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## 1. LUMBAR SPINE

### Weighted MRI's

Invest Radiol. 2017 Feb;52(2):75-80. doi: 10.1097/RLI.0000000000000314.

#### **Differentiation of Osteophytes and Disc Herniations in Spinal Radiculopathy Using Susceptibility-Weighted Magnetic Resonance Imaging.**

Bender YY<sup>1</sup>, Diederichs G, Walter TC, Wagner M, Liebig T, Rickert M, Hermann KG, Hamm B, Makowski MR.

Author information

Abstract

**OBJECTIVE:**

The aim of this study was to evaluate the diagnostic performance of susceptibility-weighted magnetic resonance imaging (SW-MRI) for the differentiation of osteophytes and disc herniations of the spine compared with that of conventional spine MR sequences and radiography.

**MATERIALS AND METHODS:**

This study was approved by the local ethics review board; written consent was obtained from all subjects. Eighty-one patients with suspected radiculopathy of the spine were included prospectively. Radiography, T1/T2, and SW-MRI of the cervical/lumbar spine were performed. As reference standard, 93 osteophytes (n = 48 patients) were identified on radiographs in combination with conventional T1/T2 images. One hundred fourteen posterior disc herniations (n = 60 patients) were identified on T1/T2 in combination with radiography excluding osteophytes. For this study, 2 observers independently assessed the presence of osteophytes and disc herniations on T1/T2 and SW-MRI, with radiographs excluded from the analysis. In a subgroup of patients (n = 19), additional computed tomography images were evaluated. Sensitivity, specificity, and interobserver agreement were calculated.

**RESULTS:**

Most osteophytes (n = 92 of 93) and disc herniations (n = 113 of 114) could be identified and differentiated on SW-MRI magnitude/phase images, if radiographs were excluded from analysis. Susceptibility-weighted magnetic resonance imaging achieved a sensitivity of 98.9% and specificity of 99.1% for the identification of osteophytes. Conventional T1/T2 spine MR sequences achieved a sensitivity and specificity of 68.6% and 86.5%, respectively, if radiographs were excluded from analysis. Regarding the size of osteophytes, SW-MRI showed a strong correlation with computed tomography (R = 0.96) and radiography (R = 0.95). In addition, SW-MRI achieved a higher interobserver agreement compared with conventional MR.

**CONCLUSIONS:**

Susceptibility-weighted magnetic resonance imaging enables the reliable differentiation of osteophytes and disc herniations in patients with spinal radiculopathy with a higher sensitivity and specificity compared with conventional T1/T2 MR sequences.

## 2. LBP

### MRI not predictive of previous episodes

J Craniovertebr Junction Spine. 2013 Jan-Jun; 4(1): 16–20.  
doi: 10.4103/0974-8237.121619 PMID: PMC3872655

#### **Clinical correlation of magnetic resonance imaging with symptom complex in prolapsed intervertebral disc disease: A cross-sectional double blind analysis**

Jeetendra Bajpai, Sumit Saini, and Rakhi Singh

**Introduction:** Low backache (LBA) is one of the most common problems and herniated lumbar disc is one of the most commonly diagnosed abnormalities associated with LBA. Disc herniation of the same size may be asymptomatic in one patient and can lead to severe nerve root compromise in another patient.

**Objective:** To evaluate correlation between the clinical features of disc collapse and magnetic resonance imaging (MRI) finding to determine the clinical importance of anatomical abnormalities identified by MRI technique.

**Summary:** From January 2010 to January 2012, 75 otherwise healthy patients (43 males 32 females) between the age of 19 and 55 years (average age was 44.5 years) with low back pain and predominant complaint of root pain who presented to our clinic were included in the study.

**Materials and Methods:** Proper screening was done to rule out previous spine affection and subjected to MRI.

**Results:** The results were analyzed under four headings viz. disc herniation, disc degeneration, thecal sac deformation and neural foramen effacement. All patients had a visual analog score (VAS) score more than 6. The interrater correlation coefficient kappa was calculated to be  $k=0.51$ . There were total 44 patients with herniation, 25 patients had mild, one patient had moderate degree of thecal sac deformation, 21 patients had one or more levels of foraminal effacement by the herniated tissue, 100% of the patients had disc degeneration ranging from grade 1 to 3 at different levels; and 48 patients (64%) had radiculopathy, six (8%) patients had bilateral and others had ipsilateral affection.

**Conclusion:** In our study, the correlation was made between clinical findings and MRI findings. It can safely be concluded that treating physician should put more emphasis on history, clinical examination, and make the inference by these and then should correlate the clinical findings with that of MRI to reach a final diagnosis.

**Keywords:** Disc degeneration, disc herniation, neural foramen effacement, thecal sac deformation

## 5. SURGERY

### Expectations of surgery

Clin J Pain. 2017 Feb;33(2):93-98. doi: 10.1097/AJP.0000000000000383.

#### **Improvement in Pain After Lumbar Spine Surgery: The Role of Preoperative Expectations of Pain Relief.**

Mancuso CA<sup>1</sup>, Reid MC, Duculan R, Girardi FP.  
Author information

Abstract

##### **OBJECTIVES:**

Improvement in pain is a major expectation of patients undergoing lumbar spine surgery.

##### **MATERIALS AND METHODS:**

Among 422 patients, the goal of this prospective study was to measure 2-year postoperative pain and to determine whether this outcome varied according to patient and clinical characteristics, including amount of pain relief expected preoperatively. Before surgery patients completed valid questionnaires that addressed clinical characteristics and expectations for pain improvement. Two years after surgery patients reported how much pain improvement they actually received.

##### **RESULTS:**

The mean age was 56 years old and 55% were men. Two years after surgery 11% of patients reported no improvement in pain, 28% reported a little to moderate improvement, 44% reported a lot of improvement, and 17% reported complete improvement. In multivariable analysis, patients reported less pain improvement if, before surgery, they expected greater pain improvement (odds ratio [OR] 1.4), had a positive screen for depression (OR 1.7), were having revision surgery (OR 1.6), had surgery at L4 or L5 (OR 2.5), had a degenerative diagnosis (OR 1.6), and if, after surgery, they had another surgery (OR 2.8) and greater back (OR 1.3) and leg (OR 1.1) pain (all variables  $P \leq 0.05$ ).

##### **CONCLUSIONS:**

Pain is not uncommon after lumbar surgery and is associated with a network of clinical, surgical, and psychological variables. This study provides evidence that patients' expectations about pain are an independent variable in this network. Because expectations are potentially modifiable this study supports addressing pain-related expectations with patients before surgery through discussions with surgeons and through formal preoperative patient education.

## 6. PELVIC GIRDLE

### Coccydynia and shock wave therapy

Eur J Orthop Surg Traumatol. 2017 Jan 2. doi: 10.1007/s00590-016-1896-2.

#### **Extracorporeal shock wave therapy for the treatment of coccydynia: a series of 23 cases.**

Marwan Y<sup>1,2</sup>, Dahrab B<sup>3</sup>, Esmaeel A<sup>3,4</sup>, Ibrahim SA<sup>3</sup>, Al-Failakawi J<sup>3</sup>.

Author information

Abstract

#### **BACKGROUND:**

Coccydynia can lead to significant functional disability and worsening of quality of life if not properly managed. In this study, we aim to assess the outcomes of extracorporeal shock wave therapy in patients with coccydynia.

#### **METHODS:**

A prospective case series study was carried out from January to December 2015. Twenty-three patients, mean age of  $38.3 \pm 12.1$  (range 18-64), were included. The majority were females (13; 56.5%), had pain for at least 6 weeks (17; 73.9%) and had trauma to the sacrococcygeal region (17; 73.9%). They had three sessions (one session per week for three consecutive weeks) of focused shock wave therapy directed to the maximal point of coccygeal tenderness. Numerical pain scale and Oswestry disability index were used to assess outcome.

#### **RESULTS:**

Six (26.1%) patients did not complete the follow-up because of no, or minimal, improvement of their pain. After 6 months of follow-up, the median numerical pain scale significantly decreased from  $7.0 \pm 4.0$  to  $2.0 \pm 2.0$  among the 17 patients with coccydynia ( $p < 0.001$ ). The median Oswestry disability index improved from  $24.0 \pm 9.0$  before therapy to  $8.0 \pm 9.0$  at final follow-up ( $p < 0.001$ ). Before treatment, 12 (70.6%) patients had moderate-to-severe disability. In contrast, no patients had severe disability and only one (5.9%) patient had moderate disability at final follow-up ( $p < 0.001$ ).

#### **CONCLUSION:**

Extracorporeal shock wave therapy had favorable outcomes in treating coccydynia. The majority of patients had partial relief of their pain and disability following this therapy.

## 7. PELVIC ORGANS/WOMAN'S HEALTH

### Vit D and CV disease

#### Vitamin D status and HDL functionality in healthy pre-menopausal women

Nutrition, Metabolism & Cardiovascular Diseases, 01/11/2017

Marchi C, et al.

Analysts assessed in macrophages the serum capacity to promote cholesterol loading (serum cholesterol loading capacity, CLC), index of its pro-atherogenic potential. They finally assessed the impact of a vitD integration. VitD status impacts circulating lipoprotein functions relevant for atherosclerosis in healthy pre-menopausal women which might be, involved in the relationship between severe vitD deficiency and expanded cardiovascular risk.

#### Methods

- Flow-mediated dilatation (FMD) and pulse wave velocity (PWV) were measured by standard techniques as markers of subclinical atherosclerosis.
- In this study, HDL CEC was evaluated by radioisotopic technique while serum Serum CLC was measured by a fluorimetric assay.

#### Results

- Total 43 Healthy pre-menopausal women were stratified in 2 groups as indicated by their vitD levels:  $\leq 10$  ng/mL (very low group, VL), status characterized as severe hypovitaminosis and over 10 ng/mL (low/normal group, LN).
- No differences were found between the 2 groups in total cholesterol, HDL cholesterol, LDL cholesterol and triglyceride levels.
- FMD was essentially lower in VL group in comparison with LN group ( $9.90\% \pm 0.26$  contrasted with  $10.81 \pm 0.31$ ;  $p=0.03$ ); PWV was higher in VL vitD group ( $6.094$  m/s  $\pm 0.26$  contrasted with  $5.25$  m/s  $\pm 0.09$ ;  $p=0.01$ ).
- HDL CEC through aqueous diffusion and SR-BI was comparable between gatherings.
- ABCA1-mediated CEC was expanded in VL group contrasted with LN group ( $3.079\% \pm 0.31$  contrasted with  $2.042\% \pm 0.19$ ;  $p=0.005$ ).
- ABCG1-mediated CEC was lower in the VL group compared to LN group ( $2.48\% \pm 0.18$  contrasted with  $3.30\% \pm 0.22$ ;  $p=0.01$ ).
- Finally, VL group serum CLC was essentially expanded (+1.21 fold  $p=0.049$ ).
- After integration ABCG1-mediated CEC in the VL increased reaching the values of control group at baseline ( $4.09\% \pm 0.12$  contrasted with  $4.08\% \pm 0.25$ ;  $p = 0.97$ ), while the LN group after supplementation did not enhance contrasted with baseline.

**Sleep quality in pregnant women**

Matern Child Health J. 2017 Jan 12. doi: 10.1007/s10995-016-2247-y.

**Association Between Fruit and Vegetable Consumption and Sleep Quantity in Pregnant Women.**

Duke CH<sup>1</sup>, Williamson JA<sup>1</sup>, Snook KR<sup>1</sup>, Finch KC<sup>1</sup>, Sullivan KL<sup>2</sup>.

Author information

Abstract

**Introduction** To determine the association of fruit and vegetable consumption with overall sleep duration among pregnant women.

**Methods** Data from the 2011 and 2012 Behavioral Risk Factors Surveillance System (BRFSS) were used. All women (n = 2951) of childbearing age (18-44 years) who were pregnant and responded to all fruit and vegetable consumption and sleep duration questions were included. Covariates included age, race, education level, exercise, and marital status. Data were analyzed using linear and ordinal logistic regression.

**Results** Total daily fruit and vegetable consumption was not associated with sleep duration among pregnant women, controlling for confounders [ $\beta = -0.03, (-0.07, 0.00)$ ]. Orange and green vegetable consumption were both inversely associated with sleep duration [ $\beta = -0.19, (-0.38, -0.01)$  and  $\beta = -0.20, (-0.33, -0.08)$  respectively]. Ordinal logistic regression found that the odds of meeting or exceeding sleep time recommendations increased slightly with each unit increase in total fruit and vegetable consumption [OR = 1.05 (1.003, 1.092)] and for every unit increase in fruit consumption [OR = 1.12 (1.038, 1.208)]. Women who exercised within the past 30 days reported approximately 20 min of additional sleep compared to those who did not [ $\beta = 0.32 (0.16, 0.49)$ ]. Age, employment status, and marital status were also independently associated with sleep duration.

**Discussion** Sleep duration in pregnant women was associated with exercise and other demographic factors, but only mildly associated with fruit and vegetable consumption. Future research should investigate the effects of additional factors including sleep quality, gestational age, family status and other medications as potential confounders.

**Restricted Uterus**

Eur J Obstet Gynecol Reprod Biol. 2017 Jan 3;210:231-235. doi: 10.1016/j.ejogrb.2017.01.002.

**Evaluation of the effectiveness of low-dose aspirin and omega 3 in treatment of asymmetrically intrauterine growth restriction: A randomized clinical trial.**

Ali MK<sup>1</sup>, Amin ME<sup>2</sup>, Amin AF<sup>3</sup>, Abd El Aal DE<sup>3</sup>.

Author information

Abstract

**OBJECTIVE:**

To test the effect of aspirin and omega 3 on fetal weight as well as feto-maternal blood flow in asymmetrical intrauterine growth restriction (IUGR).

**STUDY DESIGN:**

This study is a clinically registered (NCT02696577), open, parallel, randomized controlled trial, conducted at Assiut Woman's Health Hospital, Egypt including 80 pregnant women (28-30 weeks) with IUGR. They were randomized either to group I: aspirin or group II: aspirin plus omega 3. The primary outcome was the fetal weight after 6 weeks of treatment. Secondary outcomes included Doppler blood flow changes in both uterine and umbilical arteries, birth weight, time and method of delivery and admission to NICU. The outcome variables were analyzed using paired and unpaired t-test.

**RESULTS:**

The estimated fetal weight increased significant in group II more than group I (p=0.00). The uterine and umbilical arteries blood flow increased significantly in group II (p<0.05). The birth weight in group II was higher than that observed in group I (p<0.05).

**CONCLUSION:**

The using of aspirin with omega 3 is more effective than using aspirin only in increasing fetal weight and improving utero-placental blood flow in IUGR

## 8. VISCERA

### FODMAP's and IBS

Expert Opinion / Commentary · January 04, 2017

#### 2016 Top Stories in Gastroenterology: FODMAPs in Patients With IBS

Written by

Gastroenterologists and primary care physicians commonly encounter patients with inflammatory bowel syndrome (IBS). Management of IBS is frequently challenging and frustrating for both patients and physicians. Over the past several decades, myriad medications and other management approaches have been tried with varying degrees of success. Slowly, progress is being made toward understanding the mechanisms that underlie IBS. It is well-documented that increased intestinal inflammation is associated with IBS. Also, gut–brain connections contribute to the associated visceral hypersensitivity. The recent study by McIntosh and colleagues in *Gut* begins to uncover some of the potential links among diet, gut microbiota, metabolites, and patient symptomology.<sup>1</sup>

In this controlled, single-blinded, randomized study, patients were assigned to a low- or high-FODMAP diet for 3 weeks. Interestingly, those on the low-FODMAP diet reported fewer IBS symptoms at the end of the study. In addition, differences in both gut microbiota and urinary metabolites were found, including histamine, which was decreased eightfold. Many IBS patients harbor increased levels of histamine in their intestinal mucosa. Histamine excites enteric cholinergic neurons. In fact, stabilization of both mast cells and H<sub>1</sub> antagonists have been reported to improve IBS symptoms. Also, increased abundance of *Adlercreutzia* in patients on a low-FODMAP diet is intriguing as this bacterium decreases gas production by utilizing H<sub>2</sub> to make equol, thus reducing hydrogen sulfide and methane production. In contrast, those on a high-FODMAP diet had a decrease in bacteria that consume gas, which may worsen IBS symptoms.

Although this study is relatively preliminary, it provides proof-of-concept that specific dietary components regulate gut microbiota and the production of metabolites that, in turn, improve or worsen IBS symptoms. Further identification of specific dietary triggers will allow a more personalized and possibly more effective strategies for treating such a challenging disorder.

**Mesh repairs**

Gynecol Obstet Invest. 2016 Dec 29. doi: 10.1159/000454925.

**Reviewing Patients Following Mesh Repair; The Benefits.**

Kowalik CR<sup>1</sup>, Lakeman MM, Oryszczyn JE, Roovers JP.

**Author information****Abstract****BACKGROUND/AIMS:**

The use of synthetic mesh implants for vaginal prolapse surgery is still a subject of debate due to safety concerns. We aimed to explore long-term complications of all women treated with mesh surgery for pelvic organ prolapse (POP) in our centre.

**METHODS:**

This is a cross-sectional study of 188 women who underwent vaginal mesh surgery in a Dutch University Hospital between 2007 and 2012. The prevalence of mesh exposure, pain symptoms and patient satisfaction has been documented.

**RESULTS:**

Vaginal mesh surgery was performed in 188 women - in 147 (78%) because of recurrent POP. After a median follow-up of 40 months (range 12-76 months), 11 women (6%) had a symptomatic exposure of whom 8 women underwent surgery. Nine women (5%) had de novo pain following mesh surgery and in 3 women, (2%) this symptom was persistent despite treatment. Eighty-six percent of the responders were satisfied about their treatment.

**CONCLUSION:**

With this study, we showed that performing a total mesh recall is feasible. The prevalence of persisting symptomatic exposure and persisting pain symptoms was low in our population. Most of the complications we found were treatable. This is also reflected in the high overall satisfaction rate.

**IBS and Vit D**

Aliment Pharmacol Ther. 2017 Jan 10. doi: 10.1111/apt.13936

**Higher 25-hydroxyvitamin D levels are associated with greater odds of remission with anti-tumour necrosis factor- $\alpha$  medications among patients with inflammatory bowel diseases.**

Winter RW<sup>1</sup>, Collins E<sup>1</sup>, Cao B<sup>1</sup>, Carrellas M<sup>1</sup>, Crowell AM<sup>1</sup>, Korzenik JR<sup>1</sup>.

Author information

Abstract

**BACKGROUND:**

Vitamin D has been linked to disease activity among patients with inflammatory bowel diseases (IBD). Prior investigation has also suggested that vitamin D levels may affect duration of therapy with anti-tumour necrosis factor- $\alpha$  (anti-TNF- $\alpha$ ) medications among patients with IBD.

**AIM:**

To evaluate the relationship between vitamin D levels and odds of reaching remission while on an anti-TNF- $\alpha$  medication.

**METHODS:**

A total of 521 IBD patients enrolled in the Brigham and Women's IBD Centre database were eligible for inclusion. Patients treated with anti-TNF- $\alpha$  therapy who had vitamin D levels drawn within 6 months prior or 2 weeks after initiation of anti-TNF- $\alpha$  medication and who had reported remission status at 3 months were included. A logistic regression model adjusting for age, gender, IBD diagnosis, anti-TNF- $\alpha$  medication (infliximab vs. adalimumab) and first or subsequent anti-TNF- $\alpha$  medication was used to identify the effect of vitamin D level on initial response to anti-TNF- $\alpha$  therapy.

**RESULTS:**

A total of 173 patients were included in the final analysis. On logistic regression, patients with normal vitamin D levels n = 122 at the time of anti-TNF- $\alpha$  medication initiation had a 2.64 increased odds of remission at 3 months compared to patients with low vitamin D levels n = 51 when controlling for age, gender, diagnosis, type of anti-TNF- $\alpha$  medication and first or subsequent anti-TNF- $\alpha$  medication (OR = 2.64, 95% CI = 1.31-5.32, P = 0.0067).

**CONCLUSIONS:**

These findings suggest that vitamin D levels may influence initial response to anti-TNF- $\alpha$  medication and that low vitamin D levels may pre-dispose patients to decreased odds of remission.

**Western diet and diverticulitis**

Gastroenterology. 2017 Jan 5. pii: S0016-5085(17)30006-9. doi: 10.1053/j.gastro.2016.12.038.

**Western Dietary Pattern Increases, Whereas Prudent Dietary Pattern Decreases, Risk of Incident Diverticulitis in a Prospective Cohort Study.**

Strate LL<sup>1</sup>, Keeley BR<sup>2</sup>, Cao Y<sup>3</sup>, Wu K<sup>4</sup>, Giovannucci EL<sup>5</sup>, Chan AT<sup>6</sup>.  
Author information

## Abstract

**BACKGROUND & AIMS:**

Dietary fiber is implicated as a risk factor for diverticulitis. Analyses of dietary patterns may provide information on risk beyond those of individual foods or nutrients. We examined whether major dietary patterns are associated with risk of incident diverticulitis.

**METHODS:**

We performed a prospective cohort study of 46,295 men who were free of diverticulitis and known diverticulosis in 1986 (baseline) using data from the Health Professionals Follow-up Study. Each study participant completed a detailed medical and dietary questionnaire at baseline. We sent supplemental questionnaires to men reporting incident diverticulitis on biennial follow-up questionnaires. We assessed diet every 4 years using a validated food frequency questionnaire. Western (high in red meat, refined grains, and high-fat dairy) and prudent (high in fruits, vegetables, and whole grains) dietary patterns were identified using principal component analysis. Follow-up time accrued from the date of return of the baseline questionnaire in 1986 until a diagnosis of diverticulitis, diverticulosis or diverticular bleeding; death; or December 31, 2012. The primary endpoint was incident diverticulitis.

**RESULTS:**

During 894,468 person years of follow-up, we identified 1063 incident cases of diverticulitis. After adjustment for other risk factors, men in the highest quintile of western dietary pattern score had a multivariate hazard ratio (HR) of 1.55 (95% CI, 1.20-1.99) for diverticulitis compared to men in the lowest quintile. High vs low prudent scores were associated with decreased risk of diverticulitis (multivariate HR 0.74; 95% CI, 0.60-0.91). The association between dietary patterns and diverticulitis was predominantly attributable to intake of fiber and red meat.

**CONCLUSIONS:**

In a prospective cohort study of 46,295 men, a western dietary pattern was associated with increased risk of diverticulitis, whereas a prudent pattern was associated with decreased risk. These data may guide dietary interventions for the prevention of diverticulitis.

## Psoriasis and celiac's

### **Psoriasis and risk of celiac disease: A systematic review and meta-analysis**

Indian Journal of Dermatology, 01/11/2017

Ungprasert P, et al.

The results of this meta-analysis showed an approximately 3-fold augmented risk of celiac disease (CD) among patients with psoriasis.

#### **Methods**

- In this study, the researchers conducted a systematic review and meta-analysis of observational studies that reported relative risk, hazard ratio, odds ratio (OR), or standardized incidence ratio with 95% confidence interval (CI) comparing the risk of CD in patients with psoriasis versus participants without psoriasis.
- Pooled risk ratio and 95% CI were calculated utilizing random-effect, generic inverse-variance methods of DerSimonian and Laird.

#### **Results**

- 4 retrospective cohort studies with 12,912 cases of psoriasis and 24,739 comparators were incorporated in this meta-analysis.
- According to the findings obtained, the pooled analysis exhibited a significantly higher risk of CD among patients with psoriasis compared with members without psoriasis with the pooled OR of 3.09 (95% CI, 1.92–4.97).

### 13. CRANIUM/TMJ

#### Oral fascial pain and insomnia

Oral Dis. 2017 Jan 11. doi: 10.1111/odi.12637.

#### **An update of management of insomnia in patients with chronic orofacial pain.**

Almoznino G<sup>1,2</sup>, Haviv Y<sup>1</sup>, Sharav Y<sup>1</sup>, Benoliel R<sup>3</sup>.

#### **Author information**

#### **Abstract**

In this review we discuss the management of chronic orofacial pain (COFP) patients with insomnia. Diagnostic work-up and follow-up routines of COFP patients should include assessment of sleep problems. Management is based on a multidisciplinary approach, addressing the factors that modulate the pain experience as well as insomnia and including both non-pharmacological and pharmacological modalities. Parallel to treatment, patients should receive therapy for co-morbid medical and psychiatric disorders, and possible substance abuse that may be that may trigger or worsen the COFP and/or their insomnia. Insomnia treatment should begin with non-pharmacological therapy, to minimize potential side effects, drug interactions and risk of substance abuse associated with pharmacological therapy. Behavioral therapies for insomnia include: sleep hygiene, cognitive behavioral therapy for insomnia, multicomponent behavioral therapy or brief behavioral therapy for insomnia, relaxation strategies, stimulus control and sleep restriction. Approved U.S. Food and Drug Administration medications to treat insomnia include: benzodiazepines (estazolam, flurazepam, temazepam, triazolam and quazepam), non-benzodiazepine hypnotics (eszopiclone, zaleplon, zolpidem), the melatonin receptor agonist ramelteon, the antidepressant doxepin and the orexin receptor antagonist suvorexant. Chronic orofacial pain can greatly improve following treatment of the underlying insomnia, and therefore, re-evaluation of COFP is advised after one month of treatment. This article is protected by copyright. All rights reserved.

**Mastication test**

J Oral Rehabil. 2017 Jan 5. doi: 10.1111/joor.12481.

**The 6-minute mastication test: a unique test to assess endurance of continuous chewing; normal values, reliability, reproducibility and usability in patients with mitochondrial disease.**

van den Engel-Hoek L<sup>1</sup>, Knuijt S<sup>1</sup>, van Gerven M<sup>1</sup>, Lagarde M<sup>1</sup>, Groothuis JT<sup>1,2</sup>, de Groot IJ<sup>1,2</sup>, Janssen MC<sup>2,3</sup>.

Author information

**Abstract**

In patients with mitochondrial disease, fatigue and muscle problems are the most common complaints.

They also experience these complaints during mastication. To measure endurance in continuous mastication in patients with mitochondrial diseases the 6-minute mastication test (6MMT) was developed. This study included the collection of normal data for the 6MMT in a healthy population (children and adults). During 6 minutes of continuous mastication on a chew tube chewing cycles per minute, total amount of chewing cycles and the difference between minute 1 ( $M_1$ ) and minute 6 ( $M_6$ ) were collected in 271 healthy participants (5 - 80 years old). These results were compared with those of 9 pediatric and 25 adult patients with a mitochondrial disease. Visual Analogue Scale (VAS) scores were collected directly after the test and after 5 minutes. A qualitative rating was made on masticatory movements. The reproducibility of the 6MMT in the healthy population with an interval of approximately two weeks was good. The interrater reliability for the observations was excellent. The patient group demonstrated lower total amount of chewing cycles or had greater differences between  $M_1$  and  $M_6$ . The 6MMT is a reliable and objective test to assess endurance in continuous chewing. It demonstrates the ability of healthy children and adults to chew during 6 minutes with a highly stable frequency of mastication movements.

The test may give an explanation for the masticatory problems in patient groups, who are complaining of pain and fatigue during mastication. This article is protected by copyright. All rights reserved.

**Dental arch and malocclusion**

J Oral Rehabil. 2016 Dec 20. doi: 10.1111/joor.12475.

**The relationship between lip-closing force and dental arch morphology in patient with Angle Class I malocclusion.**

Takehana Y<sup>1</sup>, Masuda Y<sup>2,3</sup>, Kageyama T<sup>1</sup>, Okazaki R<sup>1</sup>, Murakami M<sup>1</sup>, Yamada K<sup>1</sup>.  
Author information

## Abstract

Dental arch morphology and tooth position are affected by lip-closing force (LCF). This study aimed to quantitatively evaluate the relationships between the horizontal or vertical balance of the LCF generated during maximum voluntary pursing-like movements and dental arch length (DAL) or width (DAW) or the lingual inclination of the upper or lower 1st molars (LIUM, LILM) in patients with Angle Class I malocclusion. Sixteen subjects with Angle Class I malocclusion (median age:  $23.4 \pm 5.9$  years) who had never undergone orthodontic treatment were randomly selected. LCF was measured in eight directions during maximum voluntary pursing-like lip-closing movements. Dental arch models were scanned and analysed to obtain DAW, DAL, LIUM and LILM measurements. Mandibular deviation was measured on posteroanterior cephalograms. A significant negative correlation was detected between maxillary DAL and upper LCF. Maxillary DAL, DAW and the DAL/DAW ratio displayed significant negative correlations with total LCF and upper LCF. However, no significant correlations were detected between any mandibular dental arch morphological parameter and LCF. The difference in the LIUM between the deviation and non-deviation sides exhibited a significant positive correlation with the difference in upper LCF between the deviation and non-deviation sides and was significantly negatively correlated with the difference in lower LCF between the deviation and non-deviation sides.

These results suggest that upper LCF is related to maxillary DAL, and the horizontal balance of the LCF of the upper and lower lips is related to the LIUM during pursing-like lip-closing movements in patients with Angle Class I malocclusion.

**Hyaluronic acid**

J Endod. 2016 Dec 29. pii: S0099-2399(16)30753-1. doi: 10.1016/j.joen.2016.10.026.

**Evaluation of a Commercially Available Hyaluronic Acid Hydrogel (Restylane) as Injectable Scaffold for Dental Pulp Regeneration: An In Vitro Evaluation.**

Chrepa V<sup>1</sup>, Austah O<sup>2</sup>, Diogenes A<sup>3</sup>.

Author information

Abstract

**INTRODUCTION:**

Regenerative endodontic procedures (REPs) are viable alternatives for treating immature teeth, yet these procedures do not predictably lead to pulp-dentin regeneration. A true bioengineering approach for dental pulp regeneration requires the incorporation of a scaffold conducive with the regeneration of the pulp-dentin complex. Several materials have been proposed as scaffolds for REPs; nonetheless, the majority are not eligible for immediate clinical chairside use. Thus, the aim of this study was to evaluate Restylane, a Food and Drug Administration-approved hyaluronic acid-based gel, as possible scaffold for REPs.

**METHODS:**

Stem cells of the apical papilla (SCAP) were cultured either alone or in mixtures with either Restylane or Matrigel scaffolds. Groups were cultured in basal culture medium for 6, 24, and 72 hours, and cell viability was assessed. For the mineralizing differentiation experiments, groups were cultured in differentiation medium either for 7 days and processed for alkaline phosphatase activity or for 14 days and processed for gene expression by using quantitative reverse-transcription polymerase chain reaction. SCAP in basal medium served as control.

**RESULTS:**

Cell encapsulation in either Restylane or Matrigel demonstrated reduced cell viability compared with control. Nonetheless, cell viability significantly increased in the Restylane group in the course of 3 days, whereas it decreased significantly in the Matrigel group. Restylane promoted significantly greater alkaline phosphatase activity and upregulation of dentin sialophosphoprotein, dentin matrix acidic phosphoprotein-1, and matrix extracellular phosphoglycoprotein, compared with control.

**CONCLUSIONS:**

A Food and Drug Administration-approved hyaluronic acid-based injectable gel promoted SCAP survival, mineralization, and differentiation into an odontoblastic phenotype and may be a promising scaffold material for REPs.

**Breathing patterns**

Int J Sports Phys Ther. 2016 Oct; 11(5): 803–809.

**A CLINICAL GUIDE TO THE ASSESSMENT AND TREATMENT OF BREATHING PATTERN DISORDERS IN THE PHYSICALLY ACTIVE: PART 1**

Erin B. Chapman, MS, AT,1,2 Jena Hansen-Honeycutt, MS, AT,2 Alan Nasypany, EdD, AT,2 Russell T. Baker, DAT, AT,2 and Jim May, DAT, AT2 PMID: PMC5046973

**Abstract** article-meta

**Background**

Appropriate assessment and interventions for breathing patterns prior to assessment of the patient's musculoskeletal complaint may be beneficial. Breathing pattern disorders (BPDs) are remediable and influenced by biochemical, biomechanical, psychological, and/or unknown factors. The purpose of this clinical commentary is to demonstrate the integration of a BPD assessment into a standard clinical musculoskeletal orthopedic examination.

**Clinical Assessment**

The observation of a patient's breathing pattern begins when they enter the clinic, is followed by palpation and orthopedic tests, which allows for proper classification of BPDs.

**Outcomes**

Disease-oriented measures guide the assessment and classification of BPD, while patient-oriented measures describe clinically important differences among patient values.

**Classification**

There are many possible variations of classifications of BPD, however, six primary dysfunctions found in the literature have become the foundation of the BPD assessment.

**Discussion and Conclusion**

Restoring proper breathing mechanics and neuromuscular motor control patterns during breathing may result in a decrease in pain, improved patient outcomes, and overall patient well being associated with their primary musculoskeletal complaint. A comprehensive evaluation of breathing patterns, as a part of an orthopedic examination, may guide a clinician in providing effective and appropriate treatments to decrease pain and improve function.

**Level of Evidence**

5

**Keywords:** Dysfunctional movement patterns, startle reflex, musculoskeletal pain

**TMJ OA and hand OA**

Osteoarthritis Cartilage. 2017 Jan 4. pii: S1063-4584(17)30002-X. doi: 10.1016/j.joca.2016.12.028.

**Frequency of temporomandibular osteoarthritis and related symptoms in a hand osteoarthritis cohort.**

Abrahamsson AK<sup>1</sup>, Kristensen M<sup>2</sup>, Arvidsson LZ<sup>3</sup>, Kvien TK<sup>4</sup>, Larheim TA<sup>5</sup>, Haugen IK<sup>6</sup>.  
Author information

## Abstract

**OBJECTIVE:**

The prevalence of osteoarthritis (OA) in the temporomandibular joints (TMJs) in hand OA patients is largely unknown. Our aims were to explore 1) The frequency of TMJ-related symptoms and clinical findings; 2) The TMJ OA frequency defined by cone beam computed tomography (CBCT); and 3) The relationship between TMJ-related symptoms/clinical findings and CBCT-defined TMJ OA, in a hand OA cohort.

**METHODS:**

We calculated the frequencies of TMJ-related symptoms, clinical findings and diagnosis of TMJ OA by CBCT and clinical examination in 54 patients from the Oslo hand OA cohort (88% women, mean (range) age 71 (61-83) years). Participants with and without CBCT-defined TMJ OA were compared for differences in proportions (95% confidence interval (CI)) of symptoms and clinical findings. Sensitivity and specificity of the clinical TMJ OA diagnosis were calculated using CBCT as reference.

**RESULTS:**

Self-reported symptoms and clinical findings were found in 24 (44%) and 50 (93%) individuals (93%), respectively, whereas 7 (13%) had sought healthcare. Individuals with CBCT-defined TMJ OA (n=36, 67%) reported statistically significantly more pain at mouth opening (22%, 95% CI 4-40%), clicking (33%, 95% CI 14-52%) and crepitus (25%, 95% CI 4-46%). By clinical examination, only crepitus was more common in TMJ OA (33%, 95% CI 29-77%). Clinical diagnosis demonstrated low sensitivity (0.42) and high specificity (0.93).

**CONCLUSIONS:**

CBCT-defined TMJ OA was common in hand OA patients, suggesting that TMJ OA may be part of generalized OA. Few had sought healthcare, despite high burden of TMJ-related symptoms/findings. Clinical examination underestimated TMJ OA frequency.

**HA and TMJ**

Pain. 2017 Jan;158(1):120-129.

**Temporal change in headache and its contribution to the risk of developing first-onset temporomandibular disorder in the Orofacial Pain: Prospective Evaluation and Risk Assessment (OPPERA) study.**

Tchivileva IE<sup>1</sup>, Ohrbach R, Fillingim RB, Greenspan JD, Maixner W, Slade GD.

While cross-sectional studies have demonstrated an association between headache and temporomandibular disorder (TMD), whether headache can predict the onset of TMD is unknown.

The aims of this study were to evaluate the contribution of headache to the risk of developing TMD and describe patterns of change in headache types over time.

An initially TMD-free cohort of 2410 persons with low frequency of headache completed quarterly questionnaires assessing TMD and headache symptoms over a median 3.0-year follow-up period. First-onset TMD was confirmed by clinical examination in 199 participants. Baseline reports of migraine (hazard ratio [HR] = 1.67, 95% confidence interval [CI]: 1.06-2.62) or mixed headache types (HR = 4.11, 95% CI: 1.47-11.46), or headache frequency (HR = 2.13, 95% CI: 1.31-3.48) predicted increased risk of developing TMD. In addition, headache dynamics across the follow-up period before the TMD onset were evaluated in a nested case-control study where 248 incident TMD cases were matched to 191 TMD-free controls. Both headache prevalence and frequency increased across the observation period among those who developed TMD but not among controls.

Patients with TMD were more likely to experience worsening in the headache type compared with that by controls, eg, prevalence of definite migraine among TMD cases increased 10-fold. Among all headache types experienced by patients with TMD before the TMD onset, migraine had the highest odds of progression relative to remission (odds ratio = 2.8, 95% CI: 1.6-4.8), whereas for controls this ratio was significant only for the tension-type headache (odds ratio = 2.1, 95% CI: 1.2-3.9). The important clinical implication of these findings is that adequate treatment of migraine may reduce the risk for developing TMD.

## 14. HEADACHES

### Dry needling

#### **Comparison of acute effects of superficial and deep dry needling into trigger points of suboccipital and upper trapezius muscles in patients with cervicogenic headache**

Journal of Bodywork & Movement Therapies , 01/13/2017

Sedighi A, et al.

In patients with cervicogenic headache, the application of dry needling into trigger points of suboccipital and upper trapezius muscles induces significant improvement of headache index, trigger points tenderness, functional rating index, and range of motion. On a cervical range of motion (CROM) and function, deep dry needling had greater effects.

#### Methods

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- The physicians randomly divided 30 participants (8 men, 22 women) aged 19 to 60 years (mean age  $\pm$  SD, 39 $\pm$  y) with a clinical diagnosis of cervicogenic headache into superficial and deep groups.
- They assessed headache index, trigger points tenderness, cervical range of motion (CROM), functional rating index at baseline, immediate and 1 week after the treatment.

#### Results

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- In headache index and trigger points tenderness, 2 approaches of dry needling showed reduction.
- In this study, deep dry needling revealed greater improvement of cervical range of motion ( $p < .001$ ) and functional rating index ( $p < .01$ ).

**Calcium and HA's**

Hum Mol Genet. 2016 Dec 26. pii: ddw416. doi: 10.1093/hmg/ddw416.

**Serum calcium and risk of migraine: a Mendelian randomization study.**

Yin P<sup>1</sup>, Anttila V<sup>2,3,4</sup>, Siewert KM<sup>5</sup>, Palotie A<sup>2,3,4,6,7,8</sup>, Davey Smith G<sup>9</sup>, Voight BF<sup>10,11,12</sup>.  
Author information

**Abstract**

Migraine affects ~14% of the world's population, though not all predisposing causal risk factors are known.

We used electronic health records, genetic co-heritability analysis, and a two-sample Mendelian Randomization (MR) design to determine if elevated serum calcium levels were associated with risk of migraine headache. Co-morbidity was evaluated using electronic health records obtained from the PennOmics database comprising >1 million patient entries. Genetic co-heritability and causality via MR was assessed using data from the International Headache Consortium (23,285 cases, 95,425 controls) and circulating serum calcium levels (39,400 subjects). We observed co-occurrence of migraine and hypercalcaemia ICD-9 diagnoses (OR = 1.58,  $P = 4 \times 10^{-13}$ ), even after inclusion of additional risk factors for migraine (OR = 1.23,  $P = 2 \times 10^{-3}$ ). Second, we observed co-heritability ( $r_g = 0.191$ ,  $P = 0.03$ ) between serum calcium and migraine headache, indicating that these traits have a genetic basis in common. Finally, we found that elevation of serum calcium levels by 1 mg/dl resulting from our genetic score was associated with an increase in risk of migraine (OR = 1.80, 95% CI: 1.31-2.46,  $P = 2.5 \times 10^{-4}$ ), evidence supporting a causal hypothesis. We also present multiple MR sensitivity analyses in support of this central finding.

Our results provide evidence that hypercalcaemia is comorbid with migraine headache diagnoses, and that genetically elevated serum calcium over lifetime appears to increase risk for migraine. Further studies will be required to understand the biological mechanism, pathways, and clinical implication for risk management.

## Adolescent attachment

Headache. 2017 Jan 6. doi: 10.1111/head.13007.

**Role of the Attachment Style in Determining the Association Between Headache Features and Psychological Symptoms in Migraine Children and Adolescents. An Analytical Observational Case-Control Study.**

Tarantino S<sup>1</sup>, De Ranieri C<sup>2</sup>, Dionisi C<sup>2</sup>, Gagliardi V<sup>2</sup>, Paniccia MF<sup>2</sup>, Capuano A<sup>1</sup>, Frusciante R<sup>1</sup>, Balestri M<sup>1</sup>, Vigevano F<sup>1</sup>, Gentile S<sup>2</sup>, Valeriani M<sup>1,3</sup>.

Author information

Abstract

**OBJECTIVE:**

We aimed to study the role of attachment style on headache severity and psychological symptoms in migraineurs children/adolescents. Moreover, we investigated the association between attachment style, migraine severity, and psychological symptoms.

**BACKGROUND:**

Attachment theory suggests that early interpersonal relationships may be important determinants of psychopathology and pain management. In particular, individuals with insecure attachment styles have been shown to experience more pain than people with secure attachment style. Few studies focused on headache and data on attachment style in pediatric headache are scarce.

**METHODS:**

We studied 90 migraineurs (mean age  $12.2 \pm 2.6$  years; female: 54, male: 36). Patients were divided in two groups according to headache attack frequency: (1) high frequency (HF) patients, having from weekly to daily episodes and (2) low frequency (LF) patients, showing  $\leq 3$  episodes per month. According to headache attack intensity, patients were classified in two groups: (1) mild pain (MP), allowing the patient to continue his/her daily activities and (2) severe pain (SP), leading to interruption of patient activities or forcing the child to go to bed. The psychological screening was assessed by SAFA Anxiety, Depression, and Somatization questionnaires. Attachment style was measured by the semi-projective test Separation Anxiety Test. Patients were divided into "secure," "avoidant," "ambivalent," and "disorganized/confused" attachment patterns.

**RESULTS:**

We found a significant relationship between the attachment style and migraine features. The ambivalent attachment was the most common style among patients reporting high attack frequency (51%) and severe pain intensity (50%). Anxiety (SAFA-A Tot:  $F = 23.3$ ,  $P < .001$ ), depression (SAFA-D Tot:  $F = 11.8$ ,  $P < .001$ ), and somatization (SAFA-S Tot:  $F = 10.1$ ,  $P < .001$ )

were higher in patients with ambivalent attachment style. Moreover, our results showed an association between high attack frequency and high anxiety levels, in children with ambivalent attachment style ( $F = 6.7, P < .002$ ).

### *CONCLUSIONS:*

Ambivalent attachment style may be a common vulnerability factor that impacts on pain severity, anxiety, depression, and somatization symptoms in young migraineurs. In particular, the present study provides the first evidence of the role of insecure attachment on the relationship between pain severity and psychological symptoms in migraine children.

## **20 A. ROTATOR CUFF**

### **Revision results**

Knee Surg Sports Traumatol Arthrosc. 2016 Dec 29. doi: 10.1007/s00167-016-4392-7.

### **Clinical outcome and prognostic factors of revision arthroscopic rotator cuff tear repair.**

Valencia Mora M<sup>1</sup>, Morcillo Barrenechea D<sup>1</sup>, Martín Ríos MD<sup>2</sup>, Foruria AM<sup>1</sup>, Calvo E<sup>3</sup>.

#### **Author information**

#### **Abstract**

##### **PURPOSE:**

The aim of this study was to evaluate the clinical outcome of arthroscopic rotator cuff revision surgery in a cohort of patients and to identify prognostic factors for this procedure.

##### **METHODS:**

Fifty-one consecutive patients undergoing revision arthroscopic rotator cuff repair were prospectively followed over a minimum period of one year. Radiologic findings and clinical data regarding primary and revision surgery were collected. Clinical evaluation was performed pre- and post-operatively by means of Constant Score and Simple Shoulder Test.

##### **RESULTS:**

Median age at the time of revision surgery was 60 years (range 36-77 years). Median follow-up was 25 months (range 12-58 months). There were 17 men (33.3%) and 34 women (66.7%). The majority of the tears affected the supraspinatus tendon alone (51%) or both the supra- and infraspinatus tendons (35.3%). Significant improvements were seen in terms of active forward elevation, active external rotation, pain, Simple Shoulder Test score, Constant Score, and post-operative satisfaction-age, gender, and time to revision surgery did not show significant predictive value. A smaller tear size and pre-operative elevation greater than 90° were demonstrated to be independent prognostic factors for better outcome. However, the mean increase in Constant Score was not related to the size of the tear, range of motion, or age.

##### **CONCLUSION:**

The results of this study indicate that arthroscopic revision rotator cuff repair results in reliable improvement in shoulder function, pain, and satisfaction. Pre-operative active range of motion and tear size seem to determine final outcome. A similar increase in mean Constant Score can be achieved even in large tears in patients aged over 65 years.

##### **LEVEL OF EVIDENCE: IV**

**30 A. IMPINGEMENT**

**Impingement in dancers**

Int J Sports Phys Ther. 2016 Aug; 11(4): 527–535.

**COMPARISON OF RANGE OF MOTION, STRENGTH, AND HOP TEST PERFORMANCE OF DANCERS WITH AND WITHOUT A CLINICAL DIAGNOSIS OF FEMOROACETABULAR IMPINGEMENT**

Benjamin R. Kivlan, PhD, PT, OCS, SCS,1 Christopher R. Carcia, PhD, PT, OCS, SCS,1 John J. Christoforetti, MD,2 and RobRoy L. Martin, PhD, PT1

**ABSTRACT**

article-meta

**Background**

Dancers commonly experience anterior hip pain caused by femoroacetabular impingement (FAI) that interrupts training and performance in dance. A paucity of literature exists to guide appropriate evaluation and management of FAI among dancers.

**Purpose**

The purpose of this study was to determine if dancers with clinical signs of FAI have differences in hip range of motion, strength, and hop test performance compared to healthy dancers.

**Study Design**

Quasi-experimental, cohort comparison.

**Methods**

Fifteen dancers aged between 18- 21 years with clinical signs of FAI that included anterior hip pain and provocative impingement tests were compared to 13 age-matched dancers for passive hip joint range of motion, isometric hip strength, and performance of the medial triple hop, lateral triple hop, and cross-over hop tests.

**Results**

No statistically significant differences in range of motion were noted for flexion (Healthy = 145° + 7°; FAI = 147° + 10°; p=0.59), internal rotation (Healthy = 63° + 7°; FAI = 61° + 11°; p=0.50), and external rotation (Healthy = 37° + 9°; FAI = 34° + 12°; p=0.68) between the two groups. Hip extension strength was significantly less in the dancers with FAI (224 ± 55 Newtons) compared to the healthy group (293 ± 58 Newtons; F(1,26) = 10.2; p=0.004). No statistically significant differences were noted for flexion, internal rotation, external rotation, abduction, or adduction isometric strength. The medial triple hop test was significantly less in the FAI group (354 ± 43 cm) compared to the healthy group (410 ± 50 cm; F(1,26) = 10.3; p = 0.004).

## ABSTRACTS

Similar results were observed for the lateral hop test, as the FAI group ( $294 \pm 38$  cm) performed worse than the healthy controls ( $344 \pm 54$ cm;  $F(1,26) = 7.8$ ;  $p = 0.01$ ). There was no statistically significant difference between the FAI group ( $2.7 \pm 0.92$  seconds) and the healthy group ( $2.5 \pm 0.75$  seconds) on the crossover hop test.

### **Conclusion**

Dancers with FAI have less strength of the hip extensors and perform worse during medial and lateral hop triple tests compared to healthy dancers. Clinicians may use this information to assist in screening of dancers with complaints of hip pain and to measure their progress for return to dance.

### **Level of Evidence**

3B, non-consecutive cohort study

**Keywords:** Dancers, femoroacetabular impingement, functional performance, hop test.

**Variation in symptomatic and non**

Knee Surg Sports Traumatol Arthrosc. 2016 Dec 21. doi: 10.1007/s00167-016-4402-9.

**No difference in prevalence of radiographic subspinal impingement of the hip between symptomatic and asymptomatic subjects.**

Yoo JI<sup>1</sup>, Ha YC<sup>2</sup>, Lee HJ<sup>3</sup>, Lee JY<sup>3</sup>, Lee YK<sup>1</sup>, Koo KH<sup>1</sup>.

Author information

**Abstract****PURPOSE:**

The study determined the prevalence of subspinal impingement (SSI) in symptomatic and asymptomatic individuals, morphologic characteristics in symptomatic patients, and risk factors for SSI.

**METHODS:**

The study cohort consisted of 427 patients (427 hips; median age 33.4 years; range 19-50 years) with mechanical symptoms who underwent multi-detector computed tomography arthrography (symptomatic patients) and 259 control (asymptomatic) patients who underwent abdominopelvic three-dimensional CT because of a ureter stone or minor trauma. Two orthopaedic surgeons reviewed the images to evaluate the prevalence of SSI and the relationship with morphologic abnormalities. Radiologic parameters were further compared between the SSI and non-SSI groups in symptomatic patients using the Chi-squared test or two-sample t test. Variables with p values <0.10 (sex and age) were included in the multi-variate analysis. Logistic regression analysis was carried out to identify independent risk factors for SSI.

**RESULTS:**

The prevalence of SSI in symptomatic and asymptomatic patients was 65/427 (15.2%) and 40/259 (15.4%), respectively (n.s.). Structural bony abnormalities in symptomatic patients were not associated with the presence of SSI (n.s.). Binary logistic regression analysis revealed that youth (odds ratio 0.952, 95% CI 0.922-0.984) was the only significant factor for SSI.

**CONCLUSIONS:**

SSI had a similar prevalence in symptomatic and asymptomatic patients and was not rare in either group. Therefore, clinical implication of SSI in symptomatic patient should be re-evaluated through further study.

**34. PATELLA****Changes in proprioception tendiopathy**

Clin J Sport Med. 2017 Jan;27(1):31-36. doi: 10.1097/JSM.0000000000000295.

**Impact of Patellar Tendinopathy on Knee Proprioception: A Cross-Sectional Study**

Torres R<sup>1</sup>, Ferreira J, Silva D, Rodrigues E, Bessa IM, Ribeir

**OBJECTIVE:**

To determine whether high-level athletes with patellar tendinopathy have diminished knee proprioceptive acuity.

**DESIGN:**

Cross-sectional study.

**SETTING:**

University research laboratory (institutional).

**PARTICIPANTS:**

Twenty-one basketball and volleyball players with patellar tendinopathy (13 men and 8 women; mean age  $24.5 \pm 3.6$ ; body mass index =  $22.5 \pm 2.0$  kg/m) and an equal number of athletes without symptoms of patellar tendinopathy injury were included in this study.

**ASSESSMENTS:**

Participants underwent knee proprioception assessments on a single day. Furthermore, age, sex, height, weight, VISA-P (Victorian Institute of Sport Assessment) questionnaire sports participation, medical history, knee injuries, previous treatment, and medication were obtained.

**MAIN OUTCOME MEASURES:**

Knee proprioception was evaluated by assessing sense of resistance, using a weight discrimination protocol, and joint position sense (JPS).

**RESULTS:**

No significant differences were observed in JPS at 30 and 60 degrees of knee flexion between groups ( $P = 0.165$  and  $0.481$ , respectively). In regard to the ability to discriminate weight, significant differences between the 2 groups were found with the tendinopathy group showing a higher percentage of error ( $P = 0.009$ ), namely when the set of incremental weights varied by 10% from the standard weight.

**CONCLUSIONS:**

Athletes with patellar tendinopathy have a diminished perception of force signals required for weight discrimination, whereas JPS remains unaffected in these athletes.

**Surgical care of OS disease**

Int Orthop. 2016 Dec 21. doi: 10.1007/s00264-016-3374-1.

**Results of arthroscopic treatment in unresolved Osgood-Schlatter disease in athletes.**

Circi E<sup>1</sup>, Beyzadeoglu T<sup>2,3</sup>.  
Author information

**Abstract*****AIM OF THE STUDY:***

In this study we aimed to determine outcomes following arthroscopic ossicle excision in athletes with unresolved Osgood-Schlatter disease (OSD).

***METHOD:***

Arthroscopy was performed on 11 patients (11 knees) with OSD between September 2008 and November 2014. Surgical treatment inclusion criteria were determined as: failure of conservative treatment; isolated pain over the tibial tubercle and distal patellar tendon; pain limiting sporting performance at a competitive level. All patients had a documented history of OSD; the mean duration of persistent pain over the tibial tubercle was 15.5 months. The mean age was 23 years. The mean follow-up period was 66.1 months.

***RESULTS:***

The mean latency in returning to sports related training activities after the surgery was 6.7 weeks. The mean Kujala patello-femoral score improved from 82.9 points pre-operatively, to 98.5 points at the final follow-up ( $p < 0.01$ ). The mean Lysholm knee scale score was 87.5 points in the pre-operative period, increasing to a score of 96.9 points at final follow-up ( $p < 0.01$ ). The mean Tegner activity level score was 7.5 in the pre-operative period, increasing to 8.5 post-operatively ( $p < 0.01$ ).

***DISCUSSION:***

We investigated the functional outcomes after arthroscopic treatment of unresolved OSD in athletes. All athletes with OSD showed satisfactory functional recovery following arthroscopic treatment. All patients were able to return to the same level of athletic activity.

***CONCLUSION:***

Arthroscopic surgery for unresolved OSD has the major advantage of faster recovery and avoiding damage to the patellar tendon.

**35. KNEE/TOTAL****Opioid use and revision**

J Bone Joint Surg Am. 2017 Jan 4;99(1):1-9. doi: 10.2106/JBJS.16.00167.

**Preoperative Opioid Use Is Associated with Early Revision After Total Knee Arthroplasty: A Study of Male Patients Treated in the Veterans Affairs System.**

Ben-Ari A<sup>1</sup>, Chansky H, Rozet I.  
Author information

## Abstract

**BACKGROUND:**

Opioid use is endemic in the U.S. and is associated with morbidity and mortality. The impact of long-term opioid use on joint-replacement outcomes remains unknown. We tested the hypothesis that use of opioids is associated with adverse outcomes after total knee arthroplasty (TKA).

**METHODS:**

We performed a retrospective analysis of patients who had had TKA within the U.S. Veterans Affairs (VA) system over a 6-year period and had been followed for 1 year postoperatively. The length of time for which an opioid had been prescribed and the morphine equivalent dose were calculated for each patient. Patients for whom opioids had been prescribed for >3 months in the year prior to the TKA were assigned to the long-term opioid group. A natural language processing-based machine-learning classifier was developed to classify revisions due to infectious and non-infectious causes on the basis of the postoperative note. Survival curves for the time to knee revision or manipulation were used to compare the long-term opioid group with the patients who did not take opioids long-term. Hazard and odds ratios for knee revision and manipulation were obtained as well.

**RESULTS:**

Of 32,636 patients (94.4% male; mean age [and standard deviation], 64.45 ± 9.41 years) who underwent TKA, 12,772 (39.1%) were in the long-term opioid group and 734 (2.2%) had a revision within a year after the TKA. Chronic kidney disease, diabetes, and long-term opioid use were associated with revision within 1 year-with odds ratios (95% confidence intervals [CIs]) of 1.76 (1.37 to 2.22), 1.11 (0.93 to 1.31), and 1.40 (1.19 to 1.64), respectively-and were also the leading factors associated with a revision at any time after the index TKA-with odds ratios (95% CIs) of 1.61 (1.34 to 1.92), 1.21 (1.08 to 1.36), and 1.28 (1.15 to 1.43), respectively. Long-term opioid use had a hazard ratio of 1.19 (95% CI = 1.10 to 1.24) in the analysis of its relationship with knee revision, but the hazard was not significant in the analysis of its association with knee manipulation. The accuracy of the text classifier was 0.94, with the area under the receiver operating characteristic curve being 0.99. There was no association between long-term use of opioids and the specific cause for knee revision.

**CONCLUSIONS:**

Long-term opioid use prior to TKA was associated with an increased risk of knee revision during the first year after TKA among predominantly male patients treated in the VA system.

**Depression and total knee**

Knee Surg Sports Traumatol Arthrosc. 2017 Jan 3. doi: 10.1007/s00167-016-4418-1.

**Depressed patients feel more pain in the short term after total knee arthroplasty.**

Torres-Claramunt R<sup>1,2</sup>, Hinarejos P<sup>3,4</sup>, Amestoy J<sup>3</sup>, Leal J<sup>3</sup>, Sánchez-Soler J<sup>3</sup>, Puig-Verdié L<sup>3,4</sup>, Monllau JC<sup>3,4</sup>.

Author information

**Abstract****PURPOSE:**

The hypothesis of this study was that depressive patients feel more pain in the immediate TKA postoperative period in comparison with non-depressed patients.

**METHODS:**

The diagnosis of depression was made with the Geriatric Depression Scale Short Form. The Visual Analogic Score (VAS) was registered each 8 h during the first 3 days. The mean and maximum VAS and the number of analgesic rescues required in this period were calculated in 803 consecutive TKAs. The Knee Society Score (KSS), the Western Ontario McMaster Universities Osteoarthritis Index (WOMAC), and the Short Form-36 (SF-36) scores were obtained preoperatively and at the 1-year follow-up.

**RESULTS:**

Forty-eight (6%) of these patients were considered depressed. The results obtained in the depressed patients and non-depressed were, respectively, mean VAS (2.0 vs 1.0,  $p = 0.00$ ), maximum VAS (5.3 vs 1.6,  $p = 0.00$ ), and number of rescues needed (4.4 vs 1.8,  $p = 0.00$ ). Although depressed patients scored worse in the functional and quality of life scores in the preoperative period, the improvement obtained (1-year outcomes minus preoperative outcomes) in the different scores was similar in both groups with the exception of the mental domain of the SF-36, which improved further in depressed patients ( $p = 0.00$ ).

**CONCLUSION:**

Depressed patients feel more pain in the immediate postoperative period. However, the improvement obtained in functional and referred quality of life scores is similar to non-depressed patients.

## PRP topical helps

**Topical use of platelet-rich plasma can improve the clinical outcomes after total knee arthroplasty: A systematic review and meta-analysis of 1316 patients**Fa-xin Li Yi Li<sup>1</sup> Chuan-wu Qiao Jie Zhu Jian Chen Pei-yi Zhang**Highlights**

- We conducted a meta-analysis to compare the effectiveness and safety of PRP after TKA.
- Only high quality studies were selected.
- PRP can increase the ROM and decrease WOMAC score and pain intensity after TKA.

**Abstract****Objective**

Platelet-rich plasma (PRP) is extracted by centrifuging whole blood and characterized with a high concentration of platelets. The purpose of this systematic review and meta-analysis of randomized controlled trials (RCTs) and non-RCTs is to evaluate the efficacy and safety of platelet-rich plasma (PRP) versus placebo after total knee arthroplasty (TKA).

**Methods**

The Electronic databases of PubMed, Web of Science, Embase and Cochrane Database of Systematic Reviews were searched from inception to November 2016 and any studies involving PRP versus placebo for patients prepared for TKA were selected by two reviewers. The primary endpoint is the range of motion (ROM), which represents the function after TKA. The Western Ontario McMaster Universities Osteoarthritis Index Bellamy (WOMAC), pain at 24 h, 48 h and 7 day are also assessed the effect of PRP on the function and pain after TKA. The complications of infection is also compiled to assess the safety of PRP. Stata 12.0 was used to synthesis the final results.

**Results**

Eleven clinical trials with 1316 patients are included in the meta-analysis. The pooled results indicate that administration PRP significantly increase ROM on the third day (MD = 4.72, 95% CI 2.74, 6.69; P = 0.000) and 3 month postoperatively (MD = 7.55, 95% CI 5.91, 9.19; P = 0.000). There is no statistical difference between the two groups in terms of WOMAC questionnaire score in 3 months (MD = -4.88, 95% CI -12.12, 2.41; P = 0.190). There were no statistical significance between the two groups in pain intensity at 24 h, 48 h and 7 day. There is no statistically significant difference between the PRP versus placebo in terms of the occurrence of infection (RR = 0.64, 95% CI: 0.19–2.14, P = 0.464).

**Conclusion**

Current meta-analysis indicates that PRP is associated with increasing the ROM after TKA in short term and long term. What's more, PRP can also decrease the WOMAC score and pain intensity without increasing the occurrence of infection.

**37. OSTEOARTHRITIS/KNEE****Race variation**

Clin J Pain. 2017 Feb;33(2):174-180. doi: 10.1097/AJP.0000000000000378.

**Differences in Clinical Pain and Experimental Pain Sensitivity Between Asian Americans and Whites With Knee Osteoarthritis.**

Ahn H<sup>1</sup>, Weaver M, Lyon DE, Kim J, Choi E, Staud R, Fillingim RB.

Author information

Abstract

**OBJECTIVE:**

Ethnicity has been associated with clinical and experimental pain responses. Whereas ethnic disparities in pain in other minority groups compared with whites are well described, pain in Asian Americans remains poorly understood. The purpose of this study was to characterize differences in clinical pain intensity and experimental pain sensitivity among older Asian American and non-Hispanic white (NHW) participants with knee osteoarthritis (OA).

**METHODS:**

Data were collected from 50 Asian Americans ages 45 to 85 (28 Korean, 9 Chinese, 7 Japanese, 5 Filipino, and 1 Indian) and compared with 50 age-matched and sex-matched NHW individuals with symptomatic knee OA pain. The Western Ontario and McMaster Universities Osteoarthritis Index and Graded Chronic Pain Scale were used to assess the intensity of clinical knee pain. In addition, quantitative sensory testing was used to measure experimental sensitivity to heat-induced and mechanically induced pain.

**RESULTS:**

Asian American participants had significantly higher levels of clinical pain intensity than NHW participants with knee OA. In addition, Asian American participants had significantly higher experimental pain sensitivity than NHW participants with knee OA.

**DISCUSSION:**

These findings add to the growing literature regarding ethnic and racial differences in clinical pain intensity and experimental pain sensitivity. Asian Americans in particular may be at risk for clinical pain and heightened experimental pain sensitivity. Further investigation is needed to identify the mechanisms underlying ethnic group differences in pain between Asian Americans and NHWs, and to ensure that ethnic group disparities in pain are ameliorated.

**41 A. ACHILLES TENDON AND CALF****Rupture non-surgical recovery**

Int J Sports Phys Ther. 2016 Dec;11(7):1150-1159.

**FROM ACUTE ACHILLES TENDON RUPTURE TO RETURN TO PLAY - A CASE REPORT EVALUATING RECOVERY OF TENDON STRUCTURE, MECHANICAL PROPERTIES, CLINICAL AND FUNCTIONAL OUTCOMES.**

Zellers JA1, Cortes DH2, Silbernagel L KG1.

**Author information**

**Abstract**

**INTRODUCTION:**

Achilles tendon rupture results in significant functional deficits regardless of treatment strategy (surgical versus non-surgical intervention). Recovery post-rupture is highly variable, making comprehensive patient assessment critical. Assessment tools may change along the course of recovery as the patient progresses - for instance, moving from a seated heel-rise to standing heel-rise to jump testing. However, tools that serve as biomarkers for early recovery may be particularly useful in informing clinical decision-making. The purpose of this case report was to describe the progress of a young, athletic individual following Achilles tendon rupture managed non-surgically, using patient reported and functional performance outcome measures and comprehensively evaluating Achilles tendon structure and function incorporating a novel imaging technique (cSWE).

**SUBJECT DESCRIPTION:**

The subject is a 26 year-old, female basketball coach who sustained an Achilles tendon rupture and was managed non-surgically.

**OUTCOME:**

The subject was able to steadily progress using a gradual tendon loading treatment approach well-supported by the literature. Multiple evaluative techniques including the addition of diagnostic ultrasound imaging and continuous shear wave elastography (cSWE) to standard clinical tests and measures were used to assess patient-reported symptoms, tendon structure, and tendon functional performance. Five assessments were performed over the course of 2-14 months post-rupture. By the 14-month follow-up, the subject had achieved full self-reported function. Tendon structural and mechanical properties showed similar shear modulus by 14 months, however, viscosity continued to be lower and tendon length longer on the ruptured side. Functional performance, evidenced by the heel-rise test and jump tests, also showed a positive trajectory, however, deficits of 12-28% remained between ruptured and non-ruptured sides at 14 months.

**DISCUSSION:**

This case report outlines comprehensive outcomes assessment in an athletic individual following non-surgically managed Achilles tendon rupture using a wide variety of tools that capture different aspects of tendon health. Interestingly, the course of recovery of patient symptoms, functional performance, and tendon structure do not occur in the same time frame. Therefore, it is important to assess patient outcomes using multiple outcome measures encompassing different aspects of patient performance to ensure the patient is progressing steadily with rehabilitation.

**LEVEL OF EVIDENCE:** Level 4.

**KEYWORDS:** Elastography; imaging; rehabilitation; ultrasound; viscoelastic properties

### Sympathetic involvement in tendinopathy

Scand J Med Sci Sports. 2016 Dec 28. doi: 10.1111/sms.12820.

#### **Pain duration is associated with increased muscle sympathetic nerve activity in patients with Achilles tendinopathy.**

Jewson JL<sup>1</sup>, Lambert EA<sup>2,3</sup>, Docking S<sup>4,5</sup>, Storr M<sup>4</sup>, Lambert GW<sup>1,2</sup>, Gaida JE<sup>4,6,7</sup>.

Author information

#### Abstract

Tendinopathy is a common condition, which has been linked to surrogate measures of sympathetic nervous system (SNS) activity and insulin resistance.

This study aimed to compare in vivo measures of the SNS and insulin resistance between individuals with and without Achilles tendinopathy. This case-control study compared Achilles tendinopathy sufferers to healthy controls. SNS activity was quantified using muscle sympathetic nerve activity (MSNA), while metabolic status was assessed via a modified glucose tolerance test and fasting lipid panel. Ultrasound tissue characterization assessed tendon structure. Resting MSNA did not differ between the 15 cases and 20 controls. Tendon pain duration in tendinopathy patients was correlated with burst frequency ( $R^2 = .32$ ,  $P = .02$ ) and burst incidence ( $R^2 = .41$ ,  $P = .01$ ) of MSNA. After adjusting for multiple comparisons, there was a trend suggesting fasting glucose was greater in cases (median 4.80, IQR .70 in cases vs 4.51, .38 in controls) and correlated with pain severity ( $R^2 = .14$ ,  $P = .03$ ), but no other metabolic measures were associated with tendon pain/structure.

This study indicates that SNS activity is associated with tendon pain duration, building on previous data indicating the SNS is involved in recalcitrant tendinopathy. Metabolic parameters had little relationship with Achilles tendinopathy in this metabolically homogenous sample. Prospective studies are required to uncover the precise relationship between SNS activity, insulin resistance, and tendinopathy.

**41 B. COMPARTMENT SYNDROME**

FMT helps

Int J Sports Phys Ther. 2016 Dec;11(7):1160-1176.

**A NON-OPERATIVE APPROACH TO THE MANAGEMENT OF CHRONIC EXERTIONAL COMPARTMENT SYNDROME IN A TRIATHLETE: A CASE REPORT.**

Collins CK1, Gilden B2.

**Author information**

**Abstract**

**BACKGROUND & PURPOSE:**

Chronic Exertional Compartment Syndrome (CECS) causes significant exercise related pain secondary to increased intra-compartmental pressure (ICP) in the lower extremities. CECS is most often treated with surgery with minimal information available on non-operative approaches to care. This case report presents a case of CECS successfully managed with physical therapy.

**STUDY DESIGN:**

Case report.

**CASE DESCRIPTION:**

A 34-year-old competitive triathlete experienced bilateral anterior and posterior lower leg pain measured with a numerical pain rating scale of 7/10 at two miles of running. Pain decreased to resting levels of 4/10 two hours post exercise. The patient was diagnosed with bilateral CECS with left lower extremity ICP at rest measured at 36 mmHg (deep posterior), 36-38 mmHg (superficial posterior), and 25 mmHg (anterior). Surgery was recommended.

**INTERVENTIONS:**

The patient chose non-operative care and was treated with physical therapy using the Functional Manual Therapy approach aimed at addressing myofascial restrictions, neuromuscular function and motor control deficits throughout the lower quadrant for 23 visits over 3.5 months.

**OUTCOMES:**

At discharge the patient had returned to running pain free and training for an Olympic distance triathlon. The Lower Extremity Functional Scale improved from 62 to 80. The patient reported minimal post exercise tightness in bilateral lower extremities. Left lower extremity compartment pressure measurements at rest were in normal ranges measuring at 11 mmHg (deep posterior), 8 mmHg (superficial posterior), 19 mmHg (anterior), and 10 mmHg (lateral). Three-years post intervention the patient remained pain free with a Global Rating of Change of 6.

**DISCUSSION:**

This case report describes the successful treatment of a triathlete with Functional Manual Therapy resulting in a return to competitive sports without pain.

**LEVEL OF EVIDENCE:**

Level 4.

**KEYWORDS:**

Chronic Exertional Compartment Syndrome; fasciotomy; physical therapy; running

## 46 B. LOWER LIMB NEUROMOBILIZATION

### Impact of neuromobilization

#### **Effects of lower body quadrant neural mobilization in healthy and low back pain populations: A systematic review and meta-analysis**

Manual Therapy , 01/11/2017

Neto T, et al.

In this meta-analysis, the authors propose that there are positive effects from the application of neural mobilization (NM) to the lower body quadrant. In particular, NM indicates moderate effects on flexibility in healthy participants, and large effects on pain and disability in people with low back pain (LBP).

#### Methods

- The physicians included randomized controlled trials if any form of NM was applied to the lower body quadrant.
- The main outcomes were pain, disability, and lower limb flexibility.
- They used PEDro scale to evaluate methodological quality.

#### Results

- The physicians selected 45 studies for full-text analysis, and 10 were included in the meta-analysis, involving 502 participants.
- Overall, with a mean PEDro score of 6.3 (from 4 to 8), studies presented fair to good quality.
- In this systematic review, 5 studies used healthy participants, and 5 targeted people with LBP.
- In healthy adults, a moderate effect size ( $g = 0.73$ , 95% CI: 0.48–0.98) was determined, supporting the use of NM to increase flexibility.
- In people with LBP, larger effect sizes were found for the effect of NM in pain reduction ( $g = 0.82$ , 95% CI 0.56–1.08) and disability improvement ( $g = 1.59$ , 95% CI: 1.14–2.03).

**48 A. STM****Instrument assisted**

Int J Sports Phys Ther. 2016 Dec;11(7):1040-1047.

**THE EFFECTS OF INSTRUMENT ASSISTED SOFT TISSUE MOBILIZATION ON LOWER EXTREMITY MUSCLE PERFORMANCE: A RANDOMIZED CONTROLLED TRIAL.**

MacDonald N1, Baker R2, Cheatham SW3.

**Author information**

**Abstract**

**BACKGROUND:**

Instrument-Assisted Soft Tissue Mobilization (IASTM) is a non-invasive therapeutic technique used to theoretically aid in scar tissue breakdown and absorption, fascial mobilization, and improved tissue healing. Researchers have hypothesized that utilizing IASTM will improve muscular efficiency and performance; yet previous investigations have been focused on treating injury.

**OBJECTIVE:**

The purpose of this investigation was to explore the effects of IASTM on muscle performance to assess if typical treatment application affected measures of muscular performance.

**DESIGN:**

A pretest-posttest randomized control design.

**PARTICIPANTS:**

A convenience sample of 48 physically active adults (mean age  $24 \pm 4$  years), randomly assigned to one of three groups: quadriceps treatment group, triceps surae treatment group, or control group.

**INTERVENTIONS:**

Participants performed a five-minute warm-up on a Monark bicycle ergometer before performing three countermovement vertical jumps (CMJ). Immediately after, the IASTM treatment was applied by one researcher for three minutes on each leg at the specified site (e.g., quadriceps) for those assigned to the treatment groups, while the control group rested for six minutes.

Immediately following treatment, participants performed three additional CMJs. Pre- and post-testing included measures of vertical jump height (JH), peak power (PP) and peak velocity (PV).

**RESULTS:**

There were no statistically significant differences found between treatment groups in JH, PP, or PV or across pre- and post-test trials.

**CONCLUSIONS:**

These preliminary findings suggest that standard treatment times of IASTM do not produce an immediate effect in muscular performance in healthy participants. This may help clinicians determine the optimal sequencing of IASTM when it is part of a pre-performance warm-up program. Future research should be conducted to determine the muscle performance effects of IASTM in individuals with known myofascial restriction and to determine optimal treatment

parameters, such as instrument type, amount of pressure, and treatment time necessary to affect muscular performance.

**LEVEL OF EVIDENCE:** 1b.

**KEYWORDS:** Massage; instrument-assisted; myofascial release

## 52. EXERCISE

### Exercise in post-menopausal women

Menopause. 2017 Jan;24(1):45-51. doi: 10.1097/GME.0000000000000720.

#### **Long-term effects of exercise in postmenopausal women: 16-year results of the Erlangen Fitness and Osteoporosis Prevention Study (EFOPS).**

Kemmler W<sup>1</sup>, Kohl M, von Stengel S.

Author information

Abstract

#### *OBJECTIVE:*

Multimorbidity related to menopause and/or increased age will put healthcare systems in western nations under ever-greater strain. Effective strategies to prevent diseases are thus of high priority and should be started earlier in life. The purpose of the study was to evaluate the long-term effect of exercise on different important health parameters in initially early postmenopausal women over a 16-year period.

#### *METHODS:*

In 1998, 137 early postmenopausal women with osteopenia living in Erlangen-Nürnberg were included in the study. Eighty-six women joined the exercise group (EG) and conducted two supervised group and two home training sessions per week, whereas the control group (CG: n=51) maintained their physical activity level. Primary outcome parameters were clinical overall fractures incidence; secondary study endpoint was Framingham study-based 10-year risk of coronary death/myocardial infarction and low back pain.

#### *RESULTS:*

In 2014, 59 women of the EG and 46 women of the CG were included in the 16-year follow-up analysis. Framingham study-based 10-year risk of myocardial infarction/coronary death increased significantly ( $P < 0.001$ ) in both groups; however, changes were significantly more favorable in the EG ( $5.00\% \pm 2.94\%$  vs CG:  $6.90\% \pm 3.98\%$ ;  $P = 0.02$ ). The ratio for clinical "overall" fractures was 0.47 (95% CI: 0.24-0.92;  $P = 0.03$ ), and thus significantly lower in the EG. Although we focused on a high-intensity exercise strategy, low back pain was favorably affected in the EG.

#### *CONCLUSIONS:*

Multipurpose exercise programs demonstrated beneficial effects on various relevant risk factors and diseases of menopause or/and increased age, and should thus be preferentially applied for primary or secondary prevention in postmenopausal women.

**53. CORE****Core and soccer**

Int J Sports Phys Ther. 2016 Oct; 11(5): 718–724.

**THE RELATIONSHIP BETWEEN TRUNK ENDURANCE PLANK TESTS AND ATHLETIC PERFORMANCE TESTS IN ADOLESCENT SOCCER PLAYERS**

Atsushi Imai, PhD1 and Koji Kaneoka, MD, PhD1 PMID: PMC5046965

**Abstract** article-meta

**Background**

Although it is believed that trunk function is important for athletic performance, few researchers have demonstrated a significant relationship between the trunk function and athletic performance. Recently, the prone plank and side plank tests have been used to assess trunk function.

**Purpose**

The purpose of this study was to investigate the relationships between trunk endurance plank tests and athletic performance tests, including whether there is a relationship between long distance running and trunk endurance plank tests in adolescent male soccer players.

**Study design**

Cross sectional study design.

**Methods**

Fifty-five adolescent male soccer players performed prone and side plank tests and seven performance tests: the Cooper test, the Yo-Yo intermittent recovery test, the step 50 agility test, a 30-m sprint test, a vertical countermovement jump, a standing five-step jump, and a rebound jump. The relationships between each individual plank test, the combined score of both plank tests, and performance tests were analyzed using the Pearson correlation coefficient.

**Results**

The combined score of plank tests was highly correlated with the Yo-Yo intermittent recovery test ( $r = 0.710$ ,  $p < 0.001$ ), and was moderately correlated with the Cooper test ( $r = 0.567$ ,  $p < 0.001$ ). Poor correlation was observed between the prone plank test and step 50 agility test ( $r = -0.436$ ,  $p = 0.001$ ) and no significant correlations were observed between plank tests and jump performance tests.

**Conclusions**

The results suggest that trunk endurance plank tests are positively correlated with the Yo-Yo intermittent recovery test, the Cooper test, and the step 50 agility test.

**Level of Evidence** Level 2

**Keywords:** Agility, core strength, jump, long distance running, prone plank

### Core helps swimmers

Int J Sports Phys Ther. 2016 Dec;11(7):1048-1053.

#### **IMMEDIATE EFFECTS OF DEEP TRUNK MUSCLE TRAINING ON SWIMMING START PERFORMANCE.**

Iizuka S1, Imai A2, Koizumi K3, Okuno K2, Kaneoka K2.

#### **BACKGROUND:**

In recent years, deep trunk muscle training has been adopted in various sports, including swimming. This is performed both in everyday training and as part of the warm-up routine before competitive races. It is suggested that trunk stabilization exercises are effective in preventing injury, and aid in improving performance. However, conclusive evidence of the same is yet to be obtained. The time of start phase of swimming is a factor that can significantly influence competition performance in a swimming race.

#### **HYPOTHESIS/PURPOSE:**

If trunk stabilization exercises can provide instantaneous trunk stability, it is expected that they will lead to performance improvements in the start phase of swimming. The purpose of this study was to investigate the immediate effect of trunk stabilization exercises on the start phase in swimming.

#### **STUDY DESIGN:**

Intervention study.

#### **METHODS:**

Nine elite male swimmers (mean age  $20.2 \pm 1.0$  years; height  $174.4 \pm 3.5$  cm; weight  $68.9 \pm 4.1$  kg) performed the swimming start movement. The measurement variables studied included flying distance, and the time and velocity of subjects at hands' entry and on reaching five meters. Measurements were taken in trials immediately before and after the trunk stabilization exercises. A comparison between pre- and post-exercise measurements was assessed.

#### **RESULTS:**

The time to reach five meters (T5m) decreased significantly after trunk stabilization exercises, by 0.019 s ( $p = 0.02$ ). Velocity at entry (Ventry) did not demonstrate significant change, while velocity at five meters (V5m) increased significantly after the exercises ( $p = 0.023$ ). In addition, the speed reduction rate calculated from Ventry and V5m significantly decreased by 5.17% after the intervention ( $p = 0.036$ ).

#### **CONCLUSION:**

Trunk stabilization exercises may help reduce the time from start to five meters in the start phase in swimming. The results support the hypothesis that these exercises may improve swimming performance.

**LEVELS OF EVIDENCE:** Level 3b.

**KEYWORDS:** Competitive swimmer; intervention; speed reduction

**Core helps LBP**

Pain Pract. 2017 Jan 2. doi: 10.1111/papr.12552.

**Lumbopelvic Core Stabilization Exercise and Pain Modulation Among Individuals with Chronic Nonspecific Low Back Pain.**

Paungmali A<sup>1</sup>, Joseph LH<sup>1,2</sup>, Patraporn S<sup>1</sup>, Pirunsan U<sup>1</sup>, Uthaikhup S<sup>1</sup>.  
Author information

## Abstract

**BACKGROUND:**

Lumbopelvic stabilization training (LPST) may provide therapeutic benefits on pain modulation in chronic nonspecific low back pain conditions. This study aimed to examine the effects of LPST on pain threshold and pain intensity in comparison to the passive automated cycling intervention and control intervention among patients with chronic nonspecific low back pain.

**METHODS:**

A within-subject, repeated-measures, crossover randomized controlled design was conducted among 25 participants (7 males and 18 females) with chronic nonspecific low back pain. All the participants received 3 different types of experimental interventions, which included LPST, the passive automated cycling intervention, and the control intervention randomly, with 48 hours between the sessions. The pressure pain threshold (PPT), hot-cold pain threshold, and pain intensity were estimated before and after the interventions.

**RESULTS:**

Repeated-measures analysis of variance showed that LPST provided therapeutic effects as it improved the PPT beyond the placebo and control interventions ( $P < 0.01$ ). The pain intensity under the LPST condition was significantly better than under the passive automated cycling intervention and controlled intervention ( $P < 0.001$ ). Heat pain threshold under the LPST condition also showed a significant trend of improvement beyond the control ( $P < 0.05$ ), but no significant effects on cold pain threshold were evident.

**CONCLUSIONS:**

LPST may provide therapeutic effects by inducing pain modulation through an improvement in the pain threshold and reduction in pain intensity. LPST may be considered as part of the management programs for treatment of chronic low back pain. This article is protected by copyright. All rights reserved.

**59. PAIN****Sham surgeries helps pain**

J Clin Epidemiol. 2017 Jan 4. pii: S0895-4356(16)30851-4. doi: 10.1016/j.jclinepi.2016.12.010.

**Sham surgical procedures for pain intervention result in significant improvements in pain: Systematic-review and meta-analysis.**

Gu AP<sup>1</sup>, Gu CN<sup>2</sup>, Ahmed AT<sup>3</sup>, Murad MH<sup>3</sup>, Wang Z<sup>3</sup>, Kallmes DF<sup>4</sup>, Brinjikji W<sup>5</sup>.

**Author information****Abstract****OBJECTIVE:**

To perform a systematic review and meta-analysis to study the magnitude of the placebo effect associated with sham surgery procedures.

**STUDY DESIGN:**

We conducted a systematic search for randomized controlled clinical trials comparing any type of surgery to a corresponding sham placebo group and compared improvements in the sham treatment arms in subjective, objective, categorical and continuous outcomes, as well as complication rates and mortality. Effect sizes were reported as standardized mean differences (SMD).

**SETTING:**

Systematic review and meta-analysis **RESULTS:** The overall effect size for pain improvement following sham surgery was SMD=0.22 (95% CI=0.08-0.35) with improvement most marked at 1-month (SMD=0.34, 95% CI=0.26-0.43). There was a higher rate of improvement in subjective outcomes compared to objective outcomes for both dichotomized (number of patients with improvement) (42.8% compared to 27.1%) and continuous outcomes (SMD=0.12, 95% CI=-0.05-0.30 versus SMD=-0.01, 95% CI=-0.05-0.03). There were no deaths in the sham treatment arms and major complications were very rare (0.2%, 95% CI=0.0%-0.6%).

**CONCLUSION:**

Sham surgery is associated with a large improvement in pain and other subjective patient reported outcomes but with relatively small effect on objective outcomes. Sham surgeries are overwhelmingly safe. The magnitude of this effect should be used when planning future sham-controlled surgery trials.

**Pain and mood**

Pain. 2017 Jan;158(1):48-57.

**Negative mood influences default mode network functional connectivity in patients with chronic low back pain: implications for functional neuroimaging biomarkers.**

Letzen JE<sup>1</sup>, Robinson ME.

Author information

**Abstract**

The default mode network (DMN) has been proposed as a biomarker for several chronic pain conditions.

Default mode network functional connectivity (FC) is typically examined during resting-state functional neuroimaging, in which participants are instructed to let thoughts wander. However, factors at the time of data collection (eg, negative mood) that might systematically impact pain perception and its brain activity, influencing the application of the DMN as a pain biomarker, are rarely reported. This study measured whether positive and negative moods altered DMN FC patterns in patients with chronic low back pain (CLBP), specifically focusing on negative mood because of its clinical relevance. Thirty-three participants (CLBP = 17) underwent resting-state functional magnetic resonance imaging scanning before and after sad and happy mood inductions, and rated levels of mood and pain intensity at the time of scanning. Two-way repeated-measures analysis of variances were conducted on resting-state functional connectivity data. Significant group (CLBP > healthy controls) × condition (sadness > baseline) interaction effects were identified in clusters spanning parietal operculum/postcentral gyrus, insular cortices, anterior cingulate cortex, frontal pole, and a portion of the cerebellum (PFDR < 0.05). However, only 1 significant cluster covering a portion of the cerebellum was identified examining a two-way repeated-measures analysis of variance for happiness > baseline (PFDR < 0.05).

Overall, these findings suggest that DMN FC is affected by negative mood in individuals with and without CLBP. It is possible that DMN FC seen in patients with chronic pain is related to an affective dimension of pain, which is important to consider in future neuroimaging biomarker development and implementation.

## Psychotherapy for pain

### **Psychotherapy for medically unexplained pain: A randomized clinical trial comparing intensive short-term dynamic psychotherapy and cognitive behavior therapy**

Psychosomatics, 01/13/2017  
Chavooshi B, et al.

In a randomized clinical trial, the researchers assesses intensive short-term dynamic psychotherapy (ISTDP) as a treatment for medically unexplained pain (MUP) outpatients by comparing it to the established evidence-based treatment cognitive behavioral therapy (CBT). The obtained results demonstrate that ISTDP may provide an effective alternative therapy for medically unexplained somatic symptoms of pain.

#### Methods

- For the purpose of this study, 341 adults with MUP were randomly assigned to 16 sessions of individual manualized CBT (N = 164) or ISTDP (N = 177).
- The groups were evaluated at baseline, after 16 weeks of treatment, and at the 3 month follow-up.
- Perceived pain assessed using the Numeric Pain Rating Scale (NPRS) was the primary outcome.
- Psychological distress, depression, and cognitive variables were the secondary outcomes.
- Self-efficacy, catastrophizing, and coping strategies were the cognitive variables included in this study.

#### Results

- In the intention-to-treat analysis, the ISTDP and CBT groups both demonstrated improvement in the primary outcome after treatment.
- Pain symptoms in both conditions were significantly diminished.
- Both ISTDP and CBT groups exhibited diminishment in psychological distress, depression and catastrophic thinking, and also increments in the use of relaxation as a coping strategy.
- The CBT group demonstrated an improvement in self-efficacy that was not obtained in the ISTDP group.
- Additionally, significant differences were not seen in the primary and secondary outcomes at the 3 month follow-up compared to post-treatment.
- According to the findings obtained, both treatments were equally effective at the 3 month follow-up.

### Pain and cognitive decline

#### **Pain and major depressive disorder: Associations with cognitive impairment as measured by the THINC-integrated tool (THINC-it)**

Scandinavian Journal of Pain, 01/12/2017

Cha DS, et al.

Researchers aim to explore the role of pain on cognitive function in adults with major depressive disorder (MDD). Among adults with major depressive disorder (MDD), pain is associated with increased self-rated and objective cognitive deficits.

#### Methods

- Researchers enrolled ( $n_{\text{MDD}} = 100$ ) adults (18–65) with a Diagnostic and Statistical Manual - Fifth Edition (DSM-5)-defined diagnosis of MDD experiencing a current major depressive episode (MDE).
- They matched all subjects with MDD in age, sex, and years of education to healthy controls (HC) ( $n_{\text{HC}} = 100$ ) for comparison.
- They assessed cognitive function using the recently validated THINC-integrated tool (THINC-it), which comprises variants of the choice reaction time (i.e., THINC-it: Spotter), One-Back (i.e., THINC-it: Symbol Check), Digit Symbol Substitution Test (i.e., THINC-it: Codebreaker), Trail Making Test – Part B (i.e., THINC-it: Trails), as well as the Perceived Deficits Questionnaire for Depression – 5-item (i.e., THINC-it: PDQ-5-D).
- They computed a global index of objective cognitive function using objective measures from the THINC-it, whereas self-rated cognitive deficits were measured using the PDQ-5-D.
- Using a Visual Analogue Scale (VAS), pain was measured.
- Regression analyses assessed the role of pain in predicting objective and subjective cognitive function.

#### Results

- Researchers observed a significant between-group differences on the VAS ( $p < 0.001$ ), with individuals with MDD reporting higher pain severity as evidenced by higher scores on the VAS than HC.
- On objective cognitive performance (after adjusting for MADRS total score), significant interaction effects were observed between self-rated cognitive deficits and pain ratings ( $p < 0.001$ ), proposing that pain moderates the association between self-rated and objective cognitive function.

## 61. FIBROMYALGIA

### Overview

J Pain. 2016 Dec 26. pii: S1526-5900(16)30364-9. doi: 10.1016/j.jpain.2016.12.006.

### **Evidenced-Based Guidelines on the Treatment of Fibromyalgia Patients- Are They Consistent and If Not, Why Not? Have effective psychological treatments been overlooked?**

Thieme K<sup>1</sup>, Mathys M<sup>2</sup>, Turk DC<sup>3</sup>.

Author information

#### Abstract

We compared the recommendations and methodology of several recent evidence-based guidelines for the management of patients with fibromyalgia (FM) published by professional organizations: 1. American Pain Society (APS) (2005) 2. Association of the Scientific Medical Societies in Germany (AWMF) (2012) 3. Canadian Pain Society (CPS, 2013), - Also used in United Kingdom and 4. European League Against Rheumatism (EULAR) (2016) Each guideline used systematic reviews and meta-analyses as highest level of evidence, APS, CPS, and AWMF also included individual randomized clinical trials (RCT). The APS, CPS, and AWMF assigned the highest ranking of recommendation to aerobic exercise, cognitive-behavioral therapy (CBT), amitriptyline, and multicomponent treatment. In contrast, the most recent EULAR guidelines assign the highest level of recommendation to exercise, contrary to the 2008 EULAR guidelines that recommended pharmacotherapy. Although there was some consistency for pharmacological treatments recommendations among the 4 guidelines, APS, CPS, and AWMF guidelines gave the higher ranking to CBT and multicomponent treatments. The inconsistencies across guidelines can be attributed to the criteria used for study inclusion, outcome measures used, weighting systems, and composition of the review panels. A guideline consensus is needed to harmonize the discrepancies.

#### *PERSPECTIVE:*

This article presents an overview and highlights the inconsistencies of 4 recent clinical practice guidelines for treatment of fibromyalgia patients related to study inclusion criteria, outcome measures used, ranking system used, and composition of the review panels. The discrepancies suggest a need to create a guideline consensus to synthesize guidelines

## 62 A. NUTRITION/VITAMINS

### Buckwheat reduces CV risk

#### Consumption of buckwheat products and cardiovascular risk profile: A randomized, single-blinded crossover trial

Nutrition, Metabolism & Cardiovascular Diseases, 01/06/2017

**D**inu M, et al.

This study was designed to inspect whether a replacement diet with buckwheat products could provide additive protective effects in reducing cardiovascular risk factors, including blood glucose, insulin, lipids, oxidative damage and pro-inflammatory markers, in comparison to a similar replacement diet using products made from organic wheat. The findings indicate that a replacement diet with buckwheat products exert a protective impact on the development of cardiovascular disease by decreasing circulating cardiovascular risk factors and markers of oxidative stress.

#### Methods

- In a single-blinded crossover trial, 21 participants at high risk for cardiovascular disease (11 F; 10 M; mean age  $51.3 \pm 13.4$ ) were randomized to receive products (bread, pasta, biscuits and crackers), made from either buckwheat-enriched semi-wholegrain wheat or control semi-wholegrain wheat for 8 weeks.
- A washout period of 8 weeks was implemented between the 2 intervention phases, in which participants were permitted to eat all foods as per their normal eating habits.
- Blood analyses were performed toward the begin and end of each intervention period, respectively.

#### Results

- The results of this study showed that consumption of buckwheat products resulted in a significant amelioration in total cholesterol (-4.7%), low-density lipoprotein cholesterol (-8.5%), triglycerides (-15%), glucose (-5.8%) and insulin (-17%) from baseline levels, independently of age, sex, body mass index and hypertension.
- In addition, thiobarbituric acid reactive substances (TBARs) levels were significantly decreased by 29.5%.
- A concomitant significant increment in plasma ORAC levels (+9.7%) was watched.
- After consumption of the control products, no significant differences from baseline in the same participants were seen.

**Processed meats and increased risk of bladder cancer**

Eur J Nutr. 2016 Dec 22. doi: 10.1007/s00394-016-1356-0.

**Red and processed meat consumption and risk of bladder cancer: a dose-response meta-analysis of epidemiological studies.**

Crippa A<sup>1</sup>, Larsson SC<sup>2</sup>, Discacciati A<sup>3</sup>, Wolk A<sup>2</sup>, Orsini N<sup>4</sup>.  
Author information

**Abstract*****BACKGROUND/OBJECTIVES:***

Several epidemiological studies have analyzed the associations between red and processed meat and bladder cancer risk but the shape and strength of the associations are still unclear. Therefore, we conducted a dose-response meta-analysis to quantify the potential association between red and processed meat and bladder cancer risk.

***METHODS:***

Relevant studies were identified by searching the PubMed database through January 2016 and reviewing the reference lists of the retrieved articles. Results were combined using random-effects models.

***RESULTS:***

Five cohort studies with 3262 cases and 1,038,787 participants and 8 cases-control studies with 7009 cases and 27,240 participants met the inclusion criteria. Red meat was linearly associated with bladder cancer risk in case-control studies, with a pooled RR of 1.51 (95% confidence interval (CI) 1.13, 2.02) for every 100 g increase per day, while no association was observed among cohort studies (P heterogeneity across study design = 0.02). Based on both case-control and cohort studies, the pooled relative risk (RR) for every 50 g increase of processed meat per day was 1.20 (95% CI 1.06, 1.37) (P heterogeneity across study design = 0.22).

***CONCLUSIONS:***

This meta-analysis suggests that processed meat may be positively associated with bladder cancer risk. A positive association between red meat and risk of bladder cancer was observed only in case-control studies, while no association was observed in prospective studies

**Egg intake and dementia**

Am J Clin Nutr. 2017 Jan 4. pii: ajcn146753. doi: 10.3945/ajcn.116.146753.

**Association of dietary cholesterol and egg intakes with the risk of incident dementia or Alzheimer disease: the Kuopio Ischaemic Heart Disease Risk Factor Study.**

Ylilauri MP<sup>1</sup>, Voutilainen S<sup>1</sup>, Lönnroos E<sup>1</sup>, Mursu J<sup>1</sup>, Virtanen HE<sup>1</sup>, Koskinen TT<sup>1</sup>, Salonen JT<sup>2</sup>, Tuomainen TP<sup>1</sup>, Virtanen JK<sup>3</sup>.

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

There is little information about the associations of intakes of cholesterol and eggs, a major source of dietary cholesterol, with the risk of cognitive decline in general populations or in carriers of apolipoprotein E ε4 (APO-E4), a major risk factor for dementia.

**OBJECTIVE:**

We investigated the associations of cholesterol and egg intakes with incident dementia, Alzheimer disease (AD), and cognitive performance in middle-aged and older men from Eastern Finland.

**DESIGN:**

A total of 2497 dementia-free men, aged 42-60 y in 1984-1989 at the baseline examinations of the prospective, population-based Kuopio Ischaemic Heart Disease Risk Factor Study, were included in the study. Information on the apolipoprotein E (Apo-E) phenotype was available for 1259 men. Data on cognitive performance tests at the 4-y re-examinations were available for 480 men. Dietary intakes were assessed with the use of 4-d food records at baseline. Dementia and AD diagnoses were based on Finnish health registers. Cox regression and ANCOVA were used for the analyses.

**RESULTS:**

During the 21.9-y follow-up, 337 men were diagnosed with dementia, and 266 men were diagnosed with AD. Neither cholesterol nor egg intake was associated with a higher risk of incident dementia or AD. For example, when evaluated continuously, each intake of 100 mg cholesterol/d was associated with a multivariable-adjusted HR of 0.90 (95% CI: 0.79, 1.02) for incident dementia, and each additional 0.5 egg (27 g)/d was associated with an HR of 0.89 (95% CI: 0.78, 1.01). However, egg intake was associated with better performance on neuropsychological tests of the frontal lobe and executive functioning, the Trail Making Test, and the Verbal Fluency Test. The Apo-E4 phenotype did not modify the associations of cholesterol or egg intake (P-interactions > 0.11).

**CONCLUSIONS:**

Neither cholesterol nor egg intake is associated with an increased risk of incident dementia or AD in Eastern Finnish men. Instead, moderate egg intake may have a beneficial association with certain areas of cognitive performance.

## HDL function and intake of eggs

**Intake of up to 3 eggs per day is associated with changes in HDL function and increased plasma antioxidants in healthy, young adults**

The Journal of Nutrition, 01/12/2017

DiMarco DM, et al.

## Abstract

**Background:** HDL function may be more important than HDL concentration in determining risk for cardiovascular disease. In addition, HDL is a carrier of carotenoids and antioxidant enzymes, which protect HDL and LDL particles against oxidation.

**Objective:** The goal of this study was to determine the impact of consuming 0–3 eggs/d on LDL and HDL particle size, HDL function, and plasma antioxidants in a young, healthy population.

**Methods:** Thirty-eight healthy men and women [age 18–30 y, body mass index (in kg/m<sup>2</sup>) 18.5–29.9] participated in this 14-wk crossover intervention. Subjects underwent a 2-wk washout (0 eggs/d) followed by sequentially increasing intake of 1, 2, and 3 eggs/d for 4 wk each. After each period, fasting blood was collected for analysis of lipoprotein subfractions, plasma apolipoprotein (apo) concentration, lutein and zeaxanthin concentration, and activities of lecithin-cholesterol acyltransferase, cholesteryl ester transfer protein, and paraoxonase-1.

**Results:** Compared with intake of 0 eggs/d, consuming 1–3 eggs/d resulted in increased large-LDL (21–37%) and large-HDL (6–13%) particle concentrations, plasma apoAI (9–15%), and lecithin-cholesterol acyltransferase activity (5–15%) ( $P < 0.05$  for all biomarkers). Intake of 2–3 eggs/d also promoted an 11% increase in apoAII ( $P < 0.05$ ) and a 20–31% increase in plasma lutein and zeaxanthin ( $P < 0.05$ ), whereas intake of 3 eggs/d resulted in a 9–16% increase in serum paraoxonase-1 activity compared with intake of 1–2 eggs/d ( $P < 0.05$ ). Egg intake did not affect cholesteryl ester transfer protein activity.

**Conclusions:** Intake of 1 egg/d was sufficient to increase HDL function and large-LDL particle concentration; however, intake of 2–3 eggs/d supported greater improvements in HDL function as well as increased plasma carotenoids. Overall, intake of  $\leq 3$  eggs/d favored a less atherogenic LDL particle profile, improved HDL function, and increased plasma antioxidants in young, healthy adults. This trial was registered at [clinicaltrials.gov](http://clinicaltrials.gov) as NCT02531958.

**Fish intake reduces brain tumor risk**

Nutr J. 2017 Jan 11;16(1):1. doi: 10.1186/s12937-016-0223-4.

**Fish intake and the risk of brain tumor: a meta-analysis with systematic review.**

Lian W<sup>1</sup>, Wang R<sup>2</sup>, Xing B<sup>2</sup>, Yao Y<sup>2</sup>.

Author information

**Abstract****BACKGROUND:**

Fish, rich in  $\omega$ -3 polyunsaturated fatty acids, has been found to be associated with lower risk of several types of cancer risk, and beneficial for brain development. However, the association between fish intake and brain tumor risk is still inconsistent. Therefore, we conducted a meta-analysis to clarify the association.

**METHODS:**

Relevant studies were identified from PubMed and EMBASE databases. The pooled relative risks were obtained by the fixed-effects model when no substantial heterogeneity was observed. Otherwise, the random-effects model was employed. Subgroup and publication bias analyses were also performed.

**RESULTS:**

Nine observational studies were included in the meta-analysis. The pooled relative risk of brain cancer for the highest vs. lowest category of fish intake was 0.83 (95% confidence interval [CI]: 0.70-0.99). No significant heterogeneity was detected. Dose-response analysis showed that the RR per 100 g/day increase in fish intake was 0.95 (95% CI: 0.91-0.98). The results remained unchanged in subgroup and sensitivity analyses.

**CONCLUSIONS:**

The results of our meta-analysis suggest that fish intake might be associated with lower risk of brain cancer risk. The finding should be further confirmed by future cohort studies with validated questionnaires and strict control of confounders.

**Calcium helps high systolic pressure**

Osteoporos Int. 2017 Jan;28(1):119-125. doi: 10.1007/s00198-016-3744-y. Epub 2016 Aug 20.

**Acute effects of calcium supplements on blood pressure: randomised, crossover trial in postmenopausal women.**

Billington EO<sup>1,2</sup>, Bristow SM<sup>3</sup>, Gamble GD<sup>1</sup>, de Kwant JA<sup>1</sup>, Stewart A<sup>1</sup>, Mihov BV<sup>1</sup>, Horne AM<sup>1</sup>, Reid IR<sup>1</sup>.

Author information

**Abstract**

Calcium supplements appear to increase cardiovascular risk, but the mechanism is unknown. We investigated the acute effects of calcium supplements on blood pressure in postmenopausal women. The reduction in systolic blood pressure was smaller after calcium compared with the placebo in the hours following dosing.

**INTRODUCTION:**

Calcium supplements appear to be associated with increased cardiovascular risk; however, the mechanism of this is uncertain. We previously reported that blood pressure declined over a day in older women, and that this reduction was smaller following a calcium supplement. To confirm this finding, we investigated the acute effects of calcium supplements on blood pressure.

**METHODS:**

This was a randomised controlled crossover trial in 40 healthy postmenopausal women (mean age 71 years and BMI 27.2 kg/m<sup>2</sup>). Women attended on two occasions, with visits separated by  $\geq 7$  days. At each visit, they received either 1 g of calcium as citrate, or placebo. Blood pressure and serum calcium concentrations were measured immediately before, and 2, 4 and 6 h after each intervention.

**RESULTS:**

Ionised and total calcium concentrations increased after calcium ( $p < 0.0001$  versus placebo). Systolic blood pressure decreased after both calcium and placebo, but significantly less so after calcium ( $p = 0.02$ ). The reduction in systolic blood pressure from baseline was smaller after calcium compared with placebo by 6 mmHg at 4 h ( $p = 0.036$ ) and by 9 mmHg at 6 h ( $p = 0.002$ ). The reduction in diastolic blood pressure was similar after calcium and placebo.

**CONCLUSIONS:**

These findings are consistent with those of our previous trial and indicate that the use of calcium supplements in postmenopausal women attenuates the post-breakfast reduction in systolic blood pressure by around 6-9 mmHg. Whether these changes in blood pressure influence cardiovascular risk requires further study.

## 65. NEUROLOGICAL CONDITIONS

### Exercise and neurological conditions

Neurology

Expert Opinion / Commentary · November 25, 2016

#### 2016 Top Stories in Neurology: Physical Exercise and the Brain

This year, we have highlighted a number of studies showing the beneficial effect of regular aerobic exercise on improving long-term outcome in various neurological diseases. For example, one study found that regular exercise in people with Parkinson's disease is associated with better cognition, mood, and sleep.<sup>1</sup> Furthermore, exercise in middle age even seems to be associated with larger brain volume decades later.<sup>2</sup> A small randomized trial that we highlighted showed that people with Huntington's disease who engaged in a short-term exercise program showed better change in predicted maximum rate of oxygen consumption, as well as lower weight, compared with the control group.<sup>3</sup> Studies in the last year or so have shown that higher levels of exercise in midlife can reduce the risk of dementia and can improve recovery after stroke.<sup>4,5</sup> Most of these studies are clinical trials or epidemiological studies. Few have investigated the mechanisms of why exercise is associated with these outcomes. Some have shown a direct correlation between the amount of exercise and HDL levels.<sup>6</sup> Higher HDL is associated with lower rates of atherosclerosis in cardiac and cerebral vessels. Likewise, regular exercise leads to lower blood pressure and weight loss, both of which have long been known to be important for reducing cardiovascular risk and cerebrovascular risk. Better cerebrovascular health is important for both prevention of stroke and cerebral white matter disease, critical for maintenance of cognitive function. Exercise is also important for reducing risks associated with immobility, such as venous stasis and thrombosis, contractures, atelectasis, and muscle breakdown. Immobility is associated with poorer cardiac function, respiratory function, and vascular elasticity, leading to worse brain health. Might there be other less obvious mechanisms for better outcomes with increased exercise? One is depression. One study we highlighted in the news showed that, when combined with standard medications for multiple sclerosis, exercise can reduce or prevent fatigue, depression, and paresthesia in people with MS.<sup>7</sup> Depression is a risk factor for dementia. The effect of depression could be mediated by poor nutrition, inadequate sleep, medications, or other medical complications that can directly influence neurological function. Likewise, release of endorphins through exercise might enhance learning or synaptic plasticity. Increased exercise also leads to changes in systemic cathepsin B secretion (CTSB), and CTSB levels in humans correlated with both fitness and hippocampus-dependent memory.<sup>8</sup> The investigators suggested these results indicate that CTSB might be one mediator of effects of exercise on cognition. While all of the mechanisms through which exercise is associated with improved neurological function may not be entirely clear, the benefits have been reportedly documented. Of course, exercise carries risks, also. The American Association of Neurological Surgeons releases statistics on risk of head trauma associated with various sports. The following sports contribute to the highest numbers of head injuries in US emergency rooms ([www.aans.org](http://www.aans.org)): cycling, 85,389; American football, 46,948; baseball and softball, 38,394; basketball, 34,692; water sports (diving, scuba diving, surfing, etc), 28,716; powered recreational vehicles (eg. ATVs, mini bikes), 26,606; soccer, 24,184; skateboards/scooters, 23,114; fitness/exercise/health club, 18,012; winter sports (eg, skiing, snowboarding), 16,948; horseback riding, 14,466; gymnastics/dance/cheerleading, 10,223; and even golf, 10,035. Less common activities (eg, lacrosse, hockey) cause even higher rates per hour of participation. Many studies have now shown increased risk for cognitive decline associated with repeated concussions in American football, soccer ("football"), and boxing.<sup>9-12</sup> However, it is clearly important to weigh the risks against the benefits. For example, another study we highlighted this year provided guidelines for participation in sports and exercise in people with epilepsy. Given the documented benefits of exercise, it is important to permit

## ABSTRACTS

people with epilepsy to engage in these activities to the extent the benefits outweigh the risks.<sup>13</sup>In summary, neurologists should be guiding our patients on the level of exercise and even type of exercise associated with the greatest benefit and lowest risks for each individual in light of his or her neurological condition. We should also be advising patients how to reduce risks, such as wearing helmets and/or vests. In many neurological conditions, this “prescription” can have much more of an impact on the patient’s neurological management than medications.