

## ABSTRACTS

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## 2. LBP

### Missed diagnosis

#### Low back pain misdiagnosis or missed diagnosis: Core principles

A.P. Monie, P.J. Fazey, K.P. Singer

##### Highlights

- Two cases of chronic mechanical low back pain were reported.
- Both cases had lengthy histories of inadequate assessments failed interventions.
- Using best practice guidelines, both cases were assessed and managed.
- Marked clinical improvements were recorded across all outcome measures.

##### Abstract

Consensus guidelines for the management of low back pain recommend that the clinician use contemporary best practice for assessment and treatment, consider biopsychosocial factors and, if chronic, use a multimodal and multi-disciplinary approach. Where guidelines are not followed and basic assessment is inadequate the diagnosis may be compromised and the sequelae of errors compounded. Factors such as a lack of knowledge or recognition of the common structure specific pain referral patterns, poor clinical reasoning, inappropriate referral and predilection for popular management approaches also contribute to mis-diagnosis and mis-management. This report describes two cases of chronic low back pain with lengthy histories of multiple failed interventions to highlight the consequences of focussing on a singular approach to the exclusion of evidence based pathways and the resulting risk of a missed diagnosis. The eventual management to mitigate these problems is reported with the aid of low back pain outcome measures, computer-aided combined movement examination, disability and pain questionnaires and health quality of life surveys.

## Exercise and LBP

Eur Spine J. 2015 Oct 22.

**Effects of a multidisciplinary programme on postural stability in patients with chronic recurrent low back pain: preliminary findings.**

Pieber K<sup>1</sup>, Herceg M<sup>2</sup>, Csapo R<sup>3</sup>, Wiesinger G<sup>4</sup>, Quittan M<sup>5</sup>, Crevenna R<sup>2</sup>, Mittermaier C<sup>6</sup>.  
Author information

## Abstract

**PURPOSE:**

This longitudinal study investigated the effects of a multidisciplinary rehabilitation programme on postural stability in patients with low back pain. While the consequences of such rehabilitation programme have been described for pain, mobility, strength, and functional disability, the effects on postural stability have not been examined so far.

**METHODS:**

Thirty-four patients suffering from chronic low back pain were included to participate in a multidisciplinary rehabilitation programme. We assessed postural stability, pain, strength of the lumbar extensor muscles, and functional disability. The examinations were performed before the intervention, after 20 training sessions ("half-way point"), and at the end of the rehabilitation programme.

**RESULTS:**

All outcome measures improved significantly from baseline to the first follow-up evaluation and remained constant until completion of the rehabilitation programme.

**CONCLUSIONS:**

A multidisciplinary outpatient rehabilitation programme may improve postural stability, muscle strength, pain, and functional disability in patients with chronic low back pain.

**KEYWORDS:**

Balance; Functional Reach Test; Posturography; Sensorimotor training; Sensory organization test  
PMID:26493702

O'Sullivan/fear and LBP

BMJ Open. 2015 Oct 19;5(10):e008847. doi: 10.1136/bmjopen-2015-008847.

**Beliefs underlying pain-related fear and how they evolve: a qualitative investigation in people with chronic back pain and high pain-related fear.**

Bunzli S<sup>1</sup>, Smith A<sup>1</sup>, Schütze R<sup>2</sup>, O'Sullivan P<sup>1</sup>.

Author information

Abstract

**OBJECTIVES:**

The fear-avoidance model describes how the belief that pain is a sign of damage leads to pain-related fear and avoidance. But other beliefs may also trigger the fear and avoidance responses described by the model. Experts have called for the next generation of fear avoidance research to explore what beliefs underlie pain-related fear and how they evolve. We have previously described damage beliefs and suffering/functional loss beliefs underlying high pain-related fear in a sample of individuals with chronic back pain. The aim of this study is to identify common and differential factors associated with the beliefs in this sample.

**DESIGN:**

A qualitative study employing semistructured interviews.

**SETTING:**

Musculoskeletal clinics in Western Australia.

**PARTICIPANTS:**

36 individuals with chronic back pain and high scores on the Tampa Scale (mean 47/68).

**RESULTS:**

The overarching theme was a pain experience that did not make sense to the participants. The experience of pain as unpredictable, uncontrollable and intense made it threatening. Attempting to make sense of the threatening pain, participants with damage beliefs drew on past personal experiences of pain, societal beliefs, and sought diagnostic certainty. Met with diagnostic uncertainty, or diagnoses of an underlying pathology that could not be fixed, they were left fearful of damage and confused about how to 'fix' it. Participants with suffering/functional loss beliefs drew on past personal experiences of pain and sought help from healthcare professionals to control their pain. Failed treatments and the repeated failure to achieve functional goals left them unable to make 'sensible' decisions of what to do about their pain.

**CONCLUSIONS:**

The findings raise the suggestion that sense-making processes may be implicated in the fear-avoidance model. Future research is needed to explore whether fear reduction may be enhanced by considering beliefs underlying fear and providing targeted intervention to help individuals make sense of their pain.

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**KEYWORDS:**

PAIN MANAGEMENT; QUALITATIVE RESEARCH; REHABILITATION MEDICINE

PMID:26482773

## RA and LBP

Int J Rheum Dis. 2015 Oct 21. doi: 10.1111/1756-185X.12784.

**Pain intensity, temperament traits and social support as determinants of trauma symptoms in patients suffering from rheumatoid arthritis and low-back pain.**

Rzeszutek M<sup>1</sup>, Oniszczenko W<sup>2</sup>, Schier K<sup>2</sup>, Biernat-Kałuza E<sup>3</sup>, Gasik R<sup>4</sup>.  
Author information

## Abstract

**AIM:**

The main goal of our study was to investigate the relationship between age, duration of pain, pain intensity, temperament traits as postulated by the Regulative Theory of Temperament (RTT), social support dimensions and the level of trauma symptoms, as appear in post-traumatic stress disorder (PTSD) in a sample of 300 patients suffering from chronic pain in two groups comprised of 150 patients with a clinical diagnosis of rheumatoid arthritis (RA) and 150 patients with a clinical diagnosis of low-back pain (LBP). They were analyzed together as a one group of 300 patients with chronic pain.

**METHOD:**

Temperament was measured with the Formal Characteristics of Behaviour - Temperament Inventory (FCB-TI). Social support was tested with the Berlin Social Support Scales (BSSS). The Numerical Rating Scale (NRS-11) was used to measure pain intensity. The level of trauma symptoms was assessed with the Post-Traumatic Stress Disorder Factorial Version Inventory (PTSDF).

**RESULTS:**

The results of our study suggest that the intensity of pain, participants' age, Emotional Reactivity and Sensory Sensitivity as temperament traits, need for support, and actually received social support were related to the level of trauma symptoms. The sum of the squared semi-partial correlations showed that all six variables (age, pain intensity, Emotional Reactivity, Sensory Sensitivity, need for support and actually received support), account for 20% of the variance of general trauma symptoms level.

**CONCLUSION:**

The importance of temperament traits, social support and trauma symptoms should be taken into account in psychotherapy accompanying pharmacotherapy for pain.

**KEYWORDS:** chronic pain; post-traumatic stress disorder; social support; temperament  
PMID: 26487241

**Medications and LBP****Pharmacological treatment of acute low back pain**

JAMA, 10/26/2015 Friedman BW, et al.

**T**o compare functional outcomes and pain at 1 week and 3 months after an ED visit for acute LBP among patients randomized to a 10-day course of (1) naproxen+placebo; (2) naproxen+cyclobenzaprine; or (3) naproxen+oxycodone/acetaminophen. Among patients with acute, nontraumatic, nonradicular LBP presenting to the ED, adding cyclobenzaprine or oxycodone/acetaminophen to naproxen alone did not improve functional outcomes or pain at 1-week follow-up. These findings do not support use of these additional medications in this setting.

**Methods**

- This randomized, double-blind, 3-group study was conducted at one urban ED in the Bronx, New York City.
- Patients who presented with nontraumatic, nonradicular LBP of 2 weeks' duration or less were eligible for enrollment upon ED discharge if they had a score greater than 5 on the Roland-Morris Disability Questionnaire (RMDQ). The RMDQ is a 24-item questionnaire commonly used to measure LBP and related functional impairment on which 0 indicates no functional impairment and 24 indicates maximum impairment. Beginning in April 2012, a total of 2588 patients were approached for enrollment.
- Of the 323 deemed eligible for participation, 107 were randomized to receive placebo and 108 each to cyclobenzaprine and to oxycodone/acetaminophen.
- Follow-up was completed in December 2014.
- The primary outcome was improvement in RMDQ between ED discharge and 1 week later.

**Results**

- Demographic characteristics were comparable among the 3 groups.
- At baseline, median RMDQ score in the placebo group was 20 (interquartile range [IQR], 17–21), in the cyclobenzaprine group 19 (IQR, 17–21), and in the oxycodone/acetaminophen group 20 (IQR, 17–22).
- At 1-week follow-up, the mean RMDQ improvement was 9.8 in the placebo group, 10.1 in the cyclobenzaprine group, and 11.1 in the oxycodone/acetaminophen group.
- Between-group difference in mean RMDQ improvement for cyclobenzaprine vs placebo was 0.3 (98.3% CI, -2.6 to 3.2; P=.77), for oxycodone/acetaminophen vs placebo, 1.3 (98.3% CI, -1.5 to 4.1; P=.28), and for oxycodone/acetaminophen vs cyclobenzaprine, 0.9 (98.3% CI, -2.1 to 3.9; P=.45).

### 3. DISC

#### Dose response

Arthritis Res Ther. 2015 Oct 23;17(1):297.

#### **A Dose-response relationship between severity of disc degeneration and intervertebral disc height in the lumbosacral spine.**

Teichtahl AJ<sup>1,2</sup>, Urquhart DM<sup>3</sup>, Wang Y<sup>4</sup>, Wluka AE<sup>5</sup>, Heritier S<sup>6</sup>, Cicuttini FM<sup>7</sup>.  
Author information

Abstract

#### **INTRODUCTION:**

Varied definitions of disc pathology exist in the literature. Magnetic Resonance Imaging (MRI) classification systems incorporate several qualitative features including disc appearance, the distinction between the nucleus and the annulus, signal intensity and intervertebral disc height. The lack of a continuous measure has made it difficult to sensitively examine degenerative disc disease. This study sought to examine the relationship between disc degeneration and intervertebral disc height.

#### **METHODS:**

72 community-based individuals not selected for low back pain had MRI from which the presence of lumbosacral disc degeneration was identified using the Pfirrmann grading system, and intervertebral disc height was measured.

#### **RESULTS:**

At each lumbosacral level, with higher grade of disc degeneration, intervertebral disc height was reduced (all  $p \leq 0.003$ ). Results remained unchanged when grade 5 disc degeneration, which necessitated a collapsed disc space, was excluded from analyses (all  $p \leq 0.03$ ). To quantify these associations, at each lumbosacral level, for every grade increase in disc degeneration, there was a reduction in intervertebral disc height, after adjusting for age, gender, Body mass index and smoking history ( $\beta$  range from -0.98 mm to -1.60 mm, 95 % CI range from -2.37 to -0.31, all  $p \leq 0.005$ ).

#### **CONCLUSION:**

This study has demonstrated a negative dose-response relationship between increasing severity of disc degeneration with a reduction in intervertebral disc height. Although the assessment of disc degeneration incorporates a number of qualitative measures, these data substantiate the utility of intervertebral disc height as a quantitative and continuous outcome measure in epidemiological studies, and potentially clinical practice.

PMID:26498120

## 5. SURGERY

### Fusion and fx's

Bone Joint J. 2015 Oct;97-B(10):1411-6. doi: 10.1302/0301-620X.97B10.34927.

#### **Impact of lumbar instrumented circumferential fusion on the development of adjacent vertebral compression fracture.**

Li YC<sup>1</sup>, Yang SC<sup>1</sup>, Chen HS<sup>1</sup>, Kao YH<sup>1</sup>, Tu YK<sup>1</sup>.

Author information

#### Abstract

We evaluated the impact of lumbar instrumented circumferential fusion on the development of adjacent level vertebral compression fractures (VCFs). Instrumented posterior lumbar interbody fusion (PLIF) has become a popular procedure for degenerative lumbar spine disease. The immediate rigidity produced by PLIF may cause more stress and lead to greater risk of adjacent VCFs. However, few studies have investigated the relationship between PLIF and the development of subsequent adjacent level VCFs. Between January 2005 and December 2009, a total of 1936 patients were enrolled. Of these 224 patients had a new VCF and the incidence was statistically analysed with other covariants. In total 150 (11.1%) of 1348 patients developed new VCFs with PLIF, with 108 (72%) cases at adjacent segment. Of 588 patients, 74 (12.5%) developed new subsequent VCFs with conventional posterolateral fusion (PLF), with 37 (50%) patients at an adjacent level. Short-segment fusion, female and age older than 65 years also increased the development of new adjacent VCFs in patients undergoing PLIF. In the osteoporotic patient, more rigid fusion and a higher stress gradient after PLIF will cause a higher adjacent VCF rate. Cite this article: Bone Joint J 2015;97-B:1411-16.

**KEYWORDS:** Adjacent fracture; instrumentation; lumbar interbody fusion  
PMID: 26430018



## 7. PELVIC ORGANS/WOMAN'S HEALTH

### Breast-feeding

J Adv Nurs. 2015 Oct 23. doi: 10.1111/jan.12832.

#### **Understanding the relationship between breastfeeding and postnatal depression: the role of pain and physical difficulties.**

Brown A<sup>1</sup>, Rance J<sup>1</sup>, Bennett P<sup>2</sup>.  
Author information

#### Abstract

##### **AIMS:**

To examine the relationship between specific reasons for stopping breastfeeding and depressive symptoms in the postnatal period.

##### **BACKGROUND:**

Difficulty breastfeeding has been connected to postnatal depression although it is unclear whether difficulty breastfeeding precedes or succeeds a diagnosis. However, the concept of 'breastfeeding difficulty' is wide and includes biological, psychological and social factors.

##### **DESIGN:**

A cross-sectional self-report survey.

##### **METHODS:**

Data were collected between December 2012 and February 2013. 217 women with an infant aged 0-6 months who had started breastfeeding at birth but had stopped before 6 months old completed a questionnaire examining breastfeeding duration and reasons for stopping breastfeeding. They further completed a copy of the Edinburgh Postnatal Depression Scale.

##### **RESULTS:**

A short breastfeeding duration and multiple reasons for stopping breastfeeding were associated with higher depression score. However, in a regression analysis only the specific reasons of stopping breastfeeding for physical difficulty and pain remained predictive of depression score.

##### **CONCLUSIONS:**

Understanding women's specific reasons for stopping breastfeeding rather than breastfeeding duration is critical in understanding women's breastfeeding experience and providing women with emotional support. Issues with pain and physical breastfeeding were most indicative of postnatal depression in comparison to psychosocial reasons highlighting the importance of spending time with new mothers to help them with issues such as latch.

**KEYWORDS:** breastfeeding; difficulty; formula feeding; health visiting; midwives; pain; postnatal depression  
PMID: 26494433

**Caffeine and symptoms**

Menopause. 2015 Feb;22(2):155-8. doi: 10.1097/GME.0000000000000301.

**Caffeine and menopausal symptoms: what is the association?**

Faubion SS<sup>1</sup>, Sood R, Thielen JM, Shuster LT.  
Author information

Abstract

**OBJECTIVE:**

We assessed the association between caffeine intake and menopausal symptom bother, particularly vasomotor symptoms.

**METHODS:**

A cross-sectional survey was conducted using the Menopause Health Questionnaire, which is a comprehensive survey of menopause-related health information. Questionnaires were completed by 2,507 consecutive women who presented with menopausal concerns at the Women's Health Clinic at Mayo Clinic (Rochester, MN) between July 25, 2005 and July 25, 2011. Data from 1,806 women who met all inclusion criteria were analyzed. Menopausal symptom ratings were compared between women who used caffeine and women who did not use caffeine using two-sample t test and analysis of covariance, with smoking and menopause status included as covariates. In all cases, two-tailed  $P < 0.05$  was considered statistically significant.

**RESULTS:**

Caffeine use was positively associated with mean (SD) vasomotor symptom scores (2.30 [0.91] vs 2.15 [0.94],  $P = 0.011$ ). This finding remained significant after adjustment for menopause status and cigarette smoking ( $P = 0.027$ ).

**CONCLUSIONS:**

Caffeine use is associated with greater vasomotor symptom bother in postmenopausal women.

Comment in

PMID:25051286

**Supplements did not help menopause**

Maturitas. 2015 Jul;81(3):377-83. doi: 10.1016/j.maturitas.2015.04.007. Epub 2015 Jun 1.

**Calcium and vitamin D supplementation do not influence menopause-related symptoms: Results of the Women's Health Initiative Trial.**

LeBlanc ES<sup>1</sup>, Hedlin H<sup>2</sup>, Qin F<sup>2</sup>, Desai M<sup>2</sup>, Wactawski-Wende J<sup>3</sup>, Perrin N<sup>4</sup>, Manson JE<sup>5</sup>, Johnson KC<sup>6</sup>, Masaki K<sup>7</sup>, Tyllavsky FA<sup>6</sup>, Stefanick ML<sup>8</sup>.

Author information

Abstract

**BACKGROUND:**

It is unknown whether supplementation with calcium and vitamin D has an impact on menopause-related symptoms.

**METHODS:**

As part of the Women's Health Initiative Calcium/Vitamin D Supplementation Trial (CaD), women were randomized at 40 clinical sites to elemental calcium carbonate 1000 mg with vitamin D 400 IU daily or placebo. At the CaD baseline visit (year 1 or year 2) and during a mean follow-up of 5.7 years, participants provided data on menopause-related symptoms via questionnaires. Generalized linear mixed effects techniques were used to address research questions.

**RESULTS:**

After excluding participants with missing data (N=2125), we compared menopause-related symptoms at follow-up visits of 17,101 women randomized to CaD with those of 17,056 women given the placebo. Women in the CaD arm did not have a different number of symptoms at follow-up compared to women taking the placebo (p=0.702). Similarly, there was no difference between sleep disturbance, emotional well-being, or energy/fatigue at follow-up in those who were randomized to CaD supplementation compared to those taking the placebo.

**CONCLUSIONS:**

Our data suggest that supplementation with 1000 mg of calcium plus 400 IU of vitamin D does not influence menopause-related symptoms over an average of 5.7 years of follow-up among postmenopausal women with an average age of 64 at the WHI baseline visit.

**KEYWORDS:** Calcium; Hot flashes; Menopause; Mood; Sleep; Vitamin D  
PMID:26044075

## Nerve changes in endometriosis

Hum Reprod. 2015 Oct 15. pii: dev259.

**Are endometrial nerve fibres unique to endometriosis? A prospective case-control study of endometrial biopsy as a diagnostic test for endometriosis in women with pelvic pain.**

Ellett L<sup>1</sup>, Readman E<sup>2</sup>, Newman M<sup>3</sup>, McIlwaine K<sup>2</sup>, Villegas R<sup>2</sup>, Jagasia N<sup>2</sup>, Maher P<sup>2</sup>.

Author information

Abstract

**STUDY QUESTION:** *Can the presence of endometrial nerve fibres be used as a diagnostic test for endometriosis in women with pelvic pain?*

**SUMMARY ANSWER:** Endometrial fine nerve fibres were seen in the endometrium of women both with and without endometriosis, making their detection a poor diagnostic tool for endometriosis.

**WHAT IS KNOWN ALREADY:** Laparoscopy and biopsy are currently the gold standard for making a diagnosis of endometriosis. It has been reported that small density nerve fibres in the functional layer of the endometrium are unique to women with endometriosis and hence nerve fibre detection could function as a less invasive diagnostic test of endometriosis. However, it may be that other painful conditions of the pelvis are also associated with these nerve fibres. We therefore focused this prospective study on women with pelvic pain to examine the efficacy of endometrial nerve fibre detection as a diagnostic test for endometriosis.

**STUDY DESIGN, SIZE, DURATION:** This prospective case-control study conducted between July 2009 and July 2013 included 44 women with pelvic pain undergoing laparoscopic examination for the diagnosis of endometriosis. Immunohistochemical nerve fibre detection in endometrial curettings and biopsies using anti-protein gene product 9.5 was compared with surgical diagnosis.

**PARTICIPANTS/MATERIALS, SETTINGS, METHODS:** Paired endometrial biopsies and curettings were taken from patients with (n = 22, study group) and without (n = 22, control group) endometriosis. Tissue was analysed by immunohistochemistry and nerve fibres were counted whenever they were present in the functional layer of the endometrium.

**MAIN RESULTS AND THE ROLE OF CHANCE:** Fine nerve fibres were present in the eutopic endometrium of patients both with and without endometriosis. The presence of nerve fibres in curettings was not effective for either diagnosing or excluding endometriosis; sensitivity and specificity were 31.8 and 45.5% respectively, positive predictive value was 36.8% and negative predictive value was 40.0%. Few endometrial biopsy specimens were found to have nerve fibres present; sensitivity and specificity for endometrial biopsy were 13.6 and 68.2% respectively, positive predictive value was 30.0% and negative predictive value was 44.1%.

**LIMITATIONS, REASONS FOR CAUTION:** This was a relatively small sample size and studies like this are subject to the heterogeneous nature of the patient population and tissue samples, despite our best efforts to regulate these parameters.

**WIDER IMPLICATIONS OF THE FINDINGS:** Our results demonstrate that fine nerve fibres are present in women with and without endometriosis. Future work should focus on the function of endometrial nerves and whether these nerves are involved with the subfertility or pain that endometriosis sufferers experience. Our study does not support the detection of endometrial nerve fibres as a non-invasive diagnostic test of endometriosis in women with pelvic pain.

**STUDY FUNDING/COMPETING INTERESTS:** This work was funded by the Medical Research Foundation for Women and Babies. The authors declare no conflicts of interest.

**KEYWORDS:** endometrial biopsy; endometriosis diagnosis; immunohistochemistry; laparoscopy; nerve fibres

PMID:26472151

**Prostrate CA improvements**

Eur Urol. 2015 Nov;68(5):899-905. doi: 10.1016/j.eururo.2015.07.074. Epub 2015 Aug 17.

**Unexpected Long-term Improvements in Urinary and Erectile Function in a Large Cohort of Men with Self-reported Outcomes Following Radical Prostatectomy.**

Lee JK<sup>1</sup>, Assel M<sup>2</sup>, Thong AE<sup>3</sup>, Sjoberg DD<sup>2</sup>, Mulhall JP<sup>3</sup>, Sandhu J<sup>3</sup>, Vickers AJ<sup>2</sup>, Ehdai B<sup>3</sup>.  
Author information

Abstract

**BACKGROUND:**

It is generally assumed that if a man does not regain urinary continence or erectile function within 12 mo of radical prostatectomy (RP), then the chance of subsequent recovery is low.

**OBJECTIVE:**

To determine the probability of achieving good urinary function (UF) or erectile function (EF) up to 48 mo postoperatively in men who reported poor UF or EF at 12 mo after RP.

**DESIGN, SETTING, AND PARTICIPANTS:**

We identified 3187 patients who underwent RP from 2007 through 2013 at a tertiary institution and had extended multidisciplinary follow-up with patient-reported UF and EF scores at  $\geq 12$  mo.

**INTERVENTION:**

Open or minimally invasive RP.

**OUTCOME MEASUREMENTS AND STATISTICAL ANALYSIS:**

Primary outcome was good UF as defined by a urinary score  $\geq 17$  (range: 0-21) or good EF as defined by a modified International Index of Erectile Function-6 score  $\geq 22$  (range: 1-30). The probability of functional recovery beyond 12 mo was determined by Kaplan-Meier analyses.

**RESULTS AND LIMITATIONS:**

Among patients incontinent at 12 mo, the probability of achieving good UF at 24, 36, and 48 mo was 30%, 49%, and 59%. In patients experiencing erectile dysfunction at 12 mo, the probability of recovering EF at 24, 36, and 48 mo was 22%, 32%, and 40%. On multivariable analyses, 12-mo functional score and age were associated with recovery, but only score was consistently significant.

**CONCLUSIONS:**

Men with incontinence or erectile dysfunction at 12 mo have higher than anticipated rates of subsequent functional improvement. Probability of recovery is strongly influenced by score at 12 mo. Further research should address the impact of ongoing multidisciplinary follow-up care on our observed rates of recovery.

**PATIENT SUMMARY:**

Many prostate cancer patients continue to recover urinary and erectile function after 12 mo. The level of functional recovery by 12 mo is associated with long-term recovery and should be discussed by the physician and patient when deciding on rehabilitative interventions.

**KEYWORDS:** Erectile dysfunction; Patient-reported outcomes; Radical prostatectomy; Urinary incontinence

PMID: 26293181

**Estrogen and activity**

Med Sci Sports Exerc. 2015 Oct 12.

**Association of Active and Sedentary Behaviors with Postmenopausal Estrogen Metabolism.**

Dallal CM<sup>1</sup>, Brinton LA, Matthews CE, Pfeiffer RM, Hartman TJ, Lissowska J, Falk RT, Garcia-Closas M, Xu X, Veenstra TD, Gierach GL.

Author information

Abstract

**PURPOSE:**

Physical activity may reduce endogenous estrogens but few studies have assessed effects on estrogen metabolism and none have evaluated sedentary behavior in relation to estrogen metabolism. We assessed relationships between accelerometer-measured physical activity and sedentary behavior and 15 urinary estrogens and estrogen metabolites (EM) among postmenopausal controls from a population-based breast cancer case-control study conducted in Poland (2000-2003).

**METHODS:**

Postmenopausal women (N=542) were ages 40 to 72 years and not currently using hormone therapy. Accelerometers, worn for seven days, were used to derive measures of average activity (counts/day) and sedentary behavior (<100 counts/min/day). EM were measured in 12-hour urine samples using liquid chromatography-tandem mass spectrometry. EM were analyzed individually, in metabolic pathways (C-2, -4, or -16), and as ratios relative to parent estrogens. Geometric means of EM by tertiles of accelerometer-measures, adjusted for age and body mass, were computed using linear models.

**RESULTS:**

High activity was associated with lower levels of estrone and estradiol (p-trend=0.01) while increased sedentary time was positively associated with these parent estrogens (p-trend=0.04). Inverse associations were observed between high activity and 2-methoxyestradiol, 4-methoxyestradiol, 17-epiestriol and 16-epiestriol (p-trend=0.03). Sedentary time was positively associated with methylated catechols in the 2- and 4-hydroxylation pathways (p-trend≤0.04). Women in the highest tertile of activity had increased hydroxylation at the C-2, -4, and -16 sites relative to parent estrogens (p-trend≤0.02) while increased sedentary time was associated with a lower 16-pathway:parent estrogen ratio (p-trend=0.01).

**CONCLUSIONS:**

Higher activity was associated with lower urinary estrogens, possibly through increased estrogen hydroxylation and subsequent metabolism, while sedentary behavior may reduce metabolism.

PMID: 26460631

## Celiac disease and obstetrics

Am J Obstet Gynecol. 2015 Sep 29. pii: S0002-9378(15)01194-1. doi: 10.1016/j.ajog.2015.09.080.

**Celiac disease and obstetric complications: a systematic review and meta-analysis.**

Saccone G<sup>1</sup>, Berghella V<sup>2</sup>, Sarno L<sup>1</sup>, Maruotti GM<sup>1</sup>, Cetin I<sup>3</sup>, Greco L<sup>4</sup>, Khashan AS<sup>5</sup>, McCarthy F<sup>6</sup>, Martinelli D<sup>7</sup>, Fortunato F<sup>7</sup>, Martinelli P<sup>8</sup>.

Author information

## Abstract

**OBJECTIVE:** The aim of this meta-analysis was to evaluate the risk of developing obstetric complications in women with celiac disease.

**DATA SOURCES:** Electronic databases were searched from their inception until February 2015.

**STUDY ELIGIBILITY CRITERIA:** We included all cohort studies reporting the incidence of obstetric complications in women with celiac disease compared to women without celiac disease (i.e. control group). Studies without a control group and case-control studies were excluded.

**STUDY APPRAISAL AND SYNTHESIS METHODS:** The primary outcome was defined a priori and was the incidence of a composite of obstetric complications including intrauterine growth restriction (IUGR), small for gestational age (SGA), low birth weight (LBW), preeclampsia and preterm birth (PTB). Secondary outcomes included the incidence of PTB, IUGR, stillbirth, preeclampsia, SGA and LBW. The review was registered with PROSPERO (CRD42015017263) before data extraction. All authors were contacted in order to obtain the original databases and perform individual participant data (IPD) meta-analysis. Primary and secondary outcomes were assessed in the aggregate data analysis as well as in the IPD meta-analysis.

**RESULTS:** We included 10 cohort studies (4,844,555 women) in this meta-analysis. Four authors kindly provided the entire databases for the IPD analysis. Since that none of the included studies stratified data for the primary outcome (i.e. composite outcome) assessing this outcome for the aggregate analysis was not feasible. Aggregate data analysis showed that, compared to women in the control group, women with celiac disease (both treated and untreated) had a significantly higher risk of developing PTB (aOR 1.35, 95% CI 1.09 to 1.66), IUGR (OR 2.48, 95% CI 1.32 to 4.67), stillbirth (OR 4.84, 95% CI 1.08 to 21.75), LBW (OR 1.63, 95% CI 1.06 to 2.51), and SGA (OR 4.52; 95% CI 1.02 to 20.08), while no statistically significant difference was found in the incidence of preeclampsia (OR 2.45, 95% CI 0.90 to 6.70). The risk of PTB was still significantly higher both in subgroup analysis of only diagnosed and treated celiac disease women (OR 1.26, 95% CI 1.06 to 1.48) and in subgroup analysis of only undiagnosed and untreated celiac disease women (OR 2.50, 95% CI 1.06 to 5.87). Women with diagnosed and treated celiac disease had a significantly lower risk of developing PTB compared to undiagnosed and untreated celiac disease (OR 0.80, 95% CI 0.64 to 0.99). The IPD meta-analysis showed that women with celiac disease had a significantly higher risk of composite obstetric complications compared to controls (OR 1.51, 95% CI 1.17 to 1.94). Our IPD concurs with the aggregate analysis for all the secondary outcomes.

**CONCLUSIONS:** In summary, women with celiac disease had a significantly higher risk of developing obstetric complications including PTB, IUGR, stillbirth, LBW and SGA.

**KEYWORDS:** Preterm birth; celiac disease; metaanalysis; pregnancy; small for gestational age  
PMID:26432464

## 8. VISCERA

### Crohn's disease

#### Inherited determinants of Crohn's disease and ulcerative colitis phenotypes

The Lancet, 10/28/2015 Cleynen I, et al.

The authors undertook the largest genotype association study, to date, in widely used clinical subphenotypes of inflammatory bowel disease with the goal of further understanding the biological relations between diseases. The data support a continuum of disorders within inflammatory bowel disease, much better explained by three groups (ileal Crohn's disease, colonic Crohn's disease, and ulcerative colitis) than by Crohn's disease and ulcerative colitis as currently defined. Disease location is an intrinsic aspect of a patient's disease, in part genetically determined, and the major driver to changes in disease behaviour over time.

#### Methods

- This study included patients from 49 centres in 16 countries in Europe, North America, and Australasia.
- The authors applied the Montreal classification system of inflammatory bowel disease subphenotypes to 34819 patients (19713 with Crohn's disease, 14683 with ulcerative colitis) genotyped on the ImmunoChip array.
- They tested for genotype–phenotype associations across 156154 genetic variants.
- They generated genetic risk scores by combining information from all known inflammatory bowel disease associations to summarise the total load of genetic risk for a particular phenotype.
- They used these risk scores to test the hypothesis that colonic Crohn's disease, ileal Crohn's disease, and ulcerative colitis are all genetically distinct from each other, and to attempt to identify patients with a mismatch between clinical diagnosis and genetic risk profile.

#### Results

- After quality control, the primary analysis included 29838 patients (16902 with Crohn's disease, 12597 with ulcerative colitis).
- Three loci (NOD2, MHC, and MST1 3p21) were associated with subphenotypes of inflammatory bowel disease, mainly disease location (essentially fixed over time; median follow-up of 10.5 years).
- Little or no genetic association with disease behaviour (which changed dramatically over time) remained after conditioning on disease location and age at onset.
- The genetic risk score representing all known risk alleles for inflammatory bowel disease showed strong association with disease subphenotype ( $p=1.65 \times 10^{-78}$ ), even after exclusion of NOD2, MHC, and 3p21 ( $p=9.23 \times 10^{-18}$ ).
- Predictive models based on the genetic risk score strongly distinguished colonic from ileal Crohn's disease.
- The genetic risk score could also identify a small number of patients with discrepant genetic risk profiles who were significantly more likely to have a revised diagnosis after follow-up ( $p=6.8 \times 10^{-4}$ ).



**10 A. CERVICAL SPINE**

**Anomalous spinous process**

Spine (Phila Pa 1976). 2015 Aug 4.

**Anomalous Cervical Spinous Process Leading to Myelopathy.**

Pithwa YK<sup>1</sup>.

Author information

Abstract

**STUDY DESIGN:**

A case report and literature reviewObjective. To present a rare case of anomalous spinous process of sixth cervical vertebra invaginating within the spinal canal, causing myelopathy and being successfully managed with surgical excisionSummary of Background Data. Though anomalous development of posterior arch of atlas and axis have been documented to cause impingement on spinal cord, there has been no documented literature on impingement of anomalous free-floating spinous process of subaxial spine causing compressive myelopathy.

**METHODS:**

A 42-year old female patient presenting with features of cervical myelopathy was investigated and found to have anomalous free-floating spinous process of sixth cervical vertebra impinging onto the cord.

**RESULTS:**

Patient underwent surgical excision of the anomalous bone and had a satisfactory clinical outcome.

**CONCLUSIONS:**

Though hitherto unreported, this rare anomaly of anomalous spinous process needs to be borne in mind while evaluating a relatively young patient with myelopathy. Surgical excision of the free-floating anomalous spinous process yields satisfactory outcome.

PMID:26244406

**Surgery vs. PT in radiculopathy – not a good result**

Spine (Phila Pa 1976). 2015 Jul 17.

**Factors affecting the outcome of surgical versus nonsurgical treatment of cervical radiculopathy - a randomized, controlled study.**

Engquist M<sup>1</sup>, Löfgren H, Öberg B, Holtz A, Peolsson A, Söderlund A, Vavruch L, Lind B.  
Author information

Abstract

**STUDY DESIGN:**

Prospective randomized controlled trial.

**OBJECTIVE:**

To analyze factors that may influence the outcome of anterior cervical decompression and fusion (ACDF) followed by physiotherapy versus physiotherapy alone for treatment of patients with cervical radiculopathy.

**SUMMARY OF BACKGROUND DATA:**

An understanding of patient-related factors affecting the outcome of ACDF is important for preoperative patient selection. No previous prospective, randomized study of treatment effect modifiers relating to outcome of ACDF compared with physiotherapy has been carried out.

**METHODS:**

Sixty patients with cervical radiculopathy were randomized to ACDF followed by physiotherapy or physiotherapy alone. Data for possible modifiers of treatment outcome at one year, such as sex, age, duration of pain, pain intensity, disability (Neck Disability Index, NDI), patient expectations of treatment, anxiety due to neck/arm pain, distress (Distress And Risk Assessment Method, DRAM), self efficacy (Self Efficacy Scale, SES) health status (EQ-5D) and MRI findings were collected. A multivariate analysis was performed to find treatment effect modifiers affecting the outcome regarding arm/ neck pain intensity and NDI.

**RESULTS:**

Factors that significantly altered the treatment effect between treatment groups in favor of surgery were: duration of neck pain < 12 months ( $p = 0.007$ ), duration of arm pain < 12 months ( $p = 0.01$ ) and female sex ( $p = 0.007$ ) (outcome: arm pain), low EQ-5D index (outcome: neck pain,  $p = 0.02$ ), high levels of anxiety due to neck/arm pain (outcome: neck pain,  $p = 0.02$  and NDI,  $p = 0.02$ ), low SES score ( $p = 0.05$ ) and high DRAM score ( $p = 0.04$ ). (outcome: NDI). No factors were found to be associated with better outcome with physiotherapy alone.

**CONCLUSIONS:**

In this prospective, randomized study of patients with cervical radiculopathy, short duration of pain, female sex, low health quality, high levels of anxiety due to neck/arm pain, low self efficacy and a high level of distress before treatment were associated with better outcome from surgery. No factors were found to be associated with better outcome from physiotherapy alone.

PMID:26192721

### 13. CRANIUM/TMJ

#### TMJ myofascial HA's

J Oral Rehabil. 2015 Oct 6. doi: 10.1111/joor.12357.

#### Headache attributed to masticatory myofascial pain: impact on facial pain and pressure pain threshold.

Costa YM<sup>1,2,3</sup>, Porporatti AL<sup>1</sup>, Stuginski-Barbosa J<sup>1</sup>, Bonjardim LR<sup>4</sup>, Speciali JG<sup>5</sup>, Conti PC<sup>1</sup>.  
Author information

#### Abstract

There is no clear evidence on how a headache attributed to temporomandibular disorder (TMD) can hinder the improvement of facial pain and masticatory muscle pain. The aim of this study was to measure the impact of a TMD-attributed headache on masticatory myofascial (MMF) pain management. The sample was comprised of adults with MMF pain measured according to the revised research diagnostic criteria for temporomandibular disorders (RDC/TMD) and additionally diagnosed with (Group 1, n = 17) or without (Group 2, n = 20) a TMD-attributed headache. Both groups received instructions on how to implement behavioural changes and use a stabilisation appliance for 5 months. The reported facial pain intensity (visual analogue scale - VAS) and pressure pain threshold (PPT - kgf cm<sup>-2</sup>) of the anterior temporalis, masseter and right forearm were measured at three assessment time points. Two-way anova was applied to the data, considering a 5% significance level. All groups had a reduction in their reported facial pain intensity ( $P < 0.001$ ). Mean and standard deviation (SD) PPT values, from 1.33 (0.54) to 1.96 (1.06) kgf cm<sup>-2</sup> for the anterior temporalis in Group 1 ( $P = 0.016$ ), and from 1.27 (0.35) to 1.72 (0.60) kgf cm<sup>-2</sup> for the masseter in Group 2 ( $P = 0.013$ ), had significant improvement considering baseline versus the 5th-month assessment. However, no differences between the groups were found ( $P > 0.100$ ). A TMD-attributed headache in patients with MMF pain does not negatively impact pain management, but does change the pattern for muscle pain improvement.

**KEYWORDS:** diagnosis; myofascial pain; occlusal splint; secondary headache; temporomandibular joint disorders

PMID: 26440358

## 14. HEADACHES

### Triggers of HA

Headache. 2015 Oct 16. doi: 10.1111/head.12707.

#### **Triggering Events and New Daily Persistent Headache: Age and Gender Differences and Insights on Pathogenesis-A Clinic-Based Study.**

Rozen TD<sup>1</sup>.

Author information

Abstract

#### **OBJECTIVE:**

To define what are the age and gender differences for new daily persistent headache (NDPH) triggering events and how this may relate to the pathogenesis of NDPH. To describe several new triggering events for NDPH.

#### **METHODS:**

All patients were diagnosed with primary NDPH at a headache specialty clinic during the time period of 01/2009 through 01/2013. This was a retrospective analysis of patient medical records utilizing an electronic medical record system.

#### **RESULTS:**

Ninety-seven patients were diagnosed with primary NDPH (65 women and 32 men). The mean average age of onset was younger in women than men 32.4 years vs 35.8 years. Fifty one of ninety seven NDPH patients (53%) did not recognize a triggering event while an infection or flu-like illness triggered NDPH in 22%, a stressful life event in 9%, a procedure (surgical) in 9%, and some "other" recognized trigger in 7%. All of the NDPH patients who developed new onset headache after an invasive surgical procedure were intubated. There was no significant difference in frequency for any of the triggering events between genders. The youngest age of onset was for a post stressful life event trigger while the oldest age of onset was in the post-surgical subgroup. Women developed NDPH at a younger age of onset for all recognized triggers, but there was no significant difference in ages of onset between the genders. There was no significant difference in the number of NDPH patients who had a history of migraine or no history and if they developed NDPH after any triggered event vs no triggering event. However, the majority of patients who developed NDPH after a stressful life event did have a precedent migraine history (67%). Newly noted triggers include: hormonal manipulation with progesterone, medication exposure, chemical/pesticide exposure, massage treatment, and immediately post a syncopal event.

#### **CONCLUSION:**

More than 50% of NDPH sufferers do not recognize a triggering event to their headaches. A key finding from the present study is the recognition that of those patients who developed NDPH after an invasive surgical procedure all required intubation and we speculate a cervicogenic origin to their headaches. The fact that both genders had an almost equal rate of occurrence for most NDPH triggers and almost the same age of onset suggests a common underlying pathogenesis for similar triggering events. A precedent history of migraine did not enhance the frequency of triggered vs nontriggered NDPH except possibly for a stressful life event.

**KEYWORDS:** intubation; new daily persistent headache; post-infection; post-procedure; stressful life event; triggering events

PMID: 26474179

**PTSD and migraines**

Headache. 2015 Oct 16. doi: 10.1111/head.12698.

**The Impact of Post-Traumatic Stress Disorder on the Burden of Migraine: Results From the National Comorbidity Survey-Replication.**

Rao AS<sup>1</sup>, Scher AI<sup>2</sup>, Vieira RV<sup>3</sup>, Merikangas KR<sup>4</sup>, Metti AL<sup>5</sup>, Peterlin BL<sup>1</sup>.

Author information

Abstract

**BACKGROUND:**

Post-traumatic stress disorder (PTSD) has been linked with migraine in prior studies.

**OBJECTIVE:**

To evaluate the individual and joint burdens of migraine and PTSD in a population-based cohort.

**METHODS:**

The National Comorbidity Survey-Replication (NCS-R) is a general population study conducted in the United States from February 2001-April 2003. PTSD and migraine were assessed, and four groups defined based on their migraine and PTSD status. The four groups included those with no migraine and no PTSD (controls, n=4535), those with migraine and without PTSD (migraine alone, n=236), those with PTSD and without migraine (PTSD alone, n=244), and those with both migraine and PTSD (mig+PTSD, n=68). Logistic and Poisson regression models were used to assess the association between dichotomous/multilevel outcome variables indicating financial, health, and interpersonal burdens and each migraine/PTSD group.

**RESULTS:**

Compared to controls, those with Mig+PTSD were more likely to be in the low poverty index (48% vs 41%, AOR 2.16; CI: 1.10, 4.24) and were less likely to be working for pay or profit in the past week (50% vs 68%, AOR 0.42; CI: 0.24, 0.74) but not those with migraine or PTSD alone. Additionally, the number of days where work quality was cut due to physical or mental health or substance abuse in the past month was greater in all groups compared to controls: (1) migraine alone: mean 2.57 (SEM 0.32) vs mean 1.09 (SEM 0.08) days, ARR=2.39; CI: 2.19, 2.62; (2) PTSD alone: mean 2.43 (SEM 0.33) vs mean 1.09 (SEM 0.08) days, ARR=2.09; CI: 1.91, 2.29; (3) mig+PTSD: mean 8.2 (SEM 0.79) vs 1.09 (SEM 0.08) days, ARR 6.79; CI 6.16, 7.49; and was over 2.5-fold greater in those mig+PTSD than migraine alone (mean 8.0 [SEM 0.79] vs 2.6 days [SEM 0.72], ARR 2.77; CI: 2.45, 3.14). The likelihood of having difficulty getting along or maintaining a social life was also increased in all groups relative to controls: (1) migraine alone: 21% vs 5.4%, AOR 4.20; CI: 2.62, 6.74; (2) PTSD alone: 18% vs 5.4%, AOR 3.40; CI: 2.40, 4.82; (3) Mig+PTSD: 39% vs 5.4%, AOR 9.95; CI: 5.72, 17.32, and was 2-fold greater in those with Mig+PTSD as compared to those with migraine alone (AOR 2.32; CI: 1.15, 4.69).

**CONCLUSIONS:**

These findings support the need for those who treat migraine patients to be aware of the comorbidity with PTSD, as these patients may be particularly prone to adverse financial, health, and interpersonal disease burdens.

**KEYWORDS:** disability; economic burden; migraine; post-traumatic stress disorder; societal burden

PMID: 26473981

**Variability of migraine attack**

Cephalalgia. 2015 Oct 23. pii: 0333102415613612.

**Variability of the characteristics of a migraine attack within patients.**

Viana M<sup>1</sup>, Sances G<sup>2</sup>, Ghiotto N<sup>2</sup>, Guaschino E<sup>2</sup>, Allena M<sup>2</sup>, Nappi G<sup>2</sup>, Goadsby PJ<sup>3</sup>, Tassorelli C<sup>4</sup>.

Author information

Abstract

**BACKGROUND:**

Migraine attacks may present different features in different patients and also within the same patient. The percentage of patients reporting stereotyped attacks and those reporting attacks with different phenotypes has not been the object of specific investigations.

**OBJECTIVE:**

The objective of this article is to evaluate the percentage of migraine patients reporting the same characteristics, in terms of phenotype and response to symptomatic medications on three consecutive migraine attacks.

**METHODS:**

Thirty patients with migraine without aura prospectively recorded the features of three consecutive attacks in a headache diary. Characteristics recorded were: pain intensity, presence of nausea, vomiting, photophobia, phonophobia, osmophobia, allodynia, cranial autonomic symptoms (at least one), and premonitory symptoms. Patients were allowed to take frovatriptan as symptomatic medication, whose efficacy was evaluated as the two hours pain-free status.

**RESULTS:**

None of the patients presented identical characteristics on the three studied attacks. This was still the case if we reduced the number of variables evaluated from 11 to seven of the eight core features indicated by the ICHD. Considering just six variables: unilaterality and quality of pain, presence/absence of nausea, vomiting, photophobia and phonophobia, only two patients (6%) had identical features on three consecutive attacks. With respect to the response to frovatriptan, 39% of patients had the same response, either positive (i.e. pain free after two hours) or negative (i.e. not pain free after two hours) on three consecutive attacks.

**CONCLUSION:**

Migraine attacks show a high variability not just among patients, but also within the same patient. Our data indicate that stereotypy of attacks is uncommon, and reinforces the underlying logic of the current operational classification system.

**KEYWORDS:** Migraine; characteristics; differences; features; phenotype; variability

PMID: 26498348

## Cluster

Cephalalgia. 2015 Oct 19. pii: 0333102415612774.

**Evaluation of guideline-adherent treatment in cluster headache.**

Lademann V<sup>1</sup>, Jansen JP<sup>2</sup>, Evers S<sup>3</sup>, Frese A<sup>4</sup>.

Author information

Abstract

**BACKGROUND:**

Several treatment guidelines exist for cluster headache. However, it is not yet known how many cluster headache patients are treated according to these guidelines.

**METHODS:**

We enrolled 434 cluster headache patients with confirmed diagnosis referred to two tertiary pain centers. The history of treatment was registered and analyzed according to the treatment guidelines of the European Federation of Neurological Societies.

**RESULTS:**

Regarding acute attack treatment, 62.1% of the episodic and 71.0% of the chronic cluster headache patients were treated according to the guidelines. The efficacy rate was above 92% in both groups. Regarding prophylactic treatment, 31.3% of the episodic and 50.9% of the chronic cluster headache patients were treated according to the guidelines. The efficacy rate was 92.8% for episodic and 70.9% for chronic cluster headache.

**CONCLUSION:**

The rate of guideline-adherent treatment in cluster headache is about 70% for acute treatment and about 35% for prophylactic treatment. The efficacy of this treatment is significantly higher than the efficacy of non-guideline-adherent treatment.

**KEYWORDS:** Cluster headache; acute treatment; guideline; prophylactic treatment

PMID: 26481303

## 15. VESTIBULAR

### HA in Adolescents and vestibular dysfunction

#### **Evaluation and management of vestibular migraine in children: experience from a pediatric vestibular clinic**

European Journal of Paediatric Neurology, 10/23/2015

**B**rodsky JR, et al. – The aim of this study was to evaluate the diagnostic features and response to therapy of vestibular migraine (VM) in children managed at a pediatric vestibular clinic. Vestibular migraine is a common cause of vertigo in the pediatric population that is frequently responsive to medical therapy.

#### Methods

- Twenty-eight patients  $\leq 18$  years old with a diagnosis of VM were identified from 208 patients seen at the Balance and Vestibular Program at Boston Children's Hospital from July 2012 – July 2014, after excluding 12 patients with a history of major otologic or neurologic surgery, recent concussion, or additional vestibular disorders.
- Patients' electronic medical records and testing results were retrospectively reviewed.

#### Results

- 
- Patients ranged in age from 9-18 years old (mean 14.48).
  - All included patients met criteria for definite (n=25) or probable (n=3) VM as defined by the International Classification of Headache Disorders.
  - Rotary chair (n=17), caloric (n=8), cervical vestibular evoked myogenic potential (n=16), and video head impulse (n=3) tests were normal.
  - Medications effectively reduced reported vestibular symptoms in 88% of those treated with tricyclics (n =8), 86% of those treated with cyprohepatadine (n=7), 80% of those treated with topiramate (n=5), 80% of those treated with triptans (n=10), and 25% of those treated with gabapentin (n=4).



**20 A. ROTATOR CUFF****PRP and surgery**

J Shoulder Elbow Surg. 2015 Oct 8. pii: S1058-2746(15)00416-4. doi: 10.1016/j.jse.2015.07.035.

**Efficacy of platelet-rich plasma in arthroscopic repair of full-thickness rotator cuff tears: a meta-analysis.**

Cai YZ<sup>1</sup>, Zhang C<sup>1</sup>, Lin XJ<sup>2</sup>.

Author information

- <sup>1</sup>Department of Orthopedics and Center for Sport Medicine, The First Affiliated Hospital, College of Medicine Zhejiang University, Hangzhou, China.
- <sup>2</sup>Department of Orthopedics and Center for Sport Medicine, The First Affiliated Hospital, College of Medicine Zhejiang University, Hangzhou, China. Electronic address: locuszc@icloud.com.

Abstract

**BACKGROUND:**

The use of platelet-rich plasma (PRP) is an innovative clinical therapy, especially in arthroscopic rotator cuff repair. The purpose of this study was to compare the clinical improvement and tendon-to-bone healing with and without PRP therapy in arthroscopic rotator cuff repair.

**METHODS:**

A systematic search was done in the major medical databases to evaluate the studies using PRP therapy (PRP+) or with no PRP (PRP-) for the treatment of patients with rotator cuff tears. We reviewed clinical scores such as the Constant score, the American Shoulder and Elbow Surgeons score, the University of California at Los Angeles (UCLA) Shoulder Rating Scale, the Simple Shoulder Test, and the failure-to-heal rate by magnetic resonance imaging between PRP+ and PRP- groups.

**RESULTS:**

Five studies included in this review were used for a meta-analysis based on data availability. There were no statistically significant differences between PRP+ and PRP- groups for overall outcome scores ( $P > .05$ ). However, the PRP+ group exhibited better healing rates postoperatively than the PRP- group ( $P = .03$ ) in small/moderate full-thickness tears.

**CONCLUSION:**

The use of PRP therapy in full-thickness rotator cuff repairs showed no statistically significant difference compared with no PRP therapy in clinical outcome scores, but the failure-to-heal rate was significantly decreased when PRP was used for treatment of small-to-moderately sized tears. PRP therapy may improve tendon-to-bone healing in patients with small or moderate rotator cuff tears.

**KEYWORDS:** Rotator cuff repair; biological therapy; meta-analysis; platelet-rich plasma; tendon-to-bone healing  
PMID: 26456434

## 22 A. IMPINGEMENT

### Surgery and impingement

Bone Joint J. 2015 Oct;97-B(10):1316-21. doi: 10.1302/0301-620X.97B10.35303

#### **Arthroscopy of the hip for patients with mild to moderate developmental dysplasia of the hip and femoroacetabular impingement: Outcomes following hip arthroscopy for treatment of chondrolabral damage.**

Fukui K<sup>1</sup>, Trindade CA<sup>1</sup>, Briggs KK<sup>1</sup>, Philippon MJ<sup>2</sup>.

Author information

#### Abstract

The purpose of this study was to determine patient-reported outcomes of patients with mild to moderate developmental dysplasia of the hip (DDH) and femoroacetabular impingement (FAI) undergoing arthroscopy of the hip in the treatment of chondrolabral pathology. A total of 28 patients with a centre-edge angle between 15° and 19° were identified from an institutional database. Their mean age was 34 years (18 to 53), with 12 female and 16 male patients. All underwent labral treatment and concomitant correction of FAI. There were nine reoperations, with two patients requiring revision arthroscopy, two requiring periacetabular osteotomy and five needing total hip arthroplasty. Patients who required further major surgery were more likely to be older, male, and to have more severe DDH with a larger alpha angle and decreased joint space. At a mean follow-up of 42 months (24 to 89), the mean modified Harris hip score improved from 59 (20 to 98) to 82 (45 to 100;  $p < 0.001$ ). The mean Western Ontario and McMaster Universities Osteoarthritis Index score improved from 30 (1 to 61) to 16 (0 to 43;  $p < 0.001$ ). Median patient satisfaction was 9.0/10 (1 to 10). Patients reported excellent improvement in function following arthroscopy of the hip.

This study shows that with proper patient selection, arthroscopy of the hip can be successful in the young patient with mild to moderate DDH and FAI. Cite this article: Bone Joint J 2015;97-B:1316-21.

**KEYWORDS:** FAI; dysplasia; hip arthroscopy; labral damage

PMID: 26430004

**26. CARPAL TUNNEL SYNDROME**

Open or closed tech.

Ann Plast Surg. 2015 Nov;75(5):548-51. doi: 10.1097/SAP.0000000000000267.

**Study to Assess Outcome After Open and Closed Carpal Tunnel Decompression.**

Akhtar S<sup>1</sup>, Bradley MJ, Burke FD, Dubin NH, Wilgis EF.

Author information

**Abstract**

Carpal tunnel decompression (CTD) is the most commonly performed surgical procedure within a hand unit. We have analyzed data on outcomes after carpal decompression performed by both open and closed techniques to assess whether outcomes differed between the 2 procedures. Data were jointly gathered from 2 units. The aim was to assess the outcome after CTD. Completed data were gathered from 621 CTD procedures performed on 484 patients. Of the procedures, 358 were performed via a standard open CTD technique and 263 procedures were performed via a closed single-port Agee technique. Assessments were performed by means of the Levine-Katz questionnaire, Semmes-Weinstein monofilament testing, grip strength, and pinch-grip strength testing. Assessments were performed both preoperatively and 6 months postoperatively. A randomly selected 10% of patients were also assessed at 12 months. The results were statistically better after closed CTD at the 6-month postoperative stage. However, the difference became less marked by 12-month postoperative stage.

Our results show that CTD whether performed by an open or closed technique resulted in a similar outcome at the 12-month postoperative stage. However, those procedures performed by a closed technique offered a more rapid recovery in the first 6 months postoperative than by an open technique.

PMID:25003420

**Incidence**

J Hand Surg Am. 2015 Oct 9. pii: S0363-5023(15)01030-8. doi: 10.1016/j.jhsa.2015.07.029.

**Incidence of Carpal Tunnel Syndrome Requiring Surgical Decompression: A 10.5-Year Review of 2,309 Patients.**

English JH<sup>1</sup>, Gwynne-Jones DP<sup>2</sup>.  
Author information

## Abstract

**PURPOSE:**

To describe the demographics, neurophysiological grading, and incidence of patients undergoing carpal tunnel decompression (CTD) for carpal tunnel syndrome (CTS) in a single region.

**METHODS:**

A retrospective review of 2,313 patients aged greater than 16 years who underwent 3,073 CTDs between January 2000 and August 2010. Crude annual and age- and sex-specific incidences were calculated for the study period. Nerve conduction study grades were recorded and compared with age and sex.

**RESULTS:**

Of the 2,313 patients 1,419 (61%) were female and 890 (39%) were male. Mean age at surgery was 56 years (range, 16-93 years). Females had a significantly higher CTD incidence compared with males (161 vs 108/100,000 person-years, respectively). The highest rates of CTD were seen in the 70- to 79-year age group for both men and women (307/100,000 person-years). Neurophysiological grade increased in severity with increasing age despite using an age-adjusted grading system, with higher grades in patients aged greater than 65 years.

**CONCLUSIONS:**

This study suggests that carpal tunnel syndrome has the highest incidence in older people who tend to have more severe neurophysiological changes.

**TYPE OF STUDY/LEVEL OF EVIDENCE:** Prognostic II.

**KEYWORDS:** Carpal tunnel syndrome; epidemiology; incidence  
PMID: 26460063

## 28. REPLACEMENTS

### Metal on metal problems

Bone Joint J. 2015 Oct;97-B(10):1328-37. doi: 10.1302/0301-620X.97B10.34131.

#### **A longitudinal study of MARS MRI scanning of soft-tissue lesions around metal-on-metal total hip arthroplasties and disease progression.**

Briant-Evans TW<sup>1</sup>, Lyle N<sup>1</sup>, Barbur S<sup>1</sup>, Hauptfleisch J<sup>2</sup>, Amess R<sup>3</sup>, Pearce AR<sup>1</sup>, Conn KS<sup>1</sup>, Stranks GJ<sup>1</sup>, Britton JM<sup>1</sup>.

Author information

#### Abstract

We investigated the changes seen on serial metal artefact reduction magnetic resonance imaging scans (MARS-MRI) of metal-on-metal total hip arthroplasties (MoM THAs). In total 155 THAs, in 35 male and 100 female patients (mean age 70.4 years, 42 to 91), underwent at least two MRI scans at a mean interval of 14.6 months (2.6 to 57.1), at a mean of 48.2 months (3.5 to 93.3) after primary hip surgery. Scans were graded using a modification of the Oxford classification. Progression of disease was defined as an increase in grade or a minimum 10% increase in fluid lesion volume at second scan. A total of 16 hips (30%) initially classified as 'normal' developed an abnormality on the second scan. Of those with 'isolated trochanteric fluid' 9 (47%) underwent disease progression, as did 7 (58%) of 'effusions'. A total of 54 (77%) of hips initially classified as showing adverse reactions to metal debris (ARMD) progressed, with higher rates of progression in higher grades. Disease progression was associated with high blood cobalt levels or an irregular pseudocapsule lining at the initial scan.

There was no association with changes in functional scores. Adverse reactions to metal debris in MoM THAs may not be as benign as previous reports have suggested. Close radiological follow-up is recommended, particularly in high-risk groups. Cite this article: Bone Joint J 2015;97-B:1328-37.

**KEYWORDS:** Follow-up; Longitudinal; MARS; MRI; Metal-on-metal; Pseudotumours; Total hip arthroplasty  
PMID: 26430006

**29. OA****Opposite knee problems**

Osteoarthritis Cartilage. 2015 Oct 20. pii: S1063-4584(15)01350-3. doi: 10.1016/j.joca.2015.10.001.

**Do persons with asymmetric hip pain or radiographic hip OA have worse pain and structure outcomes in the knee opposite the more affected hip? Data from the Osteoarthritis Initiative.**

Joseph GB<sup>1</sup>, Hilton JF<sup>2</sup>, Jungmann PM<sup>3</sup>, Lynch JA<sup>2</sup>, Lane NE<sup>4</sup>, Liu F<sup>2</sup>, McCulloch CE<sup>2</sup>, Tolstykh I<sup>2</sup>, Link TM<sup>1</sup>, Nevitt MC<sup>2</sup>.

Author information

Abstract

**PURPOSE:**

to determine if asymmetry between hips in pain or radiographic osteoarthritis (RHOA) is associated with worse pain and joint space narrowing (JSN) at baseline and longitudinally in knees contralateral to more affected hips.

**METHODS:**

We studied 279 participants in the Osteoarthritis Initiative with baseline asymmetry between hips in pain and 483 with asymmetry in RHOA none of whom had a hip replacement for  $\geq 4$  years after baseline. RHOA assessed from pelvis radiographs was categorized as none, possible or definite and hip pain on most days of a month in the past year as present/absent. Knee pain (WOMAC scale) and JSN (fixed flexion radiographs) were categorized as none, mild and moderate-severe. We compared knees contralateral and ipsilateral to more affected hips on baseline knee pain and JSN using clustered multinomial regression and on change in knee pain and JSN over 4-5 years using generalized linear and logistic estimating equations.

**RESULTS:**

Knees contralateral to painful hips had less baseline pain ("moderate-severe" vs. "none", relative risk ratio [RRR]: 0.39, 95% CI = 0.27-0.57), but greater baseline JSN ("moderate-severe" vs. "none", RRR: 1.62, 95% CI = 1.09-2.38) and greater worsening of pain during follow-up ( $p = 0.001$ ). Knees contralateral to hips with worse RHOA had nonsignificant trends for greater baseline JSN ( $p = 0.10$ ) and JSN progression ( $p = 0.17$ ).

**CONCLUSION:**

These findings provide limited support for the hypothesis that early asymmetry in hip pain and RHOA is associated with worse pain and structural outcomes in knees contralateral to the more affected hip.

**KEYWORDS:** hip osteoarthritis; joint pain; knee osteoarthritis; structural outcomes  
PMID:26497607

**Hyaluronic acid effective**

J Orthop Traumatol. 2015 Oct 8.

Single intra-articular injection of high molecular weight hyaluronic acid for hip osteoarthritis.

Rivera F<sup>1</sup>.

Author information

Abstract

**BACKGROUND:**

Intra-articular (IA) injection of hyaluronic acid (HA) into the hip joint appears to be safe and well tolerated but only a small number of randomized clinical trials in humans has been published. The objective of this prospective study was to evaluate the efficacy and safety of a single IA injection of high-molecular-weight (2800 kDa) HA (Coxarthrum) for hip osteoarthritis.

**MATERIALS AND METHODS:**

All patients received a single IA administration of 2.5 % sodium hyaluronate (75 mg/3 mL) of high molecular weight. Fluoroscopy requires an iodized contrast medium (iopamidol, 1 ml) which highlights the capsule before administering HA. Patients were evaluated before IA injection (T0), after 3 months, after 6 months and after 1 year from injection. Results were evaluated by the Brief Pain Inventory (BPI II), Harris Hip Score and a visual analog scale of pain (pain VAS). All treated patients were considered for statistical analysis.

**RESULTS:**

Two hundred seven patients were included at T0. The mean age was 67 years (range 46-81). Regarding BPI severity score, changes in pain between T0 and the three following visits were statistically highly significant ( $p < 0.001$ ). Changes in pain score compared to the previous visit were statistically significant for the worst pain in the second quarter post-intervention ( $p = 0.037$ ) and for mean pain in the second semester post-intervention ( $p = 0.043$ ). The evolution of the Harris Hip Score was statistically highly significant ( $p < 0.001$ ) between T0 and the following visits (T0 + 3 months, T0 + 6 months and T0 + 12 months); after a significant change between T0 and T0 + 3 months, the score remained stable. The evolution of the pain VAS showed a statistically highly significant improvement ( $p < 0.001$ ) between T0 and T0 + 3 months; thereafter it remained stable from the first quarter post-intervention. No serious adverse event was noted; 12 cases (0.5 %) of pain associated with transient synovitis are noteworthy.

**CONCLUSION:**

This study shows that a single IA injection of Coxarthrum is effective from the third month and that the results are stable or continue to improve up to 1 year.

**LEVEL OF EVIDENCE:** IV.

**KEYWORDS:** Hip; Hyaluronic acid; Viscosupplementation

PMID:26449357

## 31. KNEE

### Instability and gait

Gait Posture. 2015 Oct 8. pii: S0966-6362(15)00893-0. doi: 10.1016/j.gaitpost.2015.09.025.

#### **Alterations in walking knee joint stiffness in individuals with knee osteoarthritis and self-reported knee instability.**

Gustafson JA<sup>1</sup>, Gorman S<sup>2</sup>, Fitzgerald GK<sup>3</sup>, Farrokhi S<sup>4</sup>.

Author information

#### Abstract

Increased walking knee joint stiffness has been reported in patients with knee osteoarthritis (OA) as a compensatory strategy to improve knee joint stability. However, presence of episodic self-reported knee instability in a large subgroup of patients with knee OA may be a sign of inadequate walking knee joint stiffness. The objective of this work was to evaluate the differences in walking knee joint stiffness in patients with knee OA with and without self-reported instability and examine the relationship between walking knee joint stiffness with quadriceps strength, knee joint laxity, and varus knee malalignment. Overground biomechanical data at a self-selected gait velocity was collected for 35 individuals with knee OA without self-reported instability (stable group) and 17 individuals with knee OA and episodic self-reported instability (unstable group). Knee joint stiffness was calculated during the weight-acceptance phase of gait as the change in the external knee joint moment divided by the change in the knee flexion angle. The unstable group walked with lower knee joint stiffness ( $p=0.01$ ), mainly due to smaller heel-contact knee flexion angles ( $p<0.01$ ) and greater knee flexion excursions ( $p<0.01$ ) compared to their knee stable counterparts. No significant relationships were observed between walking knee joint stiffness and quadriceps strength, knee joint laxity or varus knee malalignment. Reduced walking knee joint stiffness appears to be associated with episodic knee instability and independent of quadriceps muscle weakness, knee joint laxity or varus malalignment. Further investigations of the temporal relationship between self-reported knee joint instability and walking knee joint stiffness are warranted.

**KEYWORDS:** Gait; Instability; Kinematics; Knee osteoarthritis; Stiffness  
PMID:26481256



**34. PATELLA****Squat with adduction better VMO**

BMC Musculoskelet Disord. 2015 Oct 12;16(1):289. doi: 10.1186/s12891-015-0736-6.

**Vastus medialis oblique and vastus lateralis activity during a double-leg semisquat with or without hip adduction in patients with patellofemoral pain syndrome.**

Miao P<sup>1,2</sup>, Xu Y<sup>3</sup>, Pan C<sup>4</sup>, Liu H<sup>5</sup>, Wang C<sup>6</sup>.

Author information

Abstract

**BACKGROUND:**

The purpose was to investigate the effect of double-leg semisquat with hip adduction on the activation of vastus medialis oblique (VMO) and vastus lateralis (VL) in patients with patellofemoral pain syndrome (PFPS).

**METHODS:**

Thirty patients with PFPS were designated to the study group, while 30 healthy matched subjects were enrolled in the control group. The activation of VL and VMO was recorded with surface electromyography (EMG) during double-leg semisquat (DS) and double-leg semisquat with hip adduction (DS-HA). The time domain and frequency domain indexes of the electromyography data were collected for analysis.

**RESULTS:**

In the study group, the time domain indexes (RMS, IEMG) and frequency domain index (MPF) of VL were significant higher than VMO in the test of DS ( $P < 0.05$ ); and the time domain of VMO was significantly higher in the test of DS-HA when compared to DS ( $P < 0.05$ ) while there was no difference in the activation of VL.

**CONCLUSIONS:**

In the study group, an increase in activity of the VMO was observed through the surface EMG signal in the double-leg semisquat exercise with hip adduction compared to the exercise without hip adduction. This finding indicates that VMO activation can be more selectively obtained through the exercise with hip adduction which can help balance the VL and VMO.

PMID:26459411

**37. OSTEOARTHRITIS/KNEE****Strength related to pain**

BMC Musculoskelet Disord. 2015 Oct 16;16(1):305. doi: 10.1186/s12891-015-0737-5.

**Quadriceps muscle strength, radiographic knee osteoarthritis and knee pain: the ROAD study.**

Muraki S<sup>1</sup>, Akune T<sup>2</sup>, Teraguchi M<sup>3</sup>, Kagotani R<sup>4</sup>, Asai Y<sup>5</sup>, Yoshida M<sup>6</sup>, Tokimura F<sup>7</sup>, Tanaka S<sup>8</sup>, Oka H<sup>9</sup>, Kawaguchi H<sup>10</sup>, Nakamura K<sup>11</sup>, Yoshimura N<sup>12</sup>.

Author information

Abstract

**BACKGROUND:**

The objective of this study was to clarify the association of quadriceps muscle strength with knee pain using a large-scale, population-based cohort of the Research on Osteoarthritis/osteoporosis Against Disability (ROAD) study.

**METHODS:**

From the 2566 subjects at the third visit of the ROAD study, the present study analyzed 2152 subjects who completed radiographic examinations and measurements of muscle strength and mass (690 men and 1462 women; mean age, 71.6 ± 12.2 years). Knee pain was assessed by an experienced orthopedist. Knee osteoarthritis (OA) was defined according to Kellgren-Lawrence (KL) grade. Quadriceps muscle strength and muscle mass at the lower limbs were measured by the Quadriceps Training Machine (QTM-05F, Alcare Co., Ltd. Tokyo, Japan) and the Body Composition Analyzer MC-190 (Tanita Corp., Tokyo, Japan), respectively.

**RESULTS:**

Quadriceps muscle strength and weight bearing index (WBI: quadriceps muscle strength by weight) were significantly associated with knee pain after adjustment for age and body mass index, whereas grip strength and muscle mass at the lower limbs were not. The significant association of quadriceps muscle strength with knee pain was independent of radiographic knee OA.

**CONCLUSION:**

The present cross-sectional study showed an independent association of quadriceps muscle strength with knee pain.

PMID: 26474770

**Medication effectiveness****Cost-effectiveness of nonsteroidal anti-inflammatory drugs and opioids in the treatment of knee osteoarthritis in older patients with multiple comorbidities**

Jeffrey N. Katz, MD MSc, Savannah R. Smith, BA, Jamie E. Collins, PhD, Daniel H. Solomon, MD, MPH, Joanne M. Jordan, MD, MPH, David J. Hunter, MBBS, PhD, Lisa G. Suter, MD, Edward Yelin, PhD, A.David Paltiel, PhD, Elena Losina, PhD

**Objective**

To evaluate long-term clinical and economic outcomes of naproxen, ibuprofen, celecoxib or tramadol for OA patients with cardiovascular disease (CVD) and diabetes.

**Design**

We used the Osteoarthritis Policy Model to examine treatment with these analgesics after standard of care -- acetaminophen and corticosteroid injections -- failed to control pain. NSAID regimens were evaluated with and without proton pump inhibitors (PPIs). We evaluated over-the-counter (OTC) regimens where available. Estimates of treatment efficacy (pain reduction, occurring in ~ 57% of patients on all regimens) and toxicity (major cardiac or gastrointestinal toxicity or fractures, risk ranging from 1.09% with celecoxib to 5.62% with tramadol) were derived from published literature. Annual costs came from Red Book Online®. Outcomes were discounted at 3%/year and included costs, quality-adjusted life expectancy, and incremental cost-effectiveness ratios (ICERs). Key input parameters were varied in sensitivity analyses.

**Results**

Adding ibuprofen to standard of care was cost saving, increasing QALYs by 0.07 while decreasing cost by \$800. Incorporating OTC naproxen rather than ibuprofen added 0.01 QALYs and increased costs by \$300, resulting in an ICER of \$54,800/QALY. Using prescription naproxen with OTC PPIs led to an ICER of \$76,700/QALY, while use of prescription naproxen with prescription PPIs resulted in an ICER of \$252,300/QALY. Regimens including tramadol or celecoxib cost more but added fewer QALYs and thus were dominated by several of the naproxen-containing regimens.

**Conclusions**

In patients with multiple comorbidities, naproxen- and ibuprofen-containing regimens are more effective and cost-effective in managing OA pain than opioids, celecoxib or standard of care.

### 43. HALLUX VALGUS

#### Sesamoid placement

#### Inter and Intra-Observer Reliability in Assessment of the Position of the Lateral Sesamoid in Determining the Severity of Hallux Valgus

Sunil Panchani, Jonathan Reading, Jaysheel Mehta

#### Highlights

- The position of the lateral sesamoid correlates well in previous studies with the severity of Hallux Valgus.
- We performed an intra and inter observer reliability study on this classification system.
- Kappa Values were high amongst Consultant and Registrar observers.
- The Lateral Sesamoid Classification System shows good Intra and Inter Observer Reliability.

#### Abstract

##### Background

The position of the lateral sesamoid on standard dorso-plantar weight bearing radiographs, with respect to the lateral cortex of the first metatarsal, has been shown to correlate well with the degree of the hallux valgus angle. We aimed to assess the inter- and intra-observer error of this new classification system.

##### Methods

Five orthopaedic consultants and five trainee orthopaedic surgeons were recruited to assess and document the degree of displacement of the lateral sesamoid on 144 weight-bearing dorso-plantar radiographs on two separate occasions. The severity of Hallux Valgus was defined as normal (0%), mild ( $\leq 50\%$ ), moderate (51% -  $\leq 99\%$ ) or severe ( $\geq 100\%$ ) depending on the percentage displacement of the lateral sesamoid body from the lateral cortical border of the first metatarsal.

##### Results

Consultant intra-observer variability showed good agreement between repeated assessment of the radiographs (mean Kappa = 0.75). Intra-observer variability for trainee orthopaedic surgeons also showed good agreement with a mean Kappa = 0.73. Intraclass correlations for consultants and trainee surgeons was also high.

##### Conclusion

The new classification system of assessing the severity of Hallux Valgus shows high inter- and intra-observer variability with good agreement and reproducibility between surgeons of consultant and trainee grades.

Keywords: Hallux Valgus, Sesamoid, Foot Surgery, Classification

#### 44. RHUMATOID ARTHRITIS

##### Genetics and OA

BMC Musculoskelet Disord. 2015 Oct 9;16(1):287. doi: 10.1186/s12891-015-0745-5.

#### Genome-wide DNA methylation study of hip and knee cartilage reveals embryonic organ and skeletal system morphogenesis as major pathways involved in osteoarthritis.

Aref-Eshghi E<sup>1</sup>, Zhang Y<sup>2</sup>, Liu M<sup>3</sup>, Harper PE<sup>4</sup>, Martin G<sup>5</sup>, Furey A<sup>6</sup>, Green R<sup>7</sup>, Sun G<sup>8</sup>, Rahman P<sup>9</sup>, Zhai G<sup>10,11</sup>.

Author information

Abstract

##### **BACKGROUND:**

Evidence suggests that epigenetics plays a role in osteoarthritis (OA). The aim of the study was to describe the genome wide DNA methylation changes in hip and knee OA and identify novel genes and pathways involved in OA by comparing the DNA methylome of the hip and knee osteoarthritic cartilage tissues with those of OA-free individuals.

##### **METHODS:**

Cartilage samples were collected from hip or knee joint replacement patients either due to primary OA or hip fractures as controls. DNA was extracted from the collected cartilage and assayed by Illumina Infinium HumanMethylation450 BeadChip array, which allows for the analysis of >480,000 CpG sites. Student T-test was conducted for each CpG site and those sites with at least 10 % methylation difference and a p value <0.0005 were defined as differentially methylated regions (DMRs) for OA. A sub-analysis was also done for hip and knee OA separately. DAVID v6.7 was used for the functional annotation clustering of the DMR genes. Clustering analysis was done using multiple dimensional scaling and hierarchical clustering methods.

##### **RESULTS:**

The study included 5 patients with hip OA, 6 patients with knee OA and 7 hip cartilage samples from OA-free individuals. The comparisons of hip, knee and combined hip/knee OA patients with controls resulted in 26, 72, and 103 DMRs, respectively. The comparison between hip and knee OA revealed 67 DMRs. The overall number of the sites after considering the overlaps was 239, among which 151 sites were annotated to 145 genes. One-fifth of these genes were reported in previous studies. The functional annotation clustering of the identified genes revealed clusters significantly enriched in skeletal system morphogenesis and development. The analysis revealed significant difference among OA and OA-free cartilage, but less different between hip OA and knee OA.

##### **CONCLUSIONS:**

We found that a number of CpG sites and genes across the genome were differentially methylated in OA patients, a remarkable portion of which seem to be involved in potential etiologic mechanisms of OA. Genes involved in skeletal developmental pathways and embryonic organ morphogenesis may be a potential area for further OA studies.

PMID:26453558

### 45 A. MANUAL THERAPY LUMBAR & GENERAL

#### PT/patient relationship

#### **Understanding and working with the psychodynamics of practitioner–patient relationships in the manual therapies**

Danny Sher, BSc (Hons) Ost. Mannie Sher, PhD

#### Summary

In this paper, we argue that practitioner–patient relationships in the manual therapies would be strengthened by a deeper understanding of the psychodynamics and emotions of those relationships. We suggest that in many cases, a purely bio-mechanical approach may neglect underlying psychological and emotional reasons of the patient's presenting condition, and consequently, lead to a less than adequate outcome for the patient. We offer easily adopted suggestions that could enhance the practice of practitioners of manual therapies as well as other professions that rely on the application of physical methods of diagnosis and treatment. These suggestions could lead to improved prognosis and increased professional satisfaction for practitioners. This paper describes five key dynamics that characterize practitioner–patient relationships: (i) pain as a form of communication; (ii) the ‘heart-sink’ patient; (iii) dependency; (iv) the erotic transference; (v) endings and loss.

**Chiropractic and LBP**

BMC Musculoskelet Disord. 2015 Oct 19;16(1):306. doi: 10.1186/s12891-015-0753-5.

**Psychological and behavioral differences between low back pain populations: a comparative analysis of chiropractic, primary and secondary care patients.**

Eklund A<sup>1</sup>, Bergström G<sup>2</sup>, Bodin L<sup>3</sup>, Axén I<sup>4,5</sup>.

Author information

Abstract

**BACKGROUND:**

Psychological, behavioral and social factors have long been considered important in the development of persistent pain. Little is known about how chiropractic low back pain (LBP) patients compare to other LBP patients in terms of psychological/behavioral characteristics.

**METHODS:**

In this cross-sectional study, the aim was to investigate patients with LBP as regards to psychosocial/behavioral characteristics by describing a chiropractic primary care population and comparing this sample to three other populations using the MPI-S instrument. Thus, four different samples were compared. A: Four hundred eighty subjects from chiropractic primary care clinics. B: One hundred twenty-eight subjects from a gainfully employed population (sick listed with high risk of developing chronicity). C: Two hundred seventy-three subjects from a secondary care rehabilitation clinic. D: Two hundred thirty-five subjects from secondary care clinics. The Swedish version of the Multidimensional Pain Inventory (MPI-S) was used to collect data. Subjects were classified using a cluster analytic strategy into three pre-defined subgroups (named adaptive copers, dysfunctional and interpersonally distressed).

**RESULTS:**

The data show statistically significant overall differences across samples for the subgroups based on psychological and behavioral characteristics. The cluster classifications placed (in terms of the proportions of the adaptive copers and dysfunctional subgroups) sample A between B and the two secondary care samples C and D.

**CONCLUSIONS:**

The chiropractic primary care sample was more affected by pain and worse off with regards to psychological and behavioral characteristics compared to the other primary care sample. Based on our findings from the MPI-S instrument the 4 samples may be considered statistically and clinically different.

**TRIAL REGISTRATION:**

Sample A comes from an ongoing trial registered at clinical trials.gov; NCT01539863 , February 22, 2012.

PMID:26483193

**McKenzie and LBP**

Phys Ther. 2015 Oct 22.

**Identifying Patients With Chronic Low Back Pain Who Respond Best to Mechanical Diagnosis and Therapy: Secondary Analysis of a Randomized Controlled Trial.**

Garcia AN<sup>1</sup>, Costa LD<sup>2</sup>, Hancock M<sup>3</sup>, Costa LO<sup>4</sup>.

Author information

Abstract

**BACKGROUND:**

"Mechanical Diagnosis and Therapy (MDT)" also known as McKenzie method like other interventions for low back pain (LBP) has been found to have small effects for people with LBP. It is possible that a group of patients respond best to MDT and have larger effects. Identification of patients who respond best to MDT compared to other interventions would be an important finding.

**METHODS:**

This study was a secondary analysis of data from a previous trial comparing MDT to Back School in 148 patients with chronic LBP. Only patients classified at baseline assessment as being in the directional preference group (n=140) were included. The effect modifiers tested were: Clear centralization vs directional preference only; Baseline pain location; Baseline pain intensity; and Age. The primary outcomes for this study were pain intensity and disability at the end of treatment (1 month). Treatment effect modification was evaluated by assessing the group versus predictor interaction terms from linear regression models. An interaction  $\geq 1.0$  for pain and  $\geq 3$  for disability were considered clinically important.

**RESULTS:**

Being older met our criteria for being a potentially important effect modifier; however, the effect occurred in the opposite direction to our hypothesis. Older people had 1.27 points more benefit in pain reduction from MDT (compared to Back School) than younger participants after 1 month of treatment.

**CONCLUSIONS:**

Our study suggests older age may be an important factor that can be considered as a treatment effect modifier for patients with chronic LBP receiving MDT. As the main trial was not powered for the investigation of subgroups, the results of this secondary analysis have to be interpreted cautiously and replication is required.

PMID: 26494768



**Chro care and costs**

BMC Health Serv Res. 2015 Oct 19;15(1):474. doi: 10.1186/s12913-015-1140-5.

**A systematic review comparing the costs of chiropractic care to other interventions for spine pain in the United States.**

Dagenais S<sup>1</sup>, Brady O<sup>2</sup>, Haldeman S<sup>3,4,5</sup>, Manga P<sup>6</sup>.

Author information

Abstract

**BACKGROUND:**

Although chiropractors in the United States (US) have long suggested that their approach to managing spine pain is less costly than other health care providers (HCPs), it is unclear if available evidence supports this premise.

**METHODS:**

A systematic review was conducted using a comprehensive search strategy to uncover studies that compared health care costs for patients with any type of spine pain who received chiropractic care or care from other HCPs. Only studies conducted in the US and published in English between 1993 and 2015 were included. Health care costs were summarized for studies examining: 1. private health plans, 2. workers' compensation (WC) plans, and 3. clinical outcomes. The quality of studies in the latter group was evaluated using a Consensus on Health Economic Criteria (CHEC) list.

**RESULTS:**

The search uncovered 1276 citations and 25 eligible studies, including 12 from private health plans, 6 from WC plans, and 7 that examined clinical outcomes. Chiropractic care was most commonly compared to care from a medical physician, with few details about the care received. Heterogeneity was noted among studies in patient selection, definition of spine pain, scope of costs compared, study duration, and methods to estimate costs. Overall, cost comparison studies from private health plans and WC plans reported that health care costs were lower with chiropractic care. In studies that also examined clinical outcomes, there were few differences in efficacy between groups, and health care costs were higher for those receiving chiropractic care. The effects of adjusting for differences in sociodemographic, clinical, or other factors between study groups were unclear.

**CONCLUSIONS:**

Although cost comparison studies suggest that health care costs were generally lower among patients whose spine pain was managed with chiropractic care, the studies reviewed had many methodological limitations. Better research is needed to determine if these differences in health care costs were attributable to the type of HCP managing their care.

PMID:26482271

**46 A. UPPER LIMB NEUROMOBILIZATION**

## Hypoalgesic effects of

J Manipulative Physiol Ther. 2015 Oct 16. pii: S0161-4754(15)00156-6. doi: 10.1016/j.jmpt.2015.09.002.

**Comparison of Hypoalgesic Effects of Neural Stretching vs Neural Gliding: A Randomized Controlled Trial.**

Beltran-Alacreu H<sup>1</sup>, Jiménez-Sanz L<sup>2</sup>, Fernández Carnero J<sup>3</sup>, La Touche R<sup>4</sup>.  
Author information

## Abstract

**OBJECTIVE:**

The purpose of this study was to evaluate the immediate mechanical hypoalgesic effect of neural mobilization in asymptomatic subjects. We also compared neural gliding vs neural stretching to see which produced greater hypoalgesic effects in asymptomatic subjects.

**METHODS:**

Forty-five asymptomatic subjects (20 men and 25 women; mean  $\pm$  SD age, 20.8  $\pm$  2.83 years) were randomly allocated into 3 groups: the neural glide group, the neural stretch group, and the placebo group. Each subject received 1 treatment session. Outcome measures included bilateral pressure pain threshold measured at the trigeminal, cervical, and tibialis anterior points, assessed pre-treatment and immediately post-treatment by a blinded assessor. Three-way repeated-measures analysis of variance was used to evaluate changes in pressure pain threshold, with group (experimental or control) as the between-subjects variable and time (pre-, post-treatment) or side (dominant, nondominant) as the within-subjects variable.

**RESULTS:**

Group differences were identified between neural mobilization groups and the placebo group. Changes occurred in all of the pressure pain threshold measures for neural gliding, and in all but the trigeminal point for neural stretch. No changes in the pressure pain threshold measures occurred in the placebo group.

**CONCLUSIONS:**

This research provides new experimental evidence that neural mobilization produces an immediate widespread hypoalgesic effect vs placebo but neural gliding produces hypoalgesic effects in more body sites than neural stretching.

**KEYWORDS:** Manual Therapy; Nociception; Pain  
PMID: 26481666

**46 B. LOWER LIMB NEUROMOILIZATION****SLR mobilization****Effect of Butler's neural tissue mobilization and Mulligan's bent leg raise on pain and straight leg raise in patients of low back ache**

Neha Tambekar, MPT, Shaila Sabnis, BPT, Apoorva Phadke, MPT, Nilima Bedekar, PhD

DOI: <http://dx.doi.org/10.1016/j.jbmt.2015.08.003>

**Summary**

Low back ache (LBA) is a common musculoskeletal disorder sometimes associated with a positive limited Straight leg raise (SLR) test. Mulligan's bent leg raise (BLR) and Butler's neural tissue mobilization (NTM) are commonly used techniques for the treatment of low back ache where SLR is limited. The aim of this study was to evaluate the effect of both the techniques on pain and limited SLR in patients with LBA. Thirty one patients with LBA with radiculopathy were randomly allocated into 2 groups; BLR [n = 16] NTM [n = 15]. The outcome measures i.e. visual analogue scale (VAS) for pain and universal goniometer for measuring SLR range of motion (SROM) were assessed at the baseline, post intervention and after 24 h (follow up). Within group analysis using paired t-test revealed a significant difference between pre-treatment and post-treatment VAS and SROM score ( $p < 0.05$ ). However no difference was seen between pre-treatment and follow up ( $p > 0.05$ ). The study showed that both techniques produce immediate improvement in pain and SLR range but this effect was not maintained during the follow up period.

Keywords: Low back pain, Mulligan bent leg raise technique, Butler's neural tissue mobilization, SLR

### 48 A. STM

#### Lymphatic drainage

J Sport Rehabil. 2015 Oct 12.

#### **The Effectiveness of Manual Lymphatic Drainage in Patients With Orthopedic Injuries. Majewski-Schrage T<sup>1</sup>, Snyder K.**

Author information

#### Abstract

Managing edema following trauma or injury is a primary concern for health care professionals, as it is theorized that delaying the removal of edema will increase secondary injury and result in a longer recovery period. The inflammatory process generates a series of events, starting with bleeding, and ultimately leading to fluid accumulation in intercellular spaces and the formation of edema. Once edema is formed, the lymphatic system plays a tremendous role in removing excess interstitial fluid and returning the fluid to the circulatory system. Therefore, rehabilitation specialists ought to utilize therapies that enhance the uptake of edema via the lymphatic system to manage edema; however, the modalities commonly utilized are ice, compression, and elevation. Modalities such as these may be effective at preventing swelling, but evidence is limited to suggest the function of the lymphatic system is enhanced as a result of these treatment applications.

Manual lymphatic drainage (MLD) is a manual therapy technique that involves the use of different hand movements with light pressure to promote variations in interstitial pressure. The variation of interstitial pressure assists the lymphatic system function and is the ultimate goal of MLD.

PMID: 26458244

**Cross friction****Cross friction algometry (CFA): Comparison of pressure pain thresholds between patients with chronic non-specific low back pain and healthy subjects**

Andre Farasyn, PhD PT DO, Bert Lassat, MSc PT

**Summary**

Palpation is widely used to assess muscular sensitivity in clinical settings but still remains a subjective evaluation. This cross-sectional study assessed a newly developed cross-friction algometry making palpation measurable. The objective was to investigate the reliability of pressure pain thresholds obtained using Cross-Friction Algometry (CFA-PPTs) measured at the level of Erector spinae and Gluteus maximus central muscle parts, and to compare the CFA-PPTs between patients with chronic nonspecific low back pain (nCLBP) and matching healthy subjects.

**Participants**

Patients presenting nCLBP to GP's and send into a Pain Center and healthy subjects recruited via university ad valvas & flyers distribution.

**Outcome measures**

30 patients with nCLBP were measured for cross-friction algometry. Other evaluations consisted of the Visual Analogue Scale (VAS) and the Oswestry Disability Index (ODI).

**Results**

The inter- and intra-reliability were tested and found to be sufficient. The mean CFA-PPT values of the Erector spinae at levels T8, T10, L1 & L3 and the Gluteus maximus of the nCLBP group were significantly lower ( $p \leq 0.001$ ) when compared to the CFA-PPT values of the healthy group. The greatest difference ( $-58\%$ ) was found at L1 Erector spinae level and at the superior part of the Gluteus maximus measuring point ( $-59\%$ ). Within the group of patients with nCLBP it was surprising to notice that there was no significant correlation between all the reference points measured using CFA-PPTs and the outcomes of the VAS and ODI scores.

**Conclusions**

With the aid of CFA, the importance of local muscular disorder in the lumbar part of the Erector spinae and Gluteus maximus in patients with nCLBP is obviously demonstrated, but also reveals the very large inter-individual differences in muscular fibrosis sensitivity and/or pain behavior in daily life. This possibly re-opens the debate on which influences can be put forward as the most important: the central or the peripheral sensitization system.

Keywords: Algometry, Cross-friction algometry, Trigger point, Low back pain

### Fascial Hierarchies

#### **Fascial Hierarchies and the Relevance of Crossed-Helical Arrangements of Collagen to Changes in the Shape of Muscles★**

Graham Scarr CBiol, FRSB., FLS., DO

##### **Summary**

Muscles are composite structures consisting of contractile myofibres surrounded by complex hierarchies of collagen-reinforced fascial sheaths. They are essentially flexible cylinders that change in shape, with the particular alignment of collagen fibres within their myofascial walls reflecting the most efficient distribution of mechanical stresses and coordinating these changes. However, while the functional significance of this crossed-helical fibre arrangement is well established in other species and in different parts of the body, relatively little attention has been given to this within the fascia of humans; and the relevance of this geometric configuration to muscles and surrounding fascial tissues is described.

Keywords: Collagen, Crossed-helix, Crossed-ply, Epimysium, Fascia, Helix, Muscle, Myofascia, Pennation, Perimysium

### 48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE

#### Acupuncture and brain changes

#### **Repeated verum but not placebo acupuncture normalizes connectivity in brain regions dysregulated in chronic pain**

- Natalia Egorova, Randy L. Gollub, Jian Kong\*

##### **Abstract**

Acupuncture, an ancient East Asian therapy, is aimed at rectifying the imbalance within the body caused by disease. Studies evaluating the efficacy of acupuncture with neuroimaging tend to concentrate on brain regions within the pain matrix, associated with acute pain. We, however, focused on the effect of repeated acupuncture treatment specifically on brain regions known to support functions dysregulated in chronic pain disorders. Transition to chronic pain is associated with increased attention to pain, emotional rumination, nociceptive memory and avoidance learning, resulting in brain connectivity changes, specifically affecting the periaqueductal gray (PAG), medial frontal cortex (MFC) and bilateral hippocampus (Hpc). We demonstrate that the PAG–MFC and PAG–Hpc connectivity in patients with chronic pain due to knee osteoarthritis indeed correlates with clinical severity scores and further show that verum acupuncture-induced improvement in pain scores (compared to sham) is related to the modulation of PAG–MFC and PAG–Hpc connectivity in the predicted direction. This study shows that repeated verum acupuncture might act by restoring the balance in the connectivity of the key pain brain regions, altering pain-related attention and memory.

**49. STRETCHING**

PNF/shoulder

J Sport Rehabil. 2015 Oct 12.

**The Acute Effects of Hold-Relax Proprioceptive Neuromuscular Facilitation With Vibration Therapy on Glenohumeral Internal Rotation Deficit.**Tucker WS<sup>1</sup>, Slone SW.  
Author information**Abstract****CONTEXT:**

Clinicians use various stretching techniques to prevent the onset of and treat glenohumeral internal rotation deficit (GIRD). It is unknown which stretching technique is the most effective.

**OBJECTIVE:**

To investigate the acute effects of hold-relax proprioceptive neuromuscular facilitation (PNF) with and without vibration therapy on internal rotation in individuals with GIRD.

**DESIGN:**

Two-within (stretch x time) comparison with repeated measures.

**SETTING:**

Controlled laboratory.

**PATIENTS:**

A volunteer sample of 11 male overhead and former overhead athletes (19.8±1.4 years, 184.5±4.5 cm, 91.8±11.6 kg) presented with GIRD and participated in the study.

**INTERVENTIONS:**

At three separate sessions, participants performed one of three randomly assigned stretches: hold-relax PNF (PNF), hold-relax PNF in combination with a whole body vibration unit set at 30 Hz (PNF-V) and static stretch (SS). Pretest and posttest maximum passive glenohumeral internal rotation measurements were taken with a digital protractor.

**MAIN OUTCOME MEASURES:**

The dependent variables were the mean glenohumeral internal rotation measurements taken at the pretest and posttest. The influence of stretch (PNF, PNF-V and SS) and time (pretest and posttest) on mean glenohumeral internal rotation was compared using a 3x2 factorial ANOVA with repeated measures on both variables ( $P \leq 0.05$ ).

**RESULTS:**

There was a stretch-by-time interaction ( $F_{2,20}=34.697$ ;  $P < 0.001$ ). Post hoc testing revealed that the PNF posttest ( $73.0 \pm 10.4^\circ$ ) was greater than the PNF pretest ( $60.0 \pm 11.8^\circ$ ), the PNF-V posttest ( $74.7 \pm 10.0^\circ$ ) was greater than the PNF-V pretest ( $57.4 \pm 10.4^\circ$ ), and the SS posttest ( $67.0 \pm 10.7^\circ$ ) was greater than the SS pretest ( $60.1 \pm 9.4^\circ$ ). When comparing the posttest values, the PNF-V posttest was greater than the SS posttest.

**CONCLUSIONS:** All three stretches (PNF, PNF-V and SS) resulted in acute increases in glenohumeral internal rotation in individuals presenting with GIRD. The PNF-V stretch resulted in the greatest increase in glenohumeral internal rotation and would be the most clinically beneficial for patients with GIRD.

PMID: 26457571



## 51. CFS/BET

## Sitting posture

Man Ther. 2015 Mar 31. pii: S1356-689X(15)00068-5. doi: 10.1016/j.math.2015.03.015.

**The relationship between sitting posture and seated-related upper quadrant musculoskeletal pain in computing South African adolescents: A prospective study.**

Brink Y<sup>1</sup>, Louw Q<sup>2</sup>, Grimmer K<sup>3</sup>, Jordaan E<sup>4</sup>.

Author information

Abstract

**BACKGROUND:**

There is evidence that consistent sitting for prolonged periods is associated with upper quadrant musculoskeletal pain (UQMP). It is unclear whether postural alignment is a significant risk factor.

**OBJECTIVE AND DESIGN:**

The aim of the prospective study (2010-2011) was to ascertain if three-dimensional sitting postural angles, measured in a real-life school computer classroom setting, predict seated-related UQMP.

**METHOD:**

Asymptomatic Grade 10 high-school students, aged 15-17 years, undertaking Computer Application Technology, were eligible to participate. Using the 3D Posture Analysis Tool, sitting posture was measured while students used desk-top computers. Posture was reported as five upper quadrant angles (Head flexion, Neck flexion; Craniocervical angle, Trunk flexion and Head lateral bending). The Computer Usage Questionnaire measured seated-related UQMP and hours of computer use. The Beck Depression Inventory and the Multidimensional Anxiety Scale for Children assessed psychosocial factors. Sitting posture, computer use and psychosocial factors were measured at baseline. UQMP was measured at six months and one-year follow-up.

**RESULTS:**

211, 190 and 153 students participated at baseline, six months and one-year follow-up respectively. 34.2% students complained of seated-related UQMP during the follow-up period. Increased head flexion (HF) predicted seated-related UQMP developing over time for a small group of students with pain scores greater than the 90th pain percentile, adjusted for age, gender, BMI, computer use and psychosocial factors ( $p = 0.003$ ). The pain score increased 0.22 points per 1° increase in HF.

**CONCLUSIONS:**

Classroom ergonomics and postural hygiene should therefore focus on reducing large HF angles among computing adolescents.

**KEYWORDS:** Adolescent; Pain; Posture; Three-dimensional

PMID: 25882626

**Sit to stand work stations**

Med Sci Sports Exerc. 2015 Oct 22.

**Using Sit-to-Stand Workstations in Offices: Is There a Compensation Effect?**

Mansoubi M<sup>1</sup>, Pearson N, Biddle SJ, Clemes SA.  
Author information

Abstract

**PURPOSE:**

Sit-to-stand workstations are becoming common in modern offices and are increasingly being implemented in sedentary behavior interventions. The purpose of this study was to examine whether the introduction of such a workstation among office workers leads to reductions in sitting during working hours, and whether office workers compensate for any reduction in sitting at work by increasing sedentary time and decreasing physical activity (PA) outside work.

**METHODS:**

Office workers (n=40; 55% female) were given a WorkFit-S, sit-to-stand workstation for 3 months. Participants completed assessments at baseline (prior to workstation installation), 1-week and 6-weeks after the introduction of the workstation, and again at 3-months (post-intervention). Posture and PA were assessed using the activPAL inclinometer and ActiGraph GT3X+ accelerometer, which participants wore for 7-days during each measurement phase.

**RESULTS:**

Compared to baseline, the proportion of time spent sitting significantly decreased ( $75\pm 13\%$  versus  $52\pm 16\%$  -  $56\pm 13\%$ ), and time spent standing and in light activity significantly increased (standing:  $19\pm 12\%$  versus  $32\pm 12\%$  -  $37\pm 15\%$ , light PA:  $14\pm 4\%$  versus  $16\pm 5\%$ ) during working hours at all follow-up assessments. However, compared to baseline, the proportion of time spent sitting significantly increased ( $60\pm 11\%$  versus  $66\pm 12\%$  -  $68\pm 12\%$ ) and light activity significantly decreased ( $21\pm 5\%$  versus  $19\pm 5\%$ ) during non-working hours across the follow-up measurements. No differences were seen in moderate-to-vigorous activity during non-working hours throughout the study.

**CONCLUSION:**

The findings suggest that introducing a sit-to-stand workstation can significantly reduce sedentary time and increase light activity levels during working hours. However, these changes were compensated for by reducing activity and increasing sitting outside of working hours. An intervention of a sit-to-stand workstation should be accompanied by an intervention outside of working hours to limit behavior compensation.

PMID: 26496419

**52. EXERCISE****Lower social economic and inactivity**

Scand J Med Sci Sports. 2015 Oct 10. doi: 10.1111/sms.12574.

**Social background, bullying, and physical inactivity: National study of 11- to 15-year-olds.**

Henriksen PW<sup>1</sup>, Rayce SB<sup>1</sup>, Melkevik O<sup>1</sup>, Due P<sup>1</sup>, Holstein BE<sup>1</sup>.

Author information

**Abstract**

More children from lower social backgrounds are physically inactive than those from higher ones. We studied whether bullying was a mediating factor between lower social background and physical inactivity. We also examined the combined effect of low social class and exposure to bullying on physical inactivity. The Danish sample of the Health Behaviour in School-aged Children (HBSC) study 2006 included 6269 schoolchildren in three age groups: 11-, 13-, and 15-year-olds from a random sample of 80 schools. The students answered the internationally standardized HBSC questionnaire. The applied definition leaves 4.0% in the category physically inactive. The sex and age-adjusted OR (95% CI) for physical inactivity was 2.10 (1.39-3.18) among students with low social class and unclassifiable 3.53 (2.26-5.53). Exposure to bullying was associated with physical inactivity, sex and age-adjusted OR = 2.39 (1.67-3.41). Exposure to bullying did not explain the association between social class and physical inactivity. The association between social class and physical inactivity was more pronounced among participants also exposed to bullying. In conclusion, there was a significantly increased odds ratio for physical inactivity among students from lower social classes and for students exposed to bullying. There was a combined effect of low social class and bullying on physical inactivity.

**KEYWORDS:** Adolescents; bullying; physical activity; social inequality; socioeconomic position

PMID: 26454139

**Hip drop exercise/gluteus medius**

J Sport Rehabil. 2015 Oct 12.

**Hip Rotations Influence Electromyographic Activity of Gluteus Medius Muscle During Pelvic Drop Exercise.**

Monteiro RL<sup>1</sup>, Facchin JH, de Freitas DG, Callegari B, João SM.  
Author information

**Abstract**

Pelvic drop exercises are often used to strengthen the gluteus medius muscle with the aim of increasing or prioritizing its recruitment. However, the effect of hip rotation on the performance of the action of the gluteus medius is unknown. The aim of the study was to evaluate the effect of hip rotation on the recruitment of the gluteus medius muscle, tensor fasciae latae and quadratus lumborum. Seventeen healthy subjects performed two sets of four repetitions of pelvic drop exercise in random order with lateral (PDLR), medial (PDMR) and neutral (PDN) rotation of the hip. The electromyographic activity of the gluteus medius muscle (GM), tensor fasciae latae (TFL) and quadratus lumborum (QL) were evaluated using surface electromyography (sEMG). The results showed significant increases in activation of the GM with medial and neutral rotation compared with lateral rotation ( $p = 0.03$ ,  $p = 0.01$ , respectively) and there was no difference between medial and neutral rotation ( $p=1.00$ ). There was no difference in electromyographic activity of the tensor fasciae latae and quadratus lumborum in any of the positions. The GM:TFL ratio was the same in all analyzed positions.

Regarding the GM:QL ratio, there was a significant increase with medial rotation compared with lateral rotation ( $p=0.02$ ). Pelvic drop exercises are more efficient for activating the gluteus medius when the hip is in medial rotation and neutral position.

PMID: 26457391

**Inactive adolescents**

Med Sci Sports Exerc. 2015 Oct 17.

**Low-Active Male Adolescents: A Dose Response to High-Intensity Interval Training.**

Logan GR<sup>1</sup>, Harris N, Duncan S, Plank LD, Merien F, Schofield G.  
Author information

Abstract

**PURPOSE:**

High-intensity interval training (HIIT) is a potential alternative to traditionally recommended steady state exercise for providing health benefits in adolescents, yet its dose-response relationship in this cohort remains unclear, as does its translatability to real-world, non-clinical settings. The present study adopts a novel dose-response design to investigate the effects of undertaking 8 wk of HIIT on the cardio-metabolic health of low-active male adolescents.

**METHODS:**

Twenty-six male adolescents (age  $16 \pm 1$  y), identified as low-active by non-participation in structured sport and physical education classes, were randomly assigned to one of five treatment groups. Corresponding with their group numbers (1-5), participants completed a number of HIIT 'sets' which consisted of 4 repeated bouts of 20 s near-maximal exertion interspersed with 10 s passive recovery. Participants performed two HIIT sessions and one resistance training session each wk for 8 wk. Baseline and follow-up health measures consisted of peak oxygen uptake ( $VO_{2peak}$ ) with an incremental ramp test to volitional exhaustion, body composition (including visceral fat mass, body fat and lean tissue mass) with dual-energy X-ray absorptiometry, and lipid profile, glucose, insulin, and interleukin-6 from blood analysis. All health outcomes were analyzed as percentage changes and data were modeled using a quadratic function to explore dose-response relationships.

**RESULTS:**

Significant improvements were observed for  $VO_{2peak}$  (~6%), body fat percentage (~4%), visceral fat mass (~10%), and waist circumference-to-height ratio (~3%), but there was no clear effect of dose across groups.

**CONCLUSION:**

Low-active adolescent males performing a single HIIT set twice weekly, in addition to one resistance training session, gained meaningful improvements in fitness and body composition. Performing additional HIIT sets provided no additional improvements to those of the lowest dose in this study.

PMID: 26484952

**Biceps femoris**

Med Sci Sports Exerc. 2015 Oct 12.

**Architectural Changes of the Biceps Femoris After Concentric or Eccentric Training.**

Timmins RG<sup>1</sup>, Ruddy JD, Presland J, Maniar N, Shield AJ, Williams MD, Opar DA.  
Author information

Abstract

**PURPOSE:**

To determine i) the architectural adaptations of the biceps femoris long head (BF<sub>lh</sub>) following concentric or eccentric strength training interventions; ii) the time course of adaptation during training and detraining.

**METHODS:**

Participants in this randomized controlled trial (control [n=28], concentric training group [n=14], eccentric training group [n=14], males) completed a 4-week control period, followed by 6 weeks of either concentric- or eccentric-only knee flexor training on an isokinetic dynamometer and finished with 28 days of detraining. Architectural characteristics of BF<sub>lh</sub> were assessed at rest and during graded isometric contractions utilizing two-dimensional ultrasonography at 28 days pre-baseline, baseline, days 14, 21 and 42 of the intervention and then again following 28 days of detraining.

**RESULTS:**

BF<sub>lh</sub> fascicle length was significantly longer in the eccentric training group ( $p < 0.05$ , d range: 2.65 to 2.98) and shorter in the concentric training group ( $p < 0.05$ , d range: -1.62 to -0.96) after 42 days of training compared to baseline at all isometric contraction intensities. Following the 28-day detraining period, BF<sub>lh</sub> fascicle length was significantly reduced in the eccentric training group at all contraction intensities compared to the end of the intervention ( $p < 0.05$ , d range: -1.73 to -1.55). There was no significant change in fascicle length of the concentric training group following the detraining period.

**CONCLUSIONS:**

These results provide evidence that short term resistance training can lead to architectural alterations in the BF<sub>lh</sub>. In addition, the eccentric training-induced lengthening of BF<sub>lh</sub> fascicle length was reversed and returned to baseline values following 28 days of detraining. The contraction mode specific adaptations in this study may have implications for injury prevention and rehabilitation.

PMID: 26460634

## 54. POSTURE

### Postural and endurance changes with neck pain

#### Neck muscle endurance and head posture: A comparison between adolescents with and without neck pain

Ana Carolina Oliveira Anabela G. Silva

##### Highlights

- Neck pain in adolescents is of considerable duration and frequency.
- Neck pain in adolescents interferes with daily activities.
- Adolescents with neck pain have decreased neck flexor endurance capacity.
- Adolescents with neck pain have decreased neck extensor endurance capacity.
- There is a need for early interventions targeting adolescents with neck pain.

##### Abstract

###### Objective

The main aims of this study were to compare the neck flexor and extensor endurance and forward head posture between adolescents with and without neck pain. The secondary aims were to explore potential associations between muscles endurance, head posture and neck pain characteristics and to assess intra-rater reliability of the measurements used.

###### Methods

Adolescents with neck pain (n = 35) and age-matched asymptomatic adolescents (n = 35) had their forward head posture, neck flexor endurance and neck extensor endurance measured using clinical tests. Intra-rater reliability was also assessed.

###### Results

Forward head posture and neck flexor and extensor endurance tests showed moderate to almost perfect intra-rater reliability (ICC between 0.58 and 0.88). Adolescents with neck pain showed significantly less forward head posture (neck pain =  $46.62 \pm 4.92$ ; asymptomatic =  $44.18 \pm 3.64$ ,  $p > 0.05$ ) and less neck flexor (neck pain =  $24.50 \pm 23.03$ s; asymptomatic =  $35.89 \pm 21.53$ s,  $p > 0.05$ ) and extensor endurance (neck pain =  $12.664 \pm 77.94$ s; asymptomatic =  $168.66 \pm 74.77$ s,  $p > 0.05$ ) than asymptomatic adolescents.

###### Conclusions

Results suggest that changes in posture and neck muscle endurance are a feature of adolescents with neck pain.

Keywords: Neck pain, Endurance, Forward head posture, Adolescents

### Postural evaluation

#### Sagittal evaluation of usual standing and sitting spinal posture

Kurt Claeys, PhD, MT Simon Brumagne, PhD Jan Deklerck, M.Sc Jacques Vanderhaeghen, PhD Wim Dankaerts, PhD, MT

#### Summary

Postural rehabilitation often plays an important role in the management of non-specific low back pain. While cervical and lumbar correlations have been demonstrated previously, the different role of the pelvis and the thoracic spine for postural control in sitting and standing remains unclear. The aim of this study was to investigate postural correlations between all spinal regions in standing and sitting. Based on digital photographs eight postural angles were analyzed in 99 young healthy persons. Pearson correlations between different postural angles were calculated. In sitting pelvic tilt demonstrated mostly medium correlations with five out of seven other postural angles, compared to three in standing. In standing trunk angle showed five out of seven mostly medium correlations with other regions compared to four out of seven in usual sitting. The low and different correlations suggest a large between-subject variability in sagittal spinal posture, without the existence of any optimal sagittal posture.

Keywords: Sagittal, Posture, Standing, Sitting, Spine



### Stab ex and posture

#### **Effect of spinal stabilization exercise on dynamic postural control and visual dependency in subjects with chronic non-specific low back pain**

Mahyar Salavati, PhD, PT Behnam Akhbari, PhD, PT Ismail Ebrahimi Takamjani, PhD, PT Hossein Bagheri, PhD, PT Kamran Ezzati, PhD, PT Amir Hossein Kahlaee, PhD, PT

#### **Background**

Motor control approach towards chronic non-specific low back pain (CNLBP) has gained increasing attention. CNLBP patients have shown to be more visually dependent for the postural control process than control subjects but no study has yet investigated the treatment programs effect on this disorder.

#### **Methods**

Forty CNLBP patients volunteered to participate in this experimental study. The subjects were randomly assigned into either stabilization exercise (SE) or control group both receiving 12 sessions of routine physiotherapy for four weeks. The SE group also received intensive stabilization exercise. Balance (in terms of overall (OSI), anteroposterior (APSI) and mediolateral stability indices (MLSI)) and functional disability were assessed by Biodex Balance System ® (BBS) and Oswestry Low Back Disability Questionnaire, respectively prior and after the interventions. The balance tests were performed with open and closed eyes.

#### **Results**

Both interventions significantly decreased all stability indices but the SE group showed a more pronounced improvement in OSI and APSI. In the SE group, vision deprivation had smaller destabilizing effects on OSI and APSI as compared with the control group. The groups were not statistically different prior and after the interventions on all dependent variables. Oswestry index reduction in the SE group was more pronounced but the interaction of time and group variables were not significant on pain intensity.

#### **Conclusion**

Both interventions effectively enhanced stability indices and functional capabilities and reduced pain intensity in CNLBP patients. The SE protocol made the patients less visual dependent perhaps via better stability. Since pain reduction was not different between the groups, more functional improvement in SE group cannot simply be interpreted via the pain interference and might be related to postural control capabilities of the patients.

**57. GAIT****Gait and total hip**

BMC Musculoskelet Disord. 2015 Oct 12;16(1):291. doi: 10.1186/s12891-015-0755-3.

**Improvement of walking speed and gait symmetry in older patients after hip arthroplasty: a prospective cohort study.**

Rapp W<sup>1</sup>, Brauner T<sup>2</sup>, Weber L<sup>3</sup>, Grau S<sup>4</sup>, Mündermann A<sup>5</sup>, Horstmann T<sup>6,7</sup>.  
Author information

## Abstract

**BACKGROUND:**

Retraining walking in patients after hip or knee arthroplasty is an important component of rehabilitation especially in older persons whose social interactions are influenced by their level of mobility. The objective of this study was to test the effect of an intensive inpatient rehabilitation program on walking speed and gait symmetry in patients after hip arthroplasty (THA) using inertial sensor technology.

**METHODS:**

Twenty-nine patients undergoing a 4-week inpatient rehabilitation program following THA and 30 age-matched healthy subjects participated in this study. Walking speed and gait symmetry parameters were measured using inertial sensor device for standardized walking trials (2\*20.3 m in a gym) at their self-selected normal and fast walking speeds on postoperative days 15, 21, and 27 in patients and in a single session in control subjects. Walking speed was measured using timing lights. Gait symmetry was determined using autocorrelation calculation of the cranio-caudal (CC) acceleration signals from an inertial sensor placed at the lower spine.

**RESULTS:**

Walking speed and gait symmetry improved from postoperative days 15-27 (speed, female: 3.2 and 4.5 m/s; male: 4.2 and 5.2 m/s; autocorrelation, female: 0.77 and 0.81; male: 0.70 and 0.79; P <0.001 for all). After the 4-week rehabilitation program, walking speed and gait symmetry were still lower than those in control subjects (speed, female 4.5 m/s vs. 5.7 m/s; male: 5.2 m/s vs. 5.3 m/s; autocorrelation, female: 0.81 vs. 0.88; male: 0.79 vs. 0.90; P <0.001 for all).

**CONCLUSIONS:**

While patients with THA improved their walking capacity during a 4-week inpatient rehabilitation program, subsequent intensive gait training is warranted for achieving normal gait symmetry. Inertial sensor technology may be a useful tool for evaluating the rehabilitation process during the post-inpatient period.

PMID: 26459628

**Self reported gait improvements**

PLoS One. 2015 Oct 7;10(10):e0139923. doi: 10.1371/journal.pone.0139923. eCollection 2015.

**Gait Biomechanics and Patient-Reported Function as Predictors of Response to a Hip Strengthening Exercise Intervention in Patients with Knee Osteoarthritis.**

Kobsar D<sup>1</sup>, Osis ST<sup>2</sup>, Hettinga BA<sup>2</sup>, Ferber R<sup>3</sup>.  
Author information

## Abstract

**OBJECTIVE:**

Muscle strengthening exercises have been shown to improve pain and function in adults with mild-to-moderate knee osteoarthritis, but individual response rates can vary greatly. Predicting individuals who respond and those who do not is important in developing a more efficient and effective model of care for knee osteoarthritis (OA). Therefore, the purpose of this study was to use pre-intervention gait kinematics and patient-reported outcome measures to predict post-intervention response to a 6-week hip strengthening exercise intervention in patients with mild-to-moderate knee OA.

**METHODS:**

Thirty-nine patients with mild-to-moderate knee osteoarthritis completed a 6-week hip-strengthening program and were subgrouped as Non-Responders, Low-Responders, or High-Responders following the intervention based on their change in Knee injury Osteoarthritis Outcome Score (KOOS). Predictors of responder subgroups were retrospectively determined from baseline patient-reported outcome measures and kinematic gait parameters in a discriminant analysis of principal components. A 3-4 year follow-up on 16 of the patients with knee OA was also done to examine long-term changes in these parameters.

**RESULTS:**

A unique combination of patient-reported outcome measures and kinematic factors was able to successfully subgroup patients with knee osteoarthritis with a cross-validated classification accuracy of 85.4%. Lower patient-reported function in daily living (ADL) scores and hip frontal plane kinematics during the loading response were most important in classifying High-Responders from other sub-groups, while a combination of hip, knee, ankle kinematics were used to classify Non-Responders from Low-Responders.

**CONCLUSION:**

Patient-reported outcome measures and objective biomechanical gait data can be an effective method of predicting individual treatment success to an exercise intervention. Measuring gait kinematics, along with patient-reported outcome measures in a clinical setting can be useful in helping make evidence-based decisions regarding optimal treatment for patients with knee OA.  
PMID: 26444426

**59. PAIN****Chronic widespread pain****Common and unique associated factors for medically unexplained chronic widespread pain and chronic fatigue☆**

J. McBeth, B. Tomenson, C.A. Chew-Graham, G.J. Macfarlane, J. Jackson, A. Littlewood, F.H. Creed

**Highlights**

- Chronic widespread pain and chronic fatigue commonly co-occur, share similar risk factors and are considered by some to be part of the same disorder.
- In this study not all putative associated factors were commonly associated with both disorders.
- The apparent common association appeared to be explained by the presence of common psychiatric disorders, anxiety and depression.

**Abstract****Objective**

Chronic widespread pain and chronic fatigue share common associated factors but these associations may be explained by the presence of concurrent depression and anxiety.

**Methods**

We mailed questionnaires to a randomly selected sample of people in the UK to identify participants with chronic widespread pain (ACR 1990 definition) and those with chronic fatigue. The questionnaire assessed sociodemographic factors, health status, healthcare use, childhood factors, adult attachment, and psychological stress including anxiety and depression. To identify persons with *unexplained* chronic widespread pain or *unexplained* chronic fatigue; we examined participant's medical records to exclude medical illness that might cause these symptoms.

**Results**

Of 1443 participants (58.0% response rate) medical records of 990 were examined. 9.4% (N = 93) had unexplained chronic widespread pain and 12.6% (N = 125) had unexplained chronic fatigue. Marital status, childhood psychological abuse, recent threatening experiences and other somatic symptoms were commonly associated with both widespread pain and fatigue. No common effect was found for few years of education and current medical illnesses (more strongly associated with chronic widespread pain) or recent illness in a close relative, neuroticism, depression and anxiety scores (more strongly associated with chronic fatigue). Putative associated factors with a common effect were associated with unexplained chronic widespread pain or unexplained chronic fatigue only when there was concurrent anxiety and/or depression.

**Discussion**

This study suggests that the associated factors for chronic widespread pain and chronic fatigue need to be studied in conjunction with concurrent depression/anxiety. Clinicians should be aware of the importance of concurrent anxiety or depression.

Keywords: Chronic fatigue, Epidemiology, Fibromyalgia, Functional somatic syndromes, Medically unexplained symptoms, Population based

Chronic fatigue syndrome

### **Increased risk of chronic fatigue syndrome in patients with migraine: A retrospective cohort study**

Chi-Ieong Lau, Che-Chen Lin, Wei-Hung Chen, Han-Cheng Wang, Chia-Hung Kao

#### **Highlights**

- The risk of CFS was 1.5-fold higher in the migraine cohort.
- The risk was most prominent in the  $\geq 65$  years group with a 2.11-fold increased CFS.
- CFS incidence appeared to increase with the frequency of migraine.

#### **Abstract**

##### **Objective**

The common concurrence of migraine and chronic fatigue syndrome (CFS) has been reported but whether migraine poses a higher risk of CFS remains unknown. In this retrospective case-control study, we examined the association between the 2 disorders by using a nationwide, population-based database in Taiwan.

##### **Methods**

The data were retrieved and analyzed from the National Health Insurance Research Database (NHIRD) of Taiwan; 6902 newly diagnosed migraine cases from 2006–2010 were identified in a subset of the NHIRD, and 27,608 migraine-free individuals were randomly selected as the comparison cohort. The multivariate Cox proportional hazards regression model was used to investigate the risk of CFS in migraineurs after adjustment for demographic characteristics and comorbidities.

##### **Results**

After adjustment for the covariates, the risk of CFS was 1.5-fold higher in the migraine cohort than in the comparison cohort (52.72 vs. 28.85 per 10,000 person-years). Intriguingly, the risk was most prominent in the oldest group ( $\geq 65$  years), with a 2.11-fold increased risk (95% confidence interval 1.31–3.41) of CFS. In addition, the adjusted cumulative incidence of CFS in the follow-up years was higher in the migraine group (log-rank test,  $P < .0001$ ), and CFS incidence appeared to increase with the frequency of migraine diagnoses.

##### **Conclusion**

The current study demonstrated an increased risk of CFS in migraineurs. Proposed mechanisms in previous studies such as mitochondrial dysfunction and central sensitization may underlie the shared pathophysiology of these seemingly distinct but potentially overlapping disorders.

**Keywords:** Chronic fatigue syndrome (CFS), Migraine, Population-based cohort study

**Sleep impacts pain**

Sleep. 2015 Oct 1;38(10):1607-17. doi: 10.5665/sleep.5058.

**Experimental Sleep Restriction Facilitates Pain and Electrically Induced Cortical Responses.**

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Author information

Abstract

**STUDY OBJECTIVES:**

Sleep restriction (SR) has been hypothesized to sensitize the pain system. The current study determined whether experimental sleep restriction had an effect on experimentally induced pain and pain-elicited electroencephalographic (EEG) responses.

**DESIGN:**

A paired crossover study.

**INTERVENTION:**

Pain testing was performed after 2 nights of 50% SR and after 2 nights with habitual sleep (HS).

**SETTING:**

Laboratory experiment at research center.

**PARTICIPANTS:**

Self-reported healthy volunteers (n = 21, age range: 18-31 y).

**MEASUREMENTS AND RESULTS:**

Brief high-density electrical stimuli to the forearm skin produced pinprick-like pain. Subjective pain ratings increased after SR, but only in response to the highest stimulus intensity (P = 0.018). SR increased the magnitude of the pain-elicited EEG response analyzed in the time-frequency domain (P = 0.021). Habituation across blocks did not differ between HS and SR. Event-related desynchronization (ERD) was reduced after SR (P = 0.039). Pressure pain threshold of the trapezius muscle region also decreased after SR (P = 0.017).

**CONCLUSION:**

Sleep restriction (SR) increased the sensitivity to pressure pain and to electrically induced pain of moderate, but not low, intensity. The increased electrical pain could not be explained by a difference in habituation. Increased response magnitude is possibly related to reduced processing within the somatosensory cortex after partial SR.

**KEYWORDS:** EEG; event-related desynchronization (ERD); event-related potential (ERP); pain; pressure pain threshold (PPT); time-frequency analysis

PMID: 26194577

## Personality and depression

J Affect Disord. 2015 Sep 25;189:118-125. doi: 10.1016/j.jad.2015.09.028.

**Association of Type D personality with increased vulnerability to depression: Is there a role for inflammation or endothelial dysfunction? - The Maastricht Study.**

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Author information

## Abstract

**BACKGROUND:**

Type D personality - the combination of negative affectivity (NA) and social inhibition (SI) - has been associated with depression but little is known about underlying mechanisms. We examined whether (1) Type D is a vulnerability factor for depression in general, (2) Type D is associated with inflammation or endothelial dysfunction, and (3) these biomarkers alter the possible association between Type D and depression.

**METHODS:**

In the Maastricht Study, 712 subjects underwent assessment of NA, SI and Type D personality (DS14), depressive disorder (Mini-International Neuropsychiatric Interview) and depressive symptoms (Patient Health Questionnaire-9). Plasma biomarkers of inflammation (hsCRP, SAA, sICAM-1, IL-6, IL-8, TNF- $\alpha$ ) and endothelial dysfunction (sVCAM-1, sICAM-1, E-selectin, vWF) were measured with sandwich immunoassays or ELISA and combined into standardized sumscores.

**RESULTS:**

Regarding personality, 49% of the study population was low in NA and SI, 22% had SI only, 12% NA only and 17% had Type D. Depressive disorder and depressive symptoms were significantly more prevalent in Type D versus the other three personality subgroups. Multivariable regression analyses showed that Type D was associated with inflammation ( $\beta=0.228$ ,  $p=0.014$ ) and endothelial dysfunction ( $\beta=0.216$ ,  $p=0.022$ ). After adjustment for these biomarkers, Type D remained independently associated with increased vulnerability to depressive disorder (OR=13.20,  $p<0.001$ ) and depressive symptoms ( $\beta=3.87$ ,  $p<0.001$ ).

**LIMITATIONS:**

The cross-sectional design restrained us to draw any conclusions on causality. The relatively low prevalence of depressive disorder restrained us to adjust for more potential confounders.

**CONCLUSIONS:**

Type D personality may be a vulnerability factor for depression, irrespective of levels of inflammation or endothelial dysfunction. Future research should examine possible underlying mechanisms.

**KEYWORDS:** Depression; Endothelial dysfunction; Inflammation; Personality  
PMID: 26433759

## 61. FIBROMYALGIA

### Fat and FM

Eur J Pain. 2015 Oct 22. doi: 10.1002/ejp.807.

#### **The association of total and central body fat with pain, fatigue and the impact of fibromyalgia in women; role of physical fitness.**

Segura-Jiménez V<sup>1</sup>, Castro-Piñero J<sup>2</sup>, Soriano-Maldonado A<sup>1</sup>, Álvarez-Gallardo IC<sup>1</sup>, Estévez-López F<sup>1,3</sup>, Delgado-Fernández M<sup>1</sup>, Carbonell-Baeza A<sup>2</sup>; al-Ándalus project..

Author information

Abstract

#### **BACKGROUND:**

The relationship between estimates of total and central body fat with fibromyalgia pain, fatigue and overall impact has not been fully described. We aimed to assess the individual and combined association of body fat (total and central) with pain, fatigue and the overall impact in fibromyalgia women; and to study the possible mediation role of physical fitness in these associations.

#### **METHODS:**

A total of 486 fibromyalgia women with a mean (standard deviation) age of 52.2 (8.0) years participated. Pain was measured with self-reported measures and algometry, whereas fatigue with the Multidimensional Fatigue Inventory. The impact of fibromyalgia was measured with the Revised Fibromyalgia Impact Questionnaire (FIQR) total score. Total and central body fat were assessed by means of bioelectrical impedance and waist circumference, respectively. The Functional Senior Fitness Test battery and the handgrip strength test were used to assess physical fitness.

#### **RESULTS:**

Total and central body fat were positively associated with pain- and fatigue-related measures and the FIQR total score ( $\beta$  from 0.10 to 0.25; all,  $p < 0.05$ ). A combined effect of total and central body fat was observed on pain (FIQR and 36-item Short-Form Health Survey), general and physical-related fatigue and FIQR total score (all, overall  $p < 0.05$ ), so that the group with no total and central obesity had more favourable results than those with total and central obesity. Cardiorespiratory fitness partially mediated (between 22-40% of the total effect) the associations between total and central body fat with pain, general fatigue, physical fatigue and reduced activity, and largely mediated (80%) the association of central body fat with the FIQR total score.

**CONCLUSIONS:** Physical fitness might potentially explain the association between obesity and fibromyalgia symptoms.

PMID: 26492384



## 62 A. NUTRITION/VITAMINS

## Eating demands men vs women

Med Sci Sports Exerc. 2015 Oct 12.

**Appetite and Energy Intake Responses to Acute Energy Deficits in Females Versus Males.**

Alajmi N<sup>1</sup>, Deighton K, King JA, Reischak-Oliveira A, Wasse LK, Jones J, Batterham RL, Stensel DJ.

Author information

Abstract

**PURPOSE:**

To explore whether compensatory responses to acute energy deficits induced by exercise or diet differ by sex.

**METHODS:**

In experiment one, twelve healthy women completed three 9 h trials (control, exercise-induced (Ex-Def) and food restriction induced energy deficit (Food-Def)) with identical energy deficits being imposed in the Ex-Def (90 min run, ~70% of VO<sub>2</sub> max) and Food-Def trials. In experiment two, 10 men and 10 women completed two 7 h trials (control and exercise). Sixty min of running (~70% of VO<sub>2</sub> max) was performed at the beginning of the exercise trial. Participants rested throughout the remainder of the exercise trial and during the control trial. Appetite ratings, plasma concentrations of gut hormones and ad libitum energy intake were assessed during main trials.

**RESULTS:**

In experiment one, an energy deficit of ~3500 kJ induced via food restriction increased appetite and food intake. These changes corresponded with heightened concentrations of plasma acylated ghrelin and lower peptide YY3-36. None of these compensatory responses were apparent when an equivalent energy deficit was induced by exercise. In experiment two, appetite ratings and plasma acylated ghrelin concentrations were lower in exercise than control but energy intake did not differ between trials. The appetite, acylated ghrelin and energy intake response to exercise did not differ between men and women.

**CONCLUSIONS:**

Women exhibit compensatory appetite, gut hormone and food intake responses to acute energy restriction but not in response to an acute bout of exercise. Additionally, men and women appear to exhibit similar acylated ghrelin and PYY3-36 responses to exercise-induced energy deficits. These findings advance understanding regarding the interaction between exercise and energy homeostasis in women.

PMID: 26465216

**Cherry juice helps dementia**

Eur J Nutr. 2015 Oct 19.

**Consumption of anthocyanin-rich cherry juice for 12 weeks improves memory and cognition in older adults with mild-to-moderate dementia.**

Kent K<sup>1</sup>, Charlton K<sup>2</sup>, Roodenrys S<sup>3</sup>, Batterham M<sup>4</sup>, Potter J<sup>5</sup>, Traynor V<sup>6</sup>, Gilbert H<sup>3</sup>, Morgan O<sup>3</sup>, Richards R<sup>3</sup>.

Author information

Abstract

**PURPOSE:**

Dietary flavonoids, including anthocyanins, may positively influence cognition and may be beneficial for the prevention and treatment of dementia. We aimed to assess whether daily consumption of anthocyanin-rich cherry juice changed cognitive function in older adults with dementia. Blood pressure and anti-inflammatory effects were examined as secondary outcomes.

**METHODS:**

A 12-week randomised controlled trial assessed cognitive outcomes in older adults (>70 year) with mild-to-moderate dementia (n = 49) after consumption of 200 ml/day of either a cherry juice or a control juice with negligible anthocyanin content. Blood pressure and inflammatory markers (CRP and IL-6) were measured at 6 and 12 weeks. ANCOVA controlling for baseline and RMANOVA assessed change in cognition and blood pressure.

**RESULTS:**

Improvements in verbal fluency (p = 0.014), short-term memory (p = 0.014) and long-term memory (p ≤ 0.001) were found in the cherry juice group. A significant reduction in systolic (p = 0.038) blood pressure and a trend for diastolic (p = 0.160) blood pressure reduction was evident in the intervention group. Markers of inflammation (CRP and IL-6) were not altered.

**CONCLUSION:**

Inclusion of an anthocyanin-rich beverage may be a practical and feasible way to improve total anthocyanin consumption in older adults with mild-to-moderate dementia, with potential to improve specific cognitive outcomes.

**KEYWORDS:** Anthocyanin; Cherry; Cognition; Dementia

PMID: 26482148

## Depression and diet

Eur J Nutr. 2015 Oct 17.

**Prospective study on the association between diet quality and depression in mid-aged women over 9 years.**

Lai JS<sup>1,2</sup>, Hure AJ<sup>3,4</sup>, Oldmeadow C<sup>4</sup>, McEvoy M<sup>3,4,5</sup>, Byles J<sup>3,4,6</sup>, Attia J<sup>3,4,5,7</sup>.

Author information

## Abstract

**PURPOSE:**

To examine the longitudinal association between diet quality and depression using prospective data from the Australian Longitudinal Study on Women's Health.

**METHODS:**

Women born in 1946-1951 (n = 7877) were followed over 9 years starting from 2001. Dietary intake was assessed using the Dietary Questionnaire for Epidemiological Studies (version 2) in 2001 and a shortened form in 2007 and 2010. Diet quality was summarised using the Australian Recommended Food Score. Depression was measured using the 10-item Centre for Epidemiologic Depression Scale and self-reported physician diagnosis. Pooled logistic regression models including time-varying covariates were used to examine associations between diet quality tertiles and depression. Women were also categorised based on changes in diet quality during 2001-2007. Analyses were adjusted for potential confounders.

**RESULTS:**

The highest tertile of diet quality was associated marginally with lower odds of depression (OR 0.94; 95 % CI 0.83, 1.00; P = 0.049) although no significant linear trend was observed across tertiles (OR 1.00; 95 % CI 0.94, 1.10; P = 0.48). Women who maintained a moderate or high score over 6 years had a 6-14 % reduced odds of depression compared with women who maintained a low score (moderate vs low score-OR 0.94; 95 % CI 0.80, 0.99; P = 0.045; high vs low score-OR 0.86; 95 % CI 0.77, 0.96; P = 0.01). Similar results were observed in analyses excluding women with prior history of depression.

**CONCLUSION:**

Long-term maintenance of good diet quality may be associated with reduced odds of depression. Randomised controlled trials are needed to eliminate the possibility of residual confounding.

**KEYWORDS:** Depression; Diet; Prospective study; Women

PMID: 26475141

**63. PHARMACOLOGY****Opiod use**

JAMA. 2015 Oct 13;314(14):1468-78. doi: 10.1001/jama.2015.11859.

**Nonmedical Prescription Opioid Use and Use Disorders Among Adults Aged 18 Through 64 Years in the United States, 2003-2013.**

Han B<sup>1</sup>, Compton WM<sup>2</sup>, Jones CM<sup>3</sup>, Cai R<sup>1</sup>.  
Author information

## Abstract

**IMPORTANCE:** Since 1999, the United States has experienced increases in morbidity and mortality associated with nonmedical use of prescription opioids.

**OBJECTIVE:** To assess national trends in and characteristics of nonmedical prescription opioid use and use disorders and the national trend in related mortality.

**DESIGN, SETTING, AND PARTICIPANTS:** Prevalence of nonmedical use and use disorders and related risk factors were based on data from 472,200 persons aged 18 through 64 years who participated in the 2003-2013 National Surveys on Drug Use and Health. Mortality was based on the 2003-2013 National Vital Statistics System's Multiple Cause of Death Files.

**EXPOSURES:** Prevalence of nonmedical use of prescription opioids.

**MAIN OUTCOMES AND MEASURES:** Nonmedical prescription opioid use and use disorders.

**RESULTS:** Among adults aged 18 through 64 years, the prevalence of nonmedical use of prescription opioids decreased from 5.4% (95% CI, 5.08%-5.70%) in 2003 to 4.9% (95% CI, 4.58%-5.22%) in 2013 (absolute difference, -0.5%; 95% CI, -0.11% to -0.89%), but the prevalence of prescription opioid use disorders increased from 0.6% (95% CI, 0.54%-0.76%) in 2003 to 0.9% (95% CI, 0.75%-1.01%) in 2013 (absolute difference, 0.3%; 95% CI, 0.03%-0.43%). The 12-month prevalence of high-frequency use ( $\geq 200$  days) also increased from 0.3% (95% CI, 0.19%-0.35%) in 2003 to 0.4% (95% CI, 0.31%-0.48%) in 2013 (absolute difference, 0.1%; 95% CI, 0.01%-0.29%). Mortality assessed by drug overdose death rates involving prescription opioids increased from 4.5 per 100,000 (95% CI, 4.42-4.61) in 2003 to 7.8 per 100,000 (95% CI, 7.64-7.89) in 2013 (absolute difference, 3.3; 95% CI, 3.09-3.41) among adults aged 18 through 64 years. The mean number of days of nonmedical use of prescription opioids increased from 2.1 (95% CI, 1.83-2.37) in 2003 to 2.6 (95% CI, 2.27-2.85) in 2013 (absolute difference, 0.5, 95% CI, 0.05-0.86). The model-adjusted prevalence of having prescription opioid use disorders among nonmedical users increased to 15.7% (95% CI, 13.87%-17.67%) in 2010, 16.1% (95% CI, 14.36%-17.99%) in 2011, 17.0% (95% CI, 15.07%-19.12%) in 2012, and 16.9% (95% CI, 14.95%-19.03%) in 2013 from 12.7% (95% CI, 11.04%-14.53%) in 2003.

**CONCLUSIONS AND RELEVANCE:** During the 2003-2013 years, among adults aged 18 through 64 years, the percentage of nonmedical use of prescription opioids decreased. In contrast, the prevalence of prescription opioid use disorders, frequency of use, and related mortality increased.

PMID: 26461997

**65. NEUROLOGICAL CONDITIONS****Neuropathic pain in MS**

Mult Scler. 2015 Oct 19. pii: 1352458515613643.

**Prevalence of neuropathic pain in early multiple sclerosis.**

Heitmann H<sup>1</sup>, Biberacher V<sup>1</sup>, Tiemann L<sup>1</sup>, Buck D<sup>1</sup>, Loleit V<sup>1</sup>, Selter RC<sup>1</sup>, Knier B<sup>1</sup>, Tölle TR<sup>1</sup>, Mührlau M<sup>2</sup>, Berthele A<sup>1</sup>, Hemmer B<sup>2</sup>, Ploner M<sup>3</sup>.

Author information

Abstract

**BACKGROUND:**

Pain is considered a frequent symptom in multiple sclerosis. Neuropathic pain is the type of pain most closely related to the pathology of multiple sclerosis and its prevalence estimates vary largely.

**OBJECTIVE:**

We prospectively assessed the prevalence of neuropathic pain in patients with early multiple sclerosis and investigated the association of neuropathic pain with other clinical parameters.

**METHODS:**

A total of 377 outpatients with multiple sclerosis at an early disease stage were included in this prospective study. Mean disease duration was 4.2 years, mean Expanded Disability Status Scale (EDSS) score was 1.6, 96.8% of patients were classified as having relapsing-remitting multiple sclerosis. Neuropathic pain was assessed using the PainDETECT questionnaire (PDQ). Depression, fatigue and cognition were assessed using the Beck Depression Inventory (BDI), the Fatigue Scale for Motor and Cognitive Functions (FSMC) and the Paced Auditory Serial Addition Test.

**RESULTS:**

PDQ scores indicative of neuropathic pain were found in 4.2% of patients. Regression analysis revealed EDSS, BDI and FMSC scores as strongest predictors of PDQ scores.

**CONCLUSIONS:**

Neuropathic pain appears to be less frequent in early multiple sclerosis than expected and is significantly associated with disability, depression and fatigue. The assessment and therapy of pain in multiple sclerosis should thus take into account neuropsychiatric symptoms already at early disease stages.

**KEYWORDS:** Multiple sclerosis; epidemiology; neuropathic pain

PMID: 26480924