasan D<sup>2</sup>, Brodie D<sup>3</sup>, Rabbani LE<sup>3</sup>, Roh DJ<sup>2</sup>, Park S<sup>2</sup>, Claassen J<sup>2</sup>, Stern Y<sup>2</sup>.

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**AIM:**

To examine gender differences among cardiac arrest (CA) survivors' cognitive, functional, and psychiatric outcomes at discharge.

**METHODS:**

This is a prospective, observational cohort of 187 CA patients admitted to Columbia University Medical Center, considered for Targeted Temperature Management (TTM), and survived to hospital discharge between September 2015 and July 2017. Patients with sufficient mental status at hospital discharge to engage in the Repeatable Battery for Neuropsychological Status (RBANS), Modified Lawton Physical Self-Maintenance Scale (M-PSMS), Cerebral Performance Category Scale (CPC), Center for Epidemiological Studies Depression Scale (CES-D), and Post-Traumatic Stress Disorder Checklist - Civilian Version (PCL-C) were included. Fisher's exact, Wilcoxon Rank Sum, and regression analysis were utilized.

**RESULTS:**

80 patients (38% women, 44% white, mean age  $53 \pm 17$  years) were included. No significant gender differences were found for age, race, Charlson Comorbidity Index, premorbid CPC or psychiatric diagnoses, arrest related variables, discharge CPC, or PCL-C scores. Women had significantly worse RBANS (64.9 vs 74.8,  $p = .01$ ), M-PSMS (13.6 vs 10.6,  $p = .02$ ), and CES-D (22.8 vs 14.3,  $p = .02$ ) scores. These significant differences were maintained in multivariate models after adjusting for age, initial rhythm, time to return of spontaneous circulation, and TTM.

**CONCLUSIONS:**

Women have worse cognitive, functional, and psychiatric outcomes at hospital discharge after cardiac arrest than men. Identifying factors contributing to these differences is of great importance in cardiac arrest outcomes research.

**Ulcerative colitis peds.**

J Clin Gastroenterol. 2018 Apr;52(4):326-332. doi: 10.1097/MCG.0000000000000741.

**Long-term Extent Change of Pediatric-Onset Ulcerative Colitis.**

Rinawi F<sup>1</sup>, Assa A<sup>1,2</sup>, Hartman C<sup>1,2</sup>, Mozer Glassberg Y<sup>1,2</sup>, Nachmias Friedler V<sup>1</sup>, Rosenbach Y<sup>1</sup>, Silbermintz A<sup>1</sup>, Zevit N<sup>1,2</sup>, Shamir R<sup>1,2</sup>.

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

Data describing extent change (progression or regression) in pediatric-onset ulcerative colitis (UC) are scarce.

**GOAL:**

We aimed to describe extent change in pediatric-onset UC during long-term follow-up and to assess predictors of extent change.

**STUDY:**

Medical charts of pediatric-onset UC patients with at least 5-year follow-up were analyzed retrospectively. Disease extent was determined using the Paris classification. It was examined at diagnosis and during follow-up at different time points. The impact of possible predictors on extent change including age at diagnosis, gender, clinical manifestations, disease, severity indices, and different therapeutic regimens during disease course was assessed.

**RESULTS:**

Patients (n=134, 55% males) were followed for a median duration of 13.1 (range, 5 to 28) years. Median age at diagnosis was 13.1 (range, 2 to 17.8) years. Of 134 patients, 40.5% had extensive or pancolitis, 33.5% left-sided colitis, and 26% had proctitis at diagnosis. On follow-up (n=117), 45% had unchanged disease extent, 35% experienced extent progression, whereas 20% experienced regression of disease extent. The multivariate Cox models demonstrated that among children with left-sided disease at diagnosis, presence of extraintestinal manifestations (hazard ratio, 5.19; P=0.022), and higher pediatric UC activity index (hazard ratio, 8.77; P=0.008) were associated with extent progression to extensive disease. Predictors of extent regression have not been identified.

**CONCLUSIONS:**

Disease extent changes significantly over time in pediatric-onset UC. In our cohort, presence of extraintestinal manifestation and higher pediatric UC activity index score at diagnosis were associated with progression from limited to extensive disease during follow-up.

PMID: 28067753 DOI: 10.1097/MCG.0000000000000741

**10 A. CERVICAL SPINE****Loss of tactile acuity**

Musculoskelet Sci Pract. 2018 Feb;33:61-66. doi: 10.1016/j.msksp.2017.11.009. Epub 2017 Nov 21.

**Tactile acuity is reduced in people with chronic neck pain.**

Harvie DS<sup>1</sup>, Edmond-Hank G<sup>2</sup>, Smith AD<sup>3</sup>.

**BACKGROUND:**

Tactile acuity deficits have been demonstrated in a range of persistent pain conditions and may reflect underlying cortical re-organisation.

**OBJECTIVE:**

This study aimed to determine whether tactile acuity is impaired in people with chronic neck pain relative to controls, and whether deficits relate to pain location, duration and intensity.

**METHODS:**

In this cross-sectional study, 20 people with chronic neck pain (5 idiopathic neck pain; 15 whiplash-associated disorder) and 20 pain-free controls underwent two-point discrimination (TPD) testing at the neck, back and arm, and point-to-point (PTP) and graphesthesia tests of tactile acuity at the neck and arm.

**RESULTS:**

Linear mixed effects models demonstrated a significant group\*body region interaction for TPD, Graphesthesia and PTP tests ( $P < 0.001$ ), with post hoc tests showing impaired TPD in people with neck pain relative to controls at the neck, low back, and arm ( $P \leq 0.001$ ). Graphesthesia and PTP was also impaired at the neck ( $P < 0.001$ ) but not the arm ( $P \geq 0.48$ ). TPD correlated with intensity and duration of pain (Pearson's  $r = 0.48$ ,  $P < 0.05$ ; Pearson's  $r = 0.77$ ,  $P < 0.01$ ). There was no sig difference between the two neck pain groups for any tactile acuity measure (TPD:  $P = 0.054$ ; Graphesthesia;  $P = 0.67$ ; Point to Point:  $P = 0.77$ ), however, low power limited confidence in this comparison.

**CONCLUSION:**

People with chronic neck pain demonstrated tactile acuity deficits in painful and non-painful regions when measured using the TPD test, with the magnitude of deficits appearing greatest at the neck. The study also revealed a positive relationship between TPD and pain intensity/duration, further supporting the main study finding.

**Eye pursuit in chronic neck pain**

Musculoskelet Sci Pract. 2018 Feb;33:18-23. doi: 10.1016/j.msksp.2017.10.007. Epub 2017 Oct 17.

**Validity of clinical measures of smooth pursuit eye movement control in patients with idiopathic neck pain.**

Daly L<sup>1</sup>, Giffard P<sup>1</sup>, Thomas L<sup>1</sup>, Treleaven J<sup>2</sup>.

Author information

Abstract

**BACKGROUND:**

Electrooculography is useful in detecting smooth pursuit neck torsion (SPNT) abnormalities in patients with neck pain, however, a validated, clinically relevant measure is lacking.

**OBJECTIVES:**

To explore the validity of visual assessment of formal and clinical videotaped SPNT tests in comparison to electrooculography.

**DESIGN:**

Cross-sectional observational study.

**METHOD:**

Twenty patients with idiopathic neck pain (INP) and twenty healthy controls performed the electrooculography SPNT test: first in neutral, then 45° trunk-under-head torsion to the left then right. The formal video test involved the participant following a horizontal laser stimulus simultaneous to electrooculography. The clinical video test was then performed where the participant followed the clinician's finger in the horizontal direction. One blinded investigator interpreted and analysed the electrooculography trace and two others interpreted the videos.

**RESULTS:**

Patients with INP had a significantly ( $p < 0.05$ ) greater SPNT difference than healthy controls. Visual observation of the formal test had 82.5% agreement with electrooculography and showed fair sensitivity (63.5%) and good specificity (89.6) whilst the clinical test had 65% agreement with electrooculography and showed poor sensitivity (27.3%) and good specificity (79.3%). There was an 82.5% agreement between investigators for the formal video taped measure.

**CONCLUSIONS:**

Visual analysis of assessment of SPNT is sufficient for detecting SPNT abnormalities in patients with INP. Accuracy of the clinical method could be improved by, altering how the visual stimulus is presented and including subjective reporting of symptoms to aid diagnosis resulting in implications for future research.

**Dystonia**

J Neurol. 2018 Mar 22. doi: 10.1007/s00415-018-8840-9.

**Cervical dystonia and substance abuse.**

Mahajan A<sup>1</sup>, Jankovic J<sup>2</sup>, Marsh L<sup>3</sup>, Patel A<sup>4</sup>, Jinnah HA<sup>5</sup>, Comella C<sup>6</sup>, Barbano R<sup>7</sup>, Perlmutter J<sup>8</sup>, Patel N<sup>9</sup>; members of the Dystonia Coalition.

**OBJECTIVE:**

To investigate the prevalence of substance abuse (SA) in patients with cervical dystonia (CD) and to correlate it with prevalence of psychiatric disorders.

**METHODS:**

Data on anxiety, depression, dystonia severity, and substance abuse were collected from ten sites participating in the Dystonia Coalition. Patients were divided into two groups according to the presence of SA, utilizing Structured Clinical Interview for DSM-4 criteria. Wilcoxon Rank-Sum test was used to analyze the difference in median scores on the questionnaires between the groups. Chi-square test was used to analyze association between opiate and benzodiazepine use and SA. Association between TWSTRS severity and SA and medication use was assessed. A two-tailed p value of < 0.05 was considered significant. SAS 9.3 (SAS Institute Inc., Cary, NC, USA) was used for all analyses.

**RESULTS:**

Of 208 CD patients, 23 (11%) were identified with SA; 26.3% of patients with SA were on opiates compared to 7.2% of CD patients without SA ( $p = 0.006$ ). Compared to non-SA patients, those experiencing SA were more likely male (88.9%;  $p = 0.0007$ ), younger (median age 55;  $p = 0.031$ ), and scored worse on questionnaires assessing depression ( $p = 0.044$ ,  $p = 0.005$ ), anxiety ( $p = 0.003$ ), and dystonia psychiatric severity ( $p = 0.033$ ). The median TWSTRS motor severity scores were higher in SA patients compared to non-SA patients (20 versus 16,  $p = 0.0339$ ). The median TWSTRS total disability, motor, and pain scores were higher in patients on opiates than patients who were not (12 versus 8,  $p = 0.0071$ ; 18.5 versus 16,  $p = 0.0243$ ; 12.4 versus 6.7,  $p = 0.0052$ , respectively).

**CONCLUSIONS:**

Potential risk factors for SA in CD patients include younger age and male gender with comorbid anxiety, depression and other psychiatric problems. Caution should be exercised when prescribing drugs with potential for abuse in these patients.

**KEYWORDS:** Alcohol; Dystonia; Neuroepidemiology; Psychiatric disorders; Substance abuse  
PMID: 29569175 DOI: 10.1007/s00415-018-8840-9

**12 A. WHIPLASH****Lateral atlantoaxial joint pain**

Musculoskelet Sci Pract. 2018 Feb;33:46-52. doi: 10.1016/j.msksp.2017.11.004. Epub 2017 Nov 10.

**Lateral atlantoaxial joint meniscoid volume in individuals with whiplash associated disorder: A case-control study.**

Farrell SF<sup>1</sup>, Khan S<sup>2</sup>, Osmotherly PG<sup>3</sup>, Sterling M<sup>4</sup>, Cornwall J<sup>5</sup>, Rivett DA<sup>3</sup>.

**BACKGROUND:**

Lateral atlantoaxial (LAA) joints are established sources of nociceptive input in chronic whiplash associated disorder (WAD). These joints contain intra-articular meniscoids that may be damaged in whiplash trauma. LAA joint meniscoid morphology has not been investigated comprehensively in a chronic WAD population, and it is unclear whether morphological differences exist compared to a pain-free population.

**OBJECTIVES:**

This study examined LAA joint meniscoid volume in individuals with chronic WAD who report pain in a distribution consistent with LAA joint pain.

**DESIGN:**

Case-control study.

**METHOD:**

Fourteen individuals with chronic WAD with pain in an LAA joint distribution (mean [SD] age 38.1 [10.8] years; six female) and 14 age- and sex-matched pain-free controls (38.0 [10.5] years) underwent cervical spine magnetic resonance imaging. LAA joint images were inspected for meniscoids; meniscoid volume was calculated in mm<sup>3</sup> and as a percentage of articular cavity volume. Symptom duration, location and intensity were recorded. Data were analysed using paired t-tests, Wilcoxon signed-rank testing, Spearman's rank testing, linear and logistic regression ( $\alpha < 0.05$ ).

**RESULTS:**

Ventral and dorsal meniscoids (n = 112) were found in each LAA joint. Greater dorsal meniscoid volume as a percentage of articular cavity volume was associated with higher pain intensity (odds ratio 1.48, p = 0.03; likelihood ratio test chi-square<sub>2</sub> = 6.64, p = 0.04), however no significant differences existed between meniscoid volumes of WAD and control participants.

**CONCLUSIONS:**

Findings indicate a potential link between dorsal LAA joint meniscoid volume and pain, suggesting larger meniscoid size may have pathoanatomical significance in WAD.

**13 B. TMJ/ORAL****Exercise and oral health****Exercise habituation is effective for improvement of periodontal disease status: A prospective intervention study****Therapeutics and Clinical Risk Management — | March 27, 2018**

Omori S, et al.

The impact of exercise habits was explored by the authors on periodontal diseases and metabolic pathology in obese men who participated in an exercise and/or dietary intervention program. It was determined that the copy count of *T. denticola* decreased substantially in the dietary intervention group. No link was reported between the number of periodontal disease-causing bacteria and probing pocket depth (PPD) and bleeding on probing (BOP). Findings illustrated possible improvements in periodontal disease due to exercise.

## Methods

- A prospective intervention research was carried out for 12 weeks.
- The enrollment consisted of 71 obese men taking part in an exercise and/or dietary intervention program.
- A total of 50 enrollees were assigned to exercise interventions (exercise intervention group) and 21 subjects were allocated to dietary interventions (dietary intervention group).
- This study was performed prior to and after each intervention program.
- Results
  - The exercise intervention group revealed that the number of teeth with a probing pocket depth (PPD)  $\geq 4$  mm considerably decreased from 14.4% to 5.6% ( $P < 0.001$ ).
  - It was also determined that the number of teeth with bleeding on probing (BOP) notably decreased from 39.8% to 14.4% ( $P < 0.001$ ).
  - A substantial decrease was found in the copy counts of *Tannerella forsythia* and *Treponema denticola* ( $P=0.001$ ).
  - Data shed light on a positive association between the change in the copy count of *T. denticola* and the number of teeth with PPD  $\geq 4$  mm ( $P=0.003$ ) and the number of teeth with BOP ( $P=0.010$ ).
  - Moreover, a positive link was depicted between the change in the copy count of *T. denticola* and body weight ( $P=0.008$ ), low-density lipoprotein cholesterol ( $P=0.049$ ), and fasting insulin ( $P=0.041$ ).
  - Nonetheless, the copy count of *T. denticola* appeared to decrease significantly ( $P=0.007$ ) in the dietary intervention group.
  - No connection was demonstrated between the number of periodontal disease-causing bacteria and PPD and BOP.

**14. HEADACHES****Risk of CV disease**

Cardiovascular medicine

**Migraine and the risk of cardiovascular and cerebrovascular events: a meta-analysis of 16 cohort studies including 1 152 407 subjects**

1. Ahmed N Mahmoud<sup>1</sup>, Mohammad K Mojadidi<sup>1</sup>, Islam Y Elgendy<sup>1</sup>

Abstract

**Objectives** To perform an updated meta-analysis to evaluate the long-term cardiovascular and cerebrovascular outcomes among migraineurs.

**Setting** A meta-analysis of cohort studies performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.

**Data sources** The MEDLINE, Web of Science and Cochrane Central Register of Controlled Trials databases were searched for relevant articles.

**Participants** A total of 16 cohort studies (18 study records) with 394 942 migraineurs and 757 465 non-migraineurs were analysed.

**Primary and secondary outcome measures** Major adverse cardiovascular and cerebrovascular events (MACCE), stroke (ie, ischaemic, haemorrhagic or non-specified), myocardial infarction (MI) and all-cause mortality. The outcomes were reported at the longest available follow-up.

**Data analysis** Summary-adjusted hazard ratios (HR) were calculated by random-effects Der-Simonian and Liard model. The risk of bias was assessed by the Newcastle-Ottawa Scale.

**Results** Migraine was associated with a higher risk of MACCE (adjusted HR 1.42, 95% confidence interval [CI] 1.26 to 1.60,  $P < 0.001$ ,  $I^2 = 40\%$ ) driven by a higher risk of stroke (adjusted HR 1.41, 95% CI 1.25 to 1.61,  $P < 0.001$ ,  $I^2 = 72\%$ ) and MI (adjusted HR 1.23, 95% CI 1.03 to 1.43,  $P = 0.006$ ,  $I^2 = 59\%$ ). There was no difference in the risk of all-cause mortality (adjusted HR 0.93, 95% CI 0.78 to 1.10,  $P = 0.38$ ,  $I^2 = 91\%$ ), with a considerable degree of statistical heterogeneity between the studies. The presence of aura was an effect modifier for stroke (adjusted HR aura 1.56, 95% CI 1.30 to 1.87 vs adjusted HR no aura 1.11, 95% CI 0.94 to 1.31,  $P_{\text{interaction}} = 0.01$ ) and all-cause mortality (adjusted HR aura 1.20, 95% CI 1.12 to 1.30 vs adjusted HR no aura 0.96, 95% CI 0.86 to 1.07,  $P_{\text{interaction}} < 0.001$ ).

**Conclusion** Migraine headache was associated with an increased long-term risk of cardiovascular and cerebrovascular events. This effect was due to an increased risk of stroke (both ischaemic and haemorrhagic) and MI. There was a moderate to severe degree of heterogeneity for the outcomes, which was partly explained by the presence of aura.

## Migraineurs response to stimuli

The Journal of Pain Original Report

**Assessment of Responsiveness to Everyday Non-Noxious Stimuli in Pain-Free Migraineurs with vs Without Aura**

- Yelena Granovsky<sup>a,b,c</sup>, Merav Shor<sup>a</sup>, Alla Shifrin<sup>a,b</sup>, Elliot Sprecher<sup>a</sup>, David Yarnitsky<sup>a,b</sup>,
- Tami Bar-Shalita<sup>c,d</sup>  
<https://doi.org/10.1016/j.jpain.2018.03.008>

**Highlights**

- Migraineurs demonstrate sensory over-responsiveness to everyday sensations
- Sensory over-responsiveness is more common in migraineurs with aura (MWA)
- Attack frequency correlates with sensory over-responsiveness and pain summation

**Abstract**

Migraineurs with aura (MWA) express higher inter-ictal response to non-noxious and noxious experimental sensory stimuli compared to migraineurs without aura (MWOA), but whether these differences also prevail in response to everyday non-noxious stimuli is not yet explored. This is a cross-sectional study testing fifty-three female migraineurs (30 MWA; 23 MWOA) that underwent wide battery of noxious psychophysical testing at pain-free phase, and completed a sensory responsiveness questionnaire and pain-related psychological questionnaires. The MWA group demonstrated higher questionnaire-based sensory over-responsiveness ( $p=0.030$ ), higher magnitude of pain temporal summation (TS) ( $p=0.031$ ) as well as higher monthly attack frequency ( $p=0.027$ ) compared to the MWOA group. Overall, 45% of migraineurs described abnormal sensory (hyper- or hypo-) responsiveness; its incidence was higher among MWA (19/30; 63%) vs. MWOA (6/23; 27%,  $P=0.012$ ), with odds ratio of 3.58 for MWA. Sensory responsiveness scores were positively correlated with attack frequency ( $r=0.361$ ;  $p=0.008$ ) and TS magnitude ( $r=0.390$ ;  $p=0.004$ ), both regardless of migraine type. MWA express higher everyday sensory responsiveness than MWOA, in-line with higher response to experimental noxious stimuli. Abnormal scores of sensory responsiveness characterize people with Sensory Modulation Dysfunction (SMD), suggesting possible underlying mechanisms overlap, and possibly incidence of both clinical entities.

**Perspective**

: This article presents findings distinguishing migraineurs with aura, demonstrating enhanced: pain amplification; monthly attack frequency; and over-responsiveness to everyday sensations, compared to migraineurs without aura. Further, migraine is characterized by high incidence of abnormal responsiveness to everyday sensation, specifically sensory over-responsiveness, that was also found related to pain.

## Cluster HA's and tobacco

Headache. 2018 Mar 14. doi: 10.1111/head.13295.

**Cluster Headache Clinical Phenotypes: Tobacco Nonexposed (Never Smoker and No Parental Secondary Smoke Exposure as a Child) versus Tobacco-Exposed: Results from the United States Cluster Headache Survey.**

Rozen TD<sup>1</sup>.

**OBJECTIVE:** To present results from the United States Cluster Headache Survey comparing the clinical presentation of tobacco nonexposed and tobacco-exposed cluster headache patients.

**BACKGROUND:** Cluster headache is uniquely tied to a personal history of tobacco usage/cigarette smoking and, if the individual cluster headache sufferer did not smoke, it has been shown that their parent(s) typically did and that individual had significant secondary smoke exposure as a child. The true nontobacco exposed (no personal or secondary exposure) cluster headache sufferer has never been fully studied.

**METHODS:** The United States Cluster Headache Survey consisted of 187 multiple choice questions related to cluster headache including: patient demographics, clinical headache characteristics, family history, triggers, smoking history (personal and secondary), and headache-related disability. The survey was placed on a website from October through December 2008.

**RESULTS:** One thousand one hundred thirty-four individuals completed the survey. One hundred thirty-three subjects or 12% of the surveyed population had no personal smoking/tobacco use history and no secondary smoke exposure as an infant/child, thus a nontobacco exposed population. In the nonexposed population, there were 87 males and 46 females with a gender ratio of 1.9:1. Episodic cluster headache occurred in 80% of nonexposed subjects. One thousand and one survey responders or 88% were tobacco-exposed (729 males and 272 females) with a gender ratio of 2.7:1. Eighty-three percent had a personal smoking history, while only 17% just had parents who smoked with secondary smoke exposure. Eighty-five percent of smokers had double exposure with a personal smoking history and secondary exposure as a child.

**SIGNIFICANT HIGHLIGHTS FROM THE SURVEY:** Nonexposed cluster headache subjects are significantly more likely to develop cluster headache at ages 40 years and younger, while the exposed sufferers are significantly more likely to develop cluster headache at 40 years of age and older. Nonexposed patients have a statistically significant higher frequency of a migraine family history. The exposed population is statistically significantly more likely to have a history of head trauma 19% vs the nonexposed population 10% ( $P = .02$ ). Tobacco exposed are significantly more likely to transition from episodic to chronic cluster headache (23% vs 14%,  $P = .02$ ). Cranial autonomic symptoms as well as agitation are more common in tobacco exposed. Nonexposed are less likely to have specific cluster headache triggers. Exposed are significantly more likely to be triggered by alcohol. Tobacco exposed are significantly heavier caffeine users than nonexposed. Nonexposed are significantly more likely to have cluster headache cycles that vary throughout the year than exposed (52% vs 40%,  $P = .02$ ). Exposed are much more likely to develop cluster headache from 12 am to 6 am than non exposed. Exposed experience significantly more frequent attacks per day and longer duration cycles than nonexposed. A significantly larger percent of the exposed population (57%) has suicidal ideations with their syndrome than nonexposed (43%) ( $P = .003$ ). In regard to disability, both subtypes are disabled by their headaches, but exposed have more work related disability and lost home-days from headache. Both subgroups have a poor overall response to preventive and abortive medication outside of inhaled oxygen and injectable sumatriptan.

**CONCLUSION:** Cluster headache sufferers who were never exposed to tobacco (personal or secondary as a child) appear to present uniquely compared to the tobacco exposed subgroup. The tobacco exposed clinical phenotype appears to have a more severe syndrome based on attack frequency, cycle duration, and headache related disability. Tobacco exposure is associated with cluster headache chronification. The nonexposed subtype appears to have an earlier age of onset, higher rate of familial migraine, and less circadian periodicity and daytime entrainment, suggesting a possible different underlying pathology than in the tobacco exposed sub-form.

### 20 A. ROTATOR CUFF

#### Obesity impacts results

#### **Obesity causes poorer clinical results and higher re-tear rates in rotator cuff repair**

Archives of Orthopaedic and Trauma Surgery — | March 30, 2018

Ateschrang A, et al.

Experts reported the functional outcome after both open and arthroscopic rotator cuff (RC) repair in normal weight, pre-obese and obese patients, presuming that obesity was a negative prognostic factor for clinical outcome and failure for the RC repair.

Equivalent clinical results and failure rates were demonstrated by both the arthroscopic and the open approach. In the Constant and DASH scores, obesity (BMI > 30) was seen to cause less favorable results and it showed higher re-tear rates.

For the normal-weight patients, the failure rate was 15.8%, in the pre-obese group it was 8.2% and in the obese group 28.6%.

**22 A. IMPINGEMENT****Changes in kinematics**

J Orthop Sports Phys Ther. 2018 Mar 6:1-31. doi: 10.2519/jospt.2018.7794.

**Kinematic Differences During Single Leg Stepdown Between Individuals With Femoroacetabular Impingement Syndrome and Individuals Without Hip Pain.**

Lewis CL<sup>1</sup>, Loverro KL<sup>1</sup>, Khoo A<sup>1</sup>.

Study Design Controlled laboratory study, case-control design.

Background Despite recognition that femoroacetabular impingement syndrome (FAIS) is a movement-related disorder, few studies have examined dynamic unilateral tasks in individuals with FAIS.

Objectives 1) Determine if individuals with FAIS have different pelvis and lower extremity movements than individuals without hip pain during a single leg stepdown. 2) Analyze kinematic differences between males and females within groups.

Methods Individuals with FAIS and individuals without hip pain performed a single leg stepdown while kinematic data were collected. Kinematics were evaluated at 60° of knee flexion. A linear regression analysis tested the main effects of group, sex, side, and interaction of sex by group.

Results Twenty individuals with FAIS and 40 individuals without hip pain participated. Individuals with FAIS performed the stepdown with greater hip flexion (4.9°, 95% confidence interval (95%CI): 0.5, 9.2) and anterior pelvic tilt (4.1°, 95%CI: 0.9, 7.3) than individuals without hip pain. Across groups, females performed the task with more hip flexion (6.1°, 95%CI: 1.7, 10.4), hip adduction (4.8°, 95%CI: 2.2, 7.4), anterior pelvic tilt (5.8°, 95%CI: 2.6, 9.0), pelvic drop (1.4°, 95%CI: 0.3, 2.5), and thigh adduction (2.7°, 95%CI: 1.3, 4.2) than males.

Conclusion Individuals with FAIS performed the stepdown with greater hip flexion and anterior pelvic tilt than individuals without hip pain. Females performed the task with greater hip flexion, hip adduction, anterior pelvic tilt, and pelvic drop compared to males. Sex differences were more pronounced in the FAIS group than in the comparison group. J Orthop Sports Phys Ther, Epub 6 Mar 2018. doi:10.2519/jospt.2018.7794.

**Clinical rating**

J Orthop Sports Phys Ther. 2018 Mar 16:1-35. doi: 10.2519/jospt.2018.7840.

**Clinical Rating of Movement Pattern Quality in Patients With Femoroacetabular Impingement Syndrome: A Methodological Study.**

Casartelli NC<sup>1,2</sup>, Maffiuletti NA<sup>1</sup>, Brunner R<sup>1</sup>, Büchi M<sup>3</sup>, Sutter R<sup>4,5</sup>, Pfirrmann CW<sup>4,5</sup>, Naal FD<sup>6</sup>, Leunig M<sup>6</sup>, Bizzini M<sup>1</sup>.

**Study Design** Cross-sectional study. **Background** Visual rating of movement pattern in patients with femoroacetabular impingement (FAI) syndrome is of interest because poor control of dynamic hip motion is frequently noted.

**Objectives** To evaluate intra- and inter-rater agreement among physical therapists with different clinical experience, in performing visual rating of movement pattern quality of patients with FAI syndrome using a semiquantitative scale.

**Methods** A video camera was used to record the performance of 34 patients with FAI syndrome performing single-limb standing, squat, frontal lunge, hop lunge, bridge and plank. Visual rating of movement, as recorded on video, by highly experienced, moderately experienced, and novice physical therapists was performed on 2 occasions using a semiquantitative scale. Hip abductor strength was assessed using dynamometry, and hip pain and function with a patient-reported questionnaire. Intra- and inter-rater agreement among physical therapists was evaluated using Gwet's agreement coefficient 1. Construct validity was evaluated as the association between physical therapists' rating and patients' hip abductor strength, pain and function.

**Results** Good intra- and inter-rater agreement was observed for and between, respectively, the highly and moderately experienced physical therapists when rating single-limb standing, bridge and plank. Poor-to-moderate intra- and inter-rater agreement was found when they rated squat, frontal and hop lunges. Poor performers, as rated by the highly experienced physical therapist only, demonstrated lower hip abductor strength ( $P < .05$ ) but similar hip pain and function than good performers.

**Conclusion** Movement pattern quality of patients with FAI syndrome should be rated by a highly experienced physical therapist. J Orthop Sports Phys Ther, Epub 16 Mar 2018. doi:10.2519/jospt.2018.7840.

## ROM

J Orthop Sports Phys Ther. 2018 Mar 16:1-29. doi: 10.2519/jospt.2018.7848.

**Is Bony Hip Morphology Associated With Range of Motion and Strength in Asymptomatic Male Soccer Players?**

Mosler AB<sup>1,2</sup>, Agricola R<sup>3</sup>, Thorborg K<sup>4</sup>, Weir A<sup>1,5</sup>, Whiteley RJ<sup>1</sup>, Crossley KM<sup>2</sup>, Hölmich P<sup>1,4</sup>.

Study Design Cross-sectional cohort study.

Background Athletes with femoroacetabular impingement (FAI) syndrome have cam and/or pincer morphology, pain on orthopaedic testing, and often have reduced hip range of motion (ROM) and strength. However, cam and pincer morphology are also common in asymptomatic hips. Therefore, it is currently unknown whether the ROM and strength deficits observed in athletes with FAI syndrome result from the variance in their bony hip morphology or hip condition.

Objectives To investigate the relationship between musculoskeletal screening findings and bony hip morphology in asymptomatic male soccer players. Methods Male professional soccer players in Qatar were screened specifically for hip/groin pain in 2 consecutive seasons. The screening battery included: pain provocation, ROM and strength tests, and hip radiographs. Univariate and multivariate regression analyses using generalised estimating equations evaluated the relationship between musculoskeletal screening findings and each bony hip morphological variant (cam, large cam, pincer, and acetabular dysplasia).

Results Asymptomatic hips with cam and large cam morphology were associated with lower ROM in internal rotation and bent knee fall out, and a higher likelihood of pain on provocation testing. Pincer morphology was associated with lower abduction ROM and higher abduction strength. Acetabular dysplasia was associated with higher abduction ROM. Each association was weak and demonstrated poor or failed discriminatory power.

Conclusion Bony hip morphology is associated with hip joint ROM and abduction strength, but musculoskeletal screening tests have a poor ability to discriminate between the different morphologies. J Orthop Sports Phys Ther, Epub 16 Mar 2018. doi:10.2519/jospt.2018.7848.

### Prevalence of

J Orthop Sports Phys Ther. 2018 Mar 16:1-25. doi: 10.2519/jospt.2018.7816.

### **The Prevalence of Cam and Pincer Morphology and Its Association With Development of Hip Osteoarthritis.**

van Klij P<sup>1</sup>, Heerey J<sup>2</sup>, Waarsing JH<sup>1</sup>, Agricola R<sup>1</sup>.

**Synopsis** Our understanding of femoroacetabular impingement (FAI) syndrome is slowly improving.

The number of studies on all aspects (aetiology, prevalence, pathophysiology, natural history, treatment, and preventative measures) of FAI syndrome has grown exponentially over the past few years. This commentary provides the latest updates on the prevalence of cam and pincer hip morphology and its relationship with development of hip osteoarthritis (OA).

Cam and pincer morphology is highly prevalent in the general population and in this paper is presented for different subgroups based on: age, sex, ethnicity, and athletic activity. Methodological issues in determining prevalence of abnormal hip morphology are also discussed. Cam morphology has been associated with development of hip OA while the association between pincer morphology and hip OA is much less clear.

Results from reviewed studies as well as remaining gaps in literature on this topic are critically discussed and put into perspective for the clinician. J Orthop Sports Phys Ther, Epub 16 Mar 2018. doi:10.2519/jospt.2018.7816.

## Capsular thickness

**Hip capsular thickness correlates with range of motion limitations in femoroacetabular impingement**

Knee Surgery Sports Traumatology Arthroscopy · March 2018

DOI: 10.1007/s00167-018-4915-5

**Abstract**

**Purpose:** Femoroacetabular impingement (FAI) is a clinical entity of the hip causing derangements in range of motion, pain, gait, and function. Computer-assisted modeling and clinical studies suggest that patients with FAI have increased capsular thickness compared to those without. A retrospective chart review was performed to assess relationships between capsular thickness, hip range of motion, and demographic factors in patients with FAI.

**Methods:** Local Research Ethics Board approval was obtained to extract electronic medical records for 188 patients at a single institution who had undergone hip arthroscopy. Procedures were performed from 2009 to 2017 by a single, fellowship-trained, board-certified sports medicine orthopaedic surgeon. Inclusion criteria were preoperative hip range of motion testing, positive clinical impingement testing, and magnetic resonance imaging (MRI) of the affected hip. Patient demographics, hip range of motion, and time to surgery were recorded. MRIs were reviewed by a board-certified musculoskeletal radiologist blinded to clinical data. Maximum thickness of the anterior hip capsule was measured in axial, axial oblique, and sagittal oblique sequences. Anterior capsular thickness was also measured at the level of the femoral head-neck junction in axial sequences (axial midline).

**Results:** Axial midline capsular thickness was negatively correlated with hip flexion ( $r = -0.196$ ,  $p = 0.0042$ ) and internal rotation ( $r = -0.143$ ,  $p = 0.0278$ ). Significant differences were seen between genders in axial midline thickness ( $5.3 \pm 1.4$  mm males/ $4.8 \pm 1.3$  mm females,  $p = 0.0079$ ), flexion ( $113^\circ \pm 18^\circ$  males/ $120^\circ \pm 17^\circ$  females,  $p = 0.0029$ ), and internal rotation ( $23^\circ \pm 13^\circ$  males/ $29^\circ \pm 12^\circ$  females,  $p = 0.0155$ ). Significant differences also existed between side affected in flexion ( $116^\circ \pm 17^\circ$  right/ $119^\circ \pm 17^\circ$  left,  $p = 0.0396$ ) and internal rotation ( $26^\circ \pm 12^\circ$  right/ $29^\circ \pm 13^\circ$  left,  $p = 0.0029$ ). Positive correlation was observed between axial oblique capsular thickness and flexion ( $r = 0.2345$ ) ( $p = 0.0229$ ).

**Conclusions:** Increased anterior hip capsular thickness at the femoral head-neck correlates with limitations in hip range of motion in FAI. The strength of this relationship may be affected between pathologies, genders, and affected side. Pathologic thickening of the hip capsule may contribute to restricted hip mobility on clinical examination, and elucidation of this relationship may provide guidance into capsular management during hip arthroscopy. Level of evidence: 4, retrospective case series.

**27. HIP****Training to avoid adduction in hip pain patients**

J Orthop Sports Phys Ther. 2018 Mar 16:1-28. doi: 10.2519/jospt.2018.7810.

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

Harris-Hayes M<sup>1,2</sup>, Steger-May K<sup>3</sup>, Van Dillen LR<sup>1,2</sup>, Schootman M<sup>4</sup>, Salsich GB<sup>5</sup>, Czuppon S<sup>1,2</sup>, Clohisy JC<sup>2</sup>, Commean PK<sup>6</sup>, Hillen TJ<sup>7</sup>, Sahrman SA<sup>1</sup>, Mueller MJ<sup>1,7</sup>.

Study Design Ancillary analysis, time-controlled randomized clinical trial.

Background Movement pattern training (MPT) has been shown to improve function among patients with chronic hip joint pain (CHJP). Objective Determine the association among treatment outcomes and mechanical factors associated with CHJP.

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

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

Conclusion After MPT, patients reported improvements in pain and function that was associated with their ability to reduce hip adduction motion during functional tasks. Level of Evidence Therapy, level 2b. J Orthop Sports Phys Ther, Epub 16 Mar 2018. doi:10.2519/jospt.2018.7810.

**28. REPLACEMENTS****Balance prior to replacement****RESEARCH REPORT****Hip Strength and Range of Movement Are Associated With Dynamic Postural Control Performance in Individuals Scheduled for Arthroscopic Hip Surgery**

**Authors:** Matthew Freke, PT<sup>1,2</sup>, Joanne Kemp, PT, PhD<sup>3</sup>, Adam Semciw, PT, PhD<sup>2</sup>, Kevin Sims, PT, PhD<sup>2</sup>, Trevor Russell, PT, PhD<sup>2</sup>, Parminder Singh, MD, FRACS<sup>4</sup>, Kay Crossley, PT, PhD<sup>3</sup>

**Published:** *Journal of Orthopaedic & Sports Physical Therapy*, 2018 **Volume:**48 **Issue:**4 **Pages:**280–288 **DOI:**10.2519/jospt.2018.7946

**Study Design**

Cross-sectional.

**Background**

Hip pain is associated with reduced muscle strength and range of movement (ROM). These impairments may contribute to decreased postural stability and balance. The Star Excursion Balance Test (SEBT) is a reliable and valid method to measure dynamic postural control.

**Objectives**

To evaluate the association between SEBT performance and hip strength, hip ROM, trunk endurance, and group characteristics in individuals with hip pain.

**Methods**

One hundred eleven individuals with hip pain, scheduled for arthroscopic hip surgery, were matched with 62 healthy controls. Hip ROM and muscle strength, trunk endurance, and SEBT reach were measured prior to surgery. Data were analyzed for between-group differences using *t* tests, and associations between SEBT reach and hip strength, hip ROM, and population characteristics were evaluated with Pearson correlation coefficients and stepwise backward regression analyses.

**Results**

Star Excursion Balance Test performance ( $P<.01$ ), hip strength ( $P<.01$ ), and hip ROM ( $P<.05$ ) were lower in the presurgery group compared to controls. In the presurgery group, when adjusted for height and weight, hip flexion strength and internal rotation ROM accounted for 44% of the variance in anteromedial SEBT reach. In the posteromedial direction, hip adduction strength and sex accounted for 53% of the variance. For the posterolateral direction, hip adduction and internal rotation strength accounted for 46% of reach variance.

**Conclusion**

The individuals who were scheduled for arthroscopic hip surgery were significantly weaker, had less hip mobility, and had reduced dynamic balance compared to controls. In this population, dynamic balance performance was associated with various hip strength and ROM measurements in a direction-specific manner. *J Orthop Sports Phys Ther* 2018;48(4):280–288. doi:10.2519/jospt.2018.7946

**Altitude and venous thrombosis**

J Shoulder Elbow Surg. 2017 Jan;26(1):7-13. doi: 10.1016/j.jse.2016.06.005. Epub 2016 Aug 12.

**High altitude is an independent risk factor for venous thromboembolism following arthroscopic rotator cuff repair: a matched case-control study in Medicare patients.**

Cancienne JM<sup>1</sup>, Burrus MT<sup>1</sup>, Diduch DR<sup>1</sup>, Werner BC<sup>2</sup>.

**BACKGROUND:**

Although the risk of venous thromboembolism (VTE) following elective shoulder arthroscopy is low, the large volume of procedures performed each year yields a significant annual burden of patients with thromboembolic complications. The purpose of this study was to evaluate the association of high procedural altitude with the incidence of postoperative VTE following arthroscopic rotator cuff repair.

**METHODS:**

A Medicare database was queried for all patients undergoing arthroscopic rotator cuff repair from 2005 to 2012. All patients with procedures performed at an altitude of 4000 feet or higher were grouped into the "high-altitude" study cohort. Patients with procedures performed at an altitude of 100 feet or lower were then matched to patients in the high-altitude cohort on the basis of age, gender, and medical comorbidities. The rate of VTE was then assessed for both the high-altitude and matched low-altitude cohorts within 90 days postoperatively.

**RESULTS:**

The rates of combined VTE (odds ratio [OR], 2.6;  $P < .0001$ ), pulmonary embolism (OR, 4.3;  $P < .0001$ ), and lower extremity deep venous thrombosis within 90 days (OR, 2.2;  $P = .029$ ) were all significantly higher in patients with procedures performed at high altitude compared with matched patients with the same procedures performed at low altitude.

**CONCLUSIONS:**

Procedural altitude  $>4000$  feet is associated with significantly increased rates of postoperative VTE, including deep venous thrombosis and pulmonary embolism, compared with age-, gender-, and comorbidity-matched patients undergoing the same procedures at altitudes  $<100$  feet.

### 35. KNEE/TOTAL

#### Revisions

Acta Orthop. 2010 Feb;81(1):95-8. doi: 10.3109/17453671003628731.

#### **Outcome of revision of unicompartmental knee replacement.**

Hang JR<sup>1</sup>, Stanford TE, Graves SE, Davidson DC, de Steiger RN, Miller LN.

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

Despite concerns regarding a higher risk of revision, unicompartmental knee arthroplasty (UKA) continues to be used as an alternative to total knee arthroplasty (TKA). There are, however, limited data on the subsequent outcome when a UKA is revised. We examined the survivorship for primary UKA procedures that have been revised.

#### **METHODS:**

We used data from the Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR) to analyze the survivorship of 1,948 revisions of primary UKA reported to the Registry between September 1999 and December 2008. This was compared to the results of revisions of primary TKA reported during the same period where both the femoral and tibial components were revised. The Kaplan-Meier method for modeling survivorship was used.

#### **RESULTS:**

When a primary UKA was revised to another UKA (both major and minor revisions), it had a cumulative per cent revision (CPR) of 28 and 30 at 3 years, respectively. The CPR at 3 years when a UKA was converted to a TKA was 10. This is similar to the 3-year CPR (12) found earlier for primary TKA where both the femoral and tibial components were revised.

#### **INTERPRETATION:**

When a UKA requires revision, the best outcome is achieved when it is converted to a TKA. This procedure does, however, have a major risk of re-revision, which is similar to the risk of re-revision of a primary TKA that has had both the femoral and tibial components revised.

**37. OSTEOARTHRITIS/KNEE**

HA is helpful

**International Journal of Surgery** Volume 53, May 2018, Pages 103-110

**Comparison of intra-articular hyaluronic acid and methylprednisolone for pain management in knee osteoarthritis: A meta-analysis of randomized controlled trials**

lJianRan<sup>1</sup>XiaohuiYang<sup>1</sup>ZhengRenJianWangHuiDong

<https://doi.org/10.1016/j.ijssu.2018.02.065>Get rights and content

**Highlights**

- Both HA and methylprednisolone injections were effective therapies for patients with knee OA.
- Methylprednisolone showed comparable efficacy in reducing pain and improving functional recovery to HA.
- No significant difference was found in long-term of follow-up in terms of adverse effects.

**Objective**

We performed a meta-analysis of randomized controlled trials (RCTs) to compare the efficacy and safety of intra-articular methylprednisolone and hyaluronic acid (HA) in term of pain reduction and improvements of knee function in patients with knee osteoarthritis (OA).

**Materials and methods**

The PubMed, EMBASE, ScienceDirect, and Cochrane Library databases were systematically searched for literature up to January 2018. RCTs involving HA and methylprednisolone in knee OA were included. Two independent reviewers performed independent data abstraction. The I<sup>2</sup> statistic was used to assess heterogeneity. A fixed or random effects model was adopted for meta-analysis. All meta-analyses were performed by using STATA 14.0.

**Results**

Five RCTs with 1004 patients were included in the meta-analysis. The present meta-analysis indicated that there were no significant differences in terms of WOMAC pain, physical function and stiffness at 4 week, 12 weeks and 26 weeks between HA and methylprednisolone groups. No increased risk of adverse events were identified in both groups.

**Conclusion**

Both HA and methylprednisolone injections were effective therapies for patients with knee OA. Methylprednisolone showed comparable efficacy in reducing pain and improving functional recovery to HA. And no significant difference was found in long-term of follow-up in terms of adverse effects.

#### 44. RHUMATOID ARTHRITIS

##### Exercise

Arthritis Res Ther. 2018 Mar 15;20(1):48. doi: 10.1186/s13075-018-1513-3.

##### **Pain sensitivity at rest and during muscle contraction in persons with rheumatoid arthritis: a substudy within the Physical Activity in Rheumatoid Arthritis 2010 study.**

Löfgren M<sup>1,2</sup>, Opava CH<sup>3,4</sup>, Demmelmaier I<sup>3</sup>, Fridén C<sup>3</sup>, Lundberg IE<sup>5</sup>, Nordgren B<sup>3,6</sup>, Kosek E<sup>7,8,9</sup>.

##### **BACKGROUND:**

We aimed to explore pressure pain sensitivity and the function of segmental and plurisegmental exercise-induced hypoalgesia (EIH) in persons with rheumatoid arthritis (RA) compared with healthy control subjects (HC).

##### **METHODS:**

Forty-six participants with RA (43 female, 3 male) and 20 HC (16 female, 4 male) participated in the study. Pressure pain thresholds, suprathreshold pressure pain at rest, and segmental and plurisegmental EIH during standardised submaximal contractions were assessed by algometry. Assessments of EIH were made by performing algometry alternately at the contracting (30% of the individual maximum) right m. quadriceps and the resting left m. deltoideus.

##### **RESULTS:**

Participants with RA had higher sensitivity to pressure pain (RA, 318 kPa; HC, 487 kPa;  $p < 0.001$ ), suprathreshold pressure pain 4/10 (RA, 433 kPa; HC, 638 kPa;  $p = 0.001$ ) and suprathreshold pressure pain 7/10 (RA, 620 kPa; HC, 851 kPa;  $p = 0.002$ ) than HC. Segmental EIH (RA, 0.99 vs 1.27;  $p < 0.001$ ; HC, 0.89 vs 1.10;  $p = 0.016$ ) and plurisegmental EIH (RA, 0.95 vs 1.36;  $p < 0.001$ ; HC, 0.87 vs 1.31;  $p < 0.001$ ) increased significantly during static muscle contraction in both groups alike ( $p > 0.05$ ).

##### **CONCLUSIONS:**

Our results indicate a generally increased pain sensitivity but normal function of EIH among persons with RA and offer one possible explanation for pain reduction observed in this group of patients following clinical exercise programmes.

**TRIAL REGISTRATION: ISRCTN registry, ISRCTN25539102 . Retrospectively registered on 4 March 2011.**

**KEYWORDS: Arthritis; Exercise; Pain measurement; Pain threshold**

PMID: 29544539 PMC5856279 DOI: 10.1186/s13075-018-1513-3

**45 A. MANUAL THERAPY LUMBAR & GENERAL****Disc changes with press ups**

Musculoskelet Sci Pract. 2018 Feb;33:67-70. doi: 10.1016/j.msksp.2017.11.008. Epub 2017 Nov 21.

**MRI evaluation of the effects of extension exercises on the disc fluid content and location of the centroid of the fluid distribution.**

Abdollah V<sup>1</sup>, Parent EC<sup>2</sup>, Battié MC<sup>3</sup>.

**BACKGROUND:**

McKenzie prone press-up exercises have been hypothesised to reduce intradiscal pressure, allowing fluid to be reabsorbed into the disc, which could improve the internal stability and local chemical milieu of the disc, potentially reducing symptoms.

**OBJECTIVE:**

To investigate the immediate effects of prone press-up exercises on lumbar disc fluid content and movement.

**DESIGN:**

Quantification of MRI changes before and after a single exercise session.

**METHODS:**

The mid-sagittal T<sub>2</sub>-weighted MR images of 22 volunteers with low back pain were obtained before and immediately after performing press-up exercises. The whole disc and nucleus regions of the L4-5 and L5-S1 discs were then segmented, and their mean signal intensity (MSI) and signal intensity weighted centroid (SIWC) were computed to estimate disc fluid content and displacement.

**RESULTS:**

There were no significant differences between the MSI and the vertical position of the SIWC of the whole disc before and after extension at either disc level (effect size [ES]: -0.23 to 0.09). There was a significant anterior displacement ( $0.1 \pm 5.4$  mm) of the location of the SIWC of the disc after extension exercise at L4-5 (ES: 0.22), but not at L5-S1 (ES: 0.00) or at either level for the nucleus region (ES: -0.06; 0.16).

**CONCLUSION:**

Little evidence was found supporting the hypothesis that press-up exercises affect disc fluid content and distribution. Novel parameters reflecting fluid distribution detected similar or larger effects of the extension than MSI. If such exercises are effective in reducing symptoms, it is likely through other mechanisms than by changing fluid content or distribution.

### 45 B. MANUAL THERAPY CERVICAL

#### Avoiding adverse events

Musculoskelet Sci Pract. 2018 Feb;33:41-45. doi: 10.1016/j.msksp.2017.11.003. Epub 2017 Nov 3.

#### **Considerations to improve the safety of cervical spine manual therapy.**

Hutting N<sup>1</sup>, Kerry R<sup>2</sup>, Coppieters MW<sup>3</sup>, Scholten-Peeters GGM<sup>4</sup>.

Author information

Abstract

Manipulation and mobilisation of the cervical spine are well established interventions in the management of patients with headache and/or neck pain. However, their benefits are accompanied by potential, yet rare risks in terms of serious adverse events, including neurovascular insult to the brain. A recent international framework for risk assessment and management offers directions in the mitigation of this risk by facilitating sound clinical reasoning. The aim of this article is to critically reflect on and summarize the current knowledge about cervical spine manual therapy and to provide guidance for clinical reasoning for cervical spine manual therapy.

#### **KEYWORDS:**

Cervical spine; Clinical reasoning; Complications; Manual therapy; Risk factors; Serious adverse events

PMID: 29153924 DOI: 10.1016/j.msksp.2017.11.003

**52. EXERCISE**

## Longevity, health and exercise

**Physical activity level as a predictor of healthy and chronic disease-free life expectancy between ages 50 and 75**

Tuija Leskinen Sari Stenholm Ville Aalto Jenny Head Mika Kivimäki Jussi Vahtera  
*Age and Ageing*, <https://doi.org/10.1093/ageing/afy016>

**Background**

physical activity promotes healthy aging. However, little is known about the relationship between physical activity levels and healthy and chronic disease-free life expectancy (LE). The study aim was to examine healthy and chronic disease-free LE between ages 50 and 75 and across various levels of physical activity by sex and different occupational statuses.

**Methods**

overall, 34,379 women (mean age 53.2 (SD 2.9) years) and 8,381 men (53.6 (SD 3.2) years) from the Finnish Public Sector study were categorized into five physical activity levels (inactive to vigorously active) according to self-reported physical activity and into three occupational statuses at the first observation point. Partial LE between ages 50 and 75 based on discrete-time multistate life table models was defined using two health indicators: healthy LE based on self-rated health and chronic disease-free LE based on chronic diseases. The average follow-up time for health indicators was 6.8 (SD 5.2) years.

**Results**

a clear dose–response relationship between higher physical activity levels and increased healthy and chronic disease-free LE in men and women, and within occupational statuses was found. On average, vigorously active men and women lived 6.3 years longer in good health and 2.9 years longer without chronic diseases between ages 50 and 75 compared to inactive individuals. The difference in years in good health between vigorously active and inactive individuals was the largest in individuals with low occupation status (6.7 years).

**Conclusion**

higher levels of physical activity increase healthy and chronic disease-free years similarly in men and women, but more among persons with low than with high occupational status.

**59. PAIN****Chronic pain and weight**

Journal of Anesthesia

pp 1–8 | Cite as

**Association of body mass index with chronic pain prevalence: a large population-based cross-sectional study in Japan**

- Keiko Yamada Yasuhiko Kubota Hiroyasu Iso Hiroyuki Oka Junji Katsuhira Ko Matsudaira

**Purpose**

The aim of this study was to examine the association between body mass index and chronic pain.

**Methods**

The outcome was chronic pain prevalence by body mass index (BMI). BMIs of less than 18.5, 18.5–25.0, 25.0–30.0, and 30.0 or over kg/m<sup>2</sup> were defined as underweight, normal weight, overweight, and obese.

**Subjects**

We used data from 4993 participants (2464 men and 2529 women aged 20–79 years) of the Pain Associated Cross-sectional Epidemiological survey in Japan. Sex-stratified multivariable-adjusted odds ratios were calculated with 95% confidence intervals using a logistic regression model including age, smoking, exercise, sleep time, monthly household expenditure, and presence of severe depression. We analyzed all ages and age subgroups, 20–49 and 50–79 years.

**Results**

The prevalence of chronic pain was higher among underweight, overweight, and obese male respondents than those reporting normal weight, with multivariable odds ratios of 1.52 (1.03–2.25), 1.55 (1.26–1.91), and 1.71 (1.12–2.60). According to underweight, only older men showed higher prevalence of chronic pain than normal weight men with odd ratios, 2.19 (1.14–4.20). Being overweight and obese were also associated with chronic pain in women; multivariable odds ratios were 1.48 (1.14–1.93) and 2.09 (1.20–3.64). Being underweight was not associated with chronic pain.

**Conclusion**

There was a U-shaped association between BMI and chronic pain prevalence among men  $\geq 50$  years, and a dose–response association among women. Our finding suggests that underweight should be considered in older men suffering chronic pain.

### 63. PHARMACOLOGY

#### Opium use post RC surgery and pre-education

Journal of Shoulder and Elbow Surgery Original Article

#### Neer Award 2018: the effect of preoperative education on opium consumption in patients undergoing arthroscopic rotator cuff repair: a prospective, randomized clinical trial

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- 

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**Background** Opioids are commonly administered for the treatment of acute and chronic pain symptoms. The current health care system is struggling to deal with increasing medication abuse and rising mortality rates from overdose. Preoperative patient-targeted education on opium use is an avenue yet to be explored. The purpose of the study was to determine whether preoperative narcotics education reduces consumption after arthroscopic rotator cuff repair (ARCR).

#### Methods

Patients undergoing primary ARCR at our institution were randomized to receiving opium-related preoperative education or not. Patients filled out preoperative questionnaires detailing complete medical history and visual analog scale (VAS) for pain. Patients completed questionnaires regarding their opium consumption and pain at their 2-week, 6-week, and 3-month follow-up.

#### Results

The study enrolled 140 patients. Patients in the study group consumed significantly less narcotics than the control group at the 3-month follow-up. Patients in the education group were 2.2 times more likely to discontinue narcotic use by the end of follow-up (odds ratio, 2.19;  $P = .03$ ). In addition, patients with a history of preoperative narcotic use that were in the education group were 6.8 times more likely to discontinue narcotics by the end of follow-up (odds ratio, 6.8;  $P = .008$ ).

#### Discussion/Conclusions

The findings of this study determined that preoperative education intervention significantly decreased the number of narcotic pills consumed at 3 months after ARCR. In addition, education resulted in earlier cessation of opioids; therefore, directed patient education can help alleviate the current opium epidemic.

**Level of evidence** Level I; Randomized Controlled Trial; Treatment Study