

## ABSTRACTS

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## 2. LBP

### Pain scores and ratings

Pain. 2015 Sep 7.

#### **Trajectories of acute low back pain: a latent class growth analysis.**

Downie AS<sup>1</sup>, Hancock MJ, Rzewuska M, Williams CM, Lin CC, Maher CG.  
Author information

#### Abstract

Characterising the clinical course of back pain by mean pain scores over time may not adequately reflect the complexity of the clinical course of acute low back pain. We analysed pain scores over 12 weeks for 1,585 acute low back pain patients presenting to primary care to identify distinct pain trajectory groups, and baseline patient characteristics associated with membership of each cluster. This was a secondary analysis of the PACE trial that evaluated paracetamol for acute low back pain. Latent class growth analysis determined a five cluster model which comprised 567 (35.8%) patients who recovered by week 2 (cluster 1, rapid pain recovery); 543 (34.3%) patients who recovered by week 12 (cluster 2, pain recovery by week 12); 222 (14.0%) patients whose pain reduced but did not recover (cluster 3, incomplete pain recovery); 167 (10.5%) patients whose pain initially decreased but then increased by week 12 (cluster 4, fluctuating pain); and 86 (5.4%) patients who experienced high-level pain for the whole 12 weeks (cluster 5, persistent high pain). Patients with longer pain duration were more likely to experience delayed or non-recovery. Belief in greater risk of persistence was associated with non-recovery, but not delayed recovery. Higher pain intensity, longer duration and workers' compensation were associated with persistent high pain, while older age and increased number of episodes was associated with fluctuating pain. Identification of discrete pain trajectory groups offers the potential to better manage acute low back pain.

PMID:26397929

## Prevention extension

**JMMT Volume 23, Issue 4 (September 2015), pp. 205-209**

**Can standing back extension exercise improve or prevent low back pain in Japanese care workers?**

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Author Affiliations

Keywords: Low back pain, Standing back extension, McKenzie method, Care worker, Population strategy, Prevention

**Abstract**

**Background:**

We suggested a standing back extension exercise ‘One Stretch’ based on the McKenzie method, to examine the ability to improve or prevent low back pain (LBP) in Japanese care workers.

**Methods:**

We conducted a single-center, non-randomized, controlled study in Japan. Care workers in an intervention group received an exercise manual and a 30-minute seminar on LBP and were encouraged with a group approach, while care workers in a control group were given only the manual. All care workers answered questionnaires at the baseline and end of a 1-year study period. The subjective improvement of LBP and compliance with the exercise were evaluated.

**Results:**

In all, 64 workers in the intervention group and 72 in the control group participated in this study. More care workers in the intervention group exercised regularly and improved or prevented LBP than in the control group ( $P=0.003$  and  $P<0.0001$ , respectively). In the intervention group, none had a first medical consultation or were absent from disability for LBP by the end of the study period.

**Conclusion:**

The exercise ‘One Stretch’ would be effective to improve or prevent LBP in care workers. Our group approach would lead to better compliance with the exercise.

Keywords: Low back pain, Standing back extension, McKenzie method, Care worker, Population strategy, Prevention

## 5. SURGERY

### Spondylo surgery

Eur Spine J. 2015 Sep 12.

#### **Surgery for adult spondylolisthesis: a systematic review of the evidence.**

Schulte TL<sup>1</sup>, Ringel F<sup>2</sup>, Quante M<sup>3</sup>, Eicker SO<sup>4</sup>, Mucbe-Borowski C<sup>5</sup>, Kothe R<sup>6</sup>.  
Author information

#### Abstract

Surgery for isthmic and degenerative spondylolisthesis (SL) in adults is carried out very frequently in everyday practice. However, it is still unclear whether the results of surgery are better than those of conservative treatment and whether decompression alone or instrumented fusion with decompression should be recommended. In addition, the role of reduction is unclear. Four clinically relevant key questions were addressed in this study: (1) Is surgery more successful than conservative treatment in relation to pain and function in adult patients with isthmic SL? (2) Is surgery more successful than conservative treatment in relation to pain and function in adult patients with degenerative SL? (3) Is instrumented fusion with decompression more successful in relation to pain and function than decompression alone in adult patients with degenerative SL and spinal canal stenosis? (4) Is instrumented fusion with reduction more successful in relation to pain and function than instrumented fusion without reduction in adult patients with isthmic or degenerative SL? A systematic PubMed search was carried out to identify randomized and nonrandomized controlled trials on these topics. Papers were analyzed systematically in a search for the best evidence. A total of 18 studies was identified and analyzed: two for question 1, eight for question 2, four for question 3, and four for question 4. Surgery appears to be better than conservative treatment in adults with isthmic SL (poor evidence) and also in adults with degenerative SL (good evidence). Instrumented fusion with decompression appears to be more successful than decompression alone in adults with degenerative SL and spinal stenosis (poor evidence). Reduction and instrumented fusion does not appear to be more successful than instrumented fusion without reduction in adults with isthmic or degenerative SL (moderate evidence).

**KEYWORDS:** Adults; Conservative treatment; Decompression; Degenerative spondylolisthesis; Fusion; Isthmic spondylolisthesis; Reduction; Spondylolisthesis; Surgery

PMID:26363561

**Adjacent level DJD**

Eur Spine J. 2015 Sep 12.

**The influence of adjacent level disc disease on discectomy outcomes.**

Briseño MR<sup>1,2</sup>, Phukan RD<sup>1</sup>, Leonard DA<sup>3</sup>, Herzog TL<sup>1</sup>, Cho CH<sup>2</sup>, Schwab JH<sup>1</sup>, Wood KB<sup>1</sup>, Bono CM<sup>2</sup>, Cha TD<sup>1</sup>.

Author information

Abstract

**PURPOSE:**

The state of adjacent level discs and its impact on surgical outcomes following single-level lumbar discectomy have not been previously investigated. The purpose of the present study was to determine if a significant relationship exists between the degree of preoperative adjacent level disc degeneration and post-operative clinical outcomes following lumbar discectomy.

**METHODS:**

This study retrospectively used preoperative magnetic resonance imaging (MRI) and prospectively collected data from a randomized clinical trial at two tertiary-care academic hospitals. Patients who underwent a primary, single-level lumbar discectomy were included. Exclusion criteria included prior lumbar surgery. Outcome measures were the Modified Oswestry Disability Index (ODI) score and Visual Analog Scale (VAS) scores for back and leg pain. These were recorded at baseline and at 3 months, 1, and 2 years postoperatively. An independent reviewer graded adjacent level disc degeneration on all preoperative MRIs using the Pfirrmann grading scale. These data were then analyzed for correlation with each outcome measure.

**RESULTS:**

Forty-seven patients were included in the study. No statistically significant correlations were found when comparing preoperative 3-month or 1-year postoperative scores or change from baseline of any outcome measure between Pfirrmann grades. Only about half the patients had 2-year follow-up, but at that time point a statistically significant difference in back VAS scores was observed between Pfirrmann groups. No other significant differences were observed at that point.

**CONCLUSIONS:**

The degree of preoperative adjacent level degeneration does not significantly affect functional or pain relief outcomes following lumbar discectomy up to 1 year after surgery.

**KEYWORDS:** Adjacent level disease; Discectomy; Lumbar spine; Outcomes; Quality of life

PMID:26363560

**PT helps post surgical intervention**

Arch Phys Med Rehabil. 2015 Sep 23. pii: S0003-9993(15)01192-2. doi: 10.1016/j.apmr.2015.09.003.

**Physiotherapy commenced within the first four weeks post spinal surgery is safe and effective: a systematic review and meta-analysis.**

Snowdon M<sup>1</sup>, Peiris CL<sup>2</sup>.  
Author information

Abstract

**OBJECTIVES:**

To determine whether physiotherapy commenced within the first four weeks post spinal surgery is safe and effective.

**DATA SOURCES:**

Electronic databases CINAHL, MEDLINE, AMED, PubMed, Embase and PEDro were searched from the earliest date possible through May 2015. An additional trial was identified through reference list scanning.

**STUDY SELECTION:**

Controlled trials evaluating comprehensive physiotherapy rehabilitation commenced within four weeks post operatively compared with a control group receiving no physiotherapy, standard post-operative care, rest or less active physiotherapy or sham physiotherapy following spinal surgery of a musculoskeletal etiology. Two reviewers independently applied inclusion and exclusion criteria with disagreements discussed until consensus could be reached. Searching identified 3162 potentially relevant articles, of which 4 trials with 250 participants met the inclusion criteria.

**DATA EXTRACTION:**

Data were extracted using a predefined data extraction form. Methodological quality of trials was assessed independently by two reviewers using the Downs and Black checklist. Pooled analyses were performed using random-effects model with inverse variance methods to calculate risk differences (RD) and 95% confidence intervals (CI) (dichotomous outcomes) and standardised mean differences (SMDs) and 95% CIs (continuous outcomes).

**DATA SYNTHESIS:**

When compared to no or sham physiotherapy, early comprehensive physiotherapy did not increase the risk of adverse events (Risk Difference -0.01, 95%CI -0.07 to 0.05, I<sup>2</sup> 0%). In addition, there is moderate quality evidence demonstrating a reduction in pain by a moderate and significant amount at 12 weeks (SMD -0.38, 95%CI -0.66 to -0.10, I<sup>2</sup> 0%) and at 12+ months (SMD -0.30, 95%CI -0.59 to -0.02, I<sup>2</sup> 0%).

**CONCLUSIONS:**

Early comprehensive physiotherapy commenced within the first four weeks post spinal surgery does not increase the potential for an adverse event and leads to a moderate statistically significant reduction in pain when compared to a control group.

**KEYWORDS:** discectomy; physical therapy; rehabilitation; spinal surgery  
PMID:26409101

**7. PELVIC ORGANS/WOMAN'S HEALTH****Sexual pain**

Curr Opin Psychiatry. 2015 Nov;28(6):412-7. doi: 10.1097/YCO.0000000000000200.

**Sexual pain disorders.**

Cabello-Santamaría F<sup>1</sup>, Río-Olvera FJ, Cabello-García MA.  
Author information

Abstract

***PURPOSE OF REVIEW:***

The purpose of this review was to assess recent research (the last 18 months) and its impact on understanding sexual pain disorders relevant to daily clinical practice.

***RECENT FINDINGS:***

It has been highlighted that sexual pain is related to the number of tender points, pressure pain threshold, more deliberate fear and less global positive affective associations with sexual stimuli, episiotomy, attachment styles, drug abuse and the influence of ambivalence over emotional expression in couples. The efficacy of a multidisciplinary vulvodynia programme of treatment, another type of therapy based on the fear-avoidance and pain self-efficacy model and a novel cognitive-behavioral couple therapy has been stated.

***SUMMARY:***

There is a gradual advance in the knowledge of sexual pain disorder etiology. At the same time different therapeutics strategies have been increasing, but it is necessary to introduce guidelines on the basis of the evidence to approach with efficacy this severe disorder.

PMID:26382162

## Rectus diastases

## RESEARCH REPORT

**The Immediate Effects on Inter-rectus Distance of Abdominal Crunch and Drawing-in Exercises During Pregnancy and the Postpartum Period**

**Authors:** Patrícia Mota, PT, PhD<sup>1</sup>, Augusto Gil Pascoal, PT, PhD<sup>1</sup>, Ana Isabel Carita, PhD<sup>1</sup>, Kari Bø, PT, PhD<sup>2</sup>

**Published:** *Journal of Orthopaedic & Sports Physical Therapy*, 2015, **Volume:** 45 **Issue:** 10 **Pages:** 781-788 doi:10.2519/jospt.2015.5459

**Study Design:** Longitudinal descriptive exploratory study.

**Objectives:** To evaluate in primigravid women the immediate effect of drawing-in and abdominal crunch exercises on inter-rectus distance (IRD), measured at 4 time points during pregnancy and in the postpartum period.

**Background:** There is scant knowledge of the effect of different abdominal exercises on IRD in pregnant and postpartum women.

**Methods:** The study included 84 primiparous participants. Ultrasound images were recorded with a 12-MHz linear transducer, at rest and during abdominal drawing-in and abdominal crunch exercises, at 3 locations on the linea alba. The IRD was measured at 4 time points: gestational weeks 35 to 41, 6 to 8 weeks postpartum, 12 to 14 weeks postpartum, and 24 to 26 weeks postpartum. Separate 2-way, repeated-measures analyses of variance (ANOVAs) were performed for each exercise (drawing-in and abdominal crunch) and each measurement location to evaluate the immediate effects of exercises on IRD at each of the 4 time points. Similarly, 2-way ANOVAs were used to contrast the effects of the 2 exercises on IRD.

**Results:** Performing the drawing-in exercise caused a significant change in width of the IRD at 2 cm below the umbilicus, narrowing the IRD by a mean of 3.8 mm (95% confidence interval [CI]: 1.2, 6.4 mm) at gestational weeks 35 to 41, and widening the IRD by 3.0 mm (95% CI: 1.4, 4.6 mm) at 6 to 8 weeks postpartum, by 1.8 mm (95% CI: 0.6, 3.1 mm) at 12 to 14 weeks postpartum, and by 2.5 mm (95% CI: 1.4, 3.6 mm) at 24 to 26 weeks postpartum ( $P < .01$ ). Performing the abdominal crunch exercise led to a significant narrowing of the IRD ( $P < .01$ ) in all 3 locations at all 4 time points, with the exception of 2 cm below the umbilicus at postpartum weeks 24 to 26. The average amount of narrowing varied from 1.6 to 20.9 mm, based on time and location.

**Conclusion:** Overall, there was a contrasting effect of the 2 exercises, with the abdominal crunch exercise consistently producing a significant narrowing of the IRD. In contrast, the drawing-in exercise generally led to a small widening of the IRD. *J Orthop Sports Phys Ther* 2015;45(10):781–788. Epub 24 Aug 2015. doi:10.2519/jospt.2015.5459

**Keyword:** abdominals, diastasis recti, ultrasound imaging



**Birth ball**

J Obstet Gynaecol Res. 2015 Sep 30. doi: 10.1111/jog.12802.

**Effect of birth ball on labor pain relief: A systematic review and meta-analysis.**

Makvandi S<sup>1</sup>, Latifnejad Roudsari R<sup>2</sup>, Sadeghi R<sup>3</sup>, Karimi L<sup>1</sup>.

Author information

Abstract

**AIM:**

To critically evaluate the available evidence related to the impact of using a birth ball on labor pain relief.

**METHODS:**

The Cochrane library, Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE/PubMed and Scopus were searched from their inception to January 2015 using keywords: (Birth\* OR Swiss OR Swedish OR balance OR fitness OR gym\* OR Pezzi OR sport\* OR stability) AND (ball\*) AND (labor OR labour OR Obstetric). All available randomized controlled trials involving women using a birth ball for pain relief during labor were considered. The search resulted in 341 titles and abstracts, which were narrowed down to eight potentially relevant articles. Of these, four studies met the inclusion criteria. Pain intensity on a 10 cm visual analogue scale was used as the main outcome measure. Risk of bias was assessed using the Cochrane Risk of Bias tool. Comprehensive Meta-Analysis Version 2 was used for statistical analysis.

**RESULTS:**

Four RCTs involving 220 women were included in the systematic review. One study was excluded from the meta-analysis because of heterogeneous interventions and a lack of mean and standard deviation results of labor pain score. The meta-analysis showed that birth ball exercises provided statistically significant improvements to labor pain (pooled mean difference -0.921; 95% confidence interval -1.28, -0.56; P = 0.0000005; I<sup>2</sup> = 33.7%).

**CONCLUSION:**

The clinical implementation of a birth ball exercise could be an effective tool for parturient women to reduce labor pain. However, rigorous RCTs are needed to evaluate the effect of the birth ball on labor pain relief.

**KEYWORDS:** birth ball; childbirth; pain management

PMID:26419499

**Vulvodynia and partners**

J Pain. 2015 Sep 23. pii: S1526-5900(15)00869-X. doi: 10.1016/j.jpain.2015.09.003.

**Daily associations between male partner responses, pain during intercourse, and anxiety in women with vulvodynia and their partners.**

Rosen NO<sup>1</sup>, Bergeron S<sup>2</sup>, Sadikaj G<sup>3</sup>, Delisle I<sup>4</sup>.  
Author information

**Abstract**

Vulvodynia is a prevalent vulvovaginal pain condition that disrupts the sexual and psychological health of affected women and their partners. Cross-sectional and daily experience studies suggest that partner responses to this pain influence the psychological and sexual sequelae of affected couples. However, their daily impact on pain and anxiety remain unknown. Using a daily diary method, 69 women (M age = 28.12, SD = 6.68) diagnosed with vulvodynia and their cohabiting partners (M age = 29.67, SD = 8.10) reported on male partner responses to women's pain and anxiety symptoms on sexual intercourse days (M = 6.54, SD = 4.99) over eight weeks. Women also reported their pain during intercourse. Results indicated that women reported greater pain on days when they perceived higher solicitous and negative male partner responses, and on days when their male partner reported greater solicitous and lower facilitative responses. Women indicated higher anxiety symptoms on days when they perceived more negative male partner responses; men's anxiety symptoms were greater on days when they reported higher negative male partner responses. Targeting partner responses may enhance the quality and efficacy of interventions aimed at reducing pain in women with vulvodynia and couples' psychological distress.

**PERSPECTIVE:**

This article examines the daily associations between male partner responses, women's pain during intercourse, and anxiety in couples coping with vulvodynia. Targeting male partner responses may enhance the quality of interventions aimed at reducing women's pain and the psychological distress of couples coping with vulvodynia.

**KEYWORDS:** anxiety; chronic pain; couples; daily diaries; partner responses; provoked vestibulodynia; vulvodynia

PMID:26409115

### Pelvic pain during pregnancy

#### **Current knowledge on low back pain and pelvic girdle pain during pregnancy and after childbirth: a narrative review**

Current Women's Health Reviews, 09/29/2015

Britt S – As there is strong evidence that stabilization exercises are not more effective than any other form of active exercise, therapeutic exercises should focus less on specific stabilizing muscles and more on behaviour and optimal dynamic control of movements. Women should be encouraged to be physically active and health care providers should help them to find exercises or physical activity optimal for each individual in her own environment.

- Women suffering from low back pain (LBP) and/or pelvic girdle pain (PGP) may be advised not to participate in physical exercises.
- Although LBP and PGP share similar and overlapping features, there is growing evidence that PGP comprises a distinct subgroup with a unique clinical presentation and needs specific management.
- There is a moderate level of evidence that PGP is related to a change in the pelvic mechanism and/or motor control.
- Appropriate information to reduce fear and anxiety and specific exercises are recommended.
- Evidence of moderate quality suggests that exercise or acupuncture during pregnancy significantly reduced LBP/PGP more than usual care alone.
- Even though group exercises during pregnancy do not seem to influence the prevalence of LBP/PGP, women who exercised handled their pain better.
- Exercises should focus coordination of the local and overall muscle system, especially addressing the dynamic control of a neutral position of the lumbopelvis, subsequently increase strength and endurance to manage the physical demands facing each individual.
- Additional essential points to be addressed are: restriction of the sacroiliac joint, posture, breathing, and some cognitive behavioural aspects.

### Depression and pregnancy

#### **Generalized anxiety disorder and major depressive disorder in pregnant and postpartum women: Maternal quality of life and treatment outcomes**

Journal of Obstetrics and Gynaecology Canada, 09/29/2015 Misri S, et al.

**C**omorbid generalized anxiety disorder (GAD) and major depressive disorder (MDD) in perinatal women is often under-diagnosed, resulting in suboptimal treatment and leading to significant maternal dysfunction. The authors describe a prospective, longitudinal study of the course, treatment outcomes, and quality of life (QoL) in pregnant and postpartum women with MDD and anxiety disorders. All pregnant and postpartum women with GAD and MDD responded to pharmacotherapy, and the majority attained complete remission of MDD. However, their GAD symptoms persisted, and their QoL was compromised. Given the chronic debilitating course of concomitant MDD and GAD in the perinatal population, it is essential to focus on adjunctive therapies to aim for full recovery.

#### Methods

- Two separate cohorts of women were recruited through the Reproductive Mental Health Program, Women's and Children's Hospital, Vancouver, British Columbia, for pharmacotherapy of depressed mood.
- One cohort was recruited during pregnancy and followed to one month postpartum; the other cohort was recruited postpartum and followed for 12 weeks.
- All women met the DSM-5 criteria for MDD and anxiety disorders.
- This non-lactating perinatal population completed measures of depression, anxiety, worry symptoms, and QoL at multiple study visits.
- Depressed women with GAD or excessive worry were compared to those without GAD in each cohort.

#### Results

- Analysis revealed that despite the majority of women with MDD having remission of symptoms with treatment, those with postpartum GAD displayed a poorer quality of life, with persistent worry symptoms, and their illness was slower to remit.
- Pregnant depressed women with uncontrollable worry (a GAD indicator) showed a lower probability of achieving remission of symptoms with treatment than those without uncontrollable worry.

## 8. VISCERA

## Increased risk of heart disease with working more than 55 hours per week

Lancet. 2015 Aug 19. pii: S0140-6736(15)60295-1. doi: 10.1016/S0140-6736(15)60295-1.

**Long working hours and risk of coronary heart disease and stroke: a systematic review and meta-analysis of published and unpublished data for 603 838 individuals.**

Kivimäki M<sup>1</sup>, Jokela M<sup>2</sup>, Nyberg ST<sup>3</sup>, Singh-Manoux A<sup>4</sup>, Fransson EI<sup>5</sup>, Alfredsson L<sup>6</sup>, Bjorner JB<sup>7</sup>, Borritz M<sup>8</sup>, Burr H<sup>9</sup>, Casini A<sup>10</sup>, Clays E<sup>11</sup>, De Bacquer D<sup>11</sup>, Dragano N<sup>12</sup>, Erbel R<sup>13</sup>

Author information

Abstract

**BACKGROUND:** Long working hours might increase the risk of cardiovascular disease, but prospective evidence is scarce, imprecise, and mostly limited to coronary heart disease. We aimed to assess long working hours as a risk factor for incident coronary heart disease and stroke.

**METHODS:** We identified published studies through a systematic review of PubMed and Embase from inception to Aug 20, 2014. We obtained unpublished data for 20 cohort studies from the Individual-Participant-Data Meta-analysis in Working Populations (IPD-Work) Consortium and open-access data archives. We used cumulative random-effects meta-analysis to combine effect estimates from published and unpublished data.

**FINDINGS:** We included 25 studies from 24 cohorts in Europe, the USA, and Australia. The meta-analysis of coronary heart disease comprised data for 603 838 men and women who were free from coronary heart disease at baseline; the meta-analysis of stroke comprised data for 528 908 men and women who were free from stroke at baseline. Follow-up for coronary heart disease was 5·1 million person-years (mean 8·5 years), in which 4768 events were recorded, and for stroke was 3·8 million person-years (mean 7·2 years), in which 1722 events were recorded. In cumulative meta-analysis adjusted for age, sex, and socioeconomic status, compared with standard hours (35-40 h per week), working long hours ( $\geq 55$  h per week) was associated with an increase in risk of incident coronary heart disease (relative risk [RR] 1·13, 95% CI 1·02-1·26;  $p=0\cdot02$ ) and incident stroke (1·33, 1·11-1·61;  $p=0\cdot002$ ). The excess risk of stroke remained unchanged in analyses that addressed reverse causation, multivariable adjustments for other risk factors, and different methods of stroke ascertainment (range of RR estimates 1·30-1·42). We recorded a dose-response association for stroke, with RR estimates of 1·10 (95% CI 0·94-1·28;  $p=0\cdot24$ ) for 41-48 working hours, 1·27 (1·03-1·56;  $p=0\cdot03$ ) for 49-54 working hours, and 1·33 (1·11-1·61;  $p=0\cdot002$ ) for 55 working hours or more per week compared with standard working hours ( $p_{\text{trend}} < 0\cdot0001$ ).

**INTERPRETATION:** Employees who work long hours have a higher risk of stroke than those working standard hours; the association with coronary heart disease is weaker. These findings suggest that more attention should be paid to the management of vascular risk factors in individuals who work long hours.

**FUNDING:** Medical Research Council, Economic and Social Research Council, European Union New and Emerging Risks in Occupational Safety and Health research programme, Finnish Work Environment Fund, Swedish Research Council for Working Life and Social Research, German Social Accident Insurance, Danish National Research Centre for the Working Environment, Academy of Finland, Ministry of Social Affairs and Employment (Netherlands), US National Institutes of Health, British Heart Foundation.

PMID:26298822

**Acid reflux other explanations**

Clin Gastroenterol Hepatol. 2015 Sep;13(9):1560-6. doi: 10.1016/j.cgh.2014.08.044. Epub 2014 Sep 26.

**Should the Reflex Be Reflux? Throat Symptoms and Alternative Explanations.**

Francis DO<sup>1</sup>, Vaezi MF<sup>2</sup>.

## Author information

## Abstract

Although laryngopharyngeal reflux, also known as extraesophageal reflux (EER), was codified more than 25 years ago, it has not been characterized fully. There is no sensitive and specific diagnostic test, and its symptoms often are nonspecific and overlap with those of other conditions commonly seen in primary care and specialist practices. Otolaryngologists have an important role in the evaluation and management of these patients—they must investigate persistent reflux-attributed symptoms by direct visualization of the upper airway and larynx, and, in some circumstances, the esophagus. It is of utmost importance to rule out the possibility of malignancy, which often presents with symptoms similar to those of EER. Once cancer is excluded, many benign upper airway conditions also can masquerade as, and often incorrectly are attributed to, EER. Although reflux is a potential etiologic factor for upper-airway symptoms, it is important not to reflexively blame reflux. We discuss other etiologies that should be considered carefully for persistent symptoms.

**KEYWORDS:** GERD; LPR; Therapy; Treatment

PMID: 25264272

## IBS DNA

Mucosal Immunol. 2015 Sep 16. doi: 10.1038/mi.2015.88.

**Assessing DNA methylation in the developing human intestinal epithelium: potential link to inflammatory bowel disease.**

Kraiczy J<sup>1</sup>, Nayak K<sup>1</sup>, Ross A<sup>1</sup>, Raine T<sup>2</sup>, Mak TN<sup>1</sup>, Gasparetto M<sup>1</sup>, Cario E<sup>3</sup>, Rakyan V<sup>4</sup>, Heuschkel R<sup>5</sup>, Zilbauer M<sup>1,5,6</sup>.

Author information

Abstract

DNA methylation is one of the major epigenetic mechanisms implicated in regulating cellular development and cell-type-specific gene expression. Here we performed simultaneous genome-wide DNA methylation and gene expression analysis on purified intestinal epithelial cells derived from human fetal gut, healthy pediatric biopsies, and children newly diagnosed with inflammatory bowel disease (IBD). Results were validated using pyrosequencing, real-time PCR, and immunostaining. The functional impact of DNA methylation changes on gene expression was assessed by employing in-vitro assays in intestinal cell lines. DNA methylation analyses allowed identification of 214 genes for which expression is regulated via DNA methylation, i.e. regulatory differentially methylated regions (rDMRs). Pathway and functional analysis of rDMRs suggested a critical role for DNA methylation in regulating gene expression and functional development of the human intestinal epithelium. Moreover, analysis performed on intestinal epithelium of children newly diagnosed with IBD revealed alterations in DNA methylation within genomic loci, which were found to overlap significantly with those undergoing methylation changes during intestinal development. Our study provides novel insights into the physiological role of DNA methylation in regulating functional maturation of the human intestinal epithelium. Moreover, we provide data linking developmentally acquired alterations in the DNA methylation profile to changes seen in pediatric IBD. Mucosal Immunology advance online publication, 16 September 2015; doi:10.1038/mi.2015.88.

PMID: 26376367

**Probiotics importance**

Helicobacter. 2015 Sep 23. doi: 10.1111/hel.12270.

**The Effect of Probiotics on Gut Microbiota during the Helicobacter pylori Eradication: Randomized Controlled Trial.**

Oh B<sup>1</sup>, Kim BS<sup>2</sup>, Kim JW<sup>3</sup>, Kim JS<sup>1</sup>, Koh SJ<sup>3</sup>, Kim BG<sup>3</sup>, Lee KL<sup>3</sup>, Chun J<sup>4,5</sup>.

Author information

Abstract

**BACKGROUND:**

Helicobacter pylori causes chronic gastritis, gastroduodenal ulcers, and gastric cancer, and has been treated with two antibiotics (amoxicillin and clarithromycin) and proton-pump inhibitors (PPIs). However, antibiotic treatment alters the indigenous gut microbiota to cause side effects. Therefore, the effects of probiotic supplementation on therapy have been studied. Although several studies have covered the probiotics' effects, details about the gut microbiota changes after H. pylori eradication have not been evaluated. Therefore, we analyzed the influences of antibiotics and their combination with probiotics on the composition of the gut microbiota using high-throughput sequencing.

**METHODS:**

Subjects were divided into two groups. The antibiotics group was treated with general therapy, and the probiotics group with general therapy and probiotic supplementation. Fecal samples were collected from all subjects during treatments, and the influences on gut microbiota were analyzed by 16S rRNA gene-pyrosequencing.

**RESULTS:**

Three phyla, Firmicutes, Bacteroidetes, and Proteobacteria, were predominant in the gut microbiota of all subjects. After treatment, the relative abundances of Firmicutes were reduced, whereas those of Proteobacteria were increased in both groups. However, the changed proportions of the gut microbiota in the antibiotics group were higher than those in the probiotics group. In addition, the increase in the levels of antibiotic-resistant bacteria was higher in the antibiotics group than in the probiotics one.

**CONCLUSION:**

Probiotic supplementation can reduce the antibiotic-induced alteration and imbalance of the gut microbiota composition. This effect may restrict the growth of antibiotic-resistant bacteria in the gut and improve the H. pylori eradication success rate.

**KEYWORDS:** Helicobacter pylori; antibiotics; gut microbiota; probiotics

PMID: 26395781



**10 A. CERVICAL SPINE****Cervical ROM**

**JMMT Volume 23, Issue 4 (September 2015), pp. 188-196**

**Reliability and validity of cervical position measurements in individuals with and without chronic neck pain**

Kim Dunleavy<sup>1</sup>; Joseph Neil<sup>2</sup>; Allison Tallon<sup>3</sup>; Diane E. Adamo<sup>1,4</sup>

Author Affiliations

Keywords: Cervical spine, Posture, Cervical position, Reliability, Criterion validity, Cervical range of motion device

DOI: <http://dx.doi.org/10.1179/2042618614Y.0000000070>

**Abstract****Objectives:**

The cervical range of motion device (CROM) has been shown to provide reliable forward head position (FHP) measurement when the upper cervical angle (UCA) is controlled. However, measurement without UCA standardization is reflective of habitual patterns. Criterion validity has not been reported. The purposes of this study were to establish: (1) criterion validity of CROM FHP and UCA compared to Optotrak data, (2) relative reliability and minimal detectable change (MDC<sub>95</sub>) in patients with and without cervical pain, and (3) to compare UCA and FHP in patients with and without pain in habitual postures.

**Methods:**

(1) Within-subjects single session concurrent criterion validity design. Simultaneous CROM and OP measurement was conducted in habitual sitting posture in 16 healthy young adults. (2) Reliability and MDC<sub>95</sub> of UCA and FHP were calculated from three trials. (3) Values for adults over 35 years with cervical pain and age-matched healthy controls were compared.

**Results:**

(1) Forward head position distances were moderately correlated and UCA angles were highly correlated. The mean (standard deviation) differences can be expected to vary between 1.48 cm (1.74) for FHP and  $-1.7$  (2.46)° for UCA. (2) Reliability for CROM FHP measurements were good to excellent (no pain) and moderate (pain). Cervical range of motion FHP MDC<sub>95</sub> was moderately low (no pain), and moderate (pain). Reliability for CROM UCA measurements was excellent and MDC<sub>95</sub> low for both groups. There was no difference in FHP distances between the pain and no pain groups, UCA was significantly more extended in the pain group ( $P < 0.05$ ).

**Discussion:**

Cervical range of motion FHP measurements were only moderately correlated with Optotrak data, and limits of agreement (LOA) and MDC<sub>95</sub> were relatively large. There was also no difference in CROM FHP distance between older symptomatic and asymptomatic individuals. Cervical range of motion FHP measurement is therefore not recommended as a clinical outcome measure. Cervical range of motion UCA measurements showed good criterion validity, excellent test-retest reliability, and achievable MDC<sub>95</sub> in asymptomatic and symptomatic participants. Differences of more than 6° are required to exceed error. Cervical range of motion UCA shows promise as a useful reliable and valid measurement, particularly as patients with cervical pain exhibited significantly more extended angles.

**Keywords:** Cervical spine, Posture, Cervical position, Reliability, Criterion validity, Cervical range of motion device

**Proprioception changes with neck pain**

Phys Ther. 2015 Sep 24.

**Neck Pain and Proprioception Revisited Using the Proprioception Incongruence Detection Test.**

Harvie DS<sup>1</sup>, Hillier S<sup>2</sup>, Madden VJ<sup>3</sup>, Smith RT<sup>4</sup>, Broecker M<sup>5</sup>, Meulders A<sup>6</sup>, Moseley LG<sup>7</sup>.  
Author information

Abstract

**BACKGROUND:**

Proprioceptive imprecision is believed to contribute to persistent pain. Detecting imprecision in order to study or treat it remains challenging given the limitations of current tests.

**OBJECTIVE:**

We aimed to determine whether proprioceptive imprecision could be detected in people with neck pain by testing their ability to identify incongruence between true head motion and a false visual reference - the proprioception incongruence detection test (PID test).

**DESIGN:**

Cross-sectional study.

**METHODS:**

Twenty-four people with neck pain and twenty-four matched controls repeatedly rotated to specific markers within a virtual world and indicated if their true head rotation was more or less than the rotation suggested by the visual feedback. Visual feedback was manipulated at six corrections, ranging from 60% of true movement to 140% of true movement. A standard repositioning error (RPE) test was also undertaken for comparison.

**RESULTS:**

Healthy controls were better able to detect incongruence between vision and true head rotation (M(SD) = 75.6(8.5%)) than people with neck pain were (M(SD) = 69.6(12.7%);  $p = 0.03$ ). RPE score was not different between groups. The PID test score related to self-reported pain intensity but did not relate to RPE test score.

**LIMITATIONS:**

Causality cannot be established from this cross-sectional study and further work refining the PID test is required for it to offer clinical utility.

**CONCLUSIONS:**

Proprioceptive precision for neck movement appears worse in those with neck pain than in those without and the extent of the deficit seems related to usual pain severity. The PID test appears to be a more sensitive test than the RPE test and is likely to be useful for assessment of proprioceptive function in research and clinical settings.

PMID:26405091

**12 A. WHIPLASH****Fear and return to work**

J Pain. 2015 Sep 23. pii: S1526-5900(15)00866-4. doi: 10.1016/j.jpain.2015.09.001.

**Expectancies Mediate the Relations Between Pain Catastrophizing, Fear of Movement and Return to Work Outcomes Following Whiplash Injury.**

Carriere JS<sup>1</sup>, Thibault P<sup>1</sup>, Milioto M<sup>2</sup>, Sullivan MJ<sup>3</sup>.

Author information

**Abstract**

Pain catastrophizing and fear of movement have been identified as key predictors of prolonged work disability following whiplash injury. However, little is known about the processes by which pain catastrophizing and fear of movement impact on return to work. This study investigated the mediating role of expectancies on the relations between pain catastrophizing and return to work, and fear of movement and return to work following whiplash injury. The study sample consisted of 154 individuals with whiplash injury who were enrolled in a multidisciplinary pain rehabilitation program. Participants completed measures of pain catastrophizing, fear of movement and return-to-work expectancies following admission to a rehabilitation program. A follow-up telephone interview was used to assess work status 1 year following discharge. Consistent with previous research, analyses revealed that expectancies, pain catastrophizing and fear of movement were significant predictors of return to work at 1-year follow-up. Regression analyses (bootstrapping) revealed that expectancies partially mediated the relation between catastrophizing and return to work. Expectancies completely mediated the relation between fear of movement and return to work. The significant predictive and mediating role of expectancies on return to work argues for the inclusion of expectancies as a specific target of intervention for individuals with whiplash injury.

***PERSPECTIVE:***

The findings suggest that expectancies might be part of the pathways by which pain catastrophizing and fear of movement impact on return to work outcomes following whiplash injury. The findings argue for greater attention to return-to-work expectancies as a risk factor for problematic recovery outcomes as well as a target of intervention.

***KEYWORDS:*** Catastrophizing; expectancies; fear of pain; return to work; whiplash  
PMID:26409116

**12 B. CERVICAL SURGERIES****Fusion not as effective as replacements**

Eur Spine J. 2015 Sep 12.

**Polyurethane on titanium unconstrained disc arthroplasty versus anterior discectomy and fusion for the treatment of cervical disc disease: a review of level I-II randomized clinical trials including clinical outcomes.**

Aragonés M<sup>1</sup>, Hevia E<sup>2</sup>, Barrios C<sup>3</sup>.

Author information

Abstract

**PURPOSE:**

To contrast the clinical and radiologic outcomes and adverse events of anterior cervical discectomy and fusion (ACDF) with a single cervical disc arthroplasty design, the polyurethane on titanium unconstrained cervical disc (PTUCD).

**METHODS:**

This is a systematic review of randomized clinical trials (RCT) with evidence level I-II reporting clinical outcomes. After a search on different databases including PubMed, Cochrane Central Register of Controlled Trials, and Ovid MEDLINE, a total of 10 RCTs out of 51 studies found were entered in the study. RTCs were searched from the earliest available records in 2005 to November 2014.

**RESULTS:**

Out of a total of 1101 patients, 562 were randomly assigned into the PTUCD arthroplasty group and 539 into the ACDF group. The mean follow-up was 30.9 months. Patients undergoing arthroplasty had lower Neck Disability Index, and better SF-36 Physical component scores than ACDF patients. Patients with PTUCD arthroplasty had also less radiological degenerative changes at the upper adjacent level. Overall adverse events were twice more frequent in patients with ACDF. The rate of revision surgery including both adjacent and index level was slightly higher in patients with ACDF, showing no statistically significant difference.

**CONCLUSIONS:**

According to this review, PTUCD arthroplasty showed a global superiority to ACDF in clinical outcomes. The impact of both surgical techniques on the cervical spine (radiological spine deterioration and/or complications) was more severe in patients undergoing ACDF. However, the rate of revision surgeries at any cervical level was equivalent for ACDF and PTUCD arthroplasty.

**KEYWORDS:**

Adjacent segment degeneration; Anterior cervical fusion; Bryan disc; Cervical disc arthroplasty; Randomized clinical trial

PMID:26363559

## 13. CRANIUM/TMJ

## Gum inflammation and diet

BMC Oral Health. 2015 Sep 18;15(1):109. doi: 10.1186/s12903-015-0094-7.

**Change of periodontal inflammatory indicators through a 4-week weight control intervention including caloric restriction and exercise training in young Koreans: a pilot study.**

Park HS<sup>1</sup>, Nam HS<sup>2</sup>, Seo HS<sup>3</sup>, Hwang SJ<sup>4,5</sup>.

Author information

Abstract

**BACKGROUND:**

Recent cross-sectional studies indicate that obesity is a risk factor for periodontal disease. Exercise training in high fat mice or rats can inhibit gingival inflammation effectively. The objective of this human intervention study was to investigate whether short-term weight control could affect periodontal indexes and serum and gingival crevicular fluid (GCF) biomarkers in young Koreans.

**METHODS:**

Forty-one obese volunteers (body mass index (BMI) > 25.0) and 12 normal weight subjects ( $18.5 \leq \text{BMI} \leq 23.0$ ) participated in a four-week weight control program to analyze the changes in anthropometric criteria, the concentrations of C-reactive protein (CRP), low-density lipoprotein (LDL), high-density lipoprotein (HDL), and triglycerides in serum, gingival index, bleeding on probing, periodontal biomarkers in GCF, and dental plaque index at the first and the 27th days.

**RESULTS:**

The means of obesity measures decreased significantly more in the obese group (BMI  $2.53 \pm 0.96$ , waist-to-hip ratio (WHR)  $4.88 \pm 1.58$  %, LDL  $35.85 \pm 21.74$  mgdL(-1)) than in the normal weight group (BMI  $0.78 \pm 0.72$ , WHR  $2.00 \pm 0.95$  %, LDL  $15.58 \pm 18.07$  mgdL(-1)). While the obese group showed significant decreases in the biomarkers in GCF (IL-1 $\beta$   $58.38 \pm 65.55$  pgmL(-1), MMP-8  $4.19 \pm 5.61$  ngmL(-1), MMP-9  $3.36 \pm 6.30$  ngmL(-1)), the mean changes for the normal weight group (IL-1 $\beta$   $10.07 \pm 21.08$  pgmL(-1), MMP-8  $1.49 \pm 4.61$  ngmL(-1), MMP-9  $-1.52 \pm 9.71$  ngmL(-1)) were not statistically significant. Anthropometric measures and the amounts of GCF biomarkers had weak positive correlations ( $0.242 \leq r \leq 0.340$ ), and LDL in serum correlated with MMP-8 ( $r = 0.332$ ) and IL-1 $\beta$  ( $r = 0.342$ ) in the obese group. Stepwise multiple linear regression analysis in the obese group showed that the relationship between the amount of IL-1 $\beta$  in GCF and predictor variables including LDL and BMI was highly significant and accounted for 19.1 % of the variance in IL-1 $\beta$  in GCF.

**CONCLUSIONS:**

In periodontally healthy subjects, weight control could reduce the amounts of MMP-8, MMP-9, and IL-1 $\beta$  in GCF of the obese subjects. Further studies with periodontally unhealthy and obese people are needed to identify the mechanism of decreases in inflammation biomarkers in GCF through weight control.

**TRIAL REGISTRATION:**

ISRCTN86753073 (2015.08.14).

PMID:26385382

**14. HEADACHES****Color blindness and HA**

J Child Neurol. 2015 Sep 18. pii: 0883073815604226.

**Is Male Migraine Associated With Color Vision Deficiency? Findings Among Israeli Adolescents Between 2007 and 2013.**

Berger A<sup>1</sup>, Findler M<sup>2</sup>, Korach T<sup>3</sup>, Yativ OF<sup>3</sup>, Gronovich Y<sup>4</sup>, Hassidim A<sup>3</sup>.  
Author information

Abstract

**OBJECTIVE:**

Accumulating clinical and experimental evidence has shown that migraine patients tend to suffer from color vision abnormalities. The aim of this study was to examine whether color vision deficiency is associated with male migraine in a large population of adolescents.

**METHODS:**

The study population included all Israeli male adolescents who underwent medical and cognitive examinations as part of their recruiting process between the years 2007 and 2013. Migraine prevalence among patients with color vision deficiency was compared to that of males without substantial color vision abnormalities.

**RESULTS:**

The study population included 305 964 male adolescents at the age of  $17 \pm 0.6$ , of whom 7584 (2.5%) had color vision deficiency, as determined by the Farnsworth Panel D-15 color blindness test. Males with color vision deficiency had a 32% increased prevalence of migraine as compared with the control group (odds ratio 1.32, 95% confidence interval 1.18-1.48,  $P < .001$ ), after adjusting for multiple variables.

**CONCLUSIONS:**

The authors found an association between color vision deficiency and migraine in male adolescents. The study results lay the basis for further research into male migraine, as well as the visual aspects of migraine.

**KEYWORDS:** color vision deficiency; male adolescents; migraine

PMID:26385974

**Arterial dysfunction in chronic migraine**

Cephalalgia. 2015 Sep 22. pii: 0333102415607857.

**Systemic and cerebral endothelial dysfunction in chronic migraine. A case-control study with an active comparator.**

González-Quintanilla V<sup>1</sup>, Toriello M<sup>1</sup>, Palacio E<sup>1</sup>, González-Gay MA<sup>2</sup>, Castillo J<sup>3</sup>, Montes S<sup>3</sup>, Martínez-Nieto R<sup>3</sup>, Fernandez J<sup>1</sup>, Rojo A<sup>1</sup>, Gutiérrez S<sup>1</sup>, Pons E<sup>1</sup>, Oterino A<sup>4</sup>.

Author information

Abstract

**BACKGROUND AND OBJECTIVE:**

Unlike migraine and migraine with aura, little information exists regarding chronic migraine (CM) as a risk factor for cardiovascular disease. In this study we aim to determine whether an association between CM and endothelial dysfunction exists.

**METHODS:**

Individuals 18 years and older diagnosed with episodic migraine (EM) and CM according to ICHD criteria were studied. After an overnight fast and abstinence from vasoactive drugs, ultrasound studies were performed and blood samples taken from patients and matched controls according to internationally agreed on protocols.

**RESULTS:**

A total of 113 individuals were enrolled (35 CM, 37 EM, 41 controls). CM patients had a lower percentage of flow-mediated vasodilation (FMD; difference of means = 5.03%;  $p = 1.0E-6$ ) and breath-holding index (BHI; difference of means 0.754;  $p = 2.0E-6$ ), as well as increased carotid intima media thickness (cIMT; difference of means = 0.128 mm;  $p = 7.0E-5$ ) than controls. The EM patients and controls comparison found similar, but less pronounced, differences: decreased BHI ( $p = 0.031$ ), and increased cIMT ( $p = 0.028$ ). Fibrinogen ( $r = 0.277$ ;  $p = 0.006$ ), C-reactive protein ( $r = 0.288$ ;  $p = 0.003$ ), and erythrocyte rate sedimentation ( $r = 0.298$ ;  $p = 0.002$ ) also correlated with cIMT, and inversely with BHI<sub>mV</sub> and FMD.

**CONCLUSIONS:**

Migraine is associated with systemic and cerebral endothelial dysfunction demonstrated by ultrasound studies and biological markers. The degree of these changes was strongly associated with the severity of migraine. Our data indicate that migraine may be a cerebral disorder with systemic endothelial damage.

**KEYWORDS:** Migraine; cerebral vasoreactivity; chronic migraine; endothelial damage; flow-mediated dilation; intima media thickness; ultrasound study

PMID:26395894

**20 A. ROTATOR CUFF****Shoulder angle**

J Shoulder Elbow Surg. 2015 Sep 6. pii: S1058-2746(15)00387-0. doi: 10.1016/j.jse.2015.07.013.

**Correlation between glenoid inclination and critical shoulder angle: a radiographic and computed tomography study.**

Daggett M<sup>1</sup>, Werner B<sup>2</sup>, Collin P<sup>2</sup>, Gauci MO<sup>2</sup>, Chaoui J<sup>2</sup>, Walch G<sup>2</sup>.  
Author information

Abstract

**BACKGROUND:**

Increased critical shoulder angles consist of both the acromial cover and glenoid inclination and have been found in patients with rotator cuff pathology. The purpose of this study was to determine the correlation of the critical shoulder angle and glenoid inclination and to determine the difference in glenoid inclination between patients with osteoarthritis and massive rotator cuff tears.

**METHODS:**

The critical shoulder angle and glenoid inclination were measured on anteroposterior radiographs, and glenoid inclination was also measured on a validated 3-dimensional computer software program of 50 shoulders undergoing primary total shoulder arthroplasty. Twenty-five shoulders had osteoarthritis and A1 glenoids, as defined by the Walch classification, and were undergoing anatomic shoulder arthroplasty. The other 25 shoulders had massive rotator cuff tears and E0 glenoids, as defined by the Favard classification. The 2 groups were compared.

**RESULTS:**

Critical shoulder angle and glenoid inclination were significantly correlated ( $R^2 = 0.7426$ ,  $P < .001$ ). Shoulders with massive rotator cuff tears (E0) demonstrated increased glenoid inclination measurements than shoulders with osteoarthritis (A1). As measured by the 3-dimensional software, the massive rotator cuff group had a glenoid inclination of  $13.6^\circ \pm 4.3^\circ$  and the osteoarthritis group had a glenoid inclination of  $4.7^\circ \pm 5.6^\circ$ . When measured by anteroposterior radiographs, the average glenoid inclination was  $13.6^\circ \pm 4.6^\circ$  in the massive rotator cuff group and was  $7.6^\circ \pm 5.01^\circ$  in the osteoarthritic group.

**CONCLUSION:**

Glenoid inclination is linearly correlated with the critical shoulder angle and is significantly increased in patients with massive rotator cuff tears.

**KEYWORDS:** Critical shoulder angle; glenoid inclination; rotator cuff tears  
PMID:26350880



**25. WRIST AND HAND****Inflammation in hand OA**

Arthritis Rheumatol. 2015 Sep 28. doi: 10.1002/art.39438.

**Inflammation is associated with erosive development in patients with hand osteoarthritis: A prospective ultrasonography study.**

Kortekaas MC<sup>1,2</sup>, Kwok WY<sup>1</sup>, Reijnen M<sup>3</sup>, Stijnen T<sup>4</sup>, Kloppenburg M<sup>1,5</sup>.  
Author information

**Abstract**

**Objective** To study associations between inflammatory ultrasound (US) features and erosive development over 2.3 years follow-up in hand osteoarthritis (OA). **Methods** In 56 consecutive hand OA patients (mean age 61 years, 86% female), fulfilling ACR criteria, effusion, synovial thickening and Power Doppler signal (PDS) were assessed in all interphalangeal joints (IPJs) with US using standardized methods at baseline and follow-up. Radiographs were scored at both time-points for osteophytes/JSN (OARSI method) and for erosive disease, defined as E- and R-phase (Verbruggen-Veys method). Erosive development was defined as a non-erosive joint becoming erosive. E- and R-phases at baseline were excluded. Associations were analysed using GEE logistic regression, adjusting for age, gender, BMI and baseline structural abnormalities. **Results** At baseline 51 IPJs (18 patients) and at follow-up 89 IPJs (26 patients) were erosive, hence 38 IPJs showed erosive development. Moderate/severe synovial thickening and PDS at baseline were associated with erosive development: adjusted odds ratio (95% confidence interval) 8.8 (2.4-32.3) and 7.1 (1.9-26.9), respectively. Especially persistent inflammation was associated with the development of erosions.

**Conclusions** Inflammatory US features are associated with the development of erosions in hand OA, implicating that inflammation plays a role in its pathogenesis and could be a therapeutic target. This article is protected by copyright. All rights reserved.

PMID:26414489

**27. HIP****Indicators of hip pain**

Br J Sports Med. 2015 Jun;49(12):810. doi: 10.1136/bjsports-2015-094602.

**Which factors differentiate athletes with hip/groin pain from those without? A systematic review with meta-analysis.**

Mosler AB1, Agricola R2, Weir A3, Hölmich P4, Crossley KM5.

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

Hip and groin injuries are common in many sports. Understanding the factors differentiating athletes with hip/groin pain from those without these injuries could facilitate management and prevention.

**OBJECTIVE:**

Conduct a systematic review and meta-analysis of the literature on factors differentiating athletes with and without hip/groin pain.

**METHODS:**

The review was registered as PROSPERO CRD42014007416 and a comprehensive, systematic search was conducted in June 2014. Inclusion criteria were: cross-sectional, cohort or case-control study designs of n>10 that examined outcome measures differentiating athletes with and without hip/groin pain. Two authors independently screened search results, assessed study quality, and performed data extraction. Methodological heterogeneity was determined and data pooled for meta-analysis when appropriate. A best evidence synthesis was performed on the remaining outcome measures.

**RESULTS:**

Of 2251 titles identified, 17 articles were included of which 10 were high quality. Sixty two different outcome measures were examined, 8 underwent meta-analysis. Pooled data showed strong evidence that athletes with hip/groin pain demonstrated: pain and lower strength on the adductor squeeze test, reduced range of motion in hip internal rotation and bent knee fall out; however, hip external rotation range was equivalent to controls. Strong evidence was found that lower patient-reported outcome (PRO) scores, altered trunk muscle function, and moderate evidence of bone oedema and secondary cleft sign were associated with hip/groin pain.

**CONCLUSIONS:**

PROs, pain and reduced strength on the adductor squeeze test, reduced range of motion in internal rotation and bent knee fall out are the outcome measures that best differentiate athletes with hip/groin pain from those without this pain.

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**KEYWORDS:**

Athlete; Groin; Hip; Injuries; Sports

**Gluteal Tendinopathy**

Med Sci Sports Exerc. 2015 Sep 28.

**Hip Abductor Muscle Weakness in Individuals with Gluteal Tendinopathy.**

Allison K<sup>1</sup>, Vicenzino B, Wrigley TV, Grimaldi A, Hodges PW, Bennell KL.  
Author information

<sup>1</sup>Centre for Health and Exercise Science, University of Melbourne, Parkville, VIC, Australia; <sup>2</sup>School of Health & Rehabilitation Sciences St Lucia, The University of Queensland QLD, Australia; <sup>3</sup>Physiotec Physiotherapy, Tarragindi, QLD, Australia.

Abstract

**PURPOSE:**

To compare hip abductor muscle strength between individuals with symptomatic, unilateral gluteal tendinopathy (GT) and asymptomatic controls.

**METHODS:**

Fifty individuals with GT aged between 35 and 70 years, and 50 sex- and age-comparable controls were recruited from the community. Maximal isometric strength (torque normalized to body mass) of the hip abductors was recorded in supine using an instrumented manual muscle tester. A two-way mixed analysis of covariance (ANCOVA), with covariates of self-reported pain during testing and pain limiting maximum effort, was used to compare hip abductor strength of the symptomatic and asymptomatic hip between GT and control individuals. Data were expressed as mean and standard deviation, with the pairwise comparisons expressed as mean differences and 95% confidence intervals.

**RESULTS:**

Individuals with GT demonstrated significantly lower hip abductor torque of both their symptomatic and asymptomatic hip than healthy controls (both  $p < 0.05$ ) with mean strength deficits of 0.35 Nm/kg (32%) on the symptomatic hip and 0.25 Nm/kg (23%) on the asymptomatic hip. In individuals with GT, the symptomatic hip was significantly weaker than the asymptomatic hip with a mean strength deficit of 0.09 Nm/kg (11%) ( $p < 0.05$ ).

**CONCLUSION:**

People with unilateral GT demonstrate significant weakness of the hip abductor muscles bilaterally when compared with healthy controls. Although it is not clear whether hip weakness precedes GT or is a consequence of the condition, the findings provide a basis to consider hip abductor muscle weakness in the treatment plan for management of GT.

PMID:26418561

## 29. OA

## PT did not help OA

JAMA. 2014 May 21;311(19):1987-97. doi: 10.1001/jama.2014.4591.

**Effect of physical therapy on pain and function in patients with hip osteoarthritis: a randomized clinical trial.**

Bennell KL1, Egerton T1, Martin J1, Abbott JH2, Metcalf B1, McManus F1, Sims K3, Pua YH4, Wrigley TV1, Forbes A5, Smith C5, Harris A6, Buchbinder R7.

**Author information**

**Abstract**

**IMPORTANCE:**

There is limited evidence supporting use of physical therapy for hip osteoarthritis.

**OBJECTIVE:**

To determine efficacy of physical therapy on pain and physical function in patients with hip osteoarthritis.

**DESIGN, SETTING, AND PARTICIPANTS:** Randomized, placebo-controlled, participant- and assessor-blinded trial involving 102 community volunteers with hip pain levels of 40 or higher on a visual analog scale of 100 mm (range, 0-100 mm; 100 indicates worst pain possible) and hip osteoarthritis confirmed by radiograph. Forty-nine patients in the active group and 53 in the sham group underwent 12 weeks of intervention and 24 weeks of follow-up (May 2010-February 2013) **INTERVENTIONS:** Participants attended 10 treatment sessions over 12 weeks. Active treatment included education and advice, manual therapy, home exercise, and gait aid if appropriate. Sham treatment included inactive ultrasound and inert gel. For 24 weeks after treatment, the active group continued unsupervised home exercise while the sham group self-applied gel 3 times weekly.

**MAIN OUTCOMES AND MEASURES:** Primary outcomes were average pain (0 mm, no pain; 100 mm, worst pain possible) and physical function (Western Ontario and McMaster Universities Osteoarthritis Index, 0 no difficulty to 68 extreme difficulty) at week 13. Secondary outcomes were these measures at week 36 and impairments, physical performance, global change, psychological status, and quality of life at weeks 13 and 36.

**RESULTS:** Ninety-six patients (94%) completed week 13 measurements and 83 (81%) completed week 36 measurements. The between-group differences for improvements in pain were not significant. For the active group, the baseline mean (SD) visual analog scale score was 58.8 mm (13.3) and the week-13 score was 40.1 mm (24.6); for the sham group, the baseline score was 58.0 mm (11.6) and the week-13 score was 35.2 mm (21.4). The mean difference was 6.9 mm favoring sham treatment (95% CI, -3.9 to 17.7). The function scores were not significantly different between groups. The baseline mean (SD) physical function score for the active group was 32.3 (9.2) and the week-13 score was 27.5 (12.9) units, whereas the baseline score for the sham treatment group was 32.4 (8.4) units and the week-13 score was 26.4 (11.3) units, for a mean difference of 1.4 units favoring sham (95% CI, -3.8 to 6.5) at week 13. There were no between-group differences in secondary outcomes (except greater week-13 improvement in the balance step test in the active group). Nineteen of 46 patients (41%) in the active group reported 26 mild adverse effects and 7 of 49 (14%) in the sham group reported 9 mild adverse events (P = .003).

**CONCLUSIONS AND RELEVANCE:** Among adults with painful hip osteoarthritis, physical therapy did not result in greater improvement in pain or function compared with sham treatment, raising questions about its value for these patients.

**32 A. KNEE/ACL****Hamstrings role in unloading**

Knee. 2015 Aug 6. pii: S0968-0160(15)00161-1. doi: 10.1016/j.knee.2015.07.007.

**Different roles of the medial and lateral hamstrings in unloading the anterior cruciate ligament.**

Guelich DR1, Xu D2, Koh JL3, Nuber GW4, Zhang LQ5.

**Author information****Abstract****INTRODUCTION:**

Anterior cruciate ligament injuries are closely associated with excessive loading and motion about the off axes of the knee, i.e. tibial rotation and knee varus/valgus. However, it is not clear about the 3-D mechanical actions of the lateral and medial hamstring muscles and their differences in loading the ACL. The purpose of this study was to investigate the change in anterior cruciate ligament strain induced by loading the lateral and medial hamstrings individually.

**METHODS:**

Seven cadaveric knees were investigated using a custom testing apparatus allowing for six degree-of-freedom tibiofemoral motion induced by individual muscle loading. With major muscles crossing the knee loaded moderately, the medial and lateral hamstrings were loaded independently to 200N along their lines of actions at 0°, 30°, 60° and 90° of knee flexion. The induced strain of the anterior cruciate ligament was measured using a differential variable reluctance transducer. Tibiofemoral kinematics was monitored using a six degrees-of-freedom knee goniometer.

**RESULTS:**

Loading the lateral hamstrings induced significantly more anterior cruciate ligament strain reduction (mean 0.764 [SD 0.63] %) than loading the medial hamstrings (mean 0.007 [0.2] %), (P=0.001 and effect size=0.837) across the knee flexion angles.

**CONCLUSION:**

The lateral and medial hamstrings have significantly different effects on anterior cruciate ligament loadings. More effective rehabilitation and training strategies may be developed to strengthen the lateral and medial hamstrings selectively and differentially to reduce anterior cruciate ligament injury and improve post-injury rehabilitation.

**CLINICAL RELEVANCE:**

The lateral and medial hamstrings can potentially be strengthened selectively and differentially as a more focused rehabilitation approach to reduce ACL injury and improve post-injury rehabilitation. Different ACL reconstruction procedures with some of them involving the medial hamstrings can be compared to each other for their effect on ACL loading.

**KEYWORDS:**

ACL; Lateral hamstring; Medial hamstring

**Simulation of normal mechanics**

Clin Biomech (Bristol, Avon). 2015 Aug 18. pii: S0268-0033(15)00219-3. doi: 10.1016/j.clinbiomech.2015.08.007.

**Anterior cruciate ligament reconstruction and cartilage contact forces-A 3D computational simulation.**

Wang L1, Lin L2, Feng Y3, Fernandes TL4, Asnis P5, Hosseini A5, Li G6.

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

Clinical outcome studies showed a high incidence of knee osteoarthritis after anterior cruciate ligament reconstruction. Abnormal joint kinematics and loading conditions were assumed as risking factors. However, little is known on cartilage contact forces after the surgery.

**METHODS:**

A validated computational model was used to simulate anatomic and transtibial single-bundle anterior cruciate ligament reconstructions. Two graft fixation angles ( $0^\circ$  and  $30^\circ$ ) were simulated for each reconstruction. Biomechanics of the knee was investigated in intact, anterior cruciate ligament deficient and reconstructed conditions when the knee was subjected to 134N anterior load and 400N quadriceps load at  $0^\circ$ ,  $30^\circ$ ,  $60^\circ$  and  $90^\circ$  of flexion. The tibial translation and rotation, graft forces, medial and lateral contact forces were calculated.

**FINDINGS:**

When the graft was fixed at  $0^\circ$ , the anatomic reconstruction resulted in slightly larger lateral contact force at  $0^\circ$  compared to the intact knee while the transtibial technique led to higher contact force at both  $0^\circ$  and  $30^\circ$  under the muscle load. When graft was fixed at  $30^\circ$ , the anatomic reconstruction overstrained the knee at  $0^\circ$  with larger contact forces, while the transtibial technique resulted in slightly larger contact forces at  $30^\circ$ .

**INTERPRETATION:**

This study suggests that neither the anatomic nor the transtibial reconstruction can consistently restore normal knee biomechanics at different flexion angles. The anatomic reconstruction may better restore anteroposterior stability and contact force with the graft fixed at  $0^\circ$ . The transtibial technique may better restore knee anteroposterior stability and articular contact force with the graft fixed at  $30^\circ$  of flexion.

**ACL alters torque production**

Am J Sports Med. 2015 Aug 14. pii: 0363546515595834.

**Impaired Quadriceps Rate of Torque Development and Knee Mechanics After Anterior Cruciate Ligament Reconstruction With Patellar Tendon Autograft.**

Kline PW1, Morgan KD1, Johnson DL2, Ireland ML2, Noehren B3.

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

Rate of torque development (RTD) measures the ability of a muscle to produce torque quickly. Decreased quadriceps RTD may impair performance of sporting tasks after surgery. Currently, little is known about variations in quadriceps RTD between anterior cruciate ligament (ACL)-reconstructed and noninjured limbs.

**PURPOSE:**

To determine the differences in RTD of the quadriceps, the rate and timing of knee extensor moment (KEM) development, and knee flexion excursion during running after ACL reconstruction with patellar tendon autograft.

**STUDY DESIGN:**

Cross-sectional study; Level of evidence, 3.

**METHODS:**

This study involved 21 patients (11 female) 6 months after ACL reconstruction with patellar tendon autograft (median [IQR]: age, 18 [16-20] years; mass, 68.18 [61.34-75] kg; height, 1.74 [1.66-1.78] m). Patients performed four 5-second maximal voluntary isometric strength trials of both limbs on an isokinetic dynamometer. RTD was calculated as the mean slope of the torque-time curve between 20% and 80% of total time to peak torque. Then, patients underwent 3-dimensional motion analysis while running on an instrumented treadmill at a self-selected running speed (mean  $\pm$  SD, 2.68  $\pm$  0.28 m/s). The rate of knee extensor moment (RKEM) was calculated as the mean slope of the moment curve between 10% and 30% of stance phase. Between-limb comparisons were determined with a paired t test for peak KEM, RKEM, knee flexion excursion during 10% to 30% of stance, and time to generate KEM.

**RESULTS:**

In the reconstructed limb, deficits in the peak rate of quadriceps torque development compared with the noninjured limb existed both isometrically (RTD, 257.56 vs 569.11 Nm/s;  $P < .001$ ) and dynamically (RKEM, 16.47 vs 22.38 Nm/kg·m·s;  $P < .001$ ). The reconstructed limb also generated a KEM later in the stance phase compared with the noninjured limb (11.37% vs 9.61% stance;  $P < .001$ ) and underwent less knee flexion excursion (15.5° vs 19.8°;  $P < .001$ ).

**CONCLUSION:**

After ACL reconstruction with patellar tendon autograft, patients have lower RTD and RKEM in the reconstructed limb. Deviations in RTD and the timing of the KEM can change the way the knee is loaded and can potentially increase injury risk and future development of posttraumatic osteoarthritis. Rehabilitation should consider exercises designed to improve RTD and prepare the limb for the demands of sport performance.

**34. PATELLA****Tapping helps**

Scand J Med Sci Sports. 2015 Sep 17. doi: 10.1111/sms.12556.

**Effect of patellar strap and sports tape on pain in patellar tendinopathy: A randomized controlled trial.**

de Vries A1, Zwerver J1, Diercks R1, Tak I2, van Berkel S3, van Cingel R4, van der Worp H1, van den Akker-Scheek I1.

**Author information****Abstract**

Numerous athletes with patellar tendinopathy (PT) use a patellar strap or sports tape during sports. This study's aim was to investigate the short-term effect of these orthoses on patellar tendon pain. Participants performed the single-leg decline squat, vertical jump test, and triple-hop test under four different conditions (patellar strap, sports tape, placebo, and control). Subsequently, participants practiced sports as usual for 2 weeks; during 1 week, they were assigned to one of the four conditions. Pain was measured with the visual analog scale (VAS). In total, 97 athletes with PT [61% male, age 27.0 (SD8.1), VISA-P 58.5 (SD12.7)] were analyzed. On the single-leg decline squat, the VAS pain score reduced significantly in the patellar strap (14 mm,  $P = 0.04$ ) and the sports tape condition (13 mm,  $P = 0.04$ ), compared with control, but not placebo. A significant decrease in VAS pain during sports was found in the sports tape (7 mm,  $P = 0.04$ ) and placebo group (6 mm,  $P = 0.04$ ). The VAS pain score two hours after sports decreased significantly in the patellar strap, sports tape and placebo group (8-mm,  $P < 0.001$ , 10 mm,  $P = 0.001$  and 7 mm,  $P = 0.03$ , respectively). This study's findings indicate that an orthosis (including placebo tape) during sports can reduce pain in PT patients in the short term.

**KEYWORDS:** Jumper's knee; brace; patellar tendon; prevention

**35. KNEE/TOTAL****Risk of smoking**

BMC Musculoskelet Disord. 2015 Sep 9;16(1):245. doi: 10.1186/s12891-015-0694-z.

Effect of smoking and soft tissue release on risk of revision after total knee arthroplasty: a case-control study.

Nwachukwu BU<sup>1</sup>, Gurary EB<sup>2,3</sup>, Lerner V<sup>4</sup>, Collins JE<sup>5</sup>, Thornhill TS<sup>6</sup>, Losina E<sup>7,8,9</sup>, Katz JN<sup>10,11,12</sup>.

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

Increasing utilization of primary total knee arthroplasty (TKA) is projected to expand demand for revision TKA. Revision TKAs are procedurally complex and incur high costs on our financially constrained healthcare system. The purpose of this study was to use a case-control design to identify factors predisposing to revision TKA, particularly demographic, clinical and perioperative technical factors.



**METHODS:**

We conducted a case control study to investigate patient, surgical and perioperative factors associated with greater risk of revision TKA. We included patients who received TKA at a tertiary center between 1996 and 2009. Cases (patients that had primary and revision TKA) were matched to controls (patients with primary TKA that was not revised) in a 1:2 ratio and risk of revision examined using conditional logistic regression.

**RESULTS:**

We identified 146 cases and 290 controls. Patient factors independently associated with revision included male sex (OR 1.73; 95 % CI 1.06-2.81) and smoking (OR 2.87; 1.33-6.19). Older age was associated with decreased risk (OR 0.83 per 5-year increment; 95 % CI 0.75-0.92). Lateral release was the only technical factor associated with revision (OR 1.92; 1.07-3.43).

**CONCLUSIONS:**

In this case control study younger patient age, male gender, soft tissue release and active smoking status were associated with increased revision risk. Although we do not know whether the risk of smoking arises from short- or long-term exposure, smoking cessation prior to TKA should be considered as an intervention for decreasing revision risk.

PMID:26353801

**37. OSTEOARTHRITIS/KNEE****Pain coping skills**

Arthritis Care Res (Hoboken). 2015 Sep 28. doi: 10.1002/acr.22744.

**Physical therapist-delivered pain coping skills training and exercise for knee osteoarthritis: Randomized controlled trial.**

Bennell KL<sup>1</sup>, Ahamed Y<sup>1</sup>, Jull G<sup>2</sup>, Bryant C<sup>3</sup>, Hunt MA<sup>4</sup>, Forbes AB<sup>5</sup>, Kasza J<sup>5</sup>, Akram M<sup>5</sup>, Metcalf B<sup>1</sup>, Harris A<sup>6</sup>, Egerton T<sup>1</sup>, Kenardy JA<sup>7</sup>, Nicholas MK<sup>8</sup>, Keefe FJ<sup>9</sup>.

Author information

**Abstract**

**Objective** To investigate whether a 12-week physical therapist-delivered combined pain coping skills training and exercise (PCST+EX) is more efficacious and cost-effective than either treatment alone for knee OA. **Methods** This was an assessor-blinded, 3-arm randomized controlled trial in 222 (73 PCST+EX, 75 EX, 74 PCST) people aged  $\geq 50$  years with knee OA. All participants received 10 treatments over 12 weeks plus a home program. PCST covered pain education and training in cognitive and behavioral pain coping skills. EX comprised strengthening exercises. PCST+EX integrated both. **Primary outcomes** were self-reported average knee pain (0-100mm visual analogue scale) and physical function (Western Ontario and McMaster Universities Osteoarthritis Index 0-68) at week 12. **Secondary outcomes** included other pain measures, global change, physical performance, psychological health, physical activity, quality-of-life and cost-effectiveness. **Analyses** were by intention-to-treat with multiple imputation for missing data. **Results** 201 (91%), 181 (82%) and 186 (84%) completed week 12, 32 and 52 measurements, respectively. At week 12, there were no significant between-group differences for reductions in pain comparing PCST+EX versus EX (mean difference 5.8mm, 95%CI -1.4,13.0) and PCST+EX versus PCST (6.7mm, 95%CI -0.6,14.1). Significantly greater improvements in function were found for PCST+EX versus EX (3.7units, 95%CI 0.4,7.0) and PCST+EX versus PCST (7.9units, 95%CI 4.7,11.2). These differences persisted at weeks 32 (both) and 52 (PCST). Benefits favoring PCST+EX were seen on several secondary outcomes. **Cost effectiveness** of PCST+EX was not demonstrated. **Conclusion** This model-of-care could improve access to psychological treatment and augment patient outcomes from exercise in knee OA although it did not appear to be cost effective. This article is protected by copyright. All rights reserved.

**KEYWORDS:** Exercise; knee osteoarthritis; pain coping; physical therapy; psychological treatment

**PMID:** 26417720

## Patterns of cartilage damage that lead to OA

### Exercise and OA

BMC Musculoskelet Disord. 2015 Sep 14;16(1):252. doi: 10.1186/s12891-015-0709-9.

### **Effect of low-level laser therapy (904 nm) and static stretching in patients with knee osteoarthritis: a protocol of randomised controlled trial.**

Ferreira de Meneses SR<sup>1,2</sup>, Hunter DJ<sup>3</sup>, Young Docko E<sup>4</sup>, Pasqual Marques A<sup>5</sup>.

Author information

Abstract

#### **BACKGROUND:**

Osteoarthritis (OA) is a highly prevalent and disabling disease. It is estimated that by 2030 the prevalence of symptomatic OA could reach 30 % of the population above 60 years. This randomised controlled trial will investigate the effect of low-level laser therapy (LLLT) and static stretching exercises, as monotherapy and in combination, on pain, quality of life, function, mobility, knee range of motion (KROM) and hamstring shortening in participants with knee OA.

#### **METHODS:**

This study will involve 145 people aged 50-75 years with symptomatic-radiographic knee OA. It will consist of two types of treatments: Low-level laser therapy (LLLT) and stretching exercises. The patients will be randomly allocated to five groups LLLTACTIVE+Stretch, LLLTPLACEBO+Stretch, Stretch, LLLT and Control (n = 29 each). Treatment frequency will be three sessions/week for all active groups. LLLT will involve the use of a Gallium-Arsenide laser (904 nm, 40 milliwatts, 3 J/point, 27 J/knee) over 24 sessions for the monotherapy group and 9 sessions for the LLLT+Stretch groups. Stretching will consist of seven exercises completed over 24 sessions. The control group will receive a booklet. Participants will be treated for 2 months (Stretch, LLLT and Control groups) or 3 months (LLLT + Stretch groups). Participants and the outcome assessor will be blind to treatment allocation throughout the study. The primary outcome is pain measured by Visual Analogue Scale. Secondary outcomes include quality of life assessed by Western Ontario and McMaster Universities Arthritis Index, function by Lequesne Algofunctional Index, mobility by Timed Up and Go Test, KROM by goniometry of knee flexion and hamstring shortening by popliteal angle. The statistical method will follow the principles of per-protocol analysis.

#### **DISCUSSION:**

Although exercise therapy is considered an effective treatment in patients with knee osteoarthritis, the knowledge of which exercise modalities would be the most appropriate for this population is lacking. LLLT has been used as resource to increase the effects of physical therapy. However, the specific dose and treatment frequency need to be better defined. The findings from this randomised controlled trial will provide evidence of the efficacy or otherwise, of LLLT and stretching exercises in the management of knee OA symptoms.

**TRIAL REGISTRATION:** NCT01738737 at ClinicalTrials.gov.

PMID: 26369333

**Surgery not effective**

Br J Sports Med. 2015 Oct;49(19):1229-35. doi: 10.1136/bjsports-2015-h2747rep.

**Arthroscopic surgery for degenerative knee: systematic review and meta-analysis of benefits and harms.**

Thorlund JB<sup>1</sup>, Juhl CB<sup>2</sup>, Roos EM<sup>1</sup>, Lohmander LS<sup>3</sup>.

Author information

Abstract

**OBJECTIVE:**

To determine benefits and harms of arthroscopic knee surgery involving partial meniscectomy, debridement, or both for middle aged or older patients with knee pain and degenerative knee disease.

**DESIGN:**

Systematic review and meta-analysis.

**MAIN OUTCOME MEASURES:** Pain and physical function.

**DATA SOURCES:** Systematic searches for benefits and harms were carried out in Medline, Embase, CINAHL, Web of Science, and the Cochrane Central Register of Controlled Trials (CENTRAL) up to August 2014. Only studies published in 2000 or later were included for harms.

**ELIGIBILITY CRITERIA FOR SELECTING STUDIES:** Randomised controlled trials assessing benefit of arthroscopic surgery involving partial meniscectomy, debridement, or both for patients with or without radiographic signs of osteoarthritis were included. For harms, cohort studies, register based studies, and case series were also allowed.

**RESULTS:** The search identified nine trials assessing the benefits of knee arthroscopic surgery in middle aged and older patients with knee pain and degenerative knee disease. The main analysis, combining the primary endpoints of the individual trials from three to 24 months postoperatively, showed a small difference in favour of interventions including arthroscopic surgery compared with control treatments for pain (effect size 0.14, 95% confidence interval 0.03 to 0.26). This difference corresponds to a benefit of 2.4 (95% confidence interval 0.4 to 4.3) mm on a 0-100 mm visual analogue scale. When analysed over time of follow-up, interventions including arthroscopy showed a small benefit of 3-5 mm for pain at three and six months but not later up to 24 months. No significant benefit on physical function was found (effect size 0.09, -0.05 to 0.24). Nine studies reporting on harms were identified. Harms included symptomatic deep venous thrombosis (4.13 (95% confidence interval 1.78 to 9.60) events per 1000 procedures), pulmonary embolism, infection, and death.

**CONCLUSIONS:** The small inconsequential benefit seen from interventions that include arthroscopy for the degenerative knee is limited in time and absent at one to two years after surgery. Knee arthroscopy is associated with harms. Taken together, these findings do not support the practise of arthroscopic surgery for middle aged or older patients with knee pain with or without signs of osteoarthritis.

**SYSTEMATIC REVIEW REGISTRATION:** PROSPERO CRD42014009145.

PMID:26383759

**38 B. FOOT TYPES****Foot types and function**

## RESEARCH REPORT

**Predicting Dynamic Foot Function From Static Foot Posture: Comparison Between Visual Assessment, Motion Analysis, and a Commercially Available Depth Camera**

**Authors:** Kade L. Paterson, PhD<sup>1</sup>, Ross A. Clark, PhD<sup>2</sup>, Alexandra Mullins, BExSci (Hons)<sup>2</sup>, Adam L. Bryant, PhD<sup>1</sup>, Benjamin F. Mentiplay, BExSci (Hons)<sup>2</sup>

Published: *Journal of Orthopaedic & Sports Physical Therapy*,

2015, Volume: 45 Issue: 10 Pages: 789-798 doi:10.2519/jospt.2015.5616

**Study Design** Controlled laboratory study.

**Objective** To evaluate the ability of 3 methods to assess static foot posture to predict rearfoot and midfoot kinematics during gait.

**Background** Static foot posture is commonly used clinically to infer dynamic function. Limitations of static clinical assessments may be overcome through advances in technologies, including commercially available depth cameras.

**Methods** The Foot Posture Index (FPI) of 31 males (average age, 22.5 years) was assessed using visual observation, a 3-D motion-analysis system, and a depth camera. Pearson correlations were used to evaluate relationships between FPI items and rearfoot and midfoot kinematics during walking. The ability of the static variables to predict dynamic function was assessed using multiple linear regression.

**Results** Most FPI items (85%) were not correlated with foot kinematics, regardless of assessment method. There were 6 fair to moderate correlations between visual FPI items and total rearfoot ( $r = -0.36$  to  $-0.39$ ,  $P < .05$ ) and midfoot ( $r = 0.37$  to  $0.61$ ,  $P < .05$ ) motion, 2 fair correlations between 3-D motion-analysis FPI items and total midfoot ( $r = -0.43$ ,  $P = .02$ ) and peak rearfoot ( $r = -0.40$ ,  $P = .03$ ) motion, and 2 fair correlations between the depth-camera FPI items and average rearfoot ( $r = -0.38$  to  $0.44$ ,  $P < .05$ ) motion. Visual assessment of the FPI provided the best prediction model, explaining 37% of the variance in total midfoot inversion/eversion.

**Conclusion** Static measures of foot posture are weakly correlated with rearfoot or midfoot kinematics, and have limited dynamic prediction ability. Our findings suggest that the FPI may not be an accurate representation of rearfoot or midfoot movement during walking, regardless of the measurement technique employed. *J Orthop Sports Phys Ther* 2015;45(10):789–798. Epub 24 Aug 2015. doi:10.2519/jospt.2015.5616

**Keyword:** biomechanics, FPI, gait, gaming, kinematic, posture

**39 B. SHOES****Shoe surface and LE injuries**

Br J Sports Med. 2015 Oct;49(19):1245-52. doi: 10.1136/bjsports-2014-094478. Epub 2015 Jun 2.

**Higher shoe-surface interaction is associated with doubling of lower extremity injury risk in football codes: a systematic review and meta-analysis.**

Thomson A<sup>1</sup>, Whiteley R<sup>1</sup>, Bleakley C<sup>2</sup>.

Author information

Abstract

**BACKGROUND:**

Turning or cutting on a planted foot may be an important inciting event for lower limb injury, particularly when shoe-surface traction is high. We systematically reviewed the relationship between shoe-surface interaction and lower-extremity injury in football sports.

**METHODS:**

A systematic literature search of four databases was conducted up to November 2014. Prospective studies investigating the relationship between rotational traction and injury rate were included. Two researchers independently extracted outcome data and assessed the quality of included studies using a modified Downs and Black index. Effect sizes (OR+95% CIs) were calculated using RevMan software. Where possible, data were pooled using the fixed effect model.

**RESULTS:**

Three prospective studies were included (4972 male athletes). The methodological quality was generally good with studies meeting 68-89% of the assessment criteria. All studies categorised athletes into low (lowest mean value 15 nm) or high traction groups (highest mean value 74 nm) based on standardised preseason testing. In all cases, injury reporting was undertaken prospectively over approximately three seasons, with verification from a medical practitioner. Injury data focused on: all lower limb injuries, ankle/knee injuries or ACL injury only. There was a clear relationship between rotational traction and injury and the direction and magnitude of effect sizes were consistent across studies. The pooled data from the three studies (OR=2.73, 95% CI 2.13 to 3.15;  $\chi^2=3.19$ , df=2, p=0.21; I(2)=36.5%) suggest that the odds of injury are approximately 2.5 times higher when higher levels of rotational traction are present at the shoe-surface interface.

**SUMMARY AND CONCLUSIONS:**

Higher levels of rotational traction influence lower limb injury risk in American Football athletes. We conclude that this warrants considerable attention from clinicians and others interested in injury prevention across all football codes.

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**KEYWORDS:** ACL; American football; Football; Injuries; Leg

PMID:26036677

### 41 B. COMPARTMENT SYNDROME

#### Extra soleus

J Foot Ankle Surg. 2015 Sep 9. pii: S1067-2516(15)00313-0. doi: 10.1053/j.jfas.2015.07.011.

#### **Accessory Soleus: A Case Report of Exertional Compartment and Tarsal Tunnel Syndrome Associated With an Accessory Soleus Muscle.**

Carrington SC<sup>1</sup>, Stone P<sup>2</sup>, Kruse D<sup>3</sup>.

Author information

#### Abstract

An accessory soleus muscle is a rare anatomic variant that frequently presents as an asymptomatic soft tissue swelling in the posteromedial ankle. Less frequently, the anomalous muscle can cause pain and swelling with activity. We present the case of a 17-year-old male with exertional compartment syndrome and associated tarsal tunnel syndrome secondary to a very large accessory soleus muscle. After surgical excision, the patient was able to return to full activity with complete resolution of symptoms.

**KEYWORDS:** accessory soleus; compartment syndrome; cross-country running leg  
PMID:26361954

### 43. HALLUX VALGUS

#### Alignment of sesamoid bones

J Foot Ankle Surg. 2015 Sep 10. pii: S1067-2516(15)00324-5. doi: 10.1053/j.jfas.2015.07.022.

#### **The Relationship Between the Sesamoid Complex and the First Metatarsal After Hallux Valgus Surgery Without Lateral Soft-Tissue Release: A Prospective Study.**

Lamo-Espinosa JM<sup>1</sup>, Flórez B<sup>2</sup>, Villas C<sup>3</sup>, Pons-Villanueva J<sup>3</sup>, Bondía JM<sup>4</sup>, Aquerreta JD<sup>5</sup>, Alfonso M<sup>3</sup>.

Author information

#### Abstract

Some investigators have emphasized restoring the relationship between the sesamoid complex and the first metatarsal head to reduce the risk of hallux valgus recurring after surgical reconstruction. In a prospective study, we analyzed whether the first metatarsophalangeal joint could be realigned after scarf-Akin bunionectomy without lateral soft tissue release. A total of 25 feet, in 22 patients, were prospectively enrolled and analyzed using anteroposterior radiographs and coronal computed tomography scans obtained before and 3 months after surgery. The Yildirim sesamoid position decreased from a preoperative of 2 (range 1 to 3) to a postoperative position of 0 (range 0 to 1;  $p < .001$ ), the mean first intermetatarsal angle decreased from  $12.6^\circ \pm 2.4^\circ$  to  $5.8^\circ \pm 2.1^\circ$  ( $p < .001$ ), and the mean distance between the second metatarsal and the tibial sesamoid changed from  $25.7 \pm 4.6$  to  $25.9 \pm 4.6$  ( $p = .59$ ). Our findings suggest that dislocation of the sesamoid complex is actually caused by displacement of the first metatarsal. In conclusion, the scarf-Akin bunionectomy adequately restores the alignment of the first metatarsophalangeal joint, including restoration of the sesamoid apparatus, without direct plantar-lateral soft tissue release.

**KEYWORDS:** adductor hallucis; bunion; first metatarsal; great toe; proximal phalanx; tibial sesamoid

PMID:26364703



**Assessment of**

Foot Ankle Int. 2015 Sep 8. pii: 1071100715604238.

**Comparison of 2D-3D Measurements of Hallux and First Ray Sagittal Motion in Patients With and Without Hallux Valgus.**

Swanson JE<sup>1</sup>, Stoltman MG<sup>1</sup>, Oyen CR<sup>1</sup>, Mohrbacher JA<sup>1</sup>, Orandi A<sup>1</sup>, Olson JM<sup>1</sup>, Glasoe WM<sup>2</sup>.  
Author information

**Abstract****BACKGROUND:**

Clinicians base treatment decisions on measures of hallux and first ray motion in the management of first metatarsophalangeal joint disorders. Women account for a majority of the patients. This study assessed the reliability of a 2D approach for the measurements of sagittal motion, and compared the result to a Cardan (3D) angle criterion standard and evaluated how hallux valgus (bunion) deformity affected the comparisons.

**METHODS:**

Twenty-nine women (controls n = 10; bunion n = 19) were examined using a retrospective repeated measures design. Weightbearing magnetic resonance (MR) images were acquired to replicate the position of the foot during the stance phase of gait. The images were reconstructed into virtual bone models using computer processes, whereby measures of hallux and first ray motion were represented by 2D and 3D methods of measurement. An examiner measured 2D motion on the image data sets using a goniometer, and reliability was assessed. The 3D Cardan angle result was derived from a matrix calculation. The 2D-3D comparison of measurements was evaluated with an analysis of variance (ANOVA) model across gait conditions, run separate for groups.

**RESULTS:**

The 2D measurement was reliable ( $ICC \geq 0.98$ ,  $SEM \leq 0.89$  degrees). There was no method-by-condition interaction ( $F \leq 1.37$ ,  $P \geq .25$ ) between variables. No significant difference was detected between the 2D-3D measurements in the control group ( $F \leq 1.24$ ,  $P \geq .30$ ), but the measurements were statistically different ( $F \geq 4.46$ ,  $P \leq .049$ ) in the bunion group.

**CONCLUSION:**

This study described a reliable 2D approach for measuring hallux and first ray sagittal motion from weightbearing images. The 2D measurements were comparable to a Cardan angle component motion result in controls, but not in women with bunion.

**CLINICAL RELEVANCE:**

Joint motion measurements may augment clinical decision making. These results suggest that a 2D image-based approach may be adequate to estimate hallux and first ray sagittal motion, although bunion deformity creates out-of-plane motions that may require 3D methods to accurately quantify. Further clinical study is required to assess the differences in clinical outcomes between measurement techniques.

**KEYWORDS:** bunion deformity; kinematic imaging; motion analysis

PMID:26351159

**Cuneiforms impact on HV**

J Foot Ankle Surg. 2015 Sep 7. pii: S1067-2516(15)00301-4. doi: 10.1053/j.jfas.2015.06.026.

**Radiographic Relevance of the Distal Medial Cuneiform Angle in Hallux Valgus Assessment.**

Hatch DJ<sup>1</sup>, Smith A<sup>2</sup>, Fowler T<sup>3</sup>.

Author information

**Abstract**

The angle formed by the distal articular facet of the medial cuneiform has been evaluated and discussed by various investigators. However, no consistent method has been available to radiograph and measure this entity. The wide variability of the angle is not conducive to comparative analysis. Additionally, investigators have noted that the angles observed (obliquity) vary greatly because of changes in radiographic angle, foot position, rotation of the first ray, and declination of the first metatarsal. Recognizing that these variables exist, we propose a reproducible assessment using digital radiography and application of deformity of correction principles. Our results have indicated a mean distal medial cuneiform angle of 20.69° in normal feet, 23.51° with moderate hallux valgus, and 20.41° with severe hallux valgus deformity. The radiograph beam was kept at 15° from the coronal plane. An inverse relationship was found between the distal medial cuneiform angle and bunion severity. This was in contrast to our expected hypothesis. The overall angle of the first metatarsal-medial cuneiform did, however, correlate with the severity of the bunion deformity ( $p < .000$ ). The obliquity values and intermetatarsal angles changed in direct relationship to the radiographic projection angle. This illustrates the importance of using standardized radiographic projection angles. We conclude that the 1-dimensional standard anteroposterior radiograph with assessment of the distal medial cuneiform angle cannot adequately demonstrate the pathologic features of hallux valgus. A better indicator appears to be the first metatarsal-medial cuneiform angle. This pathologic entity is a 3-dimensional one that incorporates the joint morphology of the first ray, triplane osseous positioning, and soft tissue imbalances. Perhaps, 3-dimensional computed tomography imaging will provide better insight into this entity.

**KEYWORDS:** distal medial cuneiform angle; hallux valgus; lapidus; medial cuneiform obliquity; metatarsus primus adductus  
PMID:26359620

**45 A. MANUAL THERAPY LUMBAR & GENERAL****Manip in adolescent LBP**

JMMT Volume 23, Issue 4 (September 2015), pp. 226-233

**Lumbar manipulation and exercise for the treatment of acute low back pain in adolescents: a randomized controlled trial**

Mitchell Selhorst ; Brittany Selhorst

Author Affiliations

Keywords: Adolescent, Manipulation, Lumbar, Low back pain, Orthopedic manipulative therapy

DOI: <http://dx.doi.org/10.1179/2042618614Y.0000000099>

Abstract

Objectives:

Low back pain (LBP) is a common condition in adolescents. Although much has been written about the efficacy of lumbar manipulation for adults with LBP, little is known about its effectiveness in adolescents. This study had two primary aims: (1) to assess the efficacy of adding lumbar manipulation to an exercise program in adolescents with acute (<90 days) LBP and (2) to report and assess any adverse reactions associated with lumbar manipulation noted in this study.

Methods:

Patients were randomly assigned to receive lumbar manipulation or sham manipulation. All patients performed 4 weeks of physical therapy exercise. Pain, patient-specific functional scale (PSFS), and global rating of change (GROC) scores were measured at evaluation, 1 week, 4 weeks, and 6 months. Relative risk was calculated for adverse reactions noted.

Results:

We recruited 35 consecutive patients with acute LBP. One patient was excluded after being diagnosed with a spondylolysis, 34 patients remained for analysis. Both groups experienced significant improvement over time in all measures. There were no differences between groups for pain, PSFS, or GROC scores. No increased risk of adverse reaction from lumbar manipulation was noted.

Discussion:

The addition of lumbar manipulation to exercise did not benefit adolescents with acute LBP.

There was not an increased risk of an adverse reaction noted in this study from lumbar manipulation performed on adolescents. Further research needs to be done to identify factors that predict positive outcomes following lumbar manipulation in adolescents.

Keywords: Adolescent, Manipulation, Lumbar, Low back pain, Orthopedic manipulative therapy

**45 B. MANUAL THERAPY CERVICAL****Manual examination for CG headaches****JMMT Volume 23, Issue 4 (September 2015), pp. 210-218****Manual examination in the diagnosis of cervicogenic headache: a systematic literature review**Paul D. Howard<sup>1,2</sup>; William Behrns<sup>1</sup>; Melanie Di Martino<sup>1</sup>; Amanda DiMambro<sup>1</sup>; Kristin McIntyre<sup>1</sup>; Catherine Shurer<sup>1</sup>

Author Affiliations

Keywords: Cervicogenic headache, Cervical headache, Diagnosis, Manual examination, Physical examination

DOI: <http://dx.doi.org/10.1179/2042618614Y.0000000097>**Abstract****Study Design:**

Systematic literature review.

**Objective:**

To evaluate the diagnostic validity of manual examination techniques used to diagnose cervicogenic headache (CGH).

**Background:**

Cervicogenic headache is a specific type of headache that originates from the cervical spine and is typically chronic in nature. Diagnostic criteria for CGH have been established by the International Headache Society (IHS) and are cited extensively in the literature. Diagnosis of CGH through manual examination is a more recent practice. To our knowledge, no systematic review of manual diagnosis of CGH has been performed.

**Methods:**

Searches of electronic databases (CINAHL, Cochrane Library, Medline, PEDro, Scopus, and SPORTDiscus) were conducted for research studies from July 2003 to February 2014. The GRADE approach was used to determine the quality of each paper.

**Results:**

Twelve papers that fulfilled the inclusion and exclusion criteria were identified (12 observational studies). The level of evidence ranged from very low to low, and recommendations for use of specific manual techniques ranged from weak to strong.

**Conclusions:**

Despite low levels of evidence, manual examination of the cervical spine appears to aid the diagnostic process related to CGH and can be implemented by both experienced and inexperienced examiners.

**Keywords:** Cervicogenic headache, Cervical headache, Diagnosis, Manual examination, Physical examination

**45 C. MANUAL THERAPY THORACIC****Manip for shoulder pain**

**JMMT Volume 23, Issue 4 (September 2015), pp. 176-187**

**Thoracic manual therapy in the management of non-specific shoulder pain: a systematic review**

Aimie L. Peek <sup>1</sup>; Caroline Miller <sup>2</sup>; Nicola R. Heneghan <sup>3</sup>

Author Affiliations

Keywords: Shoulder pain, Thoracic spine, Manipulation, Manual therapy

DOI: <http://dx.doi.org/10.1179/2042618615Y.0000000003>

**Abstract****Objectives:**

Non-specific shoulder pain (NSSP) is often persistent and disabling leading to high socioeconomic costs. Cervical manipulation has demonstrated improvements in patients with NSSP, although risks associated with thrust techniques are documented. Thoracic manual therapy (TMT) may utilise similar neurophysiological effects with less risk. The current evidence for TMT in treating NSSP is limited to systematic reviews of manual therapy (MT) applied to the upper quadrant. These reviews included trials that used shoulder girdle manual therapy (SG-MT) in the TMT group. This limits the scope of their conclusions with regard to the exclusive effectiveness of TMT for NSSP.

**Methods:**

This review used a steering group for subject and methodological expertise and was reported in line with Preferred Reporting items for Systematic Reviews and Meta-analysis (PRISMA) guidelines. Key databases were searched (1990–2014) using relevant search terms and medical subject headings (MeSH); eligibility was evaluated independently by two reviewers based on pre-defined criteria. Study participants had NSSP including impingement syndrome and excluding cervical pain. Interventions included cervicothoracic junction and TMT with or without supplementary exercises. Studies that included MT applied to the shoulder girdle including the glenohumeral joint, acromioclavicular joint or sternoclavicular joint in the TMT group, without a control, were excluded. Included studies utilised outcome measures that monitored pain and disability scores. Randomized controlled trials (RCTs) and clinical studies were eligible. Using a standardised form, each reviewer independently extracted data. Risk of bias was assessed using GRADE and PEDro scale. Results were tabulated for semi-quantitative comparison.

**Results:**

Over 912 articles were retrieved: three RCTs, one single-arm trial and three pre–post test studies were eligible. Studies varied from poor to high quality. Three RCTs demonstrated that TMT reduced pain and disability at 6, 26 and 52 weeks compared with usual care. Two pre–post test studies found between 76% and 100% of patients experienced significant pain reduction immediately post-TMT. An additional pre–post test study and a single-arm trial showed reductions in pain and disability scores 48 hours post-TMT.

**Discussion:**

Thoracic manual therapy accelerated recovery and reduced pain and disability immediately and for up to 52 weeks compared with usual care for NSSP. Further, high-quality RCTs investigating the effect of TMT in isolation for the treatment of patients with NSSP are now required.

**Keywords:** Shoulder pain, Thoracic spine, Manipulation, Manual therapy

**46 B. LOWER LIMB NEUROMOILIZATION**

**JMMT Volume 23, Issue 4 (September 2015), pp. 219-225**

**Effects of simulated neural mobilization on fluid movement in cadaveric peripheral nerve sections: implications for the treatment of neuropathic pain and dysfunction**

Kerry K. Gilbert<sup>1</sup>; C. Roger James<sup>1</sup>; Gail Apte<sup>2</sup>; Cynthia Brown<sup>3</sup>; Phillip S. Sizer<sup>1</sup>; Jean-Michel Brismée<sup>1</sup>; Michael P. Smith<sup>4</sup>

Author Affiliations

Keywords: Entrapment, Neuropathy, Nerve injury, Intraneural edema

DOI: <http://dx.doi.org/10.1179/2042618614Y.0000000094>

**Abstract**

**Background and purpose:**

Neural mobilization techniques are used clinically to treat neuropathic pain and dysfunction. While selected studies report efficacy of these techniques, the mechanisms of benefit are speculative. The purpose of this study was to evaluate the effects of *in vitro* simulated stretch/relax neural mobilization cycles on fluid dispersion within sections of unembalmed cadaveric peripheral nerve tissue.

**Methods:**

Bilateral sciatic nerve sections were harvested from six cadavers. Matched pairs of nerve sections were secured in a tissue tester and injected with a plasma/Toluidine Blue dye solution. Once the initial dye spread stabilized, the experimental nerve sections underwent 25 stretch/relaxation cycles (e.g. simulated neural mobilization) produced by a mechanical tissue tester. Post-test dye spread measurements were compared to pre-test measurements as well as control findings (no simulated mobilization). Data were analyzed using paired *t*-tests.

**Results:**

Individual dye spread measurements were reliable [ICC(3,1)=0.99]. The post-test intraneural fluid movement (dye spread) in the experimental section increased significantly with simulated neural mobilization compared to pre-test measurements (3.2±2.1 mm; *P*=0.015) and control measurements (3.3±2.7 mm; *P*=0.013).

**Conclusion:**

Repetitive simulated neural mobilization, incorporating stretch/relax cycles, of excised cadaveric peripheral nerve tissue produced an increase in intraneural fluid dispersion. Neural mobilization may alter nerve tissue environment, promoting improved function and nerve health, by dispersing tissue fluid and diminishing intraneural swelling and/or pressure.

**Keywords:** Entrapment, Neuropathy, Nerve injury, Intraneural edema

**48 C. MUSCLES****Hamstring tears and rehab**

Br J Sports Med. 2015 Oct;49(19):1241-4. doi: 10.1136/bjsports-2014-094427. Epub 2015 Jun 23.

**Hamstring injuries: prevention and treatment-an update.**

Brukner P.

**Abstract**

Despite increased knowledge of hamstring muscle injuries, the incidence has not diminished. We now know that not all hamstring injuries are the same and that certain types of injuries require prolonged rehabilitation and return to play. The slow stretch type of injury and injuries involving the central tendon both require longer times to return to play. A number of factors have been proposed as being indicators of time taken to return to play, but the evidence for these is conflicting. Recurrence rates remain high and it is now thought that strength deficits may be an important factor. Strengthening exercise should be performed with the hamstrings in a lengthened position. There is conflicting evidence regarding the efficacy of platelet-rich plasma injection in the treatment of hamstring injuries so at this stage we cannot advise their use. Various tests have been proposed as predictors of hamstring injury and the use of the Nordboard is an interesting addition to the testing process. Prevention of these injuries is the ultimate aim and there is increasing evidence that Nordic hamstring exercises are effective in reducing the incidence.

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**KEYWORDS:** Hamstring; Injury; Prevention; Treatment

PMID:26105015

**52. EXERCISE****Exercise improved mortality**

Br J Sports Med. 2015 Oct;49(19):1262-7. doi: 10.1136/bjsports-2014-094306. Epub 2015 Aug 3.

**Even a low-dose of moderate-to-vigorous physical activity reduces mortality by 22% in adults aged  $\geq 60$  years: a systematic review and meta-analysis.**

Hupin D<sup>1</sup>, Roche F<sup>2</sup>, Gremeaux V<sup>3</sup>, Chatard JC<sup>4</sup>, Oriol M<sup>5</sup>, Gaspoz JM<sup>6</sup>, Barthélémy JC<sup>2</sup>, Edouard P<sup>4</sup>.

Author information

Abstract

**BACKGROUND:**

The health benefits of 150 min a week of moderate-to-vigorous-intensity physical activity (MVPA) in older adults, as currently recommended, are well established, but the suggested dose in older adults is often not reached.

**OBJECTIVES:**

We aimed to determine whether a lower dose of MVPA was effective in reducing mortality, in participants older than 60 years.

**METHODS:**

The PubMed and Embase databases were searched from inception to February 2015. Only prospective cohorts were included. Risk ratios of death were established into four doses based on weekly Metabolic Equivalent of Task (MET)-minutes, defined as inactive (reference), low (1-499), medium (500-999) or high ( $\geq 1000$ ). Data were pooled and analysed through a random effects model using comprehensive meta-analysis software.

**RESULTS:**

Of the 835 reports screened, nine cohort studies remained, totalling 122 417 participants, with a mean follow-up of  $9.8 \pm 2.7$  years and 18 122 reported deaths (14.8%). A low dose of MVPA resulted in a 22% reduction in mortality risk (RR=0.78 (95% CI 0.71 to 0.87)  $p < 0.0001$ ). MVPA beyond this threshold brought further benefits, reaching a 28% reduction in all-cause mortality in older adults who followed the current recommendations (RR=0.72 (95% CI 0.65 to 0.80)  $p < 0.0001$ ) and a 35% reduction beyond 1000 MET-min per week (RR=0.65 (95% CI 0.61 to 0.70)  $p < 0.0001$ ).

**CONCLUSIONS:**

A dose of MVPA below current recommendations reduced mortality by 22% in older adults. A further increase in physical activity dose improved these benefits in a linear fashion. Older adults should be encouraged to include even low doses of MVPA in their daily lives.

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**KEYWORDS:** Elderly people; Health promotion; Meta-analysis; Physical activity; Public health  
PMID: 26238869



**54. POSTURE****Jaw clenching and posture**

Gait Posture. 2015 Sep 8. pii: S0966-6362(15)00850-4. doi: 10.1016/j.gaitpost.2015.09.002.

**Postural stability and the influence of concurrent muscle activation - Beneficial effects of jaw and fist clenching.**

Ringhof S<sup>1</sup>, Leibold T<sup>2</sup>, Hellmann D<sup>3</sup>, Stein T<sup>2</sup>.

Author information

**Abstract**

Recent studies reported on the potential benefits of submaximum clenching of the jaw on human postural control in upright unperturbed stance. However, it remained unclear whether these effects might also be observed among active controls. The purpose of the present study, therefore, was to comparatively examine the influence of concurrent muscle activation in terms of submaximum clenching of the jaw and submaximum clenching of the fists on postural stability. Posturographic analyses were conducted with 17 healthy young adults on firm and foam surfaces while either clenching the jaw (JAW) or clenching the fists (FIST), whereas habitual standing served as the control condition (CON). Both submaximum tasks were performed at 25% maximum voluntary contraction, assessed, and visualized in real time by means of electromyography. Statistical analyses revealed that center of pressure (COP) displacements were significantly reduced during JAW and FIST, but with no differences between both concurrent clenching activities. Further, a significant increase in COP displacements was observed for the foam as compared to the firm condition. The results showed that concurrent muscle activation significantly improved postural stability compared with habitual standing, and thus emphasize the beneficial effects of jaw and fist clenching for static postural control. It is suggested that concurrent activities contribute to the facilitation of human motor excitability, finally increasing the neural drive to the distal muscles. Future studies should evaluate whether elderly or patients with compromised postural control might benefit from these physiological responses, e.g., in the form of a reduced risk of falling.

**KEYWORDS:** Balance; Concurrent muscle activation; Fist clenching; Jaw clenching; Postural stability

PMID: 26385200

**Postural stability and LE status**

J Sport Rehabil. 2015 Sep 9.

**Ankle and Knee Flexibility and Strength Predict Dynamic Postural Stability during Single-leg Jump Landings.**

Williams VJ<sup>1</sup>, Nagai T, Sell TC, Abt JP, Rowe RS, McGrail MA, Lephart SM.  
Author information

**Abstract****CONTEXT:**

Dynamic postural stability is important for injury prevention, however little is known about how lower extremity musculoskeletal characteristics (range of motion and strength) contribute to dynamic postural stability. Knowing which modifiable physical characteristics predict dynamic postural stability can help direct rehabilitation and injury prevention programs.

**OBJECTIVE:**

To determine if trunk, hip, knee, and ankle flexibility and strength variables are significant predictors of dynamic postural stability during single-leg jump landings.

**DESIGN:**

Cross-sectional study.

**SETTING:**

Laboratory environment.

**PARTICIPANTS:**

Ninety-four male Soldiers (age =  $28.2 \pm 6.2$  years, height =  $176.5 \pm 2.6$  cm, weight =  $83.7 \pm 26.0$  kg) agreed to participate.

**INTERVENTION(S):**

No intervention provided.

**MAIN OUTCOME MEASURE(S):**

Ankle dorsiflexion and plantarflexion range of motion were assessed with a goniometer. Trunk, hip, knee, and ankle strength were assessed with an isokinetic dynamometer or hand-held dynamometer. The dynamic postural stability index (DPSI) was used to quantify postural stability. Simple linear and backwards stepwise regression analyses were used to identify which physical characteristic variables were significant predictors of DPSI.

**RESULTS:**

Simple linear regression analysis revealed that individually no variables were significant predictors of the DPSI. Stepwise backward regression analysis revealed that ankle dorsiflexion flexibility, ankle inversion and eversion strength, and knee flexion and extension strength were significant predictors of the DPSI ( $R^2=0.19$ ,  $p=0.0016$ , Adjusted  $R^2=0.15$ ).

**CONCLUSION:**

Ankle dorsiflexion range of motion, ankle inversion and eversion strength, and knee flexion and extension strength were identified as significant predictors of dynamic postural stability, explaining a small amount of the variance in the DPSI.

PMID: 26356144

**Standing/LBP/impact**

Gait Posture. 2015 Sep 15. pii: S0966-6362(15)00874-7. doi: 10.1016/j.gaitpost.2015.09.008.

**Postural strategy and trunk muscle activation during prolonged standing in chronic low back pain patients.**

Ringheim I1, Austein H2, Indahl A3, Roeleveld K4.  
Author information

**Abstract**

Prolonged standing has been associated with development and aggravation of low back pain (LBP). However, the underlying mechanisms are not well known. The aim of the present study was to investigate postural control and muscle activation during and as a result of prolonged standing in chronic LBP (cLBP) patients compared to healthy controls (HCs). Body weight shifts and trunk and hip muscle activity was measured during 15min standing. Prior and after the standing trial, strength, postural sway, reposition error (RE), flexion relaxation ratio (FRR), and pain were assessed and after the prolonged standing, ratings of perceived exertion. During prolonged standing, the cLBP patients performed significantly more body weight shifts ( $p < .01$ ) with more activated back and abdominal muscles ( $p = .01$ ) and similar temporal variability in muscle activation compared to HCs, while the cLBP patients reported more pain and perceived exertion at the end of prolonged standing. Moreover, both groups had a similar change in strength, postural sway, RE and FRR from before to after prolonged standing, where changes in HC were towards pre-standing values of cLBP patients.

Thus, despite a more variable postural strategy, the cLBP patients did not have higher muscle activation variability, but a general increased muscle activation level. This may indicate a reduced ability to individually deactivate trunk muscles. Plausibly, due to the increased variable postural strategy, the cLBP patients could compensate for the relatively high muscle activation level, resulting in normal variation in muscle activation and normal reduction in strength, RE and FRR after prolonged standing.

**KEYWORDS:** Chronic; Low back pain; Muscle fatigue; Neuromuscular control; Prolonged standing; Strength  
PMID:26404082

**56. ATHLETICS****Warm up exercises**

Sports Med. 2015 Sep 23.

**Warm-Up Strategies for Sport and Exercise: Mechanisms and Applications.**

McGowan CJ<sup>1,2</sup>, Pyne DB<sup>3,4</sup>, Thompson KG<sup>3,5</sup>, Rattray B<sup>3,5</sup>.

Author information

**Abstract**

It is widely accepted that warming-up prior to exercise is vital for the attainment of optimum performance. Both passive and active warm-up can evoke temperature, metabolic, neural and psychology-related effects, including increased anaerobic metabolism, elevated oxygen uptake kinetics and post-activation potentiation. Passive warm-up can increase body temperature without depleting energy substrate stores, as occurs during the physical activity associated with active warm-up. While the use of passive warm-up alone is not commonplace, the idea of utilizing passive warming techniques to maintain elevated core and muscle temperature throughout the transition phase (the period between completion of the warm-up and the start of the event) is gaining in popularity. Active warm-up induces greater metabolic changes, leading to increased preparedness for a subsequent exercise task. Until recently, only modest scientific evidence was available supporting the effectiveness of pre-competition warm-ups, with early studies often containing relatively few participants and focusing mostly on physiological rather than performance-related changes. External issues faced by athletes pre-competition, including access to equipment and the length of the transition/marshalling phase, have also frequently been overlooked.

Consequently, warm-up strategies have continued to develop largely on a trial-and-error basis, utilizing coach and athlete experiences rather than scientific evidence. However, over the past decade or so, new research has emerged, providing greater insight into how and why warm-up influences subsequent performance. This review identifies potential physiological mechanisms underpinning warm-ups and how they can affect subsequent exercise performance, and provides recommendations for warm-up strategy design for specific individual and team sports.

PMID:26400696

**57. GAIT****PF pain changes gait**

Arthritis Care Res (Hoboken). 2015 Sep 28. doi: 10.1002/acr.22738.

**The relation of step length to MRI detected structural damage in the patellofemoral joint: The Multicenter Osteoarthritis Study.**

Stefanik JJ<sup>1</sup>, Gross KD<sup>1,2</sup>, Guermazi A<sup>1</sup>, Felson DT<sup>1</sup>, Roemer FW<sup>3</sup>, Niu J<sup>1</sup>, Lynch JA<sup>4</sup>, Segal NA<sup>5</sup>, Lewis CE<sup>6</sup>, Lewis CL<sup>1</sup>.

Author information

Abstract

**OBJECTIVE:**

Investigate the relation of step length to the sex-specific prevalence and worsening of MRI-detected structural damage in the patellofemoral joint (PFJ) among a cohort of older women and men with or at risk for knee osteoarthritis (OA).

**METHODS:**

The Multicenter Osteoarthritis (MOST) Study is a cohort study of persons aged 50-79 years with or at risk for knee OA. Step length was assessed using the GAITRite system at the 60-month visit and cartilage damage and bone marrow lesions (BMLs) were graded on MRI at the 60 and 84-month visits. We divided step length into sex-specific quintiles and examined the relation of step length to the prevalence and worsening of cartilage damage and BMLs in the PFJ using logistic regression, adjusting for age, body mass index (BMI), leg length and tibiofemoral joint structural damage.

**RESULTS:**

4094 and 4083 PFJ subregions from 1053 knees were studied for the cartilage and BML analyses, respectively. Mean age was 65.6 ( $\pm$ 8.1) years and mean BMI was 29.1 ( $\pm$ 4.7) kg/m<sup>2</sup>; 62% were female. In women, compared to those with the shortest step length those with the longest step length had 0.62 (0.43, 0.88) and 0.59 (0.40, 0.87) times the odds of cartilage damage and BMLs, respectively. There was no cross-sectional association in men, and no longitudinal association in either sex.

**CONCLUSION:**

Women with PFJ structural damage may adapt their gait by shortening their step length, but this may not be sufficient to reduce risk of worsening damage over time. This article is protected by copyright. All rights reserved.

PMID:26413842

**58. RUNNING****Bend sprinting**

Scand J Med Sci Sports. 2015 Sep 26. doi: 10.1111/sms.12559.

**Force production during maximal effort bend sprinting: Theory vs reality.**

Churchill SM<sup>1,2</sup>, Trewartha G<sup>1</sup>, Bezodis IN<sup>3</sup>, Salo AI<sup>1</sup>.

Author information

**Abstract**

This study investigated whether the "constant limb force" hypothesis can be applied to bend sprinting on an athletics track and to understand how force production influences performance on the bend compared with the straight. Force and three-dimensional video analyses were conducted on seven competitive athletes during maximal effort sprinting on the bend (radius 37.72 m) and straight. Left step mean peak vertical and resultant force decreased significantly by 0.37 body weight (BW) and 0.21 BW, respectively, on the bend compared with the straight. Right step force production was not compromised in the same way, and some athletes demonstrated substantial increases in these variables on the bend. More inward impulse during left ( $39.9 \pm 6.5$  Ns) than right foot contact ( $24.7 \pm 5.8$  Ns) resulted in  $1.6^\circ$  more turning during the left step on the bend. There was a 2.3% decrease in velocity from straight to bend for both steps. The constant limb force hypothesis is not entirely valid for maximal effort sprinting on the bend. Also, the force requirements of bend sprinting are considerably different to straight-line sprinting and are asymmetrical in nature. Overall, bend-specific strength and technique training may improve performance during this portion of 200- and 400-m races.

**KEYWORDS:** 200 m; Running gait, mediolateral impulse; constant limb force; curve; limb asymmetry; track and field

PMID:26408499

**59. PAIN****Pain and culture**

J Oral Rehabil. 2015 Sep 15. doi: 10.1111/joor.12346.

**The effect of culture on pain sensitivity.**

Al-Harthy M<sup>1,2,3</sup>, Ohrbach R<sup>4</sup>, Michelotti A<sup>5</sup>, List T<sup>2,3,6</sup>.  
Author information

**Abstract**

Cross-cultural differences in pain sensitivity have been identified in pain-free subjects as well as in chronic pain patients. The aim was to assess the impact of culture on psychophysical measures using mechanical and electrical stimuli in patients with temporomandibular disorder (TMD) pain and pain-free matched controls in three cultures. This case-control study compared 122 female cases of chronic TMD pain (39 Saudis, 41 Swedes and 42 Italians) with equal numbers of age- and gender-matched TMD-free controls. Pressure pain threshold (PPT) and tolerance (PPTo) were measured over one hand and two masticatory muscles. Electrical perception threshold and electrical pain threshold (EPT) and tolerance (EPTo) were recorded between the thumb and index fingers. Italian females reported significantly lower PPT in the masseter muscle than other cultures ( $P < 0.001$ ) and in the temporalis muscle than Saudis ( $P = 0.003$ ). Swedes reported significantly higher PPT in the thenar muscle than other cultures ( $P = 0.017$ ). Italians reported significantly lower PPTo in all muscles than Swedes ( $P \leq 0.006$ ) and in the masseter muscle than Saudis ( $P < 0.001$ ). Italians reported significantly lower EPTo than other cultures ( $P = 0.01$ ). Temporomandibular disorder cases, compared to TMD-free controls, reported lower PPT and PPTo in all the three muscles ( $P < 0.001$ ). This study found cultural differences between groups in the PPT, PPTo and EPTo.

Overall, Italian females reported the highest sensitivity to both mechanical and electrical stimulation, while Swedes reported the lowest sensitivity. Mechanical pain thresholds differed more across cultures than did electrical pain thresholds. Cultural factors may influence response to type of pain test.

**KEYWORDS:** case-control studies; chronic pain; cross-cultural comparison; pain threshold; temporomandibular disorder  
PMID:26371794

## Use of pain science

Physiother Theory Pract. 2015 Oct;31(7):496-508. doi: 10.3109/09593985.2015.1038374.

**Preoperative therapeutic neuroscience education for lumbar radiculopathy: a single-case fMRI report.**

Louw A<sup>1</sup>, Puentedura EJ<sup>2</sup>, Diener I<sup>3</sup>, Peoples RR<sup>4</sup>.

Author information

**Abstract**

Therapeutic neuroscience education (TNE) has been shown to be effective in the treatment of mainly chronic musculoskeletal pain conditions. This case study aims to describe the changes in brain activation on functional magnetic resonance imaging (fMRI) scanning, before and after the application of a newly-designed preoperative TNE program. A 30-year-old female with a current acute episode of low back pain (LBP) and radiculopathy participated in a single preoperative TNE session. She completed pre- and post-education measures including visual analog scale (VAS) for LBP and leg pain; Oswestry Disability Index (ODI); Fear Avoidance Beliefs Questionnaire (FABQ); Pain Catastrophizing Scale (PCS) and a series of Likert-scale questions regarding beliefs and attitudes to lumbar surgery (LS). After a 30-minute TNE session, ODI decreased by 10%, PCS decreased by 10 points and her beliefs and attitudes shifted positively regarding LS. Immediately following TNE straight leg raise increased by 7° and forward flexion by 8 cm. fMRI testing following TNE revealed 3 marked differences compared to pre-education scanning: (1) deactivation of the periaqueductal gray area; (2) deactivation of the cerebellum; and (3) increased activation of the motor cortex. The immediate positive fMRI, psychometric and physical movement changes may indicate a cortical mechanism of TNE for patients scheduled for LS.

KEYWORDS: Education; fMRI; lumbar; neuroscience; preoperative; surgery

PMID: 26395827



**GMI in LBP**

Physiother Theory Pract. 2015 Oct;31(7):509-17. doi: 10.3109/09593985.2015.1060656.

**Moving without moving: immediate management following lumbar spine surgery using a graded motor imagery approach: a case report.**

Louw A<sup>1</sup>, Schmidt SG<sup>2</sup>, Louw C<sup>3</sup>, Puentedura EJ<sup>4</sup>.  
Author information

**Abstract**

Representational body maps are dynamically maintained in the brain and negatively influenced by neglect, decreased movement and pain. Graded motor imagery (GMI) utilizing various tactile and cognitive processes has shown efficacy in decreasing pain, disability and movement restrictions in musculoskeletal pain. Limited information is known about the cortical changes patients undergo during lumbar surgery (LS), let alone the therapeutic effect of GMI for LS. A 56-year-old patient underwent LS for low back pain, leg pain and progressive neurological deficit. Twenty-four hours prior to and 48 h after LS various psychometric, physical movement and tactile acuity measurements were recorded. Apart from predictable postoperative increases in pain, fear-avoidance, disability and movement-restrictions, pressure pain thresholds (PPT), two-point discrimination (TPD) and tactile acuity was greatly reduced. The patient underwent six physiotherapy (PT) treatments receiving a GMI program aimed at restoring the PPT, TPD and tactile acuity. The results revealed that GMI techniques applied to a patient immediately after LS caused marked improvements in movement (flexion average improvement/session 3.3 cm; straight leg raise average 8.3°/session) and an immediate hypoalgesic effect. GMI may provide PT with a non-threatening therapeutic treatment for the acute LS patient and establish a new role for PT in acute LS patients.

**KEYWORDS:** Brain; imagery; lumbar; mapping; pain; surgery

PMID: 26395828

**OA pain and endocannabinoid system**

Pain. 2015 Oct;156(10):2001-12. doi: 10.1097/j.pain.0000000000000260.

**Role of the endocannabinoid system in the emotional manifestations of osteoarthritis pain.**

La Porta C<sup>1</sup>, Bura SA, Llorente-Onaindia J, Pastor A, Navarrete F, García-Gutiérrez MS, De la Torre R, Manzanares J, Monfort J, Maldonado R.

Author information

**Abstract**

In this study, we investigated the role of the endocannabinoid system (ECS) in the emotional and cognitive alterations associated with osteoarthritis pain. The monosodium iodoacetate model was used to evaluate the affective and cognitive manifestations of osteoarthritis pain in type 1 (CB1R) and type 2 (CB2R) cannabinoid receptor knockout and wild-type mice and the ability of CB1R (ACEA) and CB2R (JWH133) selective agonists to improve these manifestations during a 3-week time period. The levels of the endocannabinoids anandamide (AEA) and 2-arachidonoylglycerol (2-AG) were measured in plasma and brain areas involved in the control of these manifestations. Patients with knee osteoarthritis and healthy controls were recruited to evaluate pain, affective, and cognitive symptoms, as well as plasma endocannabinoid levels and cannabinoid receptor gene expression in peripheral blood lymphocytes. The affective manifestations of osteoarthritis were enhanced in CB1R knockout mice and absent in CB2R knockouts. Interestingly, both ACEA and JWH133 ameliorated the nociceptive and affective alterations, whereas ACEA also improved the associated memory impairment. An increase of 2-AG levels in prefrontal cortex and plasma was observed in this mouse model of osteoarthritis. In agreement, an increase of 2-AG plasmatic levels and an upregulation of CB1R and CB2R gene expression in peripheral blood lymphocytes were observed in patients with osteoarthritis compared with healthy subjects. Changes found in these biomarkers of the ECS correlated with pain, affective, and cognitive symptoms in these patients. The ECS plays a crucial role in osteoarthritis and represents an interesting pharmacological target and biomarker of this disease.

PMID: 26067584

**Vagus nerve I**

Headache. 2015 Sep 14. doi: 10.1111/head.12647.

**Vagus Nerve and Vagus Nerve Stimulation, a Comprehensive Review: Part I.**

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Author information

**Abstract**

The vagus nerve (VN), the "great wondering protector" of the body, comprises an intricate neuro-endocrine-immune network that maintains homeostasis. With reciprocal neural connections to multiple brain regions, the VN serves as a control center that integrates interoceptive information and responds with appropriate adaptive modulatory feedbacks. While most VN fibers are unmyelinated C-fibers from the visceral organs, myelinated A- and B-fiber play an important role in somatic sensory, motor, and parasympathetic innervation. VN fibers are primarily cholinergic but other noncholinergic nonadrenergic neurotransmitters are also involved. VN has four vagal nuclei that provide critical controls to the cardiovascular, respiratory, and alimentary systems. Latest studies revealed that VN is also involved in inflammation, mood, and pain regulation, all of which can be potentially modulated by vagus nerve stimulation (VNS). With a broad vagal neural network, VNS may exert a neuromodulatory effect to activate certain innate "protective" pathways for restoring health.

**KEYWORDS:** neuromodulation; vagus nerve; vagus nerve stimulation

PMID: 26364692

**Vagus nerve stimulation II**

Headache. 2015 Sep 18. doi: 10.1111/head.12650.

Vagus Nerve and Vagus Nerve Stimulation, a Comprehensive Review: Part II.

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**Abstract**

The development of vagus nerve stimulation (VNS) began in the 19th century. Although it did not work well initially, it introduced the idea that led to many VNS-related animal studies for seizure control. In the 1990s, with the success of several early clinical trials, VNS was approved for the treatment of refractory epilepsy, and later for the refractory depression. To date, several novel electrical stimulating devices are being developed. New invasive devices are designed to automate the seizure control and for use in heart failure. Non-invasive transcutaneous devices, which stimulate auricular VN or carotid VN, are also undergoing clinical trials for treatment of epilepsy, pain, headache, and others. Noninvasive VNS (nVNS) exhibits greater safety profiles and seems similarly effective to their invasive counterpart. In this review, we discuss the history and development of VNS, as well as recent progress in invasive and nVNS.

**KEYWORDS:** vagus nerve; vagus nerve stimulation

PMID: 26381725

**Vagal nerve stim. III**

Headache. 2015 Sep 14. doi: 10.1111/head.12649.

**Vagus Nerve and Vagus Nerve Stimulation, a Comprehensive Review: Part III.**

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**Abstract**

Vagus nerve stimulation (VNS) is currently undergoing multiple trials to explore its potential for various clinical disorders. To date, VNS has been approved for the treatment of refractory epilepsy and depression. It exerts antiepileptic or antiepileptogenic effect possibly through neuromodulation of certain monoamine pathways. Beyond epilepsy, VNS is also under investigation for the treatment of inflammation, asthma, and pain. VNS influences the production of inflammatory cytokines to dampen the inflammatory response. It triggers the systemic release of catecholamines that alleviates the asthma attack. VNS induces antinociception by modulating multiple pain-associated structures in the brain and spinal cord affecting peripheral/central nociception, opioid response, inflammation process, autonomic activity, and pain-related behavior. Progression in VNS clinical efficacy over time suggests an underlying disease-modifying neuromodulation, which is an emerging field in neurology. With multiple potential clinical applications, further development of VNS is encouraging.

**KEYWORDS:** vagus nerve, vagus nerve stimulation, neuromodulation

PMID:26364805

### Pain processing

Pain. 2015 Oct;156(10):1945-53. doi: 10.1097/j.pain.0000000000000254.

#### **Is temporal summation of pain and spinal nociception altered during normal aging?**

Marouf R<sup>1</sup>, Piché M, Rainville P.

Author information

#### Abstract

This study examines the effect of normal aging on temporal summation (TS) of pain and the nociceptive flexion reflex (R<sub>III</sub>). Two groups of healthy volunteers, young and elderly, received transcutaneous electrical stimulation applied to the right sural nerve to assess pain and the nociceptive flexion reflex (R<sub>III</sub>-reflex). Stimulus intensity was adjusted individually to 120% of R<sub>III</sub>-reflex threshold, and shocks were delivered as a single stimulus or as a series of 5 stimuli to assess TS at 5 different frequencies (0.17, 0.33, 0.66, 1, and 2 Hz). This study shows that robust TS of pain and R<sub>III</sub>-reflex is observable in individuals aged between 18 and 75 years and indicates that these effects are comparable between young and older individuals. These results contrast with some previous findings and imply that at least some pain regulatory processes, including TS, may not be affected by normal aging, although this may vary depending on the method.

PMID: 26058038

**62 A. NUTRITION/VITAMINS****Vegetables decrease inflammation**

Eur J Nutr. 2015 Sep 29.

Food intake and inflammation in European children: the IDEFICS study.

González-Gil EM<sup>1,2</sup>, Santabábara J<sup>3,4</sup>, Russo P<sup>5</sup>, Ahrens W<sup>6,7</sup>, Claessens M<sup>8</sup>, Lissner L<sup>9</sup>, Börnhorst C<sup>6</sup>, Krogh V<sup>10</sup>, Iacoviello L<sup>11</sup>, Molnar D<sup>12</sup>, Siani A<sup>5</sup>, Tornaritis M<sup>13</sup>, Veidebaum T<sup>14</sup>, Moreno LA<sup>15,16</sup>.

Author information

Abstract

**PURPOSE:**

This cross-sectional study assesses the relationship between consumption frequencies of food items and high-sensitivity C-reactive protein (hs-CRP) in European children.

**METHODS:**

Out of the baseline sample (N = 16.228) of the IDEFICS study, 6.403 children (1.315 boys aged 2 to <6, 1.908 boys aged 6 to <10, 1.204 girls aged 2 to <6 and 1.976 girls aged 6 to <10 years) had hs-CRP measured and the Children's Eating Habits Questionnaire filled, including a food frequency questionnaire. Logistic regression adjusted for body mass index z-score, education of the mother, breast-feeding and self-reported hours of physical activity in a sport club per week was conducted.

**RESULTS:**

Mean frequency intake of raw vegetable was lower in boys (p = 0.022 in young and p = 0.020 in old) and older girls (p = 0.026) with high hs-CRP concentration, while in younger girls (p = 0.008) the same occurred with the cooked vegetables. The probability of having higher hs-CRP concentration was significantly associated with having low consumption frequency of vegetables (p = 0.004 in older boys, raw vegetables; and p = 0.0032 in younger girls, cooked vegetables). Also, honey/jam intake decreased the probability of having higher concentration of hs-CRP, whereas soft drinks with sugar, mayonnaise and cereals milled increased this probability.

**CONCLUSIONS:**

Out of all food items associated with hs-CRP, frequency intake of vegetables presented more associations across all the analysis. Findings suggest that a high-frequency intake of vegetables is inversely related to an inflammatory status in children. More studies are needed to assess the association between diet and inflammation.

**KEYWORDS:** Children; European; Food intake; IDEFICS; Inflammation

PMID: 26419585

**62 B. CRYOTHERAPY****Cold decreases pain**

Anaesthesiol Intensive Ther. 2015;47(4):333-5. doi: 10.5603/AIT.2015.0045.

**Percutaneous cryoanalgesia in pain management: a case-series.**

Bellini M<sup>1</sup>, Barbieri M.

Author information

Abstract

**BACKGROUND:**

Cryoanalgesia, also known as cryoneuroablation or cryoneurolysis, is a specialized technique for providing long-term pain relief.

**METHOD:**

We present here retrospective data on pain relief and changes in function after cryoanalgesia techniques: we describe the effect of this procedure on articular facet syndromes, sacroiliac pain and knee pain.

**RESULTS:**

We reviewed the records of 18 patients with articular lumbar facet pain, knee pain and sacroiliac pain. The Visual Analog Scale and Patient's Global Impression of Change scale show satisfaction at 1 month after cryoablation, with the best scores after three months. Only three patients showed a worse condition than the first month.

**CONCLUSION:**

The majority of patients experienced a clinically relevant degree of pain relief and improved function following percutaneous cryoanalgesia.

**KEYWORDS:** cryoanalgesia; cryoneuroablation; cryoneurolysis; pain  
PMID:26401741



**63. PHARMACOLOGY****Thought suppression**

J Behav Med. 2015 Sep 7.

**Thought suppression as a mediator of the association between depressed mood and prescription opioid craving among chronic pain patients.**

Garland EL<sup>1</sup>, Brown SM, Howard MO.  
Author information

## Abstract

Emerging research suggests that prescription opioid craving is associated with negative mood and depression, but less is known about cognitive factors linking depressive symptoms to opioid craving among adults with chronic pain. The present cross-sectional study examined thought suppression as a mediator of the relation between depression and prescription opioid craving in a sample of chronic pain patients receiving long-term opioid pharmacotherapy. Data were obtained from 115 chronic pain patients recruited from primary care, pain, and neurology clinics who had taken prescription opioids daily or nearly every day for  $\geq 90$  days prior to assessment. In this sample, 60 % of participants met DSM-IV criteria for current major depressive disorder. Depressed mood ( $r = .36, p < .001$ ) and thought suppression ( $r = .33, p < .001$ ) were significantly correlated with opioid craving. Multivariate path analyses with bootstrapping indicated the presence of a significant indirect effect of thought suppression on the association between depressed mood and opioid craving (indirect effect = .09, 95 % CI .01, .20). Sensitivity analyses showed a similar indirect effect of suppression linking major depressive disorder diagnosis and opioid craving. Attempts to suppress distressing and intrusive thoughts may result in increased craving to use opioids among chronic pain patients with depressive symptoms. Results highlight the need for interventions that mitigate thought suppression among adults with pain and mood disorders.

PMID: 26345263

**65. NEUROLOGICAL CONDITIONS****Guillain-Barre syndrome is associated with flu vaccines**

Vaccine. 2015 Jul 17;33(31):3773-8. doi: 10.1016/j.vaccine.2015.05.013. Epub 2015 May 18.

**Guillain-Barré syndrome and influenza vaccines: A meta-analysis.**

Martín Arias LH<sup>1</sup>, Sanz R<sup>1</sup>, Sáinz M<sup>1</sup>, Treceño C<sup>1</sup>, Carvajal A<sup>2</sup>.

Author information

**Abstract**

Cases of Guillain-Barré syndrome (GBS) have been occasionally associated with influenza vaccines; this possible risk, even if rare, is a matter of much concern. To investigate the strength of this association, a systematic review and a meta-analysis have been conducted; for the purpose, controlled observational studies addressing the risk of GBS associated with different influenza vaccines were sought. We finally selected 39 studies of interest published between 1981 and 2014 (seasonal influenza vaccines, 22; pandemic influenza vaccines, 16; both vaccines simultaneously administered, 1); funnel plot did not identify publication bias. At the association between any influenza vaccine - whether seasonal or pandemic - with GBS, the overall relative risk was 1.41 (95% CI, 1.20-1.66). Pandemic vaccines presented a higher risk (RR=1.84; 95% CI, 1.36-2.50) compared to seasonal vaccines (RR=1.22; 95% CI, 1.01-1.48); the latter should be considered as marginally statistically significant. Pandemic adjuvanted vaccines were not found to be related to a higher risk compared to non-adjuvanted vaccines. The results of the present meta-analysis point to a small but statistically significant association between influenza vaccines, particularly the pandemic ones, and GBS, which is consistent with current explanations upon possible mechanisms for this condition to appear.

**KEYWORDS:** Guillain-Barré syndrome; Influenza vaccines; Meta-analysis

PMID: 25999283

**Deaths averted by vaccine**

Vaccine. 2015 Jun 12;33(26):3003-9. doi: 10.1016/j.vaccine.2015.02.042. Epub 2015 Mar 23.

**Deaths averted by influenza vaccination in the U.S. during the seasons 2005/06 through 2013/14.**

Foppa IM<sup>1</sup>, Cheng PY<sup>2</sup>, Reynolds SB<sup>3</sup>, Shay DK<sup>4</sup>, Carias C<sup>5</sup>, Bresee JS<sup>4</sup>, Kim IK<sup>2</sup>, Gambhir M<sup>6</sup>, Fry AM<sup>4</sup>.

Author information

Abstract

**BACKGROUND:**

Excess mortality due to seasonal influenza is substantial, yet quantitative estimates of the benefit of annual vaccination programs on influenza-associated mortality are lacking.

**METHODS:**

We estimated the numbers of deaths averted by vaccination in four age groups (0.5 to 4, 5 to 19, 20 to 64 and  $\geq 65$  yrs.) for the nine influenza seasons from 2005/6 through 2013/14. These estimates were obtained using a Monte Carlo approach applied to weekly U.S. age group-specific estimates of influenza-associated excess mortality, monthly vaccination coverage estimates and summary seasonal influenza vaccine effectiveness estimates to obtain estimates of the number of deaths averted by vaccination. The estimates are conservative as they do not include indirect vaccination effects.

**RESULTS:**

From August, 2005 through June, 2014, we estimated that 40,127 (95% confidence interval [CI] 25,694 to 59,210) deaths were averted by influenza vaccination. We found that of all studied seasons the most deaths were averted by influenza vaccination during the 2012/13 season (9398; 95% CI 2,386 to 19,897) and the fewest during the 2009/10 pandemic (222; 95% CI 79 to 347). Of all influenza-associated deaths averted, 88.9% (95% CI 83 to 92.5%) were in people  $\geq 65$  yrs. old.

**CONCLUSIONS:**

The estimated number of deaths averted by the US annual influenza vaccination program is considerable, especially among elderly adults and even when vaccine effectiveness is modest, such as in the 2012/13 season. As indirect effects ("herd immunity") of vaccination are ignored, these estimates represent lower bound estimates and are thus conservative given valid excess mortality estimates.

**KEYWORDS:** Averted deaths; Bayesian analysis; Influenza; Influenza vaccine; Influenza-associated mortality; Monte Carlo simulation

PMID: 25812842