

3. DISC

Disc and menopause

Menopause. 2017 Oct;24(10):1136-1144. doi: 10.1097/GME.0000000000000902.

Association between menopause and lumbar disc degeneration: an MRI study of 1,566 women and 1,382 men.

Lou C¹, Chen H, Mei L, Yu W, Zhu K, Liu F, Chen Z, Xiang G, Chen M, Weng Q, He D.

OBJECTIVE:

The aim of this study was to revisit and further investigate the association between menopause and disc degeneration in the lumbar spine using a magnetic resonance imaging-based eight-level grading system.

METHODS:

This study cohort comprised of 1,566 women and 1,382 age-matched men who were admitted for low back pain from June 2013 to October 2016. Data on age, weight, height, body mass index, age at natural menopause, and years since menopause (YSM) were obtained. Lumbar disc degeneration was assessed using a magnetic resonance imaging-based eight-level grading system.

RESULTS:

After adjustment for the confounding factors of age, height, and weight, young age-matched men were more susceptible to disc degeneration than premenopausal women ($P < 0.05$). However, after menopause, postmenopausal women had a significant tendency to develop more severe disc degeneration than their age-matched men ($P < 0.05$), and also compared with premenopausal and perimenopausal women ($P < 0.01$). Postmenopausal women were divided into nine subgroups by every 5 YSM. When YSM was less than 15 years, a positive trend was observed between YSM and severity of disc degeneration, respectively, at L1/L2 ($r = 0.241$), L2/L3 ($r = 0.193$), L3/L4 ($r = 0.191$), L4/L5 ($r = 0.165$), L5/S1 ($r = 0.153$), and all lumbar discs ($r = 0.237$) ($P < 0.05$ or 0.01). The analysis of covariance indicated a significant difference in each disc level ($P < 0.05$ or 0.01) between every two groups. When YSM was more than 15 years, the significant difference, however, disappeared in each disc level ($P > 0.05$).

CONCLUSIONS:

Menopause is associated with lumbar disc degeneration. The association occurred in the first 15 YSM, suggesting estrogen deficiency might be a risk factor of disc degeneration of the lumbar spine. Further studies need to be carried out for deciding whether age or menopause plays a more important role in the progression of disc degeneration in the lumbar spine.

4. INJECTIONS

Cervical Epidurals

Effect of Interlaminar Epidural Steroid Injection in Patients with Central Cervical Spinal Stenosis

Dong Gyu Lee, MD Min Cheol Chang, MD

DOI: <http://dx.doi.org/10.1016/j.wneu.2017.09.123>

Highlights

- The effect of interlaminar ESI in central cervical spinal stenosis-induced neck pain
- Chronic neck pain was significantly reduced after cervical interlaminar ESI.
- The effect was persisted during at least 3 months after the ESI

Abstract

Objective

The authors investigated the effect of interlaminar ESI for the management of central cervical spinal stenosis-induced posterior neck pain.

Methods

Forty-five patients with posterior neck pain caused by central cervical spinal stenosis were recruited retrospectively. For the ESI procedure, a 21-g Touhy needle was inserted into the epidural space between C7 and T1, and 20 mg (40 mg/mL) of dexamethasone with 4 mL of normal saline was injected. The effect of the procedure was evaluated using a numerical rating scale (NRS) at 1, 2, and 3 months after the procedure. Successful pain relief was defined as a reduction in NRS score of $\geq 50\%$ compared with that prior to treatment. In addition, at 3 months after treatment, patient satisfaction levels were examined; patients that reported “very good” (score = 7) or “good” results (score = 6) were considered satisfied with the procedure.

Results

The posterior neck pain was significantly reduced at follow-up evaluation 1, 2, and 3 months after ESI ($p < 0.001$, repeated measures one-factor analysis). In addition, at 3 months following the procedure, 58% of the patients achieved a successful response ($\geq 50\%$ pain reduction), and 56% were satisfied with treatment results.

Conclusions

Cervical interlaminar ESI appears to be a good treatment method for managing chronic posterior neck pain induced by central cervical spinal stenosis, especially when pain is refractory to oral medication.

Epidurals comparison

A minimum of 5-year follow-up after lumbar transforaminal epidural steroid injections in patients with lumbar radicular pain due to intervertebral disc herniation

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Byron J. Schneider

DOI: <http://dx.doi.org/10.1016/j.spinee.2017.08.264>

Background context Patients with lumbosacral radiculopathy from a intervertebral disc herniation are frequently treated by transforaminal epidural steroid injections (TFESIs). The long-term outcomes of these patients are poorly described.

Purpose To determine the long-term outcomes for a homogenous group of patients with acute unilateral lumbar radicular pain due to single level herniated nucleus after lumbar epidural steroid injection at ≥ 5 years.

Design Prospective cohort study.

Patient sample Subjects enrolled into a previous reported multi-institutional randomized controlled trial, ≥ 18 years old with single leg radicular pain rating $\geq 4/10$ for less than 6 months' duration, with radiographic imaging demonstrating an anatomically congruent single level herniated nucleus pulposus.

Outcome measures Presence of recurrent or persistent pain, pain within last week, current opioid use for radicular symptoms, additional spine injections for radicular pain, progression to surgery, and unemployment due to pain as determined by independent phone interview at least 5 years after enrolment due to the initial pain complaint.

Methods All patients initially underwent a single level lumbar TFESIs due to failure of conservative care, but could elect to pursue surgical intervention or repeat injections thru shared decision making with the treating physician when and if pain control was deemed inadequate. After ≥ 5 years, an independent assessor contacted the subjects by phone and performed a standardized interview to determine outcomes. Fisher's exact test was used to compare outcomes for those who pursued versus those who did not pursue surgery.

Results During the recruitment period (December 2008-December 2012) 78 subjects were enrolled. At 5 years, 39 (50%) of the 78 subjects were reachable for independent phone follow-up. Of these, 30 [76.9%, 95% CI (61.7-87.4%)] had a history of recurrent pain since the initial TFESI. However, only 9 [23.1%, 95% CI (12.7-38.3%)] had current pain, while 3 [7.7%, 95% CI (2.7-20.3%)] were currently taking opioid medications. 9 [23.1%, 95% CI (12.7-38.3%)] had received additional TFESIs, and 19 [48.7%, 95% CI (33.9-63.8%)] had received surgery. Only 3 [7.7%, 95% CI (2.7-20.3%)] were unemployed due to related pain at time of follow-up. When comparing the group that had surgery vs those that did not, there were no differences in the rates of recurrent pain (16, 84.2% vs 14 (70.0%, $p=0.81$), current pain (6, 31.6% vs 3, 15.0%, $p=0.47$), opioid use (2, 10.5% vs 1, 5.0%; $p=1.00$), rate of additional injections (6, 31.6% vs 3, 15.0%, $p=0.47$), or unemployment status (2, 10.5% vs 1, 5.0%; $p=1.00$).

Conclusions Despite a high success rate at 6 months, the majority of subjects experienced a recurrence of symptoms at some time during the subsequent 5 years. Fortunately, few reported current symptoms and a small minority required additional injections, surgery or opioid pain medications. Lumbar disc herniation is a disease that can be effectively treated in the short-term by TFESI or surgery, but long-term recurrence rates are high regardless of treatment received.

5. SURGERY

Opioid use and fusion

Spine (Phila Pa 1976). 2017 Sep 15;42(18):1405-1411. doi: 10.1097/BRS.0000000000002133.

Predictors of Long-term Opioid Use Following Lumbar Fusion Surgery.

Connolly J 3rd¹, Javed Z, Raji MA, Chan W, Kuo YF, Baillargeon J.

STUDY DESIGN:

A population-based retrospective cohort study.

OBJECTIVE:

The aim of this study was to examine risk factors for long-term opioid use following lumbar spinal fusion surgery in a nationally representative cohort of commercially insured adults.

SUMMARY OF BACKGROUND DATA:

Opioid prescription rates for the management of low back pain have more than doubled in the US over the past decade. Although opioids are commonly used for the management of pain following lumbar spinal fusion surgery, to date, no large-scale nationally representative studies have examined the risk factors for long-term opioid use following such surgical intervention.

METHODS:

Using one of the nation's largest commercial insurance databases, we conducted a retrospective cohort study of 8377 adults, aged 21 to 63 years, who underwent lumbar spinal fusion surgery between January 1, 2009, and December 31, 2012. Long-term opioid use was defined as ≥ 365 days of filled opioid prescriptions in the 24 months following lumbar fusion. Multivariable logistic regression was used to calculate adjusted odds ratios (ORs) and 95% confidence intervals for the risk of long-term opioid use following lumbar fusion.

RESULTS:

After adjusting for covariates, the following factors were associated with an increased risk of long-term opioid use following surgery: duration of opioid use in the year before lumbar surgery [Referent (0 days); Quartile 1 (1-22 days) OR=2.27, 95% CI=1.48-3.49; Quartile 2 (23-72 days): OR=5.94, 95% CI=4.00-8.83; Quartile 3: (73-250 days) OR=25.31, 95% CI=17.26-37.10; Quartile 4 (≥ 250 days) OR=219.95, 95% CI=148.53-325.71], refusion surgery (OR=1.32, 95% CI=1.02-1.72), and diagnosis of depression (OR=1.43, 95% CI=1.18-1.74). Receipt of anterior fusion was associated with a modest decrease in the risk of long-term opioid use (OR=0.79, 95% CI=0.63-0.99).

CONCLUSION:

These findings may provide clinically relevant information to physicians, patients, and their families regarding the risk factors for opioid dependence following lumbar fusion surgery.

7. PELVIC ORGANS/WOMAN'S HEALTH

Smoking impact on fetus

Eur J Obstet Gynecol Reprod Biol. 2017 Sep 14;218:27-32. doi: 10.1016/j.ejogrb.2017.09.013.

Early pregnancy intrauterine fetal exposure to maternal smoking and impact on fetal telomere length.

Mirzakhani H¹, De Vivo I², Leeder JS³, Gaedigk R³, Vyhlidal CA³, Weiss ST¹, Tantisira K⁴.

BACKGROUND:

Reduced telomere length, or its accelerated attrition, has been implicated in aging, mortality, and several human diseases, including respiratory diseases. Age dependent manifestation of telomere-mediated disease during life span indicates the role of developmental stage in these diseases and highlights the importance of fetal developmental process in utero and at earlier life stages. Environmental determinants during developmental and later stages of life could affect telomere length. Smoke exposure as one of these significant determinants have been investigated in association with telomere length in neonates at time of delivery, children and adults.

OBJECTIVE:

We sought to investigate whether intrauterine fetal exposure to tobacco smoking characterized by placenta cotinine levels during early weeks of pregnancy might be associated with shorter relative telomere length (T/S ratio) as compared to fetuses without exposure to tobacco smoking.

STUDY DESIGN:

207 Human placenta and epithelial lung samples were used for both fetal lung telomere length assessment and measurement of placental cotinine levels. Tissues were obtained from two NICHD-supported tissue retrieval programs with registries for elective abortions, the University of Washington Center for Birth Defects Research (Seattle, WA) and the University of Maryland Brain and Tissue Bank for Developmental Disorders (Baltimore, MD). Cotinine levels (ng/g total placental tissue) were determined in whole cell extracts prepared from human placenta samples to characterize and confirm the cotinine exposure status associated with maternal smoking. Relative telomere length (T/S ratio) in genomic DNA extracted from fetal lung tissue was measured by use of quantitative real-time polymerase chain reaction. Multivariable linear regression was used to investigate the relationship between fetal Telomere-to-Single Copy (T/S) ratio and tobacco exposure.

RESULTS:

The estimated post-conception ages for included samples in the study ranged from 54 to 137 days (7-19 weeks of gestation); 47.37% of fetal samples had female sex. Of the samples included in the analysis 96 and 111 fetal samples with and without intrauterine tobacco smoking exposure were distinguished. While T/S ratio was not different between those with and without smoking exposure (1.24 ± 0.41 and 1.27 ± 0.48 , respectively; $P=0.70$), a significant effect modification of post-conception age on the relationship of intrauterine smoke exposure on fetal T/S ratio was observed (adjusted coefficient=-0.008, 95% CI: -0.016, -0.0004). The smoke exposure status was associated with T/S ratio after 93-day post conception (adjusted coefficient=-0.29, 95% CI: -0.53, -0.052).

CONCLUSIONS:

Our results demonstrate a significant association of smoke exposure in utero at early pregnancy with shortened fetal relative telomere length in the developing lung and suggest that the detrimental effect of smoking exposure on future disease sequelae may start at the early stages of pregnancy.

Vulvar

J Pediatr Adolesc Gynecol. 2017 Sep 14. pii: S1083-3188(17)30358-3. doi: 10.1016/j.jpag.2017.08.008.

Outcomes of Therapy for Vulvar Manifestation of Inflammatory Bowel Disease in Adolescents.

Debiec KE¹, Lee SD², Wahbeh GT³, Amies Oelschlager AM⁴.

BACKGROUND:

Vulvar manifestations of inflammatory bowel disease (IBD) are variable in presentation and challenging to treat. We describe vulvar manifestations and treatment response in adolescent females with IBD.

CASES:

We identified six patients with vulvar manifestations of IBD and documented treatments by retrospective chart review. Vulvar symptoms occurred without gastrointestinal (GI) symptoms in one patient. For the remaining five patients, two had GI symptoms prior to the onset of vulvar symptoms (mean time difference 4.5 years); three patients had vulvar symptoms precede the onset of GI symptoms (mean time difference 3.3 years). Vulvar IBD manifestations included pain 100% (n=6), enlargement, "fullness" or "edema" of the labia minora or majora 66% (n=4), ulcers 50% (n=3), and abscess 50% (n=3). Gynecologic procedures included biopsies, incision and drainages and partial vulvectomies. All patients were treated with multiple systemic therapies. None of the patients responded to surgical or medical treatment alone; all had recalcitrant vulvar symptoms.

SUMMARY AND CONCLUSIONS:

Vulvar manifestations of IBD may precede GI symptoms in adolescents with IBD. Treatment is challenging and in this series, systemic therapies were the most successful in achieving symptomatic improvement.

Prolapses surgery

BJOG. 2017 Sep 22. doi: 10.1111/1471-0528.14943.

Prolapse surgery with or without incontinence procedure; a systematic review and meta-analysis.

van der Ploeg JM¹, van der Steen A¹, Zwolsman S¹, van der Vaart CH¹, Roovers JWR¹.

BACKGROUND:

To reduce the risk of postoperative stress urinary incontinence (POSUI) prolapse repair might be combined with incontinence surgery.

OBJECTIVES:

Compare efficacy and safety of prolapse surgery with and without incontinence surgery.

SEARCH STRATEGY:

Including our earlier review a systematic search in PubMed, EMBASE, the Cochrane Library and the Register of Current Controlled Trials was performed from 1995 to 2017.

SELECTION CRITERIA:

Randomised trials comparing prolapse surgery with a midurethral sling (MUS) or Burch colposuspension.

DATA COLLECTION AND ANALYSIS:

Two reviewers selected eligible articles and extracted data. Stress urinary outcomes were pooled for preoperative SUI. Urgency incontinence and adverse events were pooled for incontinence procedure.

MAIN RESULTS:

Ten trials were included. Women with preoperative SUI symptoms or occult SUI had a lower risk to undergo subsequent incontinence surgery for POSUI after vaginal prolapse surgery with a MUS than after prolapse surgery only: 0% vs. 40% (RR 0.0; 95% CI 0.0-0.2) and 1% vs. 15% (RR 0.1; 95% CI 0.0-0.6) respectively. These differences were not significant in continent women not tested for occult SUI or without occult SUI. Serious adverse events were more frequent after vaginal prolapse repair with MUS (14% vs. 8%; RR 1.7; 95% CI 1.1-2.7), but not after sacrocolpopexy with Burch. Combination surgery did not increase risk of overactive bladder symptoms, urgency incontinence and surgery for voiding dysfunction.

CONCLUSIONS:

Vaginal prolapse repair with MUS reduced the risk of postoperative SUI in women with preoperative SUI symptoms or occult SUI, but serious adverse events were more frequent.

Pregnancy related low back pain and body awareness

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Disrupted body-image and pregnancy-related lumbopelvic pain. A preliminary investigation☆

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Peter B. O'Sullivan Anne J. Smith William Gibson

DOI: <http://dx.doi.org/10.1016/j.msksp.2017.05.003>**Highlights**

- Self-reported disruption of body-image is significantly greater in pregnant women who experiencing LPP than those who don't.
- The extent of body-image disruption is significantly correlated with pain intensity.
- Pain related catastrophisation is related to disrupted body-image.

Abstract**Background**

Recent investigations have suggested that disrupted body-image may contribute to the lumbopelvic pain experience. The changes in body shape and size associated with pregnancy suggest that pregnancy-related lumbopelvic pain might be a problem in which alterations in body-image are particularly relevant.

Objectives

To investigate if self-reported body-image is related to lumbopelvic pain status in women during pregnancy and explore the factors that might contribute to changes in body-image in women experiencing pregnancy-related lumbopelvic pain.

Design

Cross-sectional cohort study.

Method

Forty-two women in the third trimester of pregnancy were recruited regardless of clinical status. Pain intensity and disability were measured to estimate clinical severity. The Fremantle Back Awareness Questionnaire was used to assess body-image. Participants also completed a series of questionnaires and physical tests to explore factors that might be associated with altered body-image.

Results

The median Fremantle Back Awareness Questionnaire score for the pain free women was 1 (IQR 0–1.5) and the median score for those in pain was 3.5 (IQR 2–8). This difference was statistically significant ($p = 0.005$). The questionnaire score was significantly correlated with pain intensity but not with disability. Of the measured variables only pain catastrophisation was significantly associated with disrupted body-image.

Conclusions

Self-reported disruption of body-image was significantly greater in pregnant women who were experiencing lumbopelvic pain than those who weren't and the extent of body-image disruption was associated with pain intensity. Only pain related catastrophisation was related to disrupted body-image.

Hormone replacement safe

JAMA. 2017 Sep 12;318(10):927-938. doi: 10.1001/jama.2017.11217.

Menopausal Hormone Therapy and Long-term All-Cause and Cause-Specific Mortality: The Women's Health Initiative Randomized Trials.

Manson JE¹, Aragaki AK², Rossouw JE³, Anderson GL², Prentice RL², LaCroix AZ⁴, Chlebowski RT^{5,6}, Howard BV^{7,8}, Thomson CA⁹, Margolis KL¹⁰, Lewis CE¹¹, Stefanick ML¹², Jackson RD¹³, Johnson KC¹⁴, Martin LW¹⁵, Shumaker SA¹⁶, Espeland MA¹⁷, Wactawski-Wende J¹⁸; WHI Investigators.

IMPORTANCE: Health outcomes from the Women's Health Initiative Estrogen Plus Progestin and Estrogen-Alone Trials have been reported, but previous publications have generally not focused on all-cause and cause-specific mortality.

OBJECTIVE: To examine total and cause-specific cumulative mortality, including during the intervention and extended postintervention follow-up, of the 2 Women's Health Initiative hormone therapy trials.

DESIGN, SETTING, AND PARTICIPANTS: Observational follow-up of US multiethnic postmenopausal women aged 50 to 79 years enrolled in 2 randomized clinical trials between 1993 and 1998 and followed up through December 31, 2014.

INTERVENTIONS: Conjugated equine estrogens (CEE, 0.625 mg/d) plus medroxyprogesterone acetate (MPA, 2.5 mg/d) (n = 8506) vs placebo (n = 8102) for 5.6 years (median) or CEE alone (n = 5310) vs placebo (n = 5429) for 7.2 years (median).

MAIN OUTCOMES AND MEASURES: All-cause mortality (primary outcome) and cause-specific mortality (cardiovascular disease mortality, cancer mortality, and other major causes of mortality) in the 2 trials pooled and in each trial individually, with prespecified analyses by 10-year age group based on age at time of randomization.

RESULTS: Among 27 347 women who were randomized (baseline mean [SD] age, 63.4 [7.2] years; 80.6% white), mortality follow-up was available for more than 98%. During the cumulative 18-year follow-up, 7489 deaths occurred (1088 deaths during the intervention phase and 6401 deaths during postintervention follow-up). All-cause mortality was 27.1% in the hormone therapy group vs 27.6% in the placebo group (hazard ratio [HR], 0.99 [95% CI, 0.94-1.03]) in the overall pooled cohort; with CEE plus MPA, the HR was 1.02 (95% CI, 0.96-1.08); and with CEE alone, the HR was 0.94 (95% CI, 0.88-1.01). In the pooled cohort for cardiovascular mortality, the HR was 1.00 (95% CI, 0.92-1.08 [8.9% with hormone therapy vs 9.0% with placebo]); for total cancer mortality, the HR was 1.03 (95% CI, 0.95-1.12 [8.2% with hormone therapy vs 8.0% with placebo]); and for other causes, the HR was 0.95 (95% CI, 0.88-1.02 [10.0% with hormone therapy vs 10.7% with placebo]), and results did not differ significantly between trials. When examined by 10-year age groups comparing younger women (aged 50-59 years) to older women (aged 70-79 years) in the pooled cohort, the ratio of nominal HRs for all-cause mortality was 0.61 (95% CI, 0.43-0.87) during the intervention phase and the ratio was 0.87 (95% CI, 0.76-1.00) during cumulative 18-year follow-up, without significant heterogeneity between trials.

CONCLUSIONS AND RELEVANCE: Among postmenopausal women, hormone therapy with CEE plus MPA for a median of 5.6 years or with CEE alone for a median of 7.2 years was not associated with risk of all-cause, cardiovascular, or cancer mortality during a cumulative follow-up of 18 years.

8. VISCERA

Thyroid function

Association of thyroid function with life expectancy with and without cardiovascular disease: The Rotterdam Study

JAMA Internal Medicine | September 19, 2017

Bano A, et al.

This study was conducted to determine the association of thyroid function with total life expectancy (LE) and life expectancy (LE) with and without cardiovascular disease (CVD) among euthyroid individuals. Collected data represented that at the age of 50 years, participants with low-normal thyroid function live up to 3.5 years longer overall and up to 3.1 years longer without CVD than participants with high-normal thyroid function. These results indicated the need for a reevaluation of the current reference ranges of thyroid function, which would aid in preventive and clinical care.

Methods

- This study enrolled subjects without known thyroid disease and with thyrotropin and free thyroxine (FT₄) levels within the reference ranges.
- Among thyrotropin and FT₄ tertiles, multistate life tables were used to calculate total LE and LE with and without CVD.
- Prevalence, incidence rates, and hazard ratios for 3 transitions (healthy to CVD, healthy to death, and CVD to death), adjusting for sociodemographic and cardiovascular risk factors were used to calculate life expectancy estimates in men and women aged 50 years and older.

Results

- The mean (SD) age of the 7785 participants was 64.7 (9.8) years, and 52.5% were women.
- Over a median follow-up of 8.1 (interquartile range, 2.7-9.9) years, 789 incident CVD events and 1357 deaths were reported.
- Compared with those in the lowest tertile, men and women in the highest thyrotropin tertile lived 2.0 (95% CI, 1.0 to 2.8) and 1.4 (95% CI, 0.2 to 2.4) years longer, respectively, of which, 1.5 (95% CI, 0.2 to 2.6) and 0.9 (95% CI, -0.2 to 2.0) years longer without CVD.
- Compared with those in the lowest tertile, the difference in life expectancy for men and women in the highest FT₄ tertile was -3.2 (95% CI, -5.0 to -1.4) and -3.5 (95% CI, -5.6 to -1.5) years, respectively, of which, -3.1 (95% CI, -4.9 to -1.4) and -2.5 (95% CI, -4.4 to -0.7) years without CVD.

Acid reflux and diet

JAMA Otolaryngol Head Neck Surg. 2017 Sep 7. doi: 10.1001/jamaoto.2017.1454.

A Comparison of Alkaline Water and Mediterranean Diet vs Proton Pump Inhibition for Treatment of Laryngopharyngeal Reflux.

Zalvan CH¹, Hu S², Greenberg B³, Geliebter J^{1,4}.

IMPORTANCE:

Laryngopharyngeal reflux (LPR) is a common disorder with protean manifestations in the head and neck. In this retrospective study, we report the efficacy of a wholly dietary approach using alkaline water, a plant-based, Mediterranean-style diet, and standard reflux precautions compared with that of the traditional treatment approach of proton pump inhibition (PPI) and standard reflux precautions.

OBJECTIVE:

To determine whether treatment with a diet-based approach with standard reflux precautions alone can improve symptoms of LPR compared with treatment with PPI and standard reflux precautions.

DESIGN, SETTING, AND PARTICIPANTS:

This was a retrospective medical chart review of 2 treatment cohorts. From 2010 to 2012, 85 patients with LPR that were treated with PPI and standard reflux precautions (PS) were identified. From 2013 to 2015, 99 patients treated with alkaline water (pH >8.0), 90% plant-based, Mediterranean-style diet, and standard reflux precautions (AMS) were identified. The outcome was based on change in Reflux Symptom Index (RSI).

MAIN OUTCOMES AND MEASURES:

Recorded change in the RSI after 6 weeks of treatment.

RESULTS:

Of the 184 patients identified in the PS and AMS cohorts, the median age of participants in each cohort was 60 years (95% CI, 18-82) and 57 years (95% CI, 18-93), respectively (47 [56.3%] and 61 [61.7%] were women, respectively). The percentage of patients achieving a clinically meaningful (≥ 6 points) reduction in RSI was 54.1% in PS-treated patients and 62.6% in AMS-treated patients (difference between the groups, 8.05; 95% CI, -5.74 to 22.76). The mean reduction in RSI was 27.2% for the PS group and 39.8% in the AMS group (difference, 12.10; 95% CI, 1.53 to 22.68).

CONCLUSIONS AND RELEVANCE:

Our data suggest that the effect of PPI on the RSI based on proportion reaching a 6-point reduction in RSI is not significantly better than that of alkaline water, a plant-based, Mediterranean-style diet, and standard reflux precautions, although the difference in the 2 treatments could be clinically meaningful in favor of the dietary approach. The percent reduction in RSI was significantly greater with the dietary approach. Because the relationship between percent change and response to treatment has not been studied, the clinical significance of this difference requires further study. Nevertheless, this study suggests that a plant-based diet and alkaline water should be considered in the treatment of LPR. This approach may effectively improve symptoms and could avoid the costs and adverse effects of pharmacological intervention as well as afford the additional health benefits associated with a healthy, plant-based diet.

IBS and immune system

Diarrhea-predominant irritable bowel syndrome linked to an exhausted immune system

Liz Meszaros, MDLinx

Diarrhea-predominant irritable bowel syndrome (IBS-D) may be associated with immune system exhaustion, according to researchers from the University of Adelaide and the South Australian Health and Medical Research Institute (SAHMRI). Their results are published in the journal *Gut*.

GI, IMMUNE SYSTEM LINK?

Researchers have documented T cell exhaustion in patients with diarrhea-predominant irritable bowel syndrome.

Researchers enrolled 11 subjects (10 female; mean age: 59 years) with long standing IBS that was characterized via ROME II criteria. Five had IBS-D, four IBS-A, 2 IBS-C. All subjects were followed for 1 year, and researchers compared blood samples taken during periods when patients experienced symptoms to those taken when patients were symptom free.

All IBS-D patients had the same kind of exhaustion in their T-cells.

Previous studies have documented the link between IBS and stress, and the immune system can be inhibited by cortisol and stress hormones. This is the first study to document T-cell exhaustion in IBS-D patients.

"For the first time, we've discovered that in patients with IBS-D, their T-cells seem to be 'out of puff' or run down," said lead researcher Patrick Hughes, MD, senior lecturer, Adelaide Medical School, University of Adelaide, and member, South Australian Health and Medical Research Institute (SAHMRI), Adelaide, South Australia.

"These normally active immune cells are less responsive to stimulation, secreting fewer mediators and dividing less. This type of response is often observed in chronic infections," he added.

"Irritable bowel syndrome takes a real toll on patients," said Dr, Hughes. "It can affect people in the prime of their lives, it's a chronic disease that can last a long time, and the treatments currently available are poor. Anything we can do to better understand the disease and to help reduce its debilitating effects on patients will be welcome," he concluded.

This research was supported by the National Health and Medical Research Council (NHMRC).

Steroid use in IBS

A multi-centre audit of excess steroid use in 1176 patients with inflammatory bowel disease

Alimentary Pharmacology and Therapeutics | September 27, 2017

Selinger CP, et al.

This research aspired to benchmark steroid usage in British inflammatory bowel disease (IBD) outpatients and evaluate factors related to excess exposure. The researchers found steroid dependency or excess in 14.9% of British IBD patients (in 7.1% potentially avoidable). Positive effects of service configurations were demonstrated (IBD multi-disciplinary team, dedicated IBD clinics). Routine recording of steroid dependency or excess was feasible and needed to be considered a quality metric.

Methods

- Steroid use was recorded in unselected IBD outpatients .
- To determine whether steroid prescriptions were avoidable, cases meeting criteria for steroid dependency or excess were blind peer reviewed.
- The researchers analyzed associations between steroid use and patient/institutional factors.

Results

- In the prior 12 months, 30% received steroids among 1176 patients.
- The researchers observed steroid dependency or excess in 14.9%, which was more common in moderate/severe ulcerative colitis (UC) compared to Crohn's disease (CD) (42.6% vs 28.1%; $P = .027$).
- In 49.1%, steroid dependency or excess was deemed avoidable.
- The annual incidence of inappropriate steroid excess was 7.1%.
- Mixed-effects logistic regression analysis demonstrated independent predictors of inappropriate steroid excess.
- For moderate/severe compared to mild/quiescent disease activity, the odds ratio (OR, 95%CI) was 4.59 (1.53-20.64) for UC and 4.60 (2.21-12.00) for CD.
- In CD, lower rates of inappropriate steroid excess were found in centres with an IBD multi-disciplinary team (OR 0.62 [0.46-0.91]).
- Meanwhile, dedicated IBD clinics protected against inappropriate steroid excess in UC (OR 0.64, 95% CI 0.21-0.94).
- As per the outcomes, the total number of GI trainees was correlated with rates of inappropriate steroid excess.

Impact of IBS on bones in adolescents

Musculoskeletal system in children and adolescents with inflammatory bowel disease: Normal muscle force, decreased trabecular bone mineral density and low prevalence of vertebral fractures

European Journal of Pediatrics | September 19, 2017

Maratova K, et al.

This study encompassed the contemplation of musculoskeletal traits and gauged the vertebral fracture (VF) rate in children and adolescents with inflammatory bowel disease (IBD). The results disclosed that IBD in childhood or adolescents exerted an impact on the bones but not muscles. Bone changes were independent of the 25-hydroxycholecalciferol (25-OHD) serum level. The data recommended against the routine use of a thoracolumbar spine X-ray in the study cohort.

Methods

- The recruitment constituted 70 patients with IBD with a median age of 13.8 years.
- A scrutiny was performed of the BMD and geometric parameters of the non-dominant tibia via pQCT.
- Dynamic muscle functions were gauged through the jumping mechanography.
- An analysis was pursued of VFs based on the semiquantitative standardized method by Genant.

Results

- No variation was reported in the muscle functions adjusted for the patients' weight from the reference population.
- There appeared to be low trabecular BMD (Z-score - 1.6; $p < 0.001$) and cortical thickness (Z-score - 0.7; $p < 0.001$) in children and adolescents with IBD.
- Conversely, there was an increased cortical BMD (Z-score 1.1; $p < 0.001$).
- There was no notable correlation between the 25-OHD serum levels and the bone or muscle measurements.
- The data detected 1 patient with asymptomatic VF.

Multi vitamins

Effect of High-Dose Oral Multi-Vitamins and Minerals in Participants Not Treated with Statins in the Randomized Trial to Assess Chelation Therapy☆☆☆

Omar M. Issa, DO Rhonda Roberts, MPH Gervasio A. Lamas, MD

DOI: <http://dx.doi.org/10.1016/j.ahj.2017.09.002>

Importance In a pre-specified subgroup analysis of participants not on statin therapy at baseline in the Trial to Assess Chelation Therapy (TACT), a high-dose complex oral multi-vitamins and multi-mineral regimen was found to have a large unexpected benefit compared with placebo. The regimen tested was substantially different from any vitamin regimen tested in prior clinical trials.

Objective To explore these results, we performed detailed additional analyses of participants not on statins at enrollment in TACT.

Design TACT was a factorial trial testing chelation treatments and a 28-component high-dose oral multi-vitamins and multi-minerals regimen versus placebo in post-myocardial infarction (MI) patients age 50 or greater.

Participants There were 460/1708 (27%) TACT participants not taking statins at baseline, 224 (49%) were in the active vitamin group and 236 (51%) were in the placebo group.

Setting Patients were enrolled at 134 sites around the US and Canada.

Intervention Daily high-dose oral multi-vitamins and multi-minerals (6 tablets, active or placebo).

Main Outcome The primary endpoint of TACT was time to the first occurrence of any component of the composite endpoint: all-cause mortality, MI, stroke, coronary revascularization, or hospitalization for angina.

Results The primary endpoint occurred in 137 non-statin participants (30%), of which 51/224 (23%) were in the active group and 86/236 (36%) were taking placebo (HR = 0.62, 95% CI: 0.44, 0.87, $P = .006$). Results in the key TACT secondary endpoint, a combination of cardiovascular mortality, stroke, or recurrent MI, was consistent in favoring the active vitamin group (HR = 0.46, 95% CI 0.28, 0.75, $P = .002$). Multiple endpoints analyses were consistent with these results.

Conclusion and Relevance

High-dose oral multi-vitamin and multi-mineral supplementation appear to decrease combined cardiac events in a stable, post-MI population not taking statin therapy at baseline. These unexpected findings are being retested in the ongoing TACT2.

10 A. CERVICAL SPINE**Attributes of adolescents with chronic neck pain****August 2017** Volume 30, Pages 18–24**Repositioning error, pressure pain threshold, catastrophizing and anxiety in adolescents with chronic idiopathic neck pain**

Sofia Sá, MSc Anabela G. Silva, PhD
de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro - Portugal.

DOI: <http://dx.doi.org/10.1016/j.msksp.2017.04.011>**Highlights**

- Adolescents with neck pain seem to have increased pain sensitivity both locally and at distance.
- Adolescents with neck pain seem to have impaired joint repositioning sense.
- Adolescents with neck pain seem to catastrophize and be more anxious than asymptomatic adolescents.
- There is the need for multimodal interventions targeting neck pain in adolescents.

Abstract**Background**

Impaired proprioception, increased pain sensitivity, higher levels of anxiety and catastrophizing are present in adults with chronic idiopathic neck pain. Despite the high prevalence of neck pain, studies in adolescents are scarce.

Objectives

The main aim was to compare pressure pain thresholds (PPTs) and joint repositioning error (JRE) between adolescents with chronic idiopathic neck pain and adolescents without neck pain. Secondary aims were to compare these groups for catastrophizing and anxiety and to investigate the association between PPTs, JRE and psychosocial variables and pain characteristics.

Methods

80 adolescents (40 with and 40 without chronic neck pain) were assessed for: neck repositioning error, neck, upper trapezius and tibialis anterior PPTs, anxiety and catastrophizing. Neck pain was characterized in terms of intensity, frequency, duration and associated disability. MANCOVA was used for between group comparisons and Pearson and Spearman coefficients for correlational analysis.

Results

Adolescents with neck pain showed higher levels of catastrophizing ($p < 0.001$) and anxiety (trait: $p < 0.001$; state: $p = 0.028$), lower PPTs ($p < 0.001$) and higher JRE ($p < 0.001$) than asymptomatic controls. Pain intensity, frequency and duration were moderately correlated with anxiety, and disability was moderately correlated with anxiety (r between 0.43 and 0.50, $p < 0.05$) and catastrophizing ($r = 0.40$, $p < 0.05$).

Conclusions

This study suggests that functional changes and maladaptive cognitive processes are present in adolescents with neck pain aged 16–18 years old. These findings need to be replicated in future studies.

Dural adhesences

Spine J. 2017 Sep 19. pii: S1529-9430(17)30988-9. doi: 10.1016/j.spinee.2017.09.006.

Clinical relation among dural adhesion, dural ossification, and dural laceration in the removal of ossification of the ligamentum flavum.

Ju JH¹, Kim SJ², Kim KH¹, Ryu DS¹, Park JY¹, Chin DK¹, Kim KS¹, Cho YE¹, Kuh SU³.

BACKGROUND CONTEXT:

Dural laceration frequently occurs during surgery in patients with OLF, mainly due to dural adhesion (DA) and dural ossification (DO) between the ligamentum flavum and dura mater. However, the radiologic predictive factors of DA in OLF have rarely been reported.

PURPOSE:

To determine the preoperative radiologic signs for predicting intraoperative DA in ossification of the ligamentum flavum (OLF), by using preoperative magnetic resonance imaging (MRI) and computed tomography (CT).

STUDY DESIGN:

Retrospective study.

PATIENT SAMPLE:

This study included 182 patients who underwent decompressive laminectomy and OLF removal from 2005 to 2014.

OUTCOME MEASURE:

Demographic data, preoperative neurological status, surgical procedure and results, and intraoperative and postoperative complications were analyzed. Clinical outcome assessed with Japanese Orthopaedic Association (JOA) score.

METHODS:

Depending on the morphological appearance of OLF in preoperative radiographs, we aimed investigate the prevalence of intraoperative DA and DO. We used the following factors of representative classifications: (i) surface appearance, (ii) "double-layer" or "tram-track" sign, (iii) cross-sectional area of stenosed level, (iv) Sato's classification as axial classification, (v) Kuh's classification as sagittal classification, and (vi) high-signal-intensity change on T₂-weighted MRI. No funds were received in support of this work. No benefits in any form have been or will be received from a commercial party related directly or indirectly to the subject of this manuscript.

RESULTS:

Intraoperative evidence of DA was observed in 52 (29%) patients, and DO was observed in 23 (13%) patients. Twenty-seven (15%) patients had dural laceration during surgery. Statistically, DA was closely associated with nonuniform type of surface appearance (odds ratio 5.396, P = 0.001) as well as the presence of either "double-layer sign" or "tram-track sign" (odds ratio 11.525, P < 0.001). In preoperative CT and MRI, 21 out of 23 patients with DO showed "double-layer sign" or "tram-track sign".

CONCLUSION:

This study identified two predictive factors of DA in OLF, which were nonuniform surface appearance and the presence of "double-layer sign" or "tram-track sign". Presence of DO in OLF was closely associated with "double-layer sign" or "tram-track sign" in preoperative radiologic images.

Deformities

Spine (Phila Pa 1976). 2017 Sep 15;42(18):1375-1382. doi: 10.1097/BRS.0000000000002144.

Principal Radiographic Characteristics for Cervical Spinal Deformity: A Health-related Quality-of-life Analysis.

Bao H¹, Varghese J, Lafage R, Liabaud B, Diebo B, Ramchandran S, Day L, Jalai C, Cruz D, Errico T, Protopsaltis T, Passias P, Buckland A, Qiu Y, Schwab F, Lafage V.

STUDY DESIGN:

Retrospective study.

OBJECTIVE:

The aim of this study was to propose radiographic characteristics of patients with cervical disability and to investigate the relevant parameters when assessing cervical alignment.

SUMMARY OF BACKGROUND DATA:

Although cervical kyphosis is traditionally recognized as presentation of cervical deformity, an increasing number of studies demonstrated that cervical kyphosis may not equal cervical deformity. Therefore, several other differentiating criteria for cervical deformity should be investigated and supported with quality of life scores.

METHODS:

A database of full-body radiographs was retrospectively reviewed. Patients without previous cervical surgery, with a well-aligned thoracolumbar profile (defined as T1 pelvis angle <15°), and with an available Neck Disability Index (NDI) score were reviewed in this study. Subjects were stratified into an asymptomatic (64 subjects with NDI ≤15, Visual Analogue Scale [VAS] neck ≤3, and VAS arm ≤3) and a symptomatic group (107 subjects with NDI >15, VAS neck >3, or VAS arm >3). Independent t tests were performed to investigate differences between two groups. Logistic regressions and principal component analyses were then performed.

RESULTS:

NDI averaged 5.43 in asymptomatic group, significantly smaller than symptomatic group (5.43 vs. 41.25). t Test revealed that C2-C7 sagittal vertical axis (SVA), McGregor slope, and the slope of line of sight (SLS) were significantly different while C2-C7 angle (cervical curvature, CC) did not show statistical difference (P=0.09). Logistic regressions were performed using the significantly different parameters as well as CC. Results identified C2-C7 SVA and SLS as independent risk factors for low health-related quality of life. The principal component analysis leads to a new factor ($0.55 \times C2C7SVA + 0.34 \times COC2 + 0.77 \times CC$) with strong correlations with NDI, VAS, and EQ5D measurements.

CONCLUSION:

The traditional concept of cervical kyphosis should not be regarded as a standalone criterion of cervical deformity. The most clinically relevant components of cervical analysis are the C2-C7 SVA, C0C2 angle, and C2C7 angle. In addition, the three components should be assessed together in harmony and not individually.

LEVEL OF EVIDENCE: 4.

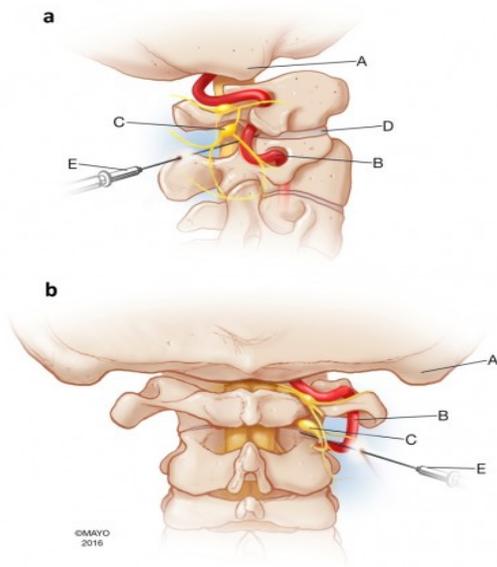
11. UPPER C SPINE

C 1-2 injections adverse events

Outcomes of C1–2 joint injections

Authors Aiudi CM, Hooten WM, Sanders RA, Watson JC, Moeschler SM, Gazelka HM, Hoelzer BC, Eldridge JS, Qu W, Lamer TJ

DOI <https://doi.org/10.2147/JPR.S144255>



Objective: Intra-articular injections of the C1–2 joint are an effective therapeutic option for pain generated from degenerative and inflammatory conditions affecting the joint. Limited information exists about the adverse events (AEs) associated with these injections. The primary aim of this study is to describe the frequency and type of AEs associated with C1–2 joint injections. The secondary aim is to identify clinical factors associated with the occurrence of AEs of C1–2 joint injections.

Design/methods: A retrospective chart review was conducted on all C1–2 joint injections performed at the Mayo Pain Medicine Clinic in Rochester, MN, from January 1, 2005 through July 31, 2015. AE data were extracted from procedural and post-procedural clinical notes. Analysis was conducted to determine correlations between any AE and demographic and clinical characteristics. Using univariate and multivariate logistic regression analyses, associations were determined.

Results: From January 1, 2005 to July 31, 2015, 135 C1–2 injections were performed on 72 patients. Overall, at least 1 AE was reported in 18.5% of the injections. The most common AEs were post-procedural increase in pain and procedural vascular contrast uptake. There was a significant association between AE occurrence and greater pre-procedural maximum pain score.

Conclusions: AEs from C1–2 joint injections occurred commonly, but there were no persistent or serious AEs associated with these injections. The data also demonstrate that patients with higher pre-procedural maximum pain scores are more likely to experience an AE.

12 B. CERVICAL SURGERIES**Serum albumin**

Spine (Phila Pa 1976). 2017 Sep 15;42(18):1367-1374. doi: 10.1097/BRS.0000000000002119.

Nutritional Status as an Adjunct Risk Factor for Early Postoperative Complications Following Posterior Cervical Fusion.

Lee NJ¹, Kothari P, Kim JS, Phan K, Di Capua J, Shin J, Cho SK.

STUDY DESIGN:

Retrospective study on prospectively collected data.

OBJECTIVE:

The aim of this study was to study the impact of nutritional status, as measured by serum albumin level, on patient outcomes following posterior cervical fusion (PCF) surgery.

SUMMARY OF BACKGROUND DATA:

Malnutrition is a potential modifiable risk factor that has garnered an increasing amount of attention within orthopedics in recent years. There is evidence to suggest the role of nutritional status in lumbar and ACDF surgery, yet the data for PCF are still lacking.

METHODS:

The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) was queried by current procedure terminology (CPT) from 2010 to 2014. Bivariate analyses were performed to compare the preoperative characteristics between those with normal albumin and hypoalbuminemia. Postoperative complications and outcomes were similarly analyzed for those with and without low albumin levels. Stepwise multivariate logistic regression models were employed to determine whether hypoalbuminemia was an independent risk factor for short-term patient outcomes and complications.

RESULTS:

There were 1573 cases with measured albumin levels (42.4%). The mean (standard deviation) serum albumin level was 3.9 (0.6). Among these patients, 265 (16.8%) cases had hypoalbuminemia. The adjusted analyses demonstrated that patients with hypoalbuminemia had a significantly higher risk for length of stay >5 days (odds ratio [OR]=3.8; 95% confidence interval [CI]=2.8-5.1; P<0.0001). In addition, hypoalbuminemia was an independent risk factor for any complications (OR=2.7; 95% CI=1.9-3.7; P<0.0001), pulmonary complications (OR=2.3; 95% CI=1.2-4.5; P=0.010), intra/postoperative blood transfusions (OR=3.2; 95% CI=2.1-4.9; P<0.0001), sepsis (OR=4.0; 95% CI=1.7-9.2; P=0.001), and venous thromboembolism (OR=3.6; 95% CI=1.5-8.5; P=0.004).

CONCLUSION:

These findings implicate that a baseline serum albumin <3.5 g/dL may serve as a valuable prognostic measure for the development of several complications following PCF surgery.

13 C. AIRWAYS/SWALLOWING/SPEECH**Sleep and PTSD****Sleep Mediates the Association between PTSD Symptoms and Chronic Pain in Youth**

Melanie Noel, PhD Jillian Vinall, PhD Lianne Tomfohr-Madsen, PhD Amy Lewandowski Holley
,
Anna C. Wilson Tonya M. Palermo, PhD

DOI: <http://dx.doi.org/10.1016/j.jpain.2017.09.002>

Highlights

- Sleep quality partially mediated the association between post-traumatic stress symptoms (PTSS) and pain characteristics among a cohort of youth with chronic pain.
- Higher PTSS was associated with higher levels of both pain intensity and pain interference and these PTSS-pain relationships were partially explained by poor sleep quality.
- Findings provide empirical support for the pediatric model of mutual maintenance in PTSS and chronic pain, which posits that sleep disturbance is a key intrapersonal factor driving this co-occurrence.
- Sleep is a modifiable mechanism that could be targeted in interventions, which might alter a trajectory of pain and comorbid mental health problems from persisting into adulthood.

Abstract

Symptoms of post-traumatic stress disorder (PTSS) and chronic pain have been shown to co-occur at high rates in adolescents and this co-occurrence is linked to worse pain and quality of life. Sleep disturbance has been posited as a mechanism underlying this co-occurrence in conceptual models of mutual maintenance. This study examined the mediating role of sleep in the relationship between PTSS and pain in youth (aged 10-17 years) with chronic pain. Ninety-seven participants completed measures of PTSS, pain (intensity and interference), anxiety symptoms, and sleep quality, in addition to demographics. Mediation models were conducted. Findings revealed that, over and above the influence of associated demographics (age, race) and anxiety symptoms, sleep quality partially mediated the relationships between PTSS and pain intensity and interference for youth with chronic pain. Specifically, higher PTSS was linked to higher levels of pain intensity and pain interference, and these relationships were partially explained by poor sleep quality. Findings highlight the potential mechanistic role of sleep in explaining the co-occurrence of chronic pain and PTSS and suggest sleep might be an important target in future interventions.

Sleep apnea and Vit. D

J Sleep Res. 2017 Sep 25. doi: 10.1111/jsr.12606.

Changes of vitamin D levels and bone turnover markers after CPAP therapy: a randomized sham-controlled trial.

Theorell-Haglöw J^{1,2}, Hoyos CM¹, Phillips CL¹, Yee BJ¹, Herrmann M³, Brennan-Speranza TC⁴, Grunstein RR¹, Liu PY⁵.

The aim was to investigate whether continuous positive airway pressure treatment could modulate serum vitamin D (25-hydroxyvitamin D) and bone turnover markers (collagen-type 1 cross-linked C-telopeptide, osteocalcin and N-terminal propeptide of type 1 collagen) in secondary analysis from a randomized controlled trial. Sixty-five continuous positive airway pressure-naïve male patients with obstructive sleep apnea (age = 49 ± 12 years, apnea-hypopnea index = 39.9 ± 17.7 events h^{-1} , body mass index = 31.3 ± 5.2 $kg\ m^{-2}$) were randomized to receive either real (n = 34) or sham (n = 31) continuous positive airway pressure for 12 weeks. At 12 weeks, all participants received real continuous positive airway pressure for an additional 12 weeks. After 12 weeks of continuous positive airway pressure (real versus sham), there were no between-group differences for any of the main outcomes [Δ 25-hydroxyvitamin D: -0.80 ± 5.28 $ng\ mL^{-1}$ (mean \pm SE) versus 3.08 ± 3.66 $ng\ mL^{-1}$, P = 0.42; Δ collagen-type 1 cross-linked C-telopeptide: 0.011 ± 0.014 $ng\ mL^{-1}$ versus -0.004 ± 0.009 $ng\ mL^{-1}$, P = 0.48; Δ osteocalcin: 1.13 ± 1.12 $ng\ mL^{-1}$ versus 0.46 ± 0.75 $ng\ mL^{-1}$, P = 0.80; Δ N-terminal propeptide of type 1 collagen: 2.07 ± 3.05 $\mu g\ L^{-1}$ versus -1.05 ± 2.13 $\mu g\ L^{-1}$, P = 0.48]. There were no further differences in subgroup analyses (continuous positive airway pressure-compliant patients, patients with severe obstructive sleep apnea or sleepy patients). However, after 24 weeks irrespective of initial randomization, vitamin D increased in patients with severe obstructive sleep apnea (9.56 ± 5.51 $ng\ mL^{-1}$, P = 0.045) and in sleepy patients (14.0 ± 4.69 $ng\ mL^{-1}$, P = 0.007). Also, there was a significant increase in osteocalcin at 24 weeks (3.27 ± 1.06 $ng\ mL^{-1}$, P = 0.01) in compliant patients.

We conclude that 12 weeks of continuous positive airway pressure did not modulate vitamin D or modulate any of the bone turnover markers compared with sham. However, it is plausible that continuous positive airway pressure may have late beneficial effects on vitamin D levels and bone turnover markers in selected groups of patients with obstructive sleep apnea.

14. HEADACHES

Upper cervical spine palpation

The Journal of Headache and Pain
December 2017, 18:97| Cite as

Stratifying migraine patients based on dynamic pain provocation over the upper cervical spine

Kerstin Luedtke Arne May

Abstract

Background

Migraine patients usually report a high prevalence of neck pain preceding or during the migraine attack. A recent investigation of musculoskeletal dysfunctions in migraine patients concluded that neck pain is not simply a symptom of the migraine attack but corresponds to identifiable muscle and joint alterations. Particularly pain provocation using palpation of the joints in the upper cervical spine was significantly more prevalent in patients with migraine than in headache-free participants.

Methods

One hundred seventy-nine migraineurs (diagnosed according to IHS classification criteria version III beta) and 73 age- and gender-matched healthy controls were examined by a physiotherapist blinded towards the diagnosis, using a palpation technique over the upper cervical spine. The palpation combined oscillating movements and sustained pressure.

Findings

Using simple palpation of the upper cervical spine, migraine patients can be stratified into three groups: painfree (11%), local pain only (42%), and pain referred to the head during sustained pressure (47%). Combining both test components (palpation and sustained pressure) has a high sensitivity and specificity for migraine.

Conclusions

The response to palpation of the upper cervical spine may indicate migraine subtypes. The presence of musculoskeletal dysfunctions of the upper cervical spine should be identified and treated to avoid ongoing nociceptive input into the trigeminocervical complex.

Eye motions and migraine

Headache. 2017 Sep 25. doi: 10.1111/head.13185.

Probing Early Motion Processing With Eye Movements: Differences of Vestibular Migraine, Migraine With and Without Aura in the Attack Free Interval.

Rogalinski S¹, Rambold HA¹.

BACKGROUND:

Migraineurs, in between headache attacks, have a different sensitivity to sensory motion stimuli compared to non-migraineurs.

METHODS:

This cross-sectional laboratory study examines the motion processing in migraineurs using ocular following responses (OFR) elicited by large field random dot patterns and open-loop smooth pursuit eye movements (PS) elicited by a single target moving on a homogenous background. Eye movements were recorded with a video-oculographic system (EyeSeeTec[®]) and stimuli presented on a CRT at 100 Hz repetition rate to horizontal stimuli of a velocity of 2.5 to 160°/s. Eye movements were analyzed during the open loop period.

RESULTS:

We recorded 43 migraine patients: 14 migraine with (MwA), 19 without aura (MwoA), 10 vestibular migraine (VM), and 16 healthy controls. ANOVA analysis of OFR responses amplitudes showed significant differences in the subgroup (control, MwA, MwoA, and VM) ($F_{3,409} = 29.8$, $P < .001$), stimulus velocity ($F_{6,406} = 12.6$, $P < .001$), and interaction ($F_{18,394} = 1.9$, $P = .015$). Fitting the OFR response velocity tuning by a "Weibull" function showed that the subgroups were different in the linear scaling factor ($F_{4,53} = 4.3$, $P < .001$) but not in parameters defining the overall form of the tuning function. In contrast, the initial open-loop responses of PS were not changed compared to control for the three different migraine subgroups.

CONCLUSION:

From the findings, we hypothesize that in the migraine subtypes, MwA and VM, there is different sensory motion information processing for OFR compared to MwoA and control, not explained by a neuronal hyperexcitability in V5. OFR might be a possible subclinical marker in the future to diagnose MwA and VM

20 A. ROTATOR CUFF**EMG of****A Systematic Review of EMG Studies in Normal Shoulders to Inform Postoperative Rehabilitation Following Rotator Cuff Repair**

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:0 Issue:0 Pages:1–43 DOI:10.2519/jospt.2017.7271**

Study Design

Systematic review.

Background

Electromyography (EMG) has previously been used to guide postoperative rehabilitation progression following rotator cuff repair, to prevent deleterious loading of early surgical repair.

Objective

To review the current literature investigating EMG during rehabilitation exercises in normal shoulders, to identify exercises that meet a cut point of $\leq 15\%$ maximal voluntary isometric contraction (MVIC) and unlikely to result in excessive loading in the early postoperative stages.

Methods

An electronic search of MEDLINE via Ovid, EMBASE, CINAHL, SPORTDiscus, PubMed and Cochrane Library for all years up until June 2016 was performed. Studies were selected in relation to pre-defined selection criteria. Pooled mean MVICs were reported and classified as low (0%-15% MVIC); low-moderate (16-20% MVIC) moderate (21%-40% MVIC); high (41%-60% MVIC); and very high (>60% MVIC).

Results

2159 studies in total were initially identified, and after applying the selection criteria, 22 studies were included for quality assessment, data extraction and data synthesis. In total, 43 exercises spanning passive ROM, active-assisted ROM and strengthening exercises were evaluated. Nine (out of 13) and 10 (out of 13) active-assisted exercises were identified to be suitable ($\leq 15\%$ MVIC) to load supraspinatus and infraspinatus respectively, early postoperatively. All exercises were placed in a theoretical continuum model whereby general recommendations can be made for prescription in patients post rotator cuff repair.

Conclusion

This review identifies passive and active-assisted exercises that are proposed to be appropriate in the early stages post rotator cuff repair. *J Orthop Sports Phys Ther, Epub 13 Jul 2017.*
doi:10.2519/jospt.2017.7271

Retear timeline

J Shoulder Elbow Surg. 2017 Sep 13. pii: S1058-2746(17)30436-6. doi: 10.1016/j.jse.2017.07.015.

The timing of retears after arthroscopic rotator cuff repair.

Chona DV¹, Lakomkin N², Lott A², Workman AD², Henry AC², Kuntz AF², Huffman GR², Glaser DL².

BACKGROUND:

Little is known about the time dependence of the failure rate of surgically repaired rotator cuffs. Retears are significant, as they are common and may lead to less satisfactory outcomes and additional operations. Their timing is critical foundational information for understanding failure mechanisms. However, this remains unclear. Currently, there exist a number of studies that have reported retear rates at specific time points. Combining data from these publications can reveal when cuffs retear, which will help inform expectations and guidelines for progression of activity after surgery.

METHODS:

PubMed, Medline, and Embase were searched for studies relating to rotator cuff repair. Abstracts and articles were evaluated on the basis of predefined inclusion and exclusion criteria. Data were extracted from those publications that satisfied all requirements, and regression analysis was performed.

RESULTS:

Thirteen articles were included in the final meta-analysis. Retear rates for medium tears increased for approximately 15 months and leveled off at approximately 20%. Retear rates for large tears progressed steadily for about 12 months and approached an upper limit of approximately 40%. Retear rates for massive tears ranged from 20% to 60%, but the distribution of retear rate over time for these cuff tears is not clear from these data.

CONCLUSION:

Retear rates for medium and large tears generally increase until at least 10-15 months after surgery, after which they are likely to level off. Retear rates for massive tears are variable and may follow a time course different from that of other tear sizes. Retear rates depend on size of the original tear.

22 B. INSTABILITY**Exercise for multidirectional instability****The effects of a conservative rehabilitation program for multidirectional instability of the shoulder**

Lyn Watson, DPhysio Simon Balster, BPhysio(Hons) Ross Lenssen, BHSc Greg Hoy, FRACS, Tania Pizzari, PhD

DOI: <http://dx.doi.org/10.1016/j.jse.2017.07.002>

Background

Conservative management is commonly recommended as the first-line treatment for multidirectional instability (MDI) of the shoulder. Despite this, the evidence for efficacy of treatment is limited, and until recently, guidance for clinicians on conservative rehabilitation programs has been inadequate. This study evaluated the effectiveness of a physiotherapy-led exercise program for participants with MDI.

Methods:

In a single-group study design, 43 participants (16 male, 27 female; mean age, 19.8 years, standard deviation, 4.9 years) diagnosed with MDI undertook a 12-week exercise program. Primary outcome measures were the Melbourne Instability Shoulder Score, Western Ontario Shoulder Instability Index, and Oxford Shoulder Instability Score. Secondary outcomes were strength and scapular position. All measures were taken at baseline and repeated at the conclusion of the program. Test differences before and after rehabilitation were evaluated with dependent *t* tests and single-group effect size calculations (standardized mean difference [SMD]) to provide a measure of the magnitude of the difference.

Results

Large effects were found between pre- and postrehabilitation scores on all functional instability questionnaires, with the Western Ontario Shoulder Instability Index demonstrating the largest effect (SMD, -3.04). Scapular upward rotation improved significantly in the early ranges of abduction (0°-60°), with moderate to large effects (SMDs, 0.54-0.95). All strength measures significantly improved, with large differences identified (SMDs, 0.69-2.08).

Conclusion

The identified improvement in functional status, shoulder muscle strength, and scapular positioning after rehabilitation allows greater confidence in the value of conservative management of MDI and informs further research by way of clinical trials in the area.

25. WRIST AND HAND

OA of the hand and central changes

Sensorimotor performance and function in people with osteoarthritis of the hand: A case-control comparison

Seminars in Arthritis and Rheumatism | September 27, 2017

sponsor

Magni NE, et al.

The objectives of this study are to figure out if hand left/right judgements, tactile acuity, and body perception are impaired in people with hand osteoarthritis (OA), investigate the connection between left-right judgements, tactile acuity and hand pain and evaluate the relationships between sensorimotor measures (left/right judgements, tactile acuity) and measures of hand function in people with hand OA. These outcomes provide proof of specific brain-related changes in working body schema in people with hand OA.

Methods

- For this research, they designed a case-control comparison study.
- Twenty patients with symptomatic hand OA and 19 healthy pain-free controls undertook a hand left/right judgment task, a control left/right judgement task, two-point discrimination (TPD) threshold testing (evaluating tactile acuity), a neglect-like symptoms questionnaire (assessing body perception) and several established measures of hand function.

Results

- In this study, they observed neglect-like symptoms were experience more frequently in the hand OA group ($P < 0.05$).
- People with hand OA were slower ($P < 0.05$) and less accurate ($P < 0.05$) in the hand left/right judgement task when compared to healthy controls, with no significant difference in the control task.
- Significant associations were found between hand left/right judgement reaction time and pain intensity ($P < 0.05$) and accuracy and pain intensity ($P < 0.05$).
- TPD was not different between groups, and no correlation was observed between TPD and left/right judgement performance.
- There was no association between left/right judgement performance and measures of hand function (all $P > 0.05$).
- However, TPD (tactile acuity) was associated with several measures of hand function (all $P < 0.05$).

28. REPLACEMENTS

Anterior approach

Comparison of supercapsular percutaneously assisted approach total hip versus conventional posterior approach for total hip arthroplasty: A prospective, randomized controlled trial

Journal of Orthopaedic Surgery and Research | September 27, 2017

Xie J, et al.

This study compared the early outcomes and radiologic outcomes with supercapsular percutaneously assisted total hip arthroplasty (SuperPath) approach versus conventional posterior approach in adult patients with primary hip osteoarthritis who underwent total hip arthroplasty. Findings demonstrated that the SuperPath technique versus conventional technique afforded shorter length of stay (LOS), earlier time to walk and climb, lower postoperative pain levels, early postoperative rehabilitation and faster recovery.

Gender mortality

The influence of patient gender on morbidity following total hip or total knee arthroplasty

Journal of Arthroplasty | September 20, 2017

Basques BA, et al.

This study investigated gender-based differences in operative time, length of stay, 30-day complications, and readmissions in patients who underwent total hip arthroplasty (THA) and total knee arthroplasty (TKA). An increased risk of multiple individual adverse events including death, surgical site infection, cardiac arrest, return to the operating room, and readmission, was observed in males, while the risk of urinary tract infection and blood transfusion was more in females.

32 A. KNEE/ACL**Symmetry and ACL**

Knee Surg Sports Traumatol Arthrosc. 2017 Sep 15. doi: 10.1007/s00167-017-4712-6.

Strength and functional symmetry is associated with post-operative rehabilitation in patients following anterior cruciate ligament reconstruction.

Ebert JR^{1,2}, Edwards P^{3,4}, Yi L³, Joss B⁴, Ackland T³, Carey-Smith R^{5,6,7}, Buelow JU⁵, Hewitt B⁸.

PURPOSE:

To investigate strength and functional symmetry during common tests in patients after anterior cruciate ligament reconstruction (ACLR), and its association with post-operative rehabilitation.

METHODS:

At a median 11.0 months post-surgery (range 10-14), 111 ACLR patients were assessed. A rehabilitation grading tool was employed to evaluate the duration and supervision of rehabilitation, as well as whether structured jumping, landing and agility exercises were undertaken. Patients completed the Noyes Activity Score (NSARS), maximal isokinetic knee extensor and flexor strength assessment, and a 4-hop test battery. Limb Symmetry Indices (LSIs) were calculated, presented for the entire group and also stratified by activity level. ANOVA evaluated differences between the operated and unaffected limbs across all tests. Correlations were undertaken to assess the relationship between post-operative rehabilitation and objective test LSIs.

RESULTS:

The unaffected limb was significantly better ($p < 0.0001$) than the operated limb for all tests. Only 52-61 patients (47-55%) demonstrated LSIs $\geq 90\%$ for each of the hop tests. Only 34 (30.6%) and 61 (55.0%) patients were $\geq 90\%$ LSI for peak quadriceps and hamstring strength, respectively. Specifically in patients actively participating in jumping, pivoting, cutting, twisting and/or turning sports, 21 patients (36.8%) still demonstrated an LSI $< 90\%$ for the single hop for distance, with 37 patients (65.0%) at $< 90\%$ for peak knee extension strength. Rehabilitation was significantly associated with the LSIs for all tests.

CONCLUSION:

Rehabilitation was significantly correlated with limb symmetry, and lower limb symmetry was below recommended criterion for many community-level ACLR patients, including those already engaging in riskier activities. It is clear that many patients are not undertaking the rehabilitation required to address post-operative strength and functional deficits, and are being cleared to return to sport (or are returning on their own accord) without appropriate evaluation and further guidance.

LEVEL OF EVIDENCE: IV.

34. PATELLA**Differences between adults and children****Characteristics and Outcome of Patellofemoral Pain in Adolescents: Do They Differ From Adults?**

Authors: Marienke van Middelkoop, PhD¹, Rianne A. van der Heijden, MD¹, Sita M.A. Bierma-Zeinstra, PT, PhD^{1,2}

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:**0 **Issue:**0 **Pages:**1–13 **DOI:**10.2519/jospt.2017.7326

Study Design

Case-series with one-year follow-up.

Background

Most of the recommendations on the diagnosis, treatment, and prognosis of patellofemoral pain (PFP) are based on research performed in adults. The literature suggest potential differences between adolescent and adults with PFP.

Objectives

To investigate differences in characteristics, symptoms, and prognosis at 1-year follow-up, between adolescents and adults with PFP.

Methods

Data from 64 patients with PFP at baseline and one-year follow-up were used. At baseline, data on demographics, symptoms, and coping strategies were obtained by questionnaire. Physical examination included strength and flexibility measurements of the quadriceps and hamstring. At 1-year follow-up a questionnaire was used to collect data on pain, function, and recovery. Differences between adolescent (14-18 years) and adults (18-40 years) were analysed using regression techniques, adjusted for sex, body mass index (BMI), and the presence of bilateral pain.

Results

Of the 64 patients with PFP included at baseline, 78.1% were available for follow-up. At baseline, adolescents with PFP had a significantly lower BMI (20.7 versus 24.9 kg/m²), a greater percentage reported bilateral pain (70% versus 43.2%), and crepitus was less frequently present (30% versus 52.3%). There was no difference in reported pain and symptoms between the 2 groups. In total, 25% of the adolescents regarded themselves recovered after one year compared to 22.7% of the adults (adjusted P-value 0.725).

Conclusion

The sample size of the study, in relation with the number of statistical tests performed urge caution in the interpretation of results. Though, in contrast to what has been suggested previously, only minor differences seem to exist between adolescents and adults with PFP. In both groups, PFP is clearly not a self-limiting disease, with near 75% of those in this study reporting persistent pain at 1-year follow-up. *J Orthop Sports Phys Ther*, Epub 4 Sep 2017. doi:10.2519/jospt.2017.7326

Femoral taping for PFP

Clin J Sport Med. 2017 Sep;27(5):438-443. doi: 10.1097/JSM.0000000000000392.

Effects of Femoral Rotational Taping on Dynamic Postural Stability in Female Patients With Patellofemoral Pain.

Song CY¹, Lin JJ, Chang AH.

OBJECTIVE:

To investigate the effects of femoral rotational taping on task performance, dynamic postural control, and pain during the Star Excursion Balance Test (SEBT) in patients with patellofemoral pain (PFP) compared to healthy controls.

DESIGN:

Case-control study, pretest-posttest.

SETTING:

Laboratory.

PARTICIPANTS:

Twenty-four female participants (16 with PFP, 8 controls).

INTERVENTIONS:

Participants in both the PFP and control groups performed SEBT with no taping, sham taping, and femoral rotational taping.

MAIN OUTCOME MEASURES:

The maximum anterior excursion distance, 3-dimensional hip and knee kinematics of the stance leg, and pain score (VAS) during SEBT were recorded. The coefficients of variance (CV) of kinematic data gathered from electromagnetic sensors on pelvis and femur were calculated to represent segmental stability.

RESULTS:

When performing the SEBT in the anterior direction, application of femoral rotational taping increased maximum excursion distance (65.57% vs 66.15% leg length, $P = 0.027$), decreased hip adduction excursion (47.6 vs 32.1 degrees, $P = 0.010$), and pain (3.34 vs 2.38, $P = 0.040$) in the PFP group. Femoral rotational taping also improved the medial-lateral (7.1 vs 4.6, $P = 0.015$) and proximal-distal stability (7.5 vs 4.5, $P = 0.020$) of the pelvis, and medial-lateral stability (7.2 vs 6.1, $P = 0.009$) of the femur.

CONCLUSIONS:

The results support the use of femoral rotational taping for improving dynamic postural control and reducing pain during SEBT.

35. KNEE/TOTAL**Reasons for revisions****Failure After Modern Total Knee Arthroplasty: A Prospective Study of 18,065 Knees**

Michael Pitta, M.D. Christina I. Esposito, Ph.D. Zhichang Li, M.D. Yuo-yu Lee, M.S.
Timothy M. Wright, Ph.D. Douglas E. Padgett, M.D.

DOI: <http://dx.doi.org/10.1016/j.arth.2017.09.041>

Abstract**Background**

The purpose of our study is to determine the mechanism of failure among primary TKAs performed at our institution. We asked the following research questions (1) What are the most common failure modes for modern TKA designs? (2) What are preoperative risk factors for failure following primary TKA?

Methods

From May 2007 to December 2012, 18,065 primary TKAs were performed in 16,083 patients at a single institution were recorded in a prospective TJA registry with a minimum of 5 year follow-up. We retrospectively reviewed patient charts to determine a cause of failure for primary TKAs. A cox proportional hazard model was used to determine risk of revision surgery following primary TKA.

Results

The most common reasons for failure within 2 years were infection and stiffness. The multivariable regression identified preoperative risk factors for TKA failure with the hazard ratios. The hazard ratio is 4.68 for patients with reported drug abuse ($p=0.03$), 3.52 for preoperative deformity & mechanical ICD-9 diagnostic codes versus OA ($p<0.01$), 1.99 for patients with CCK poly versus PS ($p<0.01$) and 1.78 for posttraumatic and trauma preoperative ICD-9 codes versus OA diagnosis ($p=0.03$). Finally, advancing age was shown to be protective for failure with a 0.61 hazard ratio ($p<0.01$).

Conclusion

The major reasons for revision TKA were due to infection, instability, aseptic loosening and stiffness. Identifiable factors for revision TKA were, in decreasing order, history of drug abuse, deformity/mechanical preoperative diagnosis, having a CCK implant over PS implant, posttraumatic/trauma preoperative diagnosis and younger age.

37. OSTEOARTHRITIS/KNEE**Injections helps**

J Am Acad Orthop Surg. 2017 Oct;25(10):703-714. doi: 10.5435/JAAOS-D-16-00541.

Efficacy and Treatment Response of Intra-articular Corticosteroid Injections in Patients With Symptomatic Knee Osteoarthritis.

Matzkin EG¹, Curry EJ, Kong Q, Rogers MJ, Henry M, Smith EL.

INTRODUCTION:

Intra-articular corticosteroid injections are often used for short-term pain relief in patients with knee osteoarthritis (OA). This study investigates the efficacy of intra-articular corticosteroid injections in patients with symptomatic knee OA and factors that affect treatment response.

METHODS:

This prospective, multicentered cohort study had 100 participants with radiographic evidence of knee OA enrolled. Participants received one corticosteroid injection into the affected knee and were evaluated before the injection (baseline) and at 3 weeks, 6 weeks, 3 months, and 6 months after the injection.

RESULTS:

Participants' Visual Numeric Scale and Western Ontario and McMaster Universities Arthritis Index (WOMAC) scores improved at all time points except for the Visual Numeric Scale score at 6 months, compared with baseline scores ($P < 0.001$). Participants with Kellgren-Lawrence grade 1 or 2 OA saw clinical improvement in the WOMAC scores at all time points, compared with the baseline score ($P < 0.01$). Compared with all other subgroups, obese patients with Kellgren-Lawrence grade 3 or 4 OA had significantly worse WOMAC scores at baseline, 6 weeks, and 3 months ($P < 0.01$ and $P < 0.01$, respectively).

DISCUSSION:

Our findings validate previously established guidelines for nonsurgical management of knee OA and suggest that intra-articular corticosteroid injections may be an acceptable short-term management option in patients unwilling or unable to undergo surgical treatment. Obesity and OA severity affect the efficacy of intra-articular corticosteroid injections.

CONCLUSION:

Patients receiving intra-articular corticosteroid injections had improved pain and function. Clinicians should expect less improvement in patients with obesity and/or advanced arthritis. Clinical benefits of intra-articular injections in these patients are less predictable.

Knee alignment**Knee Alignment is Quantitatively Related to Periarticular Bone Morphometry and Density, Especially in those with Osteoarthritis**

Grace H. Lo, Mehveen Merchant, Jeffrey B. Driban, Jeffrey Duryea, Lori Lyn Price, Charles B. Eaton, Timothy E. McAlindon

DOI: 10.1002/art.40325 View/save citation

Objective

Static alignment influences knee loading and predicts osteoarthritis (OA) progression. Periarticular bone is important in dispersing forces across the knee. And there is substantial evidence for molecular crosstalk between cartilage and subchondral bone. Our objective was to evaluate the relationship of periarticular trabecular morphology and bone mineral density (BMD) with knee alignment.

Methods

This was a cross-sectional analysis of Osteoarthritis Initiative (OAI) Bone Ancillary Study participants. Dual-energy x-ray absorptiometry (DXA) measured tibial periarticular BMD (paBMD). Knee trabecular magnetic resonance images (MRIs) were used to calculate apparent bone volume fraction, trabecular number, spacing and thickness (aBVF, aTb.N, aTb.Sp, and aTb.Th). Static alignment, hip-knee-ankle (HKA) angle, was measured on long limb films.

Results

436 participants, mean age 65.4 years (s.d. 9.2), 46% female, mean body mass index 29.6 kg/m²(s.d. 4.6); 71% had OA. Correlations between HKA and medial:lateral paBMD, medial paBMD, aBVF, aTb.N, aTb.Th, and aTb.Sp were -0.63, -0.34, -0.29, -0.32, -0.22, 0.30 respectively (more varus alignment was associated with higher medial:lateral paBMD, medial paBMD, aBVF, aTb.N, and aTb.Th and lower aTb.Sp). In OA knees, the results were more pronounced. In non-OA knees, the most consistent association was with medial:lateral paBMD.

Conclusion

Static alignment was associated with medial:lateral paBMD in all knees; and with medial paBMD and trabecular morphometry in OA knees only. Aberrant knee loading may lead to increased relative subchondral bone density, partly related to higher bone volume fraction, number of thicker trabeculae with smaller inter-trabecular spacing. Knee DXA may be a useful early biomarker for knee OA.

38 B. FOOT TYPES**Flat foot**

Eur J Orthop Surg Traumatol. 2017 Jan 24. doi: 10.1007/s00590-017-1909-9.

Clinical and radiological outcome of calcaneal lengthening osteotomy for flatfoot deformity in skeletally immature patients.

Marengo L¹, Canavese F², Mansour M¹, Dimeglio A³, Bonnel F³.

BACKGROUND:

The purpose of this study was to evaluate the clinical, functional and radiological outcome of calcaneal lengthening osteotomy for the treatment of symptomatic flatfoot deformity in skeletally immature patients.

METHODS:

A retrospective review was led on 31 prospectively enrolled patients with symptomatic flatfoot. Twenty-seven out of 31 patients met the inclusion criteria, for a total of 38 operated feet. Mean age at time of surgery was 13.3 ± 2.2 years (range 7.8-17). Mean BMI at time of surgery was 19.3 ± 4.9 (range 12.3-32). In order to assess clinical and functional outcome, all patients were evaluated according to Yoo et al., Mosca and AOFAS clinical criteria before surgery and at last follow-up visit. Moreover, all patients underwent anteroposterior and lateral weight-bearing foot radiographs preoperatively, at 3-4-month post-surgery and at last follow-up visit.

RESULTS:

Average Yoo et al. score was 3.3 ± 1 (range 0-4) preoperatively and improved to 9.8 ± 2.1 (range 3-12) at last follow-up ($p < 0.001$). Clinical outcome was satisfactory in 34 feet (89%) and unsatisfactory in 4 feet (11%). The same results were observed when Mosca clinical criteria were applied. AOFAS score improved significantly from a preoperative mean value of 49.9 ± 16 (range 23-75) to a postoperative value of 89 ± 15.9 (range 34-100) ($p < 0.001$). All radiographic parameters improved significantly from mean preoperative to mean 3-4-month postoperative value. Correction was maintained at last follow-up visit. Postoperative radiographs showed calcaneocuboid (C-C) joint subluxation in 29 (76%) feet. Final AP and lateral foot radiographs showed complete bone union and good bone graft remodeling. Furthermore, correct joint alignment was restored in all but two patients (93%).

CONCLUSIONS:

Calcaneal lengthening osteotomy is not contraindicated in symptomatic flatfoot of different etiologies, except neuromuscular disease-related flatfoot that can affect bone quality and reduce foot flexibility. C-C joint subluxation is frequently observed but has little functional impact as it tends to remodel over time.

39 A. ORTHOTICS

use of

Br J Sports Med. 2017 Sep 21. pii: bjsports-2016-097355. doi: 10.1136/bjsports-2016-097355.

Foot orthoses for plantar heel pain: a systematic review and meta-analysis.

Whittaker GA^{1,2}, Munteanu SE^{1,2}, Menz HB^{1,2}, Tan JM^{1,2}, Rabusin CL^{1,2}, Landorf KB^{1,2}.

OBJECTIVE:

To investigate the effectiveness of foot orthoses for pain and function in adults with plantar heel pain.

DESIGN:

Systematic review and meta-analysis. The primary outcome was pain or function categorised by duration of follow-up as short (0 to 6 weeks), medium (7 to 12 weeks) or longer term (13 to 52 weeks).

DATA SOURCES:

Medline, CINAHL, SPORTDiscus, Embase and the Cochrane Library from inception to June 2017.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES:

Studies must have used a randomised parallel-group design and evaluated foot orthoses for plantar heel pain. At least one outcome measure for pain or function must have been reported.

RESULTS:

A total of 19 trials (1660 participants) were included. In the *short term*, there was very low-quality evidence that foot orthoses do not reduce pain or improve function. In the *medium term*, there was moderate-quality evidence that foot orthoses were more effective than sham foot orthoses at reducing pain (standardised mean difference -0.27 (-0.48 to -0.06)). There was no improvement in function in the medium term. In the *longer term*, there was very low-quality evidence that foot orthoses do not reduce pain or improve function. A comparison of customised and prefabricated foot orthoses showed no difference at any time point.

CONCLUSION:

There is moderate-quality evidence that foot orthoses are effective at reducing pain in the medium term, however it is uncertain whether this is a clinically important change.

46 B. LOWER LIMB NEUROMOBILIZATION

Effectiveness of

RESEARCH REPORT

The Effectiveness of Neural Mobilization for Neuromusculoskeletal Conditions: A Systematic Review and Meta-analysis

Authors: Annalie Basson, PhD¹, Benita Olivier, PhD¹, Richard Ellis, PhD², Michel Coppieters, PhD³⁻⁵, Aimee Stewart, PhD¹, Witness Mudzi, PhD¹

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:**47 **Issue:**9 **Pages:**593–615 **DOI:**10.2519/jospt.2017.7117

Study Design Systematic review with meta-analysis.

Objectives To determine the efficacy of neural mobilization (NM) for musculoskeletal conditions with a neuropathic component.

Background Neural mobilization, or neurodynamics, is a movement-based intervention aimed at restoring the homeostasis in and around the nervous system. The current level of evidence for NM is largely unknown.

Methods A database search for randomized trials investigating the effect of NM on neuromusculoskeletal conditions was conducted, using standard methods for article identification, selection, and quality appraisal. Where possible, studies were pooled for meta-analysis, with pain, disability, and function as the primary outcomes.

Results Forty studies were included in this review, of which 17 had a low risk of bias. Meta-analyses could only be performed on self-reported outcomes. For chronic low back pain, disability (Oswestry Disability Questionnaire [0–50]: mean difference, –9.26; 95% confidence interval [CI]: –14.50, –4.01; $P < .001$) and pain (intensity [0–10]: mean difference, –1.78; 95% CI: –2.55, –1.01; $P < .001$) improved following NM. For chronic neck-arm pain, pain improved (intensity: mean difference, –1.89; 95% CI: –3.14, –0.64; $P < .001$) following NM. For most of the clinical outcomes in individuals with carpal tunnel syndrome, NM was not effective ($P > .11$) but showed some positive neurophysiological effects (eg, reduced intraneural edema). Due to a scarcity of studies or conflicting results, the effect of NM remains uncertain for various conditions, such as postoperative low back pain, cubital tunnel syndrome, and lateral epicondylalgia.

Conclusion

This review reveals benefits of NM for back and neck pain, but the effect of NM on other conditions remains unclear. Due to the limited evidence and varying methodological quality, conclusions may change over time.

Level of Evidence

Therapy, level 1a. *J Orthop Sports Phys Ther* 2017;47(9):593–615. Epub 13 Jul 2017. doi:10.2519/jospt.2017.7117

52. EXERCISE

Exercise and CV health

The effect of physical activity on mortality and cardiovascular disease in 130 000 people from 17 high-income, middle-income, and low-income countries: the PURE study

Dr Scott A Lear, PhD Salim Yusuf, DPhil

DOI: [http://dx.doi.org/10.1016/S0140-6736\(17\)31634-3](http://dx.doi.org/10.1016/S0140-6736(17)31634-3)

Background Physical activity has a protective effect against cardiovascular disease (CVD) in high-income countries, where physical activity is mainly recreational, but it is not known if this is also observed in lower-income countries, where physical activity is mainly non-recreational. We examined whether different amounts and types of physical activity are associated with lower mortality and CVD in countries at different economic levels.

Methods In this prospective cohort study, we recruited participants from 17 countries (Canada, Sweden, United Arab Emirates, Argentina, Brazil, Chile, Poland, Turkey, Malaysia, South Africa, China, Colombia, Iran, Bangladesh, India, Pakistan, and Zimbabwe). Within each country, urban and rural areas in and around selected cities and towns were identified to reflect the geographical diversity. Within these communities, we invited individuals aged between 35 and 70 years who intended to live at their current address for at least another 4 years. Total physical activity was assessed using the International Physical Activity Questionnaire (IPQA). Participants with pre-existing CVD were excluded from the analyses. Mortality and CVD were recorded during a mean of 6·9 years of follow-up. Primary clinical outcomes during follow-up were mortality plus major CVD (CVD mortality, incident myocardial infarction, stroke, or heart failure), either as a composite or separately. The effects of physical activity on mortality and CVD were adjusted for sociodemographic factors and other risk factors taking into account household, community, and country clustering.

Findings Between Jan 1, 2003, and Dec 31, 2010, 168 916 participants were enrolled, of whom 141 945 completed the IPAQ. Analyses were limited to the 130 843 participants without pre-existing CVD. Compared with low physical activity (<600 metabolic equivalents [MET] × minutes per week or <150 minutes per week of moderate intensity physical activity), moderate (600–3000 MET × minutes or 150–750 minutes per week) and high physical activity (>3000 MET × minutes or >750 minutes per week) were associated with graded reduction in mortality (hazard ratio 0·80, 95% CI 0·74–0·87 and 0·65, 0·60–0·71; $p<0\cdot0001$ for trend), and major CVD (0·86, 0·78–0·93; $p<0\cdot001$ for trend). Higher physical activity was associated with lower risk of CVD and mortality in high-income, middle-income, and low-income countries. The adjusted population attributable fraction for not meeting the physical activity guidelines was 8·0% for mortality and 4·6% for major CVD, and for not meeting high physical activity was 13·0% for mortality and 9·5% for major CVD. Both recreational and non-recreational physical activity were associated with benefits.

Interpretation

Higher recreational and non-recreational physical activity was associated with a lower risk of mortality and CVD events in individuals from low-income, middle-income, and high-income countries. Increasing physical activity is a simple, widely applicable, low cost global strategy that could reduce deaths and CVD in middle age.

Strength gains

Effects of rest interval duration in resistance training on measures of muscular strength: A systematic review

Sports Medicine | September 21, 2017

Grgic J, et al.

This systematic review aimed to aggregate findings and interpret the studies that evaluated chronic muscular strength adaptations to resistance training interventions involving different rest interval (RI) durations and to provide evidence-based recommendations for exercise practitioners and athletes. The authors revealed that even with short RIs (< 60 s), robust gains in muscular strength could be achieved. However, in resistance-trained individuals, it seemed that longer duration RIs (> 2 min) were required to maximize strength gains. It appeared that short to moderate RIs (60–120 s) were sufficient for maximizing muscular strength gains with regard to untrained individuals.

LBP ex

Spine (Phila Pa 1976). 2017 Aug 15;42(16):1220-1225. doi: 10.1097/BRS.0000000000002063.

Associations Between Low Back Pain and Muscle-strengthening Activity in U.S. Adults.

Alnojeidi AH¹, Johnson TM, Richardson MR, Churilla JR.

STUDY DESIGN:

This was a cross-sectional study.

OBJECTIVE:

The primary aim of the study was to examine the association between low back pain (LBP) and muscle-strengthening activity (MSA) among U.S. adults using gender-stratified analyses.

SUMMARY OF BACKGROUND DATA:

LBP is a common medical condition that impacts quality of life and professional productivity and increases the financial burden on the health care system by augmenting medical treatment costs. Previous studies analyzing gender-dependent relationships between MSA and LBP have produced mixed results.

METHODS:

Our sample included 12,721 participants from the 1999 to 2004 National Health and Nutrition Examination Survey (NHANES). Participants were categorized into one of three levels of self-reported MSA: no MSA, insufficient MSA (1 day/wk), or meeting the 2008 Department of Health and Human Services (DHHS) recommendation for MSA (≥ 2 days/wk).

RESULTS:

Gender-stratified analyses revealed significantly lower odds of reporting LBP among women [odds ratio (OR) 0.82, 95% confidence interval (CI) 0.70-0.96, $P=0.03$] and men (OR 0.86; 95% CI 0.70-0.96, $P=0.01$) who reported amounts of MSA that met the DHHS recommendation compared with those reporting no MSA. Following adjustment for smoking status, the odds remained significant among women ($P=0.03$) but not among men ($P=0.21$).

CONCLUSION:

These findings indicate that engaging in MSA at least 2 days/wk is associated with lower odds of LBP and that smoking may be an important mediating factor that should be considered in future LBP research.

54. POSTURE**Postural balance in athletes**

Clin J Sport Med. 2017 Sep;27(5):444-449. doi: 10.1097/JSM.0000000000000374.

Assessment of the Postural Stability of Female and Male Athletes.

Howell DR¹, Hanson E, Sugimoto D, Stracciolini A, Meehan WP 3rd.

OBJECTIVE:

Postural stability is often affected by sport-related injuries and subsequently evaluated during postinjury examinations. Intrinsic factors, however, may also affect postural control. We sought to compare the postural control of female and male athletes as measured simultaneously by (1) the modified balance error scoring system (mBESS) and (2) a video-force plate system.

DESIGN:

Cross-sectional study.

SETTING:

Sports injury prevention center.

PARTICIPANTS:

Pediatric, adolescent, and young adult athletes who performed mBESS during an injury prevention evaluation.

INDEPENDENT VARIABLES:

We compared the postural control of female and male athletes. We also accounted for independent variables associated with postural stability, including age, body mass index, and history of ankle injury, concussion, and migraine headache.

MAIN OUTCOME MEASURES:

Total errors committed during the mBESS and measurements derived from integrated kinematic and kinetic data obtained by a video-force plate system. Differences between males and females were tested using analysis of covariance.

RESULTS:

Participants (n = 409) ranged in age from 10 to 29 years (mean = 14.6 ± 2.8); 60% were female. No significant differences on mBESS were detected between females and males; however, female athletes demonstrated significantly better postural stability on the video-force plate analysis during double-leg (P = 0.03, d = 0.28), single-leg (P < 0.001, d = 0.62), and tandem stances (P < 0.001, d = 0.53) when compared with males.

CONCLUSIONS:

Uninjured female athletes demonstrate better postural stability on video-force plate analysis than their uninjured male counterparts. These findings provide an important information assistive to clinicians during interpretation of postinjury balance tests.

56. ATHLETICS

hypermobility

Hypermobility in Adolescent Athletes: Pain, Functional Ability, Quality of Life, and Musculoskeletal Injuries

Authors: Heidi Schmidt, PT, MHS¹, Trine Lykke Pedersen, MSS¹, Tina Junge, PT, PhD^{1,2}, Raoul Engelbert, PT, PhD^{3,4}, Birgit Juul-Kristensen, PT, PhD^{1,5}

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**0 **Issue:**0 **Pages:**1–24 **DOI:**10.2519/jospt.2017.7682

Study Design

Cross-sectional.

Background

Generalised joint hypermobility (GJH) may increase pain and likelihood of injuries and also decrease function and health-related quality of life (HRQoL) in elite level adolescent athletes.

Objectives

To assess the prevalence of GJH in elite level adolescent athletes, and to study the association of GJH with pain, function, HRQoL, and musculoskeletal injuries.

Methods

A total of 132 elite level adolescent athletes (36 males; 96 females), mean (SD) age 14.0 (0.9) years, participated (n=22 ballet dancers, n=57 teamgym gymnasts, n=53 team handball players). GJH was classified using the Beighton scores (BS) (GJH4: BS \geq 4/9, GJH5: BS \geq 5/9, GJH6: BS \geq 6/9). Function of lower extremity, musculoskeletal injuries, and HRQoL were assessed with self-reported questionnaires, and part of physical performance was assessed by 4 postural sway tests and 2 one-legged hop for distance tests.

Results

Overall prevalence for GJH4, GJH5 and GJH6 was 27.3%, 15.9%, and 6.8%, respectively, with a higher prevalence in ballet dancers and team gymnasts than in team handball players (GJH4: 68.2%, 24.6%, and 13.2 %). There was no significant difference in lower extremity function, injury prevalence and related factors (exacerbation, recurrence, and absence from training) HRQoL, or lengths of hop tests for those with and without GJH. However, the GJH group had significantly larger centre of pressure path length across sway tests.

Conclusion

For ballet dancers and teamgym gymnasts the prevalence of GJH4 was higher than for team handball players. For ballet dancers, the prevalence of GJH5 and GJH6 was higher than for team handball players and the general adolescent population. The GJH group demonstrated larger sway in the balance tests, which, in the current cross-sectional study did not have an association with injuries or HRQoL. However, the risk of having (ankle) injuries due to larger sway for the GJH group must be studied in future longitudinal studies. *J Orthop Sports Phys Ther*, Epub 15 Sep 2017. doi:10.2519/jospt.2017.7682

Keyword: ballet, Beighton, generalised joint hypermobility, gymnastic, handball, proprioception/balance

Multiple injuries

Clin J Sport Med. 2017 Sep;27(5):481-486. doi: 10.1097/JSM.0000000000000373.

Return to Sports After Multiple Trauma: Which Factors Are Responsible?-Results From a 17-Year Follow-up.

Weber CD¹, Horst K, Nguyen AR, Bader MJ, Probst C, Zelle B, Pape HC, Dienstknecht T.

OBJECTIVE:

We hypothesize that the majority of polytraumatized patients are unable to maintain their preinjury level of sporting activity, and that musculoskeletal injuries are a major contributing factor. We assessed the impact of such injuries on sporting prowess, with a focus on isolating, particularly debilitating musculoskeletal trauma.

METHODS:

We conducted a cohort study of 637 patients at a level 1 trauma centre, to assess the long-term outcome of severe trauma on return to sporting activities (RTS). Data collated on the multiply injured patient included preinjury physical activity, standardized outcome scores (SF-12, GOS, HASPOC), and clinical follow-up of at least 10 years duration. The return to preinjury sports participation was defined as a primary outcome parameter. Regression analyses were performed to identify specific injuries interfering with the RTS.

STUDY DESIGN:

Prognostic study; Level of evidence, II.

RESULTS:

Mean follow-up was 17 ± 5 years. We included 465 patients, including 207 athletic and 258 nonathletic individuals. Mean age at the time of injury was 26 ± 11.5 years and injury severity was comparable between the 2 cohorts. The deleterious effects on quality of life and the total duration of the rehabilitation process were also similar in athletes and nonathletes. Athletes were more likely to be unable to return to preinjury activities, or to return to a lower level of sporting prowess posttrauma. We identified knee injuries as the type of musculoskeletal trauma most likely to be career ending for the athlete (odds ratio 3.4, 95% confidence interval, 1.4-8.3; $P = 0.008$).

CONCLUSION:

Our results demonstrate an enforced shift from high-impact and team sports to low-impact activities after multiple trauma. Injuries of the lower extremities, especially around the knee joint, seem to have the highest lifechanging potential, preventing individuals from returning to their previous sporting activities.

MRi and Hamstring tears

Br J Sports Med. 2017 Sep 13. pii: bjsports-2017-097659. doi: 10.1136/bjsports-2017-097659.

Intramuscular tendon involvement on MRI has limited value for predicting time to return to play following acute hamstring injury.

van der Made AD^{1,2,3,4}, Almusa E¹, Whiteley R¹, Hamilton B⁵, Eirale C¹, van Hellemond F¹, Tol JL^{1,3}.

BACKGROUND:

Hamstring injury with intramuscular tendon involvement is regarded as a serious injury with a delay in return to play (RTP) of more than 50 days and reinjury rates up to 63%. However, this reputation is based on retrospective case series with high risk of bias.

OBJECTIVE:

Determine whether intramuscular tendon involvement is associated with delayed RTP and elevated rates of reinjury.

METHODS:

MRI of male athletes with an acute hamstring injury was obtained within 5 days of injury. Evaluation included standardised MRI scoring and scoring of intramuscular tendon involvement. Time to RTP and reinjury rate were prospectively recorded.

RESULTS:

Out of 70 included participants, intramuscular tendon disruption was present in 29 (41.4%) injuries. Injuries without intramuscular tendon disruption had a mean time to RTP of 22.2±7.4 days. Injuries with <50%, 50%-99% and 100% disruption of tendon cross-sectional area had a mean time to RTP of 24.0±9.7, 25.3±8.6 and 31.6±10.9 days, respectively. Injuries with full-thickness disruption took longer to RTP compared with injuries without disruption ($p=0.025$). Longitudinal intramuscular tendon disruption was not significantly associated with time to RTP. Waviness was present in 17 (24.3%) injuries. Mean time to RTP for injuries without and with waviness was 22.6±7.5 and 30.2±10.8 days ($p=0.014$). There were 11 (15.7%) reinjuries within 12 months, five (17.2%) in the group with intramuscular tendon disruption and six (14.6%) in the group without intramuscular tendon disruption.

CONCLUSION:

Time to RTP for injuries with full-thickness disruption of the intramuscular tendon and waviness is significantly longer (by slightly more than 1 week) compared with injuries without intramuscular tendon involvement. However, due to the considerable overlap in time to RTP between groups with and without intramuscular tendon involvement, its clinical significance for the individual athlete is limited.

59. PAIN**PT for pain of HIV****Physical therapy as non-pharmacological chronic pain management of adults living with HIV: Self-reported pain scores and analgesic use
HIV/AIDS - Research and Palliative Care | September 22, 2017**

Pullen S

Authors planned this work to assess the effect of physical therapy (PT) on self-reported pain scores and pain medication usage in people living with HIV (PLHIV) enrolled in a multidisciplinary HIV clinic. Results suggested PT intervention was effective, cost-effective, non-pharmacological method to decrease chronic pain in PLHIV.

Methods

- In PLHIV enrolled in a multidisciplinary HIV clinic, authors determined the effect of PT on self-reported pain scores and pain medication usage.
- They collected data via reviews of patient medical records within a certain timeframe.
- They gathered data from patient charts for two points: initial PT encounter (Time 1) and PT discharge or visit ≤ 4 months after initial visit (Time 2).

Results

- During the study period, subjects receiving PT reported decreased pain (65.2%), elimination of pain (28.3%), no change in pain (15.2%), and increased pain (6.5%).
- There were three-quarters of the subjects who reported a minimal clinically important difference (MCID) in pain score, and more than half that reported a decrease in pain score over the MCID.
- A trend of decreasing pain medication prescription and usage was observed among subjects during the study period.

Localized neuropathic pain

Localized neuropathic pain: An expert consensus on local treatments

Drug Design, Development and Therapy | September 21, 2017

Pickering G, et al.

Authors conduct this literature review to provide an overview of the current knowledge regarding the etiology and pathophysiology of localized neuropathic pain (LNP), its assessment and the existing topical pharmacological treatments. As per findings, for LNP treatment, successive international recommendations have included topical 5% lidocaine and 8% capsaicin. For LNP, especially in elderly patients and patients with comorbidities and polypharmacy, expert panel suggest considering these compounds as first-line treatment. They suggested following precautions for the use of plasters cautiously. Despite the necessity for more randomized controlled trials for both drugs, publications clearly demonstrated excellent risk/benefit ratios, safety, tolerance and continued efficacy throughout long-term treatment.

61. FIBROMYALGIA

Chronic Migraine

Headache. 2017 Sep 22. doi: 10.1111/head.13191.

Fibromyalgia Among Patients With Chronic Migraine and Chronic Tension-Type Headache: A Multicenter Prospective Cross-Sectional Study.

Cho SJ¹, Sohn JH², Bae JS³, Chu MK⁴.

OBJECTIVES:

To investigate the frequency and impact of fibromyalgia among patients with chronic migraine (CM) and chronic tension-type headache (CTTH).

BACKGROUND:

Fibromyalgia (FM) is a common comorbidity in patients with chronic headaches. CM and CTTH are the two common types of chronic headaches.

METHODS:

We conducted a cross-sectional study in neurology outpatient clinics of four university hospitals and selected first-visit 136 patients with CM and 35 patients with CTTH. FM was assessed based on the 2010 American College of Rheumatology diagnostic criteria.

RESULTS:

The frequency of FM was significantly higher among patients with CM when compared to those with CTTH (91/136 [66.9%] vs 9/35 [25.7%], $P < .001$). Logistic regression analyses revealed an increased odds ratio (OR) for FM for patients with CM when compared to those with CTTH after adjustment for age, sex, anxiety, depression, and insomnia (OR = 3.6, 95% confidence interval = 1.1-11.4). Furthermore, CM patients with FM had higher scores in FM Impact Questionnaire compared to CTTH patients with FM (51.5 ± 16.3 vs 43.7 ± 18.7 , $P = .015$). Comorbidity of FM was associated with increased frequency of photophobia, phonophobia, anxiety, depression, and insomnia among patients with CM. Such association was not noted among patients with CTTH.

CONCLUSION:

FM based on 2010 American College of Rheumatology diagnostic criteria was more prevalent among patients with CM than those with CTTH. Some clinical features and comorbidities of CM varied with the presence of FM.

62 A. NUTRITION/VITAMINS

Prev Med. 2017 Sep 6. pii: S0091-7435(17)30315-8. doi: 10.1016/j.ypmed.2017.08.031.

Associations of 100% fruit juice versus whole fruit with hypertension and diabetes risk in postmenopausal women: Results from the Women's Health Initiative.

Auerbach BJ¹, Littman AJ², Tinker L³, Larson J³, Krieger J⁴, Young B⁵, Neuhaus M⁶.

The objective of this study was to determine whether consumption of 100% fruit juice as compared to whole fruit is associated with increased risk of hypertension or diabetes. We analyzed postmenopausal women in the United States enrolled in the Women's Health Initiative between 1993 and 1998. Whole fruit and 100% fruit juice intake were assessed by baseline food frequency questionnaire. Standardized questionnaires assessed outcomes every 6-12 months during a mean 7.8 years of follow-up. Cox regression estimated hazard ratios (HR) and 95% confidence intervals (CI) for incident hypertension (n=36,314 incident cases/80,539 total participants) and diabetes (n=11,488 incident cases/114,219 total participants). In multivariable analyses there was no significant association comparing the highest to lowest quintiles of 100% fruit juice consumption (8oz/day compared to none) and incident hypertension (HR 1.00, 95% CI 0.97-1.03) or diabetes (HR 0.96, 95% CI 0.90-1.03). There was also no significant association between whole fruit consumption (2.4 servings/day compared to 0.3 servings/day) and incident hypertension (HR 1.02, 95% CI 0.98-1.05) or diabetes (HR 1.03, 95% CI 0.96-1.10).

Consuming moderate amounts of 100% fruit juice or whole fruit was not significantly associated with risk of hypertension or diabetes among postmenopausal US women.

62 B. CRYOTHERAPY

For post surgical pain

Orthop Nurs. 2017 Sep/Oct;36(5):344-349. doi: 10.1097/NOR.0000000000000382.

Effects of Localized Cold Therapy on Pain in Postoperative Spinal Fusion Patients: A Randomized Control Trial.

Quinlan P¹, Davis J, Fields K, Madamba P, Colman L, Tinca D, Cannon Drake R.

BACKGROUND:

Cold therapy used in the sports medicine settings has been found to be effective in reducing postoperative pain; however, there are limited studies that examine the effect of cold therapy on postoperative pain in patients with posterior lumbar spinal fusion.

PURPOSE:

The purpose of this study was to determine the effects of cold on postoperative spine pain and add to the body of knowledge specific to practical application of cold therapy in the spine surgery setting.

METHODS:

Researchers used a two-group randomized control design to evaluate the effects of local cold therapy on postoperative pain and analgesia use after lumbar spinal fusion surgery. The primary outcome was postoperative pain. Secondary outcomes included analgesia use and perceived benefit of cold therapy.

RESULTS:

The intervention (cold) group had a marginally greater reduction in mean Numerical Rating Scale score across all 12 pain checks ($M \pm SD = -1.1 \pm 0.8$ points reduction vs. -1.0 ± 0.8 points reduction, $p = .589$). On average, the intervention group used less morphine equivalents ($M \pm SD = 12.6 \pm 31.5$ vs. 23.7 ± 40.0) than the control group across pain checks seven to 12 ($p = .042$).

CONCLUSIONS:

This study provides additional evidence to support the use of cold therapy as an adjuvant pain management strategy to optimize pain control and reduce opioid consumption following spine fusion surgical procedures.

63. PHARMACOLOGY

64. ELECTROTHERAPY

65. NEUROLOGICAL CONDITIONS