

## 2. LBP

### Treat distressed patients

#### RESEARCH REPORT

#### Outcomes in Distressed Patients With Chronic Low Back Pain: Subgroup Analysis of a Clinical Trial

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#### Study Design

Subgroup analysis of a controlled clinical trial.

#### Background

Current evidence suggests that people with chronic low back pain who are distressed may require different interventions than do those who are not distressed. Recently, the enhanced transtheoretical model intervention (ETMI) reported significant improvements in disability and pain and increased physical activity in patients with chronic low back pain compared to physical therapy as usual.

#### Objectives

To compare outcomes between ETMI and physical therapy interventions for participants with and without self-reported distress.

#### Methods

We tested the interaction between intervention (ETMI versus physical therapy) and distress status (using the Medical Outcomes Study 12-Item Short-Form Health Survey cut point), and performed between-group comparisons on 3 separate outcomes (disability, pain, and physical activity) at 3 and 12 months.

#### Results

In the ETMI group, 57 of 108 participants were considered distressed, versus 62 of 106 participants in the physical therapy group. The interaction between intervention and distress at 12 months was significant. Participants improved with both interventions, but the magnitude of change in distressed participants who received ETMI was larger than that in distressed participants who received physical therapy (mean  $\pm$  SD difference from baseline in disability of  $6.1 \pm 6.1$  in the ETMI group, compared with  $3.4 \pm 6.7$  in the physical therapy group).

#### Conclusion

The enhanced transtheoretical model intervention was significantly more effective than physical therapy in participants with distress. The trial was registered in *ClinicalTrials.gov* (NCT01631344).

#### Level of Evidence

Therapy, level 2b. *J Orthop Sports Phys Ther* 2018;48(6):491–495. Epub 27 Mar 2018. doi:10.2519/jospt.2018.7670

**Factors related to LBP**

Spine J. 2018 May 21. pii: S1529-9430(18)30243-2. doi: 10.1016/j.spinee.2018.05.018.

**Risk factors for low back pain and sciatica: an umbrella review.**

Parreira P<sup>1</sup>, Maher C<sup>2</sup>, Steffens D<sup>3</sup>, Hancock M<sup>4</sup>, Ferreira M<sup>5</sup>.

**BACKGROUND:**

Low back pain (LBP) is a highly prevalent condition and it is associated with significant disability and work absenteeism worldwide. A variety of environmental and individual characteristics have been reported to increase the risk of low back pain (LBP). To our knowledge, there has been no previous attempt to summarise the evidence from existing systematic reviews of risk factors for LBP and/or sciatica. **PURPOSE:** to provide an overview of risk factors for LBP, we completed an umbrella review of the evidence from existing systematic reviews.

**STUDY DESIGN:**

umbrella review **METHODS:** A systematic literature search was conducted in MEDLINE, EMBASE, PubMed PsychINFO, and CINAHL databases. To focus on the most recent evidence, we only included systematic reviews published in the last five years (2011-2016) examining any risk factor for LBP and sciatica. **examining any risk factor for LBP and/or sciatica.** Only systematic reviews of cohort studies enrolling participants without LBP and/or sciatica at baseline were included. The methodological quality of the reviews was assessed independently by two review authors, using the AMSTAR tool. All authors have declared: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; any other relationships or activities that could appear to have influenced the submitted work **RESULTS:** We included 15 systematic reviews containing 134 cohort studies. Four systematic reviews were of high methodological quality and 11 were of moderate quality. Of the 54 risk factors investigated, 38 risk factors were significantly associated with increased risk of LBP and/or sciatica in at least one systematic review and the odds ratios ranged from 1.26 to 13.00. Adverse risk factors included characteristics of the individual (e.g older age), poor general health (e.g. smoking), physical stress on spine (e.g vibration) and psychological stress (e.g depression).

**CONCLUSION:**

Poor general health, physical and psychological stress and characteristics of the person increase risk for a future episode of LBP or sciatica

**Lordosis and spondylosis**

Spine (Phila Pa 1976). 2018 Jun 15;43(12):833-838. doi: 10.1097/BRS.0000000000002480.

**Increased Lumbar Lordosis and Smaller Vertebral Cross-Sectional Area Are Associated With Spondylolysis.**

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*STUDY DESIGN:*

A cross-sectional comparison of vertebral morphology and lumbar lordosis (LL) in adolescents with and without spondylolysis.

*OBJECTIVE:*

To test the hypothesis that in addition to LL, vertebral cross-sectional area (CSA) is also associated with spondylolysis.

*SUMMARY OF BACKGROUND DATA:*

Recent data indicate that the CSA of the vertebral body is a determinant of LL, which has been shown to be associated with spondylolysis.

*METHODS:*

Using magnetic resonance imaging, we compared the degree of LL from L1 to L5 and the CSA of the lumbar vertebrae in 35 adolescents (16 females and 19 males) with spondylolysis and 86 healthy controls (36 females and 50 males) of similar sex, age, height, and weight.

*RESULTS:*

There were no significant differences in age, height, weight, or vertebral height between subjects with and without spondylolysis, regardless of sex. In contrast, LL angle in spondylolysis patients was 57% and 51% greater in girls and boys with spondylolysis;  $44.1 \pm 10.4^\circ$  versus  $28.1 \pm 9.8^\circ$  and  $34.8 \pm 5.9^\circ$  versus  $23.0 \pm 6.0^\circ$  for girls and boys, respectively (both P's < 0.0001). Additionally, values for vertebral CSA were on average, 8% and 10% smaller in females and males with spondylolysis;  $7.6 \pm 0.8$  cm versus  $8.3 \pm 1.1$  cm and  $8.4 \pm 1.6$  versus  $9.3 \pm 1.6$  for girls and boys, respectively (both P's  $\leq 0.039$ ). Multiple linear and logistic regression analyses indicated that the CSA of the vertebral body was negatively associated with LL angle and an independent predictor of the presence of spondylolysis. This was true regardless of whether girls and boys were analyzed together or independently, and whether LL angle was measured from L1 to L5 or S1.

*CONCLUSION:*

We provide evidence that patients with spondylolysis have increased LL and smaller vertebral CSA.

## 5. SURGERY

### Comparison

World Neurosurg. 2018 May 17. pii: S1878-8750(18)31002-7. doi: 10.1016/j.wneu.2018.05.049.

#### **Microendoscopy-assisted Minimally Invasive Versus Open Transforaminal Lumbar Interbody Fusion for Lumbar Degenerative Diseases: Five-Year Outcomes.**

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#### *OBJECTIVE:*

To evaluate five-year outcomes between microendoscopy-assisted minimally invasive (MIS) and open transforaminal lumbar interbody fusion (TLIF).

#### *METHODS:*

Sixty single-level MIS and open surgeries were performed (30 patients in either group). Perioperative parameters, including operative duration, intraoperative estimated blood loss (EBL) and fluoroscopy time, postoperative analgesic usage and ambulatory time, as well as complications, were recorded. Visual analogue scale (VAS, back and leg), Japanese Orthopaedics Association score (JOA) and Oswestry disability index (ODI) were obtained. Finally, self-evaluation of surgical outcomes (modified MacNab criteria), interbody fusion rate (Bridwell grade 1) and prevalence of adjacent segment degeneration (ASD) were assessed.

#### *RESULTS:*

Intraoperative EBL and postoperative analgesia usage were reduced in MIS group, and patients undergoing microendoscopy-assisted MIS-TLIF ambulated earlier than those receiving open TLIF postoperatively. Nevertheless, surgical duration and fluoroscopy time were prolonged in MIS group. Complication incidences were similar in both groups. VAS (back and leg), JOA and ODI were improved at one month, two years and five years postoperatively in both groups when compared with preoperative scores. Significant improvements in these scores were found in MIS group at one month postoperatively, while at two years and five years postoperatively, both groups revealed comparable aforementioned scores. Excellent and perfect scale rating, interbody fusion rate and ASD prevalence between the groups were almost similar.

#### *CONCLUSIONS:*

Microendoscopy-assisted MIS-TLIF is comparable with open TLIF in terms of five-year outcomes with additional benefits of reduced intraoperative iatrogenic injury, decreased initial pain, minimized activity restrictions and accelerated ambulation recovery after surgery.

## 7. PELVIC ORGANS/WOMAN'S HEALTH

### Childbirth and dysmenorrhea

BJOG. 2018 Apr 19. doi: 10.1111/1471-0528.15247.

#### **The prevalence and potential determinants of dysmenorrhoea and other pelvic pain in women: a prospective study.**

Righarts A<sup>1</sup>, Osborne L<sup>1</sup>, Connor J<sup>2</sup>, Gillett W<sup>1</sup>.

##### *OBJECTIVE:*

To estimate the prevalence of pelvic pain and model associations with potential demographic, obstetric, gynaecological and psychosocial determinants.

##### *DESIGN, SETTING AND SAMPLE:*

A cohort study of women born between 1972 and 1973 in Dunedin, New Zealand, most recently assessed when aged 38 years (95% of survivors retained); 429 women were eligible for analysis.

##### *METHODS:*

Women self-completed reproductive health questionnaires at ages 21, 26, 32 and 38 years, with questions on dysmenorrhoea at ages 13 and 15, and on all pelvic pain at age 38. Prevalence and 95% confidence intervals (CI) were calculated and Poisson regression used to model associations.

##### *MAIN OUTCOME MEASURES:*

The prevalence of pain and adjusted relative risks (ARR) for potential explanatory factors.

##### *RESULTS:*

Over half (54.5%, 95% CI 49.7-59.3%) of women experienced pelvic pain in the past 12 months at age 38. Dysmenorrhoea was reported by 46.2% (41.3-51.3%), dyspareunia by 11.6% (8.7-15.2%) and other pelvic pain (OPP) by 17.3% (13.8-21.2%). After adjusting for multiple factors, pregnancy (ARR 0.60, 95% CI 0.32-1.13) and childbirth (ARR 0.52, 95% CI 0.25-1.09) were borderline protective for dyspareunia and OPP, respectively. However, childbirth was not associated with dysmenorrhoea (ARR 0.97, 95% CI 0.74-1.28). Dysmenorrhoea and dyspareunia were strongly associated, and both were associated with endometriosis.

##### *CONCLUSIONS:*

Our data confirm that female pelvic pain is common, and suggest common gynaecological and obstetric causal pathways, but there was no strong evidence supporting a benefit of childbirth for dysmenorrhoea. Further research on obstetric events and pelvic pain is needed, with both being common experiences.

**Placenta previa**

**European Journal of Obstetrics & Gynecology and Reproductive Biology**  
Volume 227, August 2018, Pages 1-7

**The effect of advanced maternal age on maternal and neonatal outcomes of placenta previa: A register-based cohort study**

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<https://doi.org/10.1016/j.ejogrb.2018.05.025>

**Objectives**

Advanced maternal age (AMA) at the time of delivery generally worsens obstetric outcomes, but its effects on specific pregnancy problems, such as placenta previa, have not been adequately assessed. Therefore, the objective of the study was to explore the effect of AMA on adverse maternal and neonatal outcomes among pregnancies complicated by placenta previa.

**Study Design**

The study was a register-based cohort study using data of three Finnish health registries, including information of 283 324 women and their newborns. Separate multivariable logistic regression modeling was performed for women under age 35 and women aged 35 or older to assess the association between placenta previa and adverse maternal and neonatal outcomes. Furthermore, interactions between maternal age and placenta previa were tested.

**Results**

A total of 283 324 deliveries of which 714 (0.3%) were complicated by placenta previa. Adverse maternal and neonatal outcomes increased in women with placenta previa, with different patterns across age groups. The adjusted odds ratios and 95% confidence intervals for AMA and young women with previa were 7.3 (5.0–10.6) and 6.8 (5.2–8.9) in blood transfusion, 11.3 (5.4–23.3) and 10.9 (6.1–19.6) in placental abruption. In neonatal outcomes the adjusted odds ratios for AMA and young women with placenta previa were 8.8 (6.6–11.6) and 11.7 (9.7–14.1) in preterm birth <37 weeks, 4.0 (3.0–5.3) and 4.9 (4.1–5.9) in neonatal intensive care unit (NICU) admission, 4.0 (2.8–5.7) and 5.9 (4.7–7.4) low birth weight <2500 g, 2.7 (1.5–4.9) and 3.3 (2.2–5.0) in low Apgar score at 5 min. The joint effects of maternal age and placenta previa on the risk of adverse maternal and neonatal outcomes were non-significant.

**Conclusions**

The risk of adverse maternal and neonatal outcomes for women with placenta previa was not substantially affected by maternal age if their different risk profiles were taken into account.

## 8. VISCERA

### Probiotics and reduced blood pressure

J Hypertens. 2018 Jul;36(7):1548-1554. doi: 10.1097/HJH.0000000000001728.

#### **Whole blood omega-3 fatty acid concentrations are inversely associated with blood pressure in young, healthy adults.**

Filipovic MG<sup>1,2</sup>, Aeschbacher S<sup>3</sup>, Reiner MF<sup>1,2</sup>, Stivala S<sup>2</sup>, Gobbato S<sup>2</sup>, Bonetti N<sup>2</sup>, Risch M<sup>4,5</sup>, Risch L<sup>4,6,7</sup>, Camici GG<sup>2</sup>, Luescher TF<sup>8</sup>, von Schacky C<sup>9</sup>, Conen D<sup>3,10</sup>, Beer JH<sup>1,2</sup>.

#### *BACKGROUND:*

Omega-3 fatty acids (n-3 FA) may have blood pressure (BP)-lowering effects in untreated hypertensive and elderly patients. The effect of n-3 FA on BP in young, healthy adults remains unknown. The Omega-3 Index reliably reflects an individuals' omega-3 status. We hypothesized that the Omega-3 Index is inversely associated with BP levels in young healthy adults.

#### *METHODS:*

The current study (n=2036) is a cross-sectional study investigating the baseline characteristics of a cohort, which includes healthy adults, age 25-41 years. Individuals with cardiovascular disease, known diabetes or a BMI higher than 35 kg/m were excluded. The Omega-3 Index was determined in whole blood using gas chromatography. Association with office and 24-h BP was assessed using multivariable linear regression models adjusted for potential confounders.

#### *RESULTS:*

Median Omega-3 Index was 4.58% (interquartile range 4.08; 5.25). Compared with individuals in the lowest Omega-3 Index quartile, individuals in the highest had a SBP and DBP that was 4 and 2 mmHg lower, respectively (P<0.01). A significant linear inverse relationship of the Omega-3 Index with 24-h and office BP was observed. Per 1-U increase in log-transformed Omega-3 Index the lowering in BP (given as multivariable adjusted  $\beta$  coefficients; 95% confidence interval) was -2.67 mmHg (-4.83; -0.51; P=0.02) and -2.30 mmHg (-3.92; -0.68; P=0.005) for 24-h SBP and DBP, respectively.

#### *CONCLUSION:*

A higher Omega-3 Index is associated with statistically significant, clinically relevant lower SBP and DBP levels in normotensive young and healthy individuals. Diets rich in n-3 FA may be a strategy for primary prevention of hypertension.

**Mother's IBS drugs in infants**

Gastroenterology

**Exposure Concentrations of Infants Breastfed by Women Receiving Biologic Therapies for Inflammatory Bowel Diseases and Effects of Breastfeeding on Infections and Development****Rebecca Matro**, MD<sup>1</sup>, Christopher F. Martin<sup>2</sup>, Douglas Wolf, MD<sup>3</sup>, Samir A. Shah, MD<sup>4</sup>, Uma Mahadevan, MD<sup>5</sup> <https://doi.org/10.1053/j.gastro.2018.05.040>

**Background & Aims** Exposure to biologic and immunosuppressant agents during breastfeeding is controversial and there are limited data on safety. We investigated whether biologics are detectable in breast milk from women receiving treatment for inflammatory bowel diseases (IBD) and whether breastfeeding while on treatment is associated with infections or developmental delays.

**Methods**

We performed a multi-center prospective study of women with IBD and their infants, collecting breast milk samples (n=72) from patients receiving biologic therapy from October 2013 to November 2015. Drug concentrations were measured in all breast milk samples at several time points within 48 hrs of collection and within 168 hrs for some samples. Child development was assessed using the Ages and Stages Questionnaire 3 (ASQ3), completed by 824 women with IBD (treated or untreated) during pregnancy (620 breastfed and 204 did not). Data on children's health and development were obtained from mothers and pediatricians, along with information on mothers' medication exposure, IBD history, activity, and pregnancy, and post-partum complications. We used  $\chi^2$  or Fisher's exact test to determine associations between categorical values, and compared differences in continuous outcomes between groups using ANOVA models. The primary outcome was drug concentration of biologic agents in breast milk (from 72 women) at 1, 12, 24, and 48 hours after dosing, and also at 72, 96, 120, and 168 hrs from available samples. Secondary outcomes were a range of infant infections and ASQ3-defined developmental delays among all breast-fed infants.

**Results**

We detected infliximab in breast milk samples from 19 of 29 treated women (max 0.74  $\mu\text{g}/\text{mL}$ ), adalimumab in 2 of 21 treated women (max 0.71  $\mu\text{g}/\text{mL}$ ), certolizumab in 3 of 13 treated women (max 0.29  $\mu\text{g}/\text{mL}$ ), natalizumab in 1 of 2 treated women (max 0.46  $\mu\text{g}/\text{mL}$ ), and ustekinumab in 4 of 6 treated women (max 1.57  $\mu\text{g}/\text{mL}$ ); we did not detect golimumab in breast milk from the 1 woman receiving this drug. Rates of infection and developmental milestones at 12 months were similar in breastfed vs non-breastfed infants: any infection 39% vs 39% in controls ( $P=1.000$ ) and milestone score 87 vs 86 in controls ( $P=.9992$ ). Rates of infection and developmental milestones did not differ among infants whose mothers received treatment with biologics, immunomodulators, or combination therapy, compared to unexposed infants (whose mothers received treatment with mesalamines or steroids or no medication).

**Conclusions**

In a study of women receiving treatment for IBD and their infants, we detected low concentrations of infliximab, adalimumab, certolizumab, natalizumab, and ustekinumab in breast milk samples. We found breastfed infants of mothers on biologics, immunomodulators, or combination therapies to have similar risks of infection and rate of milestone achievement compared to non-breastfed or infants unexposed to these drugs. Maternal use of biologic therapy appears compatible with breastfeeding. Clinicaltrials.gov no: NCT00904878



## Inflammation and gallstone disease

**Association of Circulating Inflammation Proteins and Gallstone Disease**

Z Liu et al. J Gastroenterol Hepatol. 2018 Apr 19

**BACKGROUND AND AIM:** Inflammation plays a role in the development of both gallstones and gallbladder cancer; however, few studies have investigated the association of circulating inflammation proteins with risk of gallstones.

**METHODS:** This study measured 13 cytokines (including 10 interleukins [ILs]) that have been associated with cancer in serum samples collected from 150 gallstone patients and 149 population-based controls from Shanghai, China, in 1997-2001. This study estimated the associations of each cytokine, categorized into quartiles and coded as a trend, with risk of gallstones using logistic regression models adjusted for potential confounders.

**RESULTS:** Higher levels of IL-6, IL-10, IL-12 (p70), and IL-13 were associated with increased risk of gallstones (i.e.  $P_{\text{trend}} < 0.003$ , Bonferroni corrected), with odds ratios (ORs) that ranged from  $OR_{\text{highest quartile [Q4] versus lowest quartile [Q1]} = 3.2$  (95% confidence interval: 1.4, 7.5) for IL-13 to  $OR_{\text{Q4 versus Q1}} = 5.7$  (95% confidence interval: 2.5, 13.5) for IL-12 (p70). In a regression model including all four ILs, only IL-12 retained statistical significance ( $P < 0.05$ ).

**CONCLUSION:** This study found four circulating ILs that were associated with gallstones. Future studies are needed to validate the findings and evaluate the common pathway or mechanism in the development of gallbladder diseases associated with these cytokine signatures.

**Probiotics helps IBS**

BMC Gastroenterology December 2018, 18:71

**A randomized placebo-controlled clinical trial of a multi-strain probiotic formulation (Bio-Kult®) in the management of diarrhea-predominant irritable bowel syndrome**

- Shamsuddin M. Ishaque S. M. Khosruzzaman Dewan Saifuddin Ahmed Mukesh Prasad Sah

**Background**

Accumulating evidence supports the view that an imbalance of gut bacteria contributes to IBS, and that increasing the mass of beneficial species may reduce the numbers of pathogenic bacteria and help alleviate symptoms.

**Methods**

In this double-blind trial 400 adult patients with moderate-to-severe symptomatic diarrhea-predominant IBS (IBS-D) were randomized to treatment with the multi-strain probiotic Bio-Kult® (14 different bacterial strains) or placebo for 16 weeks. The change in severity and frequency of abdominal pain was the primary outcome measure.

**Results**

Probiotic treatment significantly improved the severity of abdominal pain in patients with IBS-D. A 69% reduction for probiotic versus 47% for placebo ( $p < 0.001$ ) equates to a 145 point reduction on the IBS-severity scoring system (IBS-SSS). The proportion of patients who rated their symptoms as moderate-to-severe was reduced from 100% at baseline to 14% for the multi-strain probiotic at follow-up (month 5) versus 48% for placebo ( $p < 0.001$ ). Also, the number of bowel motions per day from month 2 onwards was significantly reduced in the probiotic group compared with the placebo group ( $p < 0.05$ ). In addition to relieving symptoms, the probiotic markedly improved all dimensions of quality of life in the 34-item IBS-Quality of Life (IBS-QoL) questionnaire. No serious adverse events were reported.

**Conclusions**

The multi-strain probiotic was associated with significant improvement in symptoms in patients with IBS-D and was well-tolerated. These results suggest that probiotics confer a benefit in IBS-D patients which deserves further investigation.

**Processed foods and asthma**

Pediatr Allergy Immunol. 2018 Apr 21. doi: 10.1111/pai.12911.

**Associations of ultra-processed food and drink products with asthma and wheezing among Brazilian adolescents.**

Melo B<sup>1</sup>, Rezende L<sup>2</sup>, Machado P<sup>3</sup>, Gouveia N<sup>2</sup>, Levy R<sup>2</sup>.

*BACKGROUND:*

Although both consumptions of ultra-processed products and asthma are common during adolescence, the epidemiological evidence in regarding their association is unclear. We investigated the associations of ultra-processed products consumption with asthma and wheezing in a representative sample of Brazilian adolescents.

*METHODS:*

We used data from a representative sample of 109 104 Brazilian adolescents enrolled in the National Survey of School Health, 2012. The consumption of ultra-processed products was based on the weekly consumption (0-2, 3-4,  $\geq 5$  d/wk) of sweet biscuits, salty biscuits, ultra-processed meats, sweets/candies, soft drinks, and packaged snacks over the previous 7 days. We also calculated an ultra-processed consumption score by adding partial scores corresponding to weekly frequency intake of each ultra-processed product. The ultra-processed consumption score ranged from 0 to 42, the higher score, the higher the intake of these products. The presence of wheezing in the previous 12 months and asthma at any time in the past was self-reported.

*RESULTS:*

The adjusted odds ratios of asthma comparing the extreme categories ranged from 1.08 (95% CI 1.03-1.13) for sweets/candies to 1.30 (1.21-1.40) for ultra-processed meats. Similar magnitude of associations was found for wheezing outcome. The ultra-processed consumption score was positively associated with the presence of asthma and wheezing in a dose-response manner. The adjusted OR of asthma and wheezing comparing highest to lowest quintile of ultra-processed consumption score was 1.27 (95% CI 1.15-1.41) and 1.42 (1.35-1.50), respectively.

*CONCLUSIONS:*

The consumption of ultra-processed products was positively associated with the presence of asthma and wheezing in adolescents.

**Dairy consumption and hypertension**

The American Journal of Medicine  
Clinical Research Study

**ASSOCIATION OF DAIRY CONSUMPTION AND 24-HOUR BLOOD PRESSURE IN OLDER ADULTS WITH HYPERTENSION**

Alberto Lana, PhDa, b, Jose R Banegas, PhDb, Pilar Guallar-Castillón, PhDb, c, Fernando Rodríguez-Artalejo, PhDb, c, Esther Lopez-Garcia, PhDb, c, ,  
<https://doi.org/10.1016/j.amjmed.2018.04.039>

- Consumption of low fat dairy products was associated with lower diastolic blood pressure and better blood control among older adults with hypertension.
- Conversely, consumption of high fat dairy products was associated with higher blood pressure.
- Use of low fat dairy products may be beneficial in older adults with hypertension.
- When dairy products are included in diets of hypertensive adults over 60 years, our data suggest that low-fat versions are preferable, consistently with current DASH and other clinical guidelines on hypertension management.

***Background***

The aim was to examine the association between habitual consumption of dairy products and 24-h ambulatory blood pressure monitoring among older adults with hypertension.

***Methods***

We conducted an analysis of 715 community-living hypertensive adults aged  $\geq 60$ . Habitual dairy consumption was assessed with a validated diet history. Blood pressure was recorded by 24-hour ambulatory blood pressure monitoring; controlled blood pressure was defined as 24-hour blood pressure  $< 130/80$  mm Hg in those under drug treatment. Analyses were adjusted for main confounders, including diet, hypertension duration, and being on antihypertensive treatment.

***Results***

After adjustment for confounders, consumers of  $\geq 7$  servings/wk of whole milk/yogurt had a diastolic blood pressure 1.40 mm Hg higher (95% confidence interval: 0.01, 2.81) than consumers of  $< 1$  serving/wk. By contrast, consumers of  $\geq 7$  servings/wk of low-fat milk/yogurt had a diastolic blood pressure 1.74 mm Hg lower (95% confidence interval: -3.26, -0.23) than consumers of  $< 1$  serving/wk. Moreover, the odds ratio (95% confidence interval) for controlled blood pressure was 1.83 (1.05-3.08) for those consuming  $\geq 7$  servings/wk of low-fat milk/yogurt, when comparing with consumers of  $< 1$  serving/wk. Cheese consumption was not associated with blood pressure.

***Conclusion***

Regular consumption of low-fat milk/yogurt was associated with lower 24-h diastolic blood pressure and with better blood pressure control among older adults with hypertension.

## 12 B. CERVICAL SURGERIES

### Myelopathies impact

Spine (Phila Pa 1976). 2018 Jun 15;43(12):817-823. doi:0.1097/BRS.0000000000002446.

#### **The Feature of Clinical and Radiographic Outcomes in Elderly Patients With Cervical Spondylotic Myelopathy: A Prospective Cohort Study on 1025 Patients.**

Machino M<sup>1</sup>, Ando K<sup>1</sup>, Kobayashi K<sup>1</sup>, Ito K<sup>1</sup>, Tsushima M<sup>1</sup>, Matsumoto A<sup>1</sup>, Morozumi M<sup>1</sup>, Tanaka S<sup>1</sup>, Ito K<sup>2</sup>, Kato F<sup>2</sup>, Nishida Y<sup>1</sup>, Ishiguro N<sup>1</sup>, Imagama S<sup>1</sup>.

#### *STUDY DESIGN:*

A prospective cohort study.

#### *OBJECTIVE:*

The purpose of this study was to compare the surgical outcomes between nonelderly and elderly patients with cervical spondylotic myelopathy (CSM) and to characterize the preoperative symptoms and postoperative residual symptoms in elderly patients.

#### *SUMMARY OF BACKGROUND DATA:*

Age at the time of surgery influences the surgical outcome. However, no report has elucidated residual symptoms after surgery in elderly patients with CSM. We designed a large-scale cohort study examining the surgical outcomes of CSM in elderly patients from a single surgery.

#### *METHODS:*

A total of 1025 consecutive patients with CSM (642 men and 383 women; mean age, 64.4 yr; range, 23-93 yr) who underwent laminoplasty were included. Patients were divided into three groups based on age: nonelderly (<65 yr), young-old (65-74 yr), and old-old ( $\geq 75$  yr), and the number of patients in each group was 488, 329, and 208, respectively. The pre- and postoperative neurological statuses were evaluated using the Japanese Orthopaedic Association (JOA) scoring system for cervical myelopathy. The recovery rate (RR) of each function was compared among the three groups. Radiographic data including alignment and range of motion were also assessed.

#### *RESULTS:*

The mean preoperative JOA scores of motor function of the lower extremity in nonelderly, young-old, and old-old groups were 2.8, 2.2, and 1.6, respectively ( $P < 0.0001$ ). Elderly patients showed significantly lower JOA scores for bladder function than nonelderly patients (2.7, 2.5, and 2.2,  $P < 0.0001$ ). Cervical lordosis in the neutral position increased gradually with age. Total range of motion decreased with increasing age. After surgery, the mean RRs of motor function of the lower extremity were 57.7%, 38.6%, and 24.0%, respectively. Gait disturbance significantly increased with age ( $P < 0.0001$ ).

#### *CONCLUSION:*

Postoperative gait disturbance persisted more than other symptoms in elderly patients than in nonelderly patients.

**13 B. TMJ/ORAL****Periodontitis and diabetes**

J Clin Periodontol. 2017 Nov 10. doi: 10.1111/jcpe.12839.

**Prevalence of diabetes mellitus in people clinically diagnosed with periodontitis: A systematic review and meta-analysis of epidemiologic studies.**

Ziukaite L<sup>1</sup>, Slot DE<sup>1</sup>, Van der Weijden FA<sup>1</sup>.

**OBJECTIVES:**

Diabetes mellitus and periodontitis are complex chronic diseases with an established bidirectional relationship. This systematic review evaluated in subjects with professionally diagnosed periodontitis the prevalence and odds of having diabetes.

**METHODS:**

The MEDLINE-PubMed, CENTRAL and EMBASE databases were searched. Prevalence of diabetes mellitus among subjects with periodontitis was extracted or if possible calculated.

**RESULTS:**

From the 803 titles and abstracts that came out of the search, 27 papers met the initial criteria. Prevalence of diabetes was 13.1% among subjects with periodontitis and 9.6% among subjects without periodontitis. Based on subanalysis, for subjects with periodontitis, the prevalence of diabetes was 6.2% when diabetes was self-reported, compared to 17.3% when diabetes was clinically assessed. The highest prevalence of diabetes among subjects with periodontitis was observed in studies originating from Asian countries (17.2%, n = 18,002) and the lowest in studies describing populations from Europe (4.3%, n = 7,858). The overall odds ratio for patients with diabetes to be among subjects with periodontitis as compared to those without periodontitis was 2.27 (95% CI [1.90;2.72]). A substantial variability in the definitions of periodontitis, combination of self-reported and clinically assessed diabetes, lack of confounding for diabetes control in included studies introduces estimation bias.

**CONCLUSIONS:**

The overall prevalence and odds of having diabetes are higher within periodontitis populations compared to people without periodontitis. Self-reported diabetes underestimates the prevalence when compared to this condition assessed clinically. Geographical differences were observed: the highest diabetes prevalence among subjects with periodontitis was observed in studies conducted in Asia and the lowest in studies originating from Europe.

**Tooth brushing reduces metabolic syndrome**

J Clin Periodontol. 2018 May;45(5):538-547. doi: 10.1111/jcpe.12876. Epub 2018 Apr 17.

**Relationship of toothbrushing to metabolic syndrome in middle-aged adults.**

Tanaka A<sup>1</sup>, Takeuchi K<sup>1</sup>, Furuta M<sup>1</sup>, Takeshita T<sup>1,2</sup>, Suma S<sup>1</sup>, Shinagawa T<sup>3</sup>, Shimazaki Y<sup>4</sup>, Yamashita Y<sup>1</sup>.

*AIM:*

To examine the effect of toothbrushing on the development of metabolic syndrome (MetS), including assessment of periodontal status, in middle-aged adults.

*METHODS:*

This 5-year follow-up retrospective study was performed in 3,722 participants (2,897 males and 825 females) aged 35-64 years who underwent both medical check-ups and dental examinations. Metabolic components included obesity, elevated triglycerides, blood pressure, fasting glucose and reduced high-density lipoprotein. Toothbrushing frequency was assessed using a questionnaire. Periodontal disease was defined as having at least one site with a pocket depth of  $\geq 4$  mm. Logistic regression analysis was performed to evaluate the relationship between toothbrushing frequency at the baseline examination and the development of MetS ( $\geq 3$  components).

*RESULTS:*

During follow-up, 11.1% of participants developed MetS. After adjusting for potential confounders including periodontal disease, participants with more frequent daily toothbrushing tended to have significantly lower odds of developing MetS (p for trend = .01). The risk of development of MetS was significantly lower in participants brushing teeth  $\geq 3$  times/day than in those brushing teeth  $\leq 1$  time/day (odds ratio = 0.64, 95% confidence interval = 0.45-0.92).

*CONCLUSIONS:*

Frequent daily toothbrushing was associated with lower risk of development of MetS.

### 13 C. AIRWAYS/SWALLOWING/SPEECH

#### Sleep quality and mortality

##### **The association of sleep duration and quality with all-cause and cause-specific mortality in the Women's Health Initiative**

Sleep Medicine — Kabat GC, et al. | June 04, 2018

Using data from the Women's Health Initiative, the researchers investigated the relationships of sleep duration, insomnia, and use of sleep aids with death from cardiovascular disease (CVD), cancer, "other" causes, and all causes combined. They used Cox proportional hazards models in the analysis of baseline data and in time-dependent analyses of repeated measures to estimate relationships of sleep-related factors with mortality.

They reported that insomnia was not correlated with mortality, whereas use of sleep aids was positively associated with mortality. The data presented in this work revealed a small but robust relationship of sleep duration with mortality in postmenopausal women.



## 14. HEADACHES

### Medication misuse

J Headache Pain. 2018 May 24;19(1):38. doi: 10.1186/s10194-018-0865-z.

#### **Factors associated with acute medication overuse in people with migraine: results from the 2017 migraine in America symptoms and treatment (MAST) study.**

Schwedt TJ<sup>1</sup>, Alam A<sup>2</sup>, Reed ML<sup>3</sup>, Fanning KM<sup>3</sup>, Munjal S<sup>2</sup>, Buse DC<sup>4</sup>, Dodick DW<sup>5</sup>, Lipton RB<sup>6</sup>.

#### **BACKGROUND:**

The MAST Study is a longitudinal, cross-sectional survey study of US adults with migraine. These analyses were conducted to estimate rates of acute medication overuse (AMO) and determine associations of AMO with individual and headache characteristics.

#### **METHODS:**

Eligible respondents had ICHD-3-beta migraine, reported  $\geq 3$  monthly headache days (MHDs) in the past 3 months,  $\geq 1$  MHD in the past 30 days, and currently took acute headache medication. AMO was defined according to ICHD-3-beta thresholds for monthly days of medication taking when diagnosing medication overuse headache.

#### **RESULTS:**

Eligible respondents (N = 13,649) had a mean age of  $43.4 \pm 13.6$  years; most were female (72.9%) and Caucasian (81.9%). Altogether, 15.4% of respondents met criteria for AMO. Compared with those not overusing medications, respondents with AMO were significantly more likely to be taking triptans (31.3% vs 14.2%), opioids (23.8% vs 8.0%), barbiturates (7.8% vs 2.7%), and ergot alkaloids (3.1% vs 0.6%) and significantly less likely to be taking NSAIDs (63.3% vs 69.8%) ( $p < 0.001$  for all comparisons). Respondents with AMO had significantly more MHDs ( $12.9 \pm 8.6$  vs  $4.3 \pm 4.3$ ,  $p < 0.001$ ); higher migraine symptom severity ( $17.8 \pm 2.7$  vs  $16.4 \pm 3.0$ ,  $p < 0.001$ ), higher pain intensity scores (7.4 vs 6.5,  $p < 0.001$ ); and higher rates of cutaneous allodynia (53.7% vs 37.5%,  $p < 0.001$ ). Adjusted for MHDs, the odds of AMO were increased by each additional year of age (OR 1.02, 95% CI 1.02, 1.03); being married (OR 1.19, 95% CI 1.06, 1.34); smoking (OR 1.54, 95% CI 1.31, 1.81); having psychological symptoms (OR 1.62, 95% CI 1.43, 1.83) or cutaneous allodynia (OR 1.22, 95% CI 1.08, 1.37); and greater migraine symptom severity (OR 1.06, 95% CI 1.04, 1.09) and pain intensity (OR 1.27, 95% CI 1.22, 1.32). Cutaneous allodynia increased the risk of AMO by 61% in males (OR 1.61, 95% CI 1.28, 2.03) but did not increase risk in females (OR 1.08, 95% CI 0.94, 1.25).

#### **CONCLUSIONS:**

AMO was present in 15% of respondents with migraine. AMO was associated with higher symptom severity scores, pain intensity, and rates of cutaneous allodynia. AMO was more likely in triptan, opioid, and barbiturate users but less likely in NSAID users. Cutaneous allodynia was associated with AMO in men but not women. This gender difference merits additional exploration.

**Blood flow**

J Pain Res. 2018 Apr 4;11:661-666. doi: 10.2147/JPR.S144183. eCollection 2018.

**Cerebral blood flow velocity in migraine and chronic tension-type headache patients.**

Karacay Ozkalayci S<sup>1</sup>, Nazliel B<sup>1</sup>, Batur Caglayan HZ<sup>1</sup>, Irkec C<sup>1</sup>.

**INTRODUCTION:**

The present study seeks to use transcranial Doppler ultrasound to evaluate cerebral blood flow velocities in anterior and posterior circulation arteries, during an attack-free episode in migraine patients, with and without aura, as well as in chronic tension-type headache patients who were not receiving prophylactic medication.

**METHODS:**

A total of 50 patients (35 female, 15 male) were evaluated during a headache-free episode: 30 migraine patients without aura (mean age: 32±8 years), 10 migraine patients with aura (mean age: 34±4 years), and 10 patients with chronic tension-type headache (mean age: 34±5 years).

**RESULTS:**

No significant difference was present between anterior, middle, and posterior cerebral and vertebral arteries' blood flow velocities between migraine patients, with and without aura, or in patients with a tension-type headache, and normal controls ( $p>0.05$ ). However, a significant increase in basilar artery cerebral blood flow velocities relative to controls was present in patients with a tension-type headache ( $p>0.001$ ).

**CONCLUSION:**

It is difficult to predict the main reason for the significant increase in basilar artery blood flow velocities in patients with chronic tension-type headache. It may be due to constriction of conductance or the dilatation of the resistance vessels.

**Cluster HA management**

Headache. 2018 May 21. doi: 10.1111/head.13334.

**Greater Occipital Nerve Injection versus Oral Steroids for Short Term Prophylaxis of Cluster Headache: A Retrospective Comparative Study.**

Wei J<sup>1</sup>, Robbins MS<sup>1</sup>.

**OBJECTIVE:**

To investigate our experience with oral steroid and greater occipital nerve (GON) injection with steroid as transitional treatments for cluster headache.

**BACKGROUND:**

Cluster headache is a primary headache disorder characterized by multiple episodes of intense unilateral pain with autonomic features. During cluster headache attacks, transitional therapies are useful while prophylactic dosages are initiated or increased. There are limited data comparing the efficacy of oral versus injected transitional treatments.

**METHODS:**

We retrospectively reviewed charts for patients evaluated with cluster headache at our center and captured episodes of transitional therapy utilized from 1995 to 2014. Treatment benefit was categorized into complete, partial, or no response.

**RESULTS:**

Forty-three patients received transitional therapy over a total of 151 encounters, of which 140 were available for analysis. Encounters featured oral steroids (81, 57.9%) and GON injection (59, 42.1%). Of the 40 patients with treatment response data available, 24 patients received only one type of transitional therapy and 16 patients received both therapies. More encounters featuring oral steroids versus GON injections led to at least a partial response (82.7% vs 64.4%) and to a lesser extent a complete response (50.6% vs 35.6%). Among 16 patients treated with both therapies, 8 (50%) responded to both and 6 (37.5%) responded only to oral steroids.

**CONCLUSIONS:**

Our single-center, retrospective data suggest the majority of patients with cluster headache responded to both prednisone and GON injections for transitional treatment, with a higher response to oral steroids. Our results may inform study design for a randomized trial, which is warranted.

**Medication misuse in 20%**

April 10, 2018; 90 (15 Supplement) APRIL 26, 2018

**Factors Associated with Acute Medication Overuse in Persons with Migraine: Results from the 2017 Migraine in America Symptoms and Treatment (MAST) Study (S43.002)**

Todd Schwedt, Aftab Alam, Michael Reed, Kristina Fanning, SAGAR MUNJAL, David Dodick, Dawn Buse and Richard Lipton

**Objective:** We surveyed a systematic sample of individuals with migraine to: estimate rates of medication overuse (MO); and to determine associations of patient and migraine characteristics with presence of MO.

**Background:** Medication overuse is common and impactful to migraineurs.

**Design/Methods:** This analysis includes MAST Study participants,  $\geq 18$  years, meeting modified ICHD-3 $\beta$  migraine criteria using a validated screener, averaging  $\geq 1$  headache day per month, and using acute headache medication from a nationwide online research panel. Variables of interest included sociodemographics, monthly headache day frequency, headache pain intensity (0–10), migraine symptom severity score (MSSS), clinically significant anxiety/depression symptoms (PHQ-4), and presence of cutaneous allodynia (ASC-12). Logistic regression identified variables associated with MO.

**Results:** 14,396 respondents met inclusion criteria. Mean age was 43.4 years, 73.1% were women, 81.5% were Caucasian, and 70.8% were employed. 2,854 (19.8%) respondents met criteria for MO. Headache frequency ( $\geq 15$  headache days/month vs. 1–4 days/month; OR 14.51, CI 12.68, 16.62), headache pain intensity (OR 1.17, CI 1.13, 1.21) and MSSS (OR 1.04, CI 1.02, 1.06) were associated with MO. Respondents with anxiety/depression symptoms were 58% more likely (1.58, 95% CI 1.42, 1.76), and with cutaneous allodynia were 15% more likely to meet criteria of MO (OR 1.15, CI 1.04, 1.27). Caucasian race (OR 0.80, CI 0.71, 0.90), having health insurance (OR 0.74, CI 0.63, 0.87) and not smoking (0.71, 0.63, 0.87) were protective against MO. Modeling revealed males were associated with increased MO (OR 1.19, CI 1.06, 1.32). Men with allodynia were more likely to have MO versus women (unadjusted: 30.0% vs 23.6%).

**Conclusions:** MO was observed in 20% of people with migraine. After adjusting for headache frequency, headache pain intensity, and sociodemographics, a significant association was seen between MO and anxiety/depression symptoms and cutaneous allodynia. Interestingly, men with allodynia were more likely to meet criteria for MO than women.

## 17. SHOULDER GIRDLE

### Yoga and scapula stabilization

#### RESEARCH REPORT

#### Scapular Muscle Activity During Static Yoga Postures

**Authors:** Jaclyn N. Chopp-Hurley, PhD<sup>1</sup>, Courtney Prophet, BSc<sup>1</sup>, Brynn Thistle, BSc<sup>1</sup>, Jessica Pollice, BSc<sup>1</sup>, Monica R. Maly, PT, PhD<sup>1-3</sup>

**Published:** *Journal of Orthopaedic & Sports Physical Therapy*,  
2018 **Volume:**48 **Issue:**6 **Pages:**504–509 **DOI:**10.2519/jospt.2018.7311

#### Study Design

Controlled, cross-sectional laboratory study.

#### Background

Despite the growing popularity of yoga, little is known about the muscle activity of the scapular stabilizers during isometric yoga postures and their potential utility in shoulder rehabilitation.

#### Objectives

To examine scapular stabilizer muscle activation during various yoga postures.

#### Methods

Twenty women with yoga experience and no shoulder pain or injury participated. Electromyography was used to record the muscle activity of the upper, middle, and lower trapezius, as well as of the serratus anterior, during 15 yoga postures.

#### Results

Muscle activity varied between yoga postures (3%–57% maximum voluntary isometric contraction [MVIC]). Overall, the “locust arms forward” posture elicited the highest activity from the upper (22.4% MVIC), middle (41.8% MVIC), and lower (56.8% MVIC) trapezius, while several postures elicited moderate activity (greater than 20% MVIC) from the serratus anterior. Conversely, the “dancer's pose right,” “reverse tabletop,” and “warrior II” postures demonstrated low activity (less than or equal to 15.7% MVIC) of the scapular stabilizers.

#### Conclusion

Strengthening the scapular stabilizer muscles is an important component of shoulder rehabilitation. Yoga postures have been identified that activate the scapular stabilizer muscles at varying levels of activity. *J Orthop Sports Phys Ther* 2018;48(6):504–509. Epub 6 Apr 2018. doi:10.2519/jospt.2018.7311

**20 B. LABRUM****Biceps tenodesis****Biceps tenodesis versus labral repair for superior labrum anterior-to-posterior tears: a systematic review and meta-analysis**

Eoghan T. Hurley, MB, BCh Daren Lim Fat, MCh, FEBOT Cliona M. Duigenan, BSc J. Chance Miller, BA Hannan Mullett, MCh, FRCSI (Tr, Orth) Cathal J. Moran, MD, FRCSI (Tr, Orth)

DOI: <https://doi.org/10.1016/j.jse.2018.04.011>

**Background**

This study systematically reviewed the comparative studies in the literature to ascertain whether biceps tenodesis or labral repair results in superior clinical outcomes in the treatment of superior labrum anterior-to-posterior (SLAP) tears.

**Methods**

A systematic search of articles in PubMed, EMBASE and The Cochrane Library databases was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. Cohort studies of biceps tenodesis compared with labral repair of SLAP tears were included. Statistical analysis was performed using Review Manager software (The Nordic Cochrane Centre, The Cochrane Collaboration, Copenhagen, Denmark). A *P* value of  $<.05$  was considered to be statistically significant.

**Results**

Included were 5 studies with 234 patients. Biceps tenodesis resulted in improved rates of patient satisfaction (95.6% vs. 76.2%,  $P = .01$ ) and rate of return to sport (81.3% vs, 64.3%,  $P = .02$ ), compared with SLAP repair. Although the difference in reoperation rates was not statistically significant, there was a trend toward higher reoperation rates in patients treated with SLAP repair (14.2% vs 6.5%,  $P = .09$ ). In addition, there was no difference in complication rates or functional outcomes.

**Conclusion**

Our study found that biceps tenodesis resulted in higher rates of patient satisfaction and return to sport in the studies published in the literature and that biceps tenodesis and SLAP repair resulted in similar functional outcome scores.

## 21. ADHESIVE CAPSULITIS

### Medial management

Journal of Shoulder and Elbow Surgery

Original Article

### **A randomized controlled trial of arthroscopic capsular release versus hydrodilatation in the treatment of primary frozen shoulder**

Sian Gallacher BSC<sup>a</sup>, James C. Beazley MBChB, MSc, FRCS<sup>a</sup>, Jon Evans MBChB, MRCS<sup>a</sup>, Rahul Anaspure MBBS, MRCS, FRCR<sup>b</sup>, David Silver MBChB, FRCR, FRCP<sup>b</sup>, Andrew Redfern MBChB, FRCR<sup>b</sup>, William Thomas MBBS, BSc, FRCS<sup>a</sup>, Jeff Kitson MBChB, FRCS<sup>a</sup>, Chris Smith MBBCh, MD, FRCS<sup>a</sup>  
<https://doi.org/10.1016/j.jse.2018.04.002> Get rights and content

#### Background

Arthroscopic capsular release (ACR) and hydrodilatation (HD) have been developed for the management of frozen shoulder refractory to conservative treatment. To date no randomized trial has directly compared the efficacy of both interventions. The aim of this trial was to determine whether the Oxford Shoulder Score (OSS) differs between patients with frozen shoulder randomized to treatment with ACR or HD.

#### Methods

Patients presenting with severe idiopathic frozen shoulder deemed suitable for surgical intervention by a consultant shoulder surgeon were randomized to ACR or HD. The primary outcome measure was OSS at 6 months, with secondary outcomes measures of the EuroQol-5D visual analog scale, external rotation, complications, and crossover rate also recorded.

#### Results

Between June 2013 and December 2016, 50 patients were randomized to HD or ACR. The average age of the HD and ACR cohorts was 55.2 and 52.6 years, respectively ( $P = .36$ ). At 6 months after the intervention, 20 patients were available for follow-up in the HD cohort and 19 in the ACR cohort. Both groups demonstrated significant improvements in OSS from baseline, but the OSS was significantly higher in the ACR cohort than the HD cohort (43.8 vs. 38.5,  $P = .023$ ). The OSS was noted to improve rapidly after the intervention, with 75% of improvement in OSS noted at 6 weeks after surgery in both groups.

#### Conclusions

Patients randomized to ACR reported a significantly higher OSS at 6 months than those randomized to HD. Both groups, however, showed a significant improvement.

Level of evidence Level II Randomized Controlled Trial Treatment Stu

**32 A. KNEE/ACL****New hamstring technique for repair**

Arthroscopy. 2018 May 24. pii: S0749-8063(18)30271-8. doi: 10.1016/j.arthro.2018.03.026.

**Use of the 5-Strand Hamstring Autograft Technique in Increasing Graft Size in Anterior Cruciate Ligament Reconstruction.**

Krishna L<sup>1</sup>, Panjwani T<sup>2</sup>, Mok YR<sup>2</sup>, Lin Wong FK<sup>2</sup>, Singh A<sup>2</sup>, Toh SJ<sup>2</sup>.

**BACKGROUND:**

To determine the extent to which a strategy of routinely preparing a 5-strand hamstring autograft would increase graft size in anterior cruciate ligament (ACL) reconstruction.

**METHODS:**

A total of 64 patients were enrolled in a prospective randomized controlled study comparing 5-strand and quadrupled semitendinosus-gracilis autografts in single-bundle ACL reconstruction (5-strand group, n = 32; 4-strand group, n = 32). In the 5-strand group, the diameter of the 4-strand construct and the subsequent 5-strand graft used were measured, whereas in the 4-strand group, the diameter of the quadrupled graft used was measured. Quadrupled graft diameter and hamstring tendon lengths were correlated with patient gender, height, weight, and body mass index (BMI).

**RESULTS:**

The mean diameter of the final graft used in the 5-strand group was  $8.8 \pm 0.8$  mm, whereas that in the 4-strand group was  $7.8 \pm 0.7$  mm ( $P < .001$ ). The mean increase in graft size achieved with the use of the 5-strand technique was  $1.4 \pm 0.3$  mm. In the 5-strand group, 24 of 32 (75%) patients had graft diameters exceeding 8 mm compared with 9 of 32 (28%) patients in the 4-strand group ( $P < .001$ ). Quadrupled graft diameter was significantly correlated with patient height and BMI, whereas the gracilis and semitendinosus lengths were significantly correlated with patient height.

**CONCLUSIONS:**

The 5-strand hamstring autograft provides a significantly larger diameter graft compared with the quadrupled hamstring autograft in ACL reconstruction. Graft sizes exceeding 8 mm are achievable in 75% of patients with the routine application of this technique. This is significantly more than that obtained with the standard quadrupled hamstring graft. Hamstring tendon length and quadrupled hamstring graft diameter are also significantly correlated with patient height.



### 33. MENISCUS

#### Mechanical signs with surgery

Osteoarthritis Cartilage. 2018 May 21. pii: S1063-4584(18)31256-1. doi: 10.1016/j.joca.2018.05.004.

#### **Change in patient-reported outcomes in patients with and without mechanical symptoms undergoing arthroscopic meniscal surgery: A prospective cohort study.**

Pihl K<sup>1</sup>, Turkiewicz A<sup>2</sup>, Englund M<sup>3</sup>, Stefan Lohmander L<sup>4</sup>, Jørgensen U<sup>5</sup>, Nissen N<sup>6</sup>, Schjerning J<sup>7</sup>, Thorlund JB<sup>8</sup>.

#### **OBJECTIVE:**

Patients with degenerative or traumatic meniscal tears are at high risk of developing knee osteoarthritis. We investigated if younger ( $\leq 40$  years) and older ( $> 40$  years) patients with preoperative mechanical symptoms improved more in patient-reported outcomes after meniscal surgery than those without mechanical symptoms.

#### **DESIGN:**

Patients from Knee Arthroscopy Cohort Southern Denmark (KACS) undergoing arthroscopic surgery for a meniscal tear completed online questionnaires before surgery, and at 12 and 52 weeks follow-up. Questionnaires included self-reported presence of mechanical symptoms (i.e. sensation of catching and/or locking) and the Knee Injury and Osteoarthritis Outcome Score (KOOS). We analyzed between-group differences in change in KOOS<sub>4</sub> from baseline to 52 weeks, using an adjusted mixed linear model.

#### **RESULTS:**

150 younger patients (mean age 31 (SD 7), 67% men) and 491 older patients (mean age 54 (SD 9), 53% men) constituted the baseline cohorts. Patients with mechanical symptoms generally had worse self-reported outcomes before surgery. At 52 weeks follow-up, younger patients with preoperative mechanical symptoms had improved more in KOOS<sub>4</sub> scores than younger patients without preoperative mechanical symptoms (adjusted mean difference 10.5, 95%CI: 4.3, 16.6), but did not exceed the absolute postoperative KOOS<sub>4</sub> scores observed for those without mechanical symptoms. No difference in improvement was observed between older patients with or without mechanical symptoms (adjusted mean difference 0.7, 95%CI: -2.6, 3.9).

#### **CONCLUSIONS:**

Younger patients ( $\leq 40$  years) with preoperative mechanical symptoms experienced greater improvements after arthroscopic surgery compared to younger patients without mechanical symptoms. Our observational study result needs to be confirmed in randomized trials.

**37. OSTEOARTHRITIS/KNEE**

Exercise helps

**CLINICAL COMMENTARY****Physical Activity and Exercise Therapy Benefit More Than Just Symptoms and Impairments in People With Hip and Knee Osteoarthritis**

**Authors:** Søren T. Skou, PT, PhD<sup>1,2</sup>, Bente Klarlund Pedersen, MD, DMSc<sup>3</sup>, J. Haxby Abbott, DPT, PhD, FNZCP<sup>4</sup>, Brooke Patterson, PT<sup>5</sup>, Christian Barton, PT, PhD<sup>5,6</sup>

**Published:** *Journal of Orthopaedic & Sports Physical Therapy*, 2018 **Volume:**48 **Issue:**6 **Pages:**439–447 **DOI:**10.2519/jospt.2018.7877

**Synopsis**

Osteoarthritis (OA) of the hip and knee is among the leading causes of global disability, highlighting the need for early, targeted, and effective treatment. The benefits of exercise therapy in people with hip and knee OA are substantial and supported by high-quality evidence, underlining that it should be part of first-line treatment in clinical practice. Furthermore, unlike other treatments for OA, such as analgesia and surgery, exercise therapy is not associated with risk of serious harm. Helping people with OA become more physically active, along with structured exercise therapy targeting symptoms and impairments, is crucial, considering that the majority of people with hip and knee OA do not meet physical activity recommendations.

Osteoarthritis is associated with a range of chronic comorbidities, including type 2 diabetes, cardiovascular disease, and dementia, all of which are associated with chronic low-grade inflammation.

Physical activity and exercise therapy not only improve symptoms and impairments of OA, but are also effective in preventing at least 35 chronic conditions and treating at least 26 chronic conditions, with one of the potential working mechanisms being exercise-induced anti-inflammatory effects. Patient education may be crucial to ensure long-term adherence and sustained positive effects on symptoms, impairments, physical activity levels, and comorbidities.

*J Orthop Sports Phys Ther* 2018;48(6):439–447. Epub 18 Apr 2018. doi:10.2519/jospt.2018.7877

## PRP helps

**The Clinical Outcomes are Associated with Changes in the Ultrasonography Structural Appearance After Platelet-Rich Plasma Treatment for Knee Osteoarthritis**

Hamada S Ahmad<sup>1</sup>, Sherief E Farrag<sup>1</sup>, Amr E Okasha<sup>1</sup>, Aisha O Kadry<sup>2</sup>, Tamer B Ata<sup>3</sup>, Amir A Monir<sup>4</sup>, Ibrahim Shady<sup>5</sup> 1.

**Abstract Background**– Hyaluronic acid (HA) and platelet-rich plasma (PRP) are two treatment options used for knee osteoarthritis (KOA) but studies comparing the efficacy of the two yield conflicting results. In addition, the association of clinical outcomes of PRP intra-articular injections with changes in the ultrasonography structural appearance of the knee has not been investigated.

**Aim of the study**– To compare the efficacy of PRP and HA intra-articular injections as monotherapeutic options for primary KOA, and to determine whether the clinical outcomes are associated with changes in the ultrasonography structural appearance.

**Subjects and methods**– A randomized clinical trial was conducted on 89 patients with KOA. The patients were given either PRP (n=45) or HA (n=44) intra-articular injections. The patients received three injections in the knee, which was more symptomatic at baseline evaluation, with a 2-week interval between injections. The outcome measures included VAS-pain, international knee documentation committee score, and assessment of synovial hypertrophy, synovial vascularity and knee effusion using ultrasonography. Outcome measures were assessed at baseline and at 3- and 6- months post-injection.

**Results**– While both PRP and HA injections resulted in the improvement of all outcome measures at 3- and 6-months follow up, they were significantly better in the PRP group than in the HA group. 2

**Conclusion**– Intra-articular injection of PRP is an effective treatment that reduced pain and improved the functional status in patients with KOA. The clinical outcomes of the intra-articular injections of PRP are associated with improved synovial hypertrophy and vascularity scores, and less effusion.

**38 A. FOOT AND ANKLE****Limitations with OA****RESEARCH REPORT****Physical Impairments in Adults With Ankle Osteoarthritis: A Systematic Review and Meta-analysis**

**Authors:** Munira Mohammed Al-Mahrouqi, PT, MSPT<sup>1</sup>, David Allan MacDonald, PT, PhD<sup>1,2</sup>, Bill Vicenzino, PT, PhD<sup>1</sup>, Michelle Dawn Smith, PT, PhD<sup>1</sup>

**Published:** *Journal of Orthopaedic & Sports Physical Therapy*, 2018 **Volume:**48 **Issue:**6 **Pages:**449–459 **DOI:**10.2519/jospt.2018.7569

**Study Design**

Systematic review with meta-analysis.

**Background**

Lower-limb osteoarthritis (OA) is associated with pain and reduced function. Most research focuses on hip and knee OA-related impairments; consequently, impairments that characterize ankle OA are not well understood.

**Objective**

To systematically review available evidence of physical impairments in individuals with ankle OA.

**Methods**

A comprehensive search of electronic databases was conducted from their inception to July 2017. Studies were screened using predefined inclusion/exclusion criteria. Studies that compared physical measures (excluding gait) between individuals with ankle OA and healthy controls or the unaffected ankle were included. Two reviewers rated studies for quality. Meta-analyses with random effects were conducted when appropriate.

**Results**

Of 4565 identified studies (563 participants), 8 satisfied the inclusion criteria and 3 studies were included in meta-analyses. All studies evaluated a range of impairments at end-stage OA, and exhibited poor reporting of missing data, assessor blinding, and measurement validity. Meta-analyses revealed large impairments of ankle sagittal plane motion and strength. Evidence from single studies indicated large deficits of ankle frontal plane motion and strength, talar translation and rotation on arthrometry, balance, and electromyography of ankle joint muscles. There were also abnormal bony alignments and greater fatty infiltrate in all calf muscle compartments.

**Conclusion**

The results of this literature review suggest significant ankle motion, strength, and functional impairments in individuals with ankle OA. The strength of the conclusions is limited, due to the small number and methodological limitations of published studies.

**Level of Evidence**

Symptom prevalence, level 1a. *J Orthop Sports Phys Ther* 2018;48(6):449–459. Epub 7 Apr 2018. doi:10.2519/jospt.2018.7569

## ABSTRACTS

**38 B. FOOT TYPES 38 C. FOOT EXERCISE 39 A. ORTHOTICS 39 B. SHOES 40.  
ANKLE SPRAINS AND INSTABILITY 41 A. ACHILLES TENDON AND CALF 41 B.  
COMPARTMENT SYNDROME 42. PLANTAR SURFACE 43. HALLUX VALGUS 44.  
RHUMATOID ARTHRITIS**

**45 A. MANUAL THERAPY LUMBAR & GENERAL****McKenzie review positive for chronic LBP**

## RESEARCH REPORT

**Effectiveness of the McKenzie Method of Mechanical Diagnosis and Therapy for Treating Low Back Pain: Literature Review With Meta-analysis**

**Authors:** Olivier T. Lam, PT<sup>1</sup>, David M. Strenger, PT<sup>2</sup>, Matthew Chan-Fee, PT<sup>3</sup>, Paul Thuong Pham, PT<sup>4</sup>, Richard A. Preuss, PT, PhD<sup>5</sup>, Shawn M. Robbins, PT, PhD<sup>5</sup>

**Published:** *Journal of Orthopaedic & Sports Physical Therapy*,  
2018 **Volume:**48 **Issue:**6 **Pages:**476–490 **DOI:**10.2519/jospt.2018.7562

**Study Design**

Literature review with meta-analysis.

**Background**

The McKenzie Method of Mechanical Diagnosis and Therapy (MDT), a classification-based system, was designed to classify patients into homogeneous subgroups to direct treatment.

**Objectives**

To examine the effectiveness of MDT for improving pain and disability in patients with either acute (less than 12 weeks in duration) or chronic (greater than 12 weeks in duration) low back pain (LBP).

**Methods**

Randomized controlled trials examining MDT in patients with LBP were identified from 6 databases. Independent investigators assessed the studies for exclusion, extracted data, and assessed risk of bias. The standardized mean difference (SMD) and 95% confidence interval were calculated to compare the effects of MDT to those of other interventions in patients with acute or chronic LBP.

**Results**

Of the 17 studies that met the inclusion criteria, 11 yielded valid data for analysis. In patients with acute LBP, there was no significant difference in pain resolution ( $P = .11$ ) and disability ( $P = .61$ ) between MDT and other interventions. In patients with chronic LBP, there was a significant difference in disability (SMD,  $-0.45$ ), with results favoring MDT compared to exercise alone. There were no significant differences between MDT and manual therapy plus exercise ( $P > .05$ ) for pain and disability outcomes.

**Conclusion**

There is moderate- to high-quality evidence that MDT is not superior to other rehabilitation interventions for reducing pain and disability in patients with acute LBP. In patients with chronic LBP, there is moderate- to high-quality evidence that MDT is superior to other rehabilitation interventions for reducing pain and disability; however, this depends on the type of intervention being compared to MDT.

**Level of Evidence** Therapy, level 1a. *J Orthop Sports Phys Ther* 2018;48(6):476–490. Epub 30 Mar 2018. doi:10.2519/jospt.2018.7562

## 59. PAIN

## Spouse responses to chronic pain

The Journal of Pain Original Reports

**Spouse Criticism/Hostility Toward Partners with Chronic Pain: The Role of Spouse Attributions for Patient Control over Pain Behaviors**

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<https://doi.org/10.1016/j.jpain.2018.05.007>

## Highlights

- Spouse observations of patient pain behavior predict spouse critical/hostile responses
  - Spouse “internal” attributions predict spouse critical/hostile responses
  - Internal attributions mediate observed pain behaviors and spouse responses links

## Abstract

Spouse attributions regarding displays of pain behaviors by their partners with chronic pain may account for subsequent increases in spouse critical/hostile responses toward their partners. People with chronic low back pain ( $n = 105$ ) and their pain-free spouses ( $n = 105$ ) completed electronic diary measures five times per day for 14 consecutive days. Key items assessed spouse observations of patient pain behavior, attributions regarding these behaviors, and spouse critical/hostile responses toward patients.

Results were: a) spouse observations of patient pain behavior at Time 1 predicted high levels of spouse critical/hostile responses toward the patient at Time 2; b) “internal” attributions (e.g., the patient was attempting to influence spouse's feelings) at Time 1 predicted high levels of spouse critical/hostile responses toward the patient at Time 2; c) internal attributions mediated links between spouse observed pain behaviors at Time 1 and levels of spouse critical/hostile responses at Time 2. Spouse observations of patient pain behavior was also related to an “external” attribution (i.e., patient pain behavior was due to pain condition), but this attribution was not a significant mediator. A vital factor linking spouse scrutiny to spouse critical/hostile responses may be the spouse's ascribed reasons for the patient's grimacing, bracing, complaining, and so forth.

**Perspective:** Results indicate that spouse internal and negative attributions for pain behaviors of their partners with chronic pain may influence subsequent spouse critical/hostile reactions to them. Findings suggest that replacing spouse internal and negative attributions with external, compassionate and accepting explanations may be useful therapeutic targets for couples coping with chronic pain.

**Race and auto injury medication**

Pain. 2018 Jun;159(6):1056-1063. doi: 10.1097/j.pain.0000000000001186.

**Racial differences in presentations and predictors of acute pain after motor vehicle collision.**

Beaudoin FL<sup>1,2</sup>, Gutman R<sup>3</sup>, Zhai W<sup>3</sup>, Merchant RC<sup>1,4</sup>, Clark MA<sup>4,5</sup>, Bollen KA<sup>6,7</sup>, Hendry P<sup>8</sup>, Kurz MC<sup>9</sup>, Lewandowski C<sup>10</sup>, Pearson C<sup>11</sup>, O'Neil B<sup>11</sup>, Datner E<sup>12</sup>, Mitchell P<sup>13</sup>, Domeier R<sup>14</sup>, McLean SA<sup>15,16</sup>.

African Americans experience a greater burden of acute pain than non-Hispanic white individuals across of variety of acute medical conditions, but it is unknown whether this is the case after trauma.

We evaluated pain, pain-related characteristics (eg, peritraumatic distress), and analgesic treatment in 2 cohorts of individuals (African American [n = 931] and non-Hispanic white [n = 948]) presenting to the emergency department (ED) after a motor vehicle collision. We performed a propensity-matched analysis (n = 796 in each group) to assess racial differences in acute pain in the ED. In multivariable models conducted within the matched sample, race was associated with moderate to severe axial pain (odds ratio [OR] 3.2; 95% confidence interval [CI]: 2.1-5.0, P < 0.001) and higher average numerical rating scale scores (1.3; 95% CI: 1.1-1.6; P < 0.001). After adjustment for pain and other covariates, non-Hispanic white patients were more likely to receive an opioid analgesic in the ED (OR 2.0; 95% CI: 1.4-3.0, P < 0.001) or at discharge (OR 4.9; 95% CI: 3.4-7.1, P < 0.001) and also less likely to receive an NSAID in the ED (OR 0.54; 95% CI: 0.38-0.78; P = 0.001) or at discharge (0.31; 95% CI: 0.43-0.84).

Racial differences in the severity of acute posttraumatic pain after a motor vehicle collision are not explained by factors such as socioeconomic status or crash characteristics.

Despite a higher burden of acute pain, African Americans were less likely to receive opioid analgesics and more likely to receive NSAIDs. Further work is needed to understand the relationship between pain severity, disparities in analgesic treatment, and longer term outcomes, such as post-motor vehicle collision chronic pain.



## 61. FIBROMYALGIA

### Task interference

Pain. 2018 Jun;159(6):1119-1126. doi: 10.1097/j.pain.0000000000001196.

#### **Task interference and distraction efficacy in patients with fibromyalgia: an experimental investigation.**

Van Ryckeghem DML<sup>1,2</sup>, Rost S<sup>1</sup>, Kissi A<sup>2</sup>, Vögele C<sup>1</sup>, Crombez G<sup>2,3</sup>.

Pain has the capacity to interfere with daily tasks. Although task interference by pain is largely unintentional, it can be controlled to a certain extent. Such top-down control over pain has been believed to be reduced in patients with fibromyalgia (FM).

In this study, we investigated task interference and distraction efficacy in patients with FM and a matched healthy control group. Forty-nine patients with FM and 49 healthy volunteers performed as quickly as possible (1) a visual localization task in the presence of nonpainful vibrating or painful electric somatic stimuli, and (2) a somatosensory localization task (using nonpainful or painful stimuli). Participants reported on their experience of the somatic stimuli on some of the trials during both localisation tasks.

Results indicated that pain interferes with performance of the visual task, in both patients with FM and healthy individuals. Furthermore, participants experienced the pain stimulus as less intense when directing attention away from the pain than when focusing on the pain. Overall, task performance of patients with FM was slower compared with the task performance in the healthy control group. In contrast to our hypotheses, patients with FM and healthy volunteers did not differ in the magnitude of the interference effect and distraction efficacy.

In conclusion, current study provides support for contemporary theories claiming that attention modulates the experience of pain and vice versa. However, no evidence was found for an altered attentional processing of pain in patients with FM. Furthermore, results indicate that task interference and distraction efficacy are not just 2 sides of the same coin.

**62 A. NUTRITION/VITAMINS****Vitamin D helps cognition**

Prev Med. 2018 May 15;113:57-61. doi: 10.1016/j.ypmed.2018.05.010.

**The association between serum vitamin d level and cognitive function in older adults: Cooper Center Longitudinal Study.**

Pavlovic A<sup>1</sup>, Abel K<sup>2</sup>, Barlow CE<sup>2</sup>, Farrell SW<sup>2</sup>, Weiner M<sup>3</sup>, DeFina LF<sup>2</sup>.

Low blood level of vitamin D and low physical activity have been linked to the development of cognitive impairment in older adults.

The purpose of the present study was to examine the relationship between serum vitamin D and cognition as measured via the Montreal Cognitive Assessment (MoCA) in a healthy, older population. The study sample consisted of 4358 patients from the Cooper Clinic in Dallas, TX. All participants underwent a maximal graded exercise test to determine cardiorespiratory fitness (CRF). Cognitive impairment was defined as a MoCA score <25. Low vitamin D status was defined as serum 25-hydroxyvitamin D <30 ng/mL. Multivariable logistic regression analysis was employed to evaluate the association between vitamin D blood level and MoCA score. A low MoCA score was directly associated with higher age (OR: 1.75, 95% CI: 1.53, 1.99), and inversely associated with female sex (OR: 0.63, 95% CI: 0.51, 0.77), and years of education (OR: 0.87, 95% CI: 0.84, 0.91). When controlling for significant predictors (age, sex, and education), the low vitamin D group had a significantly greater likelihood of having a low MoCA score (OR: 1.26, 95% CI: 1.04, 1.51). The vitamin D effect remained significant when CRF was added to the model (OR: 1.23, 95% CI: 1.02, 1.48).

In conclusion, low vitamin D was shown to be associated with cognitive impairment. Therefore, preventive measures such as vitamin D supplementation may play a protective role in memory loss and/or age-associated cognitive decline.

**Omega 3s helps depression**

Journal of Affective Disorders Volume 238, 1 October 2018, Pages 47-61

Review article

**Omega-3 polyunsaturated fatty acid supplementation in prevention and treatment of maternal depression: Putative mechanism and recommendation**

<https://doi.org/10.1016/j.jad.2018.05.018> Get rights and content

Highlights

- Postpartum depression is caused in part by omega-3 deficiency, which not only affects neurotransmission activity (e.g., serotonin) on brain cell membranes, but also induces neuro-inflammation.
- Clinical evidence has shown beneficial effects of omega-3 supplementation on prenatal and postpartum depression.
- To elicit beneficial effects, a lengthy replenishment of docosahexaenoic acid (DHA) in neuronal cellular membrane is required to restore the brain neurotransmission function, and a short-term supplementation of eicosapentaenoic acid (EPA) to suppress the omega-6 fatty acids induced neuro-inflammation and subsequently, depression.
- Dietary supplementation with omega-3 fatty acids rich in EPA during pregnancy or postpartum reduces some symptoms of depression.

Background

Women are vulnerable to depression during their childbearing years, and giving birth to a child precipitates postpartum depression (PPD) in some women. This review focuses on comparing the effectiveness of omega-3 polyunsaturated fatty acid supplementation on depression during pregnancy or PPD after childbirth.

Methods

MEDLINE, PubMed, PsycINFO, and the Cochrane Collaboration Registry of Controlled Trials etc. through July 2017 were searched. Studies of dietary intake and plasma and/or milk levels of omega-3 fatty acids and trials of benefits and effects of omega-3 fatty acids supplements on pregnant or postpartum women with depression were specifically selected.

Results

Omega-3 fatty acid deficiency, due to inadequate intake, fast depletion during pregnancy and lactation, is one of the risk factors of PPD. Associations between neuroinflammation (elevated pro-inflammatory cytokines) and aberrant neurotransmission (low serotonergic transmission activity) and risk of PPD have also been reported by numerous studies. Supplementation with eicosapentaenoic acid (EPA)-rich oil can effectively reduce depression during pregnancy and PPD after childbirth. Long term treatment with docosahexaenoic acid (DHA)-rich oil can be effective in reducing the risk of PPD in healthy women, but not in lactating women. Supplementation of DHA-rich oil to women begun at pregnancy and continued after childbirth exerts no beneficial effect on depression.

Conclusions

Dietary supplementation with omega-3 fatty acids rich in EPA during pregnancy or postpartum reduces some symptoms associated with depression. DHA supplementation to healthy pregnant women can also reduce the risk of PPD.