

2. LBP

Gray matter changes

Clin J Pain. 2017 Nov;33(11):983-990. doi: 10.1097/AJP.0000000000000489.

Gray Matter Abnormalities Associated With Chronic Back Pain: A Meta-Analysis of Voxel-based Morphometric Studies.

Yuan C¹, Shi H, Pan P, Dai Z, Zhong J, Ma H, Sheng L.

BACKGROUND:

Studies employing voxel-based morphometry have reported inconsistent findings on the association of gray matter (GM) abnormalities with chronic back pain (CBP). We, therefore, performed a meta-analysis of available studies to identify the most consistent GM regions associated with CBP.

METHODS:

The PubMed, Embase, and Web of Science databases were searched from January 2000 to May 29, 2016. Comprehensive meta-analyses of whole-brain voxel-based morphometry studies to identify the most robust GM abnormalities in CBP were conducted using the Seed-based d Mapping software package.

RESULTS:

A total of 10 studies, comprising 293 patients with CBP and 624 healthy controls, were included in the meta-analyses. The most robust findings of regional GM decreases in patients with CBP compared with healthy controls were identified in the bilateral medial prefrontal cortex extending to the anterior cingulate cortex, the right medial prefrontal cortex extending to the orbitofrontal cortex. Regional GM decreases in the left anterior insula were less robustly observed.

CONCLUSIONS:

The present study demonstrates a pattern of GM alterations in CBP. These data further advance our understanding of the pathophysiology of CBP.

Hip abductor weakness

J Geriatr Phys Ther. 2017 Sep 13. doi: 10.1519/JPT.000000000000148

Physical Therapy Management of Patients With Chronic Low Back Pain and Hip Abductor Weakness.

Peterson S¹, Denninger T.

BACKGROUND AND PURPOSE:

Hip abductor dysfunction is common in individuals with chronic low back pain (CLBP). Previous research investigating abductor strengthening in the heterogeneous CLBP population is sparse and has failed to target those patients most likely to benefit. The aim of the current case series was to describe the physical therapy management and outcomes of 3 patients with CLBP matching a previously identified subgroup characterized by substantial hip abductor weakness.

CASE DESCRIPTION:

Three nonconsecutive patients with CLBP—a 77-year-old man, a 78-year-old woman, and an 85-year-old woman—were treated in an outpatient physical therapy clinic. All 3 patients matched a previously identified CLBP subgroup characterized by substantial hip abductor weakness.

INTERVENTION:

Patients were treated using a targeted exercise approach consisting mostly of hip abductor strengthening for 11 to 17 visits over 8 to 10 weeks. Patients received additional treatments including heel lift and pain neuroscience education when indicated.

OUTCOMES:

By discharge, all patients had made clinically important improvements in pain (3- to 7-point reduction on the Numeric Pain Rating Scale), function (10- to 16-point change on the Modified Oswestry Disability Index), and perceived improvement (6-7 on Global Rating of Change Scale). Lumbar range of motion was painless, and hip abductor strength was improved from 2+/5 to 3+/5 in all 3 patients. These gains were maintained at 3-month follow-up.

DISCUSSION:

The current case series describes the use of a targeted exercise approach consisting mostly of hip abductor strengthening in a group of patients with CLBP and hip abductor weakness. The results indicated that this approach may be effective in reducing pain and improving function, particularly for older patients.

Neural mob

J Phys Ther Sci. 2017 Sep; 29(9): 1578–1582. PMID: PMC5599824

The treatment effect of hamstring stretching and nerve mobilization for patients with radicular lower back pain

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[Purpose] In this paper, hamstring stretching and nerve mobilization are conducted on patients with radicular lower back pain, and changes to pain levels, pressure thresholds, angles of knee joint extension, and disorder levels of lower back pain were studied.

[Subjects and Methods] The subjects were divided into two groups: one group conducted hamstring stretches and was comprised of 6 male and 5 female subjects, and the other group received nerve mobilization treatment and was comprised of 5 male and 6 female subjects.

[Results] Pain level and the disorder index of lower back pain were significantly alleviated after the intervention in both groups. Pressure threshold and angles of knee extension were significantly increased after the intervention in both groups. Comparing the two groups, the alleviation of pain was more significant in the nerve mobilization group.

[Conclusion] Patients with radicular lower back pain showed significant differences in pain level, pressure threshold, knee extension angle, and disorder index of lower back pain for both the hamstring stretching group and nerve mobilization group after the treatment. Hamstring stretching and nerve mobilization can be usefully applied for the therapy of patients with radicular lower back pain.

Healthy life styles positive for prevention of LBP**Healthy lifestyle behavior and risk of long duration troublesome neck pain or low back pain among men and women: results from the Stockholm Public Health Cohort****Authors** Skillgate E, Pico-Espinosa OJ, Hallqvist J, Bohman T, Holm LW**DOI** <https://doi.org/10.2147/CLEP.S145264>

Background: The role of healthy lifestyle behavior (HLB) in terms of physical activity, alcohol intake, smoking, and diet put together has not yet been explored for the risk of low back pain (LBP) and neck pain (NP). Our aim was to study if an HLB is protective against the onset of long duration troublesome LBP and NP in men and women.

Methods: Two cohorts from the Stockholm Public Health Cohort, free from LBP (n=12,483) and NP (n=10,539), respectively, in 2006, were surveyed with questionnaires. Baseline information about physical activity, alcohol intake, diet, and smoking were dichotomized into being healthy/not healthy and combined in a categorical variable according to the number of healthy behaviors present. Binomial regression analyses were used to evaluate the role of HLB for the outcomes 4 years later.

Results: When men with three or four healthy lifestyles were compared to men with none or one, the risk ratio (RR) of LBP was 0.63 (95% confidence interval [CI]: 0.39–1.02). The corresponding RR for LBP in women was 0.86 (95% CI: 0.56–1.32). When men with three or four healthy lifestyles were compared to men with none or one, the RR for NP was 1.13 (95% CI: 0.74–1.71). The corresponding RR for NP in women was 0.52 (95% CI: 0.35–0.77).

Conclusion: An HLB seems to be protective for long duration troublesome LBP in men, and for long duration troublesome NP in women.

QOL and LBP

The Relationship Between Spinal Pain and Comorbidity: A Cross-sectional Analysis of 579 Community-Dwelling, Older Australian Women

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Julie E. Byles, PhD Fiona Blyth, MPH, PhD

DOI: <http://dx.doi.org/10.1016/j.jmpt.2017.06.004>

Objectives

The aims of this study were to (1) report the prevalence and explore the influence of spinal pain on quality of life and (2) assess the relationship between spinal pain and the type and number of comorbidities.

Methods

This cross-sectional study comprised 579 community-dwelling, older Australian women. Women had “spinal pain” if they marked “yes” to neck pain, upper back pain, mid-back pain, and/or lower back pain. Descriptive statistics and binary logistic regression were performed to report the prevalence and explore the relationship between spinal pain and the type and number of comorbidities.

Results

A majority of women (55.8%) who returned surveys had spinal pain. Women with spinal pain had significantly lower physical and mental quality of life scores than women without spinal pain (Medical Outcomes Study: 36 Item Short Form Survey [SF-36] physical component summary: 40.1 ± 11.1 vs 49.0 ± 9.0 , and SF-36 mental component summary: 50.0 ± 10.5 vs 53.9 ± 8.2 , respectively). Having spinal pain was significantly associated with overweight and obesity (odds ratio 1.98 [95% confidence interval 1.3-2.96] and 2.12 [1.37-3.28]), diabetes (1.93 [1.01-3.67]), pulmonary comorbidity (1.66 [1.04-2.65]), and cardiovascular comorbidity (1.57 [1.07-2.28]). More than half of the women with spinal pain reported 2 or more comorbidities, with comorbidities significantly more common among women with spinal pain than among women without spinal pain. The odds of having spinal pain increased with an increasing number of comorbidities (2 comorbidities: 2.44 [1.47-4.04], 3 comorbidities: 3.07 [1.66-5.67], 4 comorbidities: 5.05 [1.64-15.54]).

Conclusions

Spinal pain is common in community-dwelling, older Australian women and is associated with greater disability and poorer quality of life. Diabetes, cardiovascular disease, pulmonary disease, and obesity appear to have a relationship with spinal pain. There was an incremental increase in the risk of spinal pain associated with increasing comorbidity count.

5. SURGERY

Local vs general anesthesia

Efficiency of spinal anesthesia versus general anesthesia for lumbar spinal surgery: a retrospective analysis of 544 patients

Authors Pierce JT, Kosiratna G, Attiah MA, Kallan MJ, Koenigsberg R, Syre P, Wyler D, Marcotte PJ, Kofke WA, Welch WC

DOI <https://doi.org/10.2147/LRA.S141233>

Background: Previous studies have shown varying results in selected outcomes when directly comparing spinal anesthesia to general in lumbar surgery. Some studies have shown reduced surgical time, postoperative pain, time in the postanesthesia care unit (PACU), incidence of urinary retention, postoperative nausea, and more favorable cost-effectiveness with spinal anesthesia. Despite these results, the current literature has also shown contradictory results in between-group comparisons.

Materials and methods: A retrospective analysis was performed by querying the electronic medical record database for surgeries performed by a single surgeon between 2007 and 2011 using procedural codes 63030 for discectomy and 63047 for laminectomy: 544 lumbar laminectomy and discectomy surgeries were identified, with 183 undergoing general anesthesia and 361 undergoing spinal anesthesia (SA). Linear and multivariate regression analyses were performed to identify differences in blood loss, operative time, time from entering the operating room (OR) until incision, time from bandage placement to exiting the OR, total anesthesia time, PACU time, and total hospital stay. Secondary outcomes of interest included incidence of postoperative spinal hematoma and death, incidence of paraparesis, plegia, post-dural puncture headache, and paresthesia, among the SA patients.

Results: SA was associated with significantly lower operative time, blood loss, total anesthesia time, time from entering the OR until incision, time from bandage placement until exiting the OR, and total duration of hospital stay, but a longer stay in the PACU. The SA group experienced one spinal hematoma, which was evacuated without any long-term neurological deficits, and neither group experienced a death. The SA group had no episodes of paraparesis or plegia, post-dural puncture headaches, or episodes of persistent postoperative paresthesia or weakness.

Conclusion: SA is effective for use in patients undergoing elective lumbar laminectomy and/or discectomy spinal surgery, and was shown to be the more expedient anesthetic choice in the perioperative setting

7. PELVIC ORGANS/WOMAN'S HEALTH

Sperm

Andrology. 2017 Oct 12. doi: 10.1111/andr.12430. [Epub ahead of print]

Dietary patterns and semen quality: a systematic review and meta-analysis of observational studies.

Arab A1,2, Rafie N1,2, Mansourian M3, Miraghajani M4, Hajianfar H1,2.

Abstract

A number of studies have examined the association between dietary patterns and semen quality, but the findings have been inconclusive.

Herein, we conducted a systematic review and meta-analysis of observational studies to assess the association between dietary patterns and semen quality. PubMed, Cochrane library, Science direct, Scopus, Google Scholar, and ISI web of science databases were searched up to August 2016 for observational studies assessing the association between common dietary patterns and sperm quality markers. Data were pooled by the generic inverse variance method with random effects and expressed as mean differences with 95% confidence intervals (CIs). Heterogeneity was assessed (Cochrane Q-statistic) and quantified (I²-statistic). The Newcastle-Ottawa Scale assessed study quality. Six eligible studies, involving 8207 participants, were included in our systematic review and meta-analysis. The pooled mean difference of sperm concentration for the healthy dietary pattern versus unhealthy dietary pattern intake was mean difference: 0.66; 95% CI, 0.305-1.016; $p < 0.001$. In comparison with those who had the highest adherence to healthy dietary pattern, individuals in the lowest adherence had significantly lower level of sperm concentration.

However, no significant association was seen between eating patterns and other semen quality. Healthy dietary pattern seems to be associated with elevated sperm concentration level. Further longitudinal studies are needed to clarify this relationship.

Preterm neurodevelopment

BJOG. 2017 Oct 11. doi: 10.1111/1471-0528.14832.

Cognitive, motor, behavioural and academic performances of children born preterm: a meta-analysis and systematic review involving 64 061 children.

Allotey J^{1,2}, Zamora J^{1,3,4}, Cheong-See F¹, Kalidindi M¹, Arroyo-Manzano D^{3,4}, Asztalos E⁵, van der Post J⁶, Mol BW^{7,8}, Moore D⁹, Birtles D¹⁰, Khan KS^{1,2}, Thangaratinam S^{1,2}.

BACKGROUND:

Preterm birth may leave the brain vulnerable to dysfunction. Knowledge of future neurodevelopmental delay in children born with various degrees of prematurity is needed to inform practice and policy.

OBJECTIVE:

To quantify the long-term cognitive, motor, behavioural and academic performance of children born with different degrees of prematurity compared with term-born children.

SEARCH STRATEGY:

PubMed and Embase were searched from January 1980 to December 2016 without language restrictions.

SELECTION CRITERIA:

Observational studies that reported neurodevelopmental outcomes from 2 years of age in children born preterm compared with a term-born cohort.

DATA COLLECTION AND ANALYSIS:

We pooled individual estimates of standardised mean differences (SMD) and odds ratios (OR) with 95% confidence intervals using a random effects model.

MAIN RESULTS:

We included 74 studies (64 061 children). Preterm children had lower cognitive scores for FSIQ (SMD: -0.70; 95% CI: -0.73 to -0.66), PIQ (SMD: -0.67; 95% CI: -0.73 to -0.60) and VIQ (SMD: -0.53; 95% CI: -0.60 to -0.47). Lower scores for preterm children in motor skills, behaviour, reading, mathematics and spelling were observed at primary school age, and this persisted to secondary school age, except for mathematics. Gestational age at birth accounted for 38-48% of the observed IQ variance. ADHD was diagnosed twice as often in preterm children (OR: 1.6; 95% CI: 1.3-1.8), with a differential effect observed according to the severity of prematurity ($I^2 = 49.4\%$, $P = 0.03$).

CONCLUSIONS:

Prematurity of any degree affects the cognitive performance of children born preterm. The poor neurodevelopment persists at various ages of follow up. Parents, educators, healthcare professionals and policy makers need to take into account the additional academic, emotional and behavioural needs of these children.

TWEETABLE ABSTRACT:

Ovulation and dysmenorrhea

Rates of anovulation in adolescents and young adults with moderate to severe primary dysmenorrhea and those without primary dysmenorrhea

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DOI: <http://dx.doi.org/10.1016/j.jpag.2017.09.014>

Abstract**Objective**

To evaluate rates of presumptive anovulation in eumenorrheic adolescents and young adults with moderate to severe primary dysmenorrhea and those without primary dysmenorrhea.

Participants

Thirty-nine adolescents and young adults (ages 16-24) with primary dysmenorrhea and 52 age-matched controls.

Design

Participants completed luteinizing hormone surge ovulation predictor test kits. Anovulatory cycles were defined by never receiving a positive result prior to the next menstrual period; participants were grouped as anovulatory if they experienced at least one anovulatory cycle during study participation. Participants rated daily level of menstrual pain on a 0-10 numeric rating scale.

Setting

A university-based clinical research laboratory.

Results

One hundred and sixty-eight cycles were monitored, 29.8% of which were anovulatory (37.1% vs. 17.5% of cycles in control and dysmenorrhea groups respectively). During study participation, control girls were significantly more likely to have had at least one anovulatory cycle than were girls with primary dysmenorrhea (44.2% vs. 17.9% of participants respectively, $p < .01$). Cycle length and number of bleeding days between ovulatory and anovulatory cycles were similar. The primary dysmenorrhea group's maximum menstrual pain ratings did not differ between ovulatory and anovulatory cycles (4.77 and 4.36 respectively, $p > .05$).

Conclusion

Data support previous findings of increased rates of ovulation in primary dysmenorrhea. However, menstruation following anovulatory cycles can be as painful as menstruation following ovulatory cycles. These data support the idea that regular menses do not necessarily indicate that a normal ovulatory cycle has occurred. Previous implications that ovulation is necessary for the development of substantial menstrual pain are incomplete.

Sugar beverages and conception

Association between preconception maternal beverage intake and in vitro fertilization outcomes

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Russ Hauser, M.D., Sc.D. Jorge E. Chavarro, M.D.

DOI: <http://dx.doi.org/10.1016/j.fertnstert.2017.09.007>

Objective

To study whether maternal intake of beverage type affects IVF outcomes.

Design

A prospective study.

Setting

Tertiary, university-affiliated center.

Patient(s)

Three hundred forty women undergoing IVF from 2014 through 2016 for infertility as well as for pregenetic diagnosis for autosomal recessive diseases were enrolled during ovarian stimulation and completed a questionnaire describing their usual beverage consumption.

Intervention(s)

None.

Main Outcome Measure(s)

IVF outcomes were abstracted from medical records. Total caffeine intake was estimated by summing the caffeine content for specific beverages multiplied by frequency of intake. Associations between specific types of beverages and IVF outcomes were analyzed using Poisson and logistic regression models adjusting for possible confounders.

Result(s)

Higher intake of sugared soda was associated with lower total, mature, and fertilized oocytes and top-quality embryos after ovarian stimulation. Women who consumed sugared soda had, on average, 1.1 fewer oocytes retrieved, 1.2 fewer mature oocytes retrieved, 0.6 fewer fertilized oocytes, and 0.6 fewer top-quality embryos compared with women who did not consume sugared soda. Furthermore, compared with women who did not drink sugared soda, the adjusted difference in percent of cycles resulting in live birth for women consuming 0.1–1 cups/day and >1 cup/day were –12% and –16%, respectively. No associations were found between consumption of coffee, caffeine, or diet sodas and IVF outcome.

Conclusion(s)

Sugared beverages, independent of their caffeine content, may be a bigger threat to reproductive success than caffeine and caffeinated beverages without added sugar.

8. VISCERA

Early infections and CD

Am J Epidemiol. 2017 Jun 16. doi: 10.1093/aje/kwx190.

Infections in early Life and development of celiac disease.

Beyerlein A, Donnachie E, Ziegler AG.

Early infections have been suggested to be associated with increased risk for later celiac disease (CD).

We analyzed prospective claims data of $n = 295,420$ infants from Bavaria, Germany, born between 2005 and 2007 containing information on medically attended infectious diseases according to ICD-10 code on a quarterly basis to calculate hazard ratios and 95% confidence intervals of time to CD diagnosis by infection exposure, adjusting for sex, calendar month of birth and number of previous healthcare visits. CD risk was increased in children who had a gastrointestinal infection during the first year of life (hazard ratio = 1.32, 95% confidence interval: 1.12, 1.55) and to a lesser extent also in children with a respiratory infection during the first year (hazard ratio = 1.22, 95% confidence interval: 1.04, 1.43). Repeated gastrointestinal infections during the first year of life were associated with particularly increased CD risk in later life.

These findings indicate that early gastrointestinal infections may be relevant for CD development.

Prevalence of IBS

Worldwide incidence and prevalence of inflammatory bowel disease in the 21st century: A systematic review of population-based studies

The Lancet | October 17, 2017

Ng SC, et al.

A systematic review of population-based studies is done to evaluate the changing incidence and prevalence of inflammatory bowel disease around the world. The outcome of this study suggests that the inflammatory bowel disease has become a global disease with accelerating incidence in newly industrialised countries whose societies have become more westernised at the turn of the 21st century. Although the incidence is stabilising in western countries, the burden remains high as prevalence surpasses 0.3%. These information highlights the requirement for research into prevention of inflammatory bowel disease and innovations in health-care systems to manage this complex and costly disease.

Methods

- In this study, they searched MEDLINE and Embase up to and including Dec 31, 2016, to identify observational, population-based studies reporting the incidence or prevalence of Crohn's disease or ulcerative colitis from 1990 or later.
- A study was regarded as population-based if it involved all residents within a specific area and the patients were representative of that area.
- To be incorporated into the systematic review, ulcerative colitis and Crohn's disease should have been reported separately.
- Studies that did not report original data and studies that reported only the incidence or prevalence of paediatric-onset inflammatory bowel disease (diagnosis at age <16 years) were excluded.
- They created choropleth maps for the incidence (119 studies) and prevalence (69 studies) of Crohn's disease and ulcerative colitis.
- They utilized temporal trend analyses to report changes as an annual percentage change (APC) with 95% CI.

Results

- They identified total 147 studies that were qualified for final inclusion in the systematic review, including 119 studies of incidence and 69 studies of prevalence.
- The highest reported prevalence values were in Europe (ulcerative colitis 505 per 100000 in Norway; Crohn's disease 322 per 100000 in Germany) and North America (ulcerative colitis 286 per 100000 in the USA; Crohn's disease 319 per 100000 in Canada).
- The prevalence of inflammatory bowel disease exceeded 0.3% in North America, Oceania, and many countries in Europe.
- Overall, 16 (72.7%) of 22 studies on Crohn's disease and 15 (83.3%) of 18 studies on ulcerative colitis reported stable or reducing incidence of inflammatory bowel disease in North America and Europe.
- Since 1990, incidence has been rising in newly industrialised countries in Africa, Asia, and South America, including Brazil (APC for Crohn's disease +11.1% [95% CI 4.8-17.8] and APC for ulcerative colitis +14.9% [10.4-19.6]) and Taiwan (APC for Crohn's disease +4.0% [1.0-7.1] and APC for ulcerative colitis +4.8% [1.8-8.0]).

Fructans and IBS

Clin Gastroenterol Hepatol. 2017 Sep 29. pii: S1542-3565(17)31185-0. doi: 10.1016/j.cgh.2017.09.043.

Fructans Exacerbate Symptoms in a Subset of Children with Irritable Bowel Syndrome.

Chumpitazi BP¹, McMeans AR², Vaughan A³, Ali A³, Orlando S³, Elsaadi A³, Shulman RJ⁴.

BACKGROUND & AIMS:

Dietary fructans exacerbate symptoms in some, but not all, adults with irritable bowel syndrome (IBS). We sought to determine whether fructans worsen symptoms in children with IBS and whether clinical and psychosocial factors, and/or gas production, can identify those who are fructan sensitive.

METHODS:

We performed a double-blind placebo-controlled (maltodextrin) cross-over trial of 23 children with IBS, based on pediatric Rome III criteria, from September 2014 through December 2016. At baseline, participants completed 1-week pain and stool diaries and a 3-day food record and psychosocial factors (depression, anxiety, and somatization) were measured. Subjects were randomly assigned to groups that were provided meals for 72 hrs containing either fructans or maltodextrin (0.5 g/kg; max 19 g). Following a washout period of 10 days or more, the subjects received the meal they were not given during the first study period (crossed over). Gastrointestinal symptoms and breath hydrogen and methane production were captured during each meal period. Fructan sensitivity was defined as an increase of 30% or more in abdominal pain frequency following fructan ingestion.

RESULTS:

Subjects had more mean episodes of abdominal pain/day during the fructan-containing diet (3.4 ± 2.6) vs the maltodextrin-containing diet (2.4 ± 1.7) ($P < 0.01$), along with more severe bloating ($P < 0.05$) and flatulence ($P = 0.01$). Hydrogen (but not methane) production was greater while subjects were on the fructan-containing diet (617 ± 305 ppm·hr) than the maltodextrin-containing diet (136 ± 78 ppm·hr) ($P < .001$). Eighteen subjects (78.2%) had more frequent abdominal pain while on the fructan-containing diet and 12 (52.2%) qualified as fructan sensitive. We found no difference between fructan-sensitive and fructan-insensitive subjects in baseline abdominal pain or bowel movement characteristics, dietary intake, psychosocial parameters, IBS subtype, or gas production.

CONCLUSION:

In a randomized controlled trial of children with IBS, we found fructans to exacerbate several symptoms. However, fructan sensitivity cannot be identified based on baseline gastrointestinal symptoms, dietary intake, psychosocial factors, or gas production. Clinicaltrials.gov no: [NCT02842281](https://clinicaltrials.gov/ct2/show/study/NCT02842281).

Passive smoke and colan CA

J Gastroenterol Hepatol. 2017 Oct 19. doi: 10.1111/jgh.14023.

The Impact of Passive Smoking on the Risk of Colorectal Neoplasia in Never, Former, and Current Smokers.

Jung YS¹, Kim NH², Yang HJ¹, Park SK¹, Park JH¹, Park DI¹, Sohn CI¹.

BACKGROUND:

Active smoking is well known to be a risk factor for colorectal neoplasia (CRN). However, it remains unclear whether passive smoking is also related to the risk of CRN. We investigated the effect of passive smoking on the risk of CRN in never, former, and current smokers.

METHODS:

A cross-sectional study was performed on asymptomatic examinees who underwent colonoscopy as part of a health check-up.

RESULTS:

Of 136,707 participants, 33,052 (24.2%) were never passive smokers, and 103,655 (75.8%) were ever passive smokers. The mean age of the study population was 41.0 years. The proportion of never, former, and current smokers was 56.9%, 21.4%, and 24.8%, respectively, and the proportion of overall CRN and advanced CRN (ACRN) was 15.4% and 1.7%, respectively. Ever passive smoke exposure was associated with an increased risk of overall CRN in never smokers (adjusted odds ratio [AOR] 1.08; 95% confidence interval [CI] 1.02-1.13) and former smokers (AOR 1.08; 95% CI 1.00-1.17) but not in current smokers (AOR 1.02; 95% CI 0.94-1.11). Additionally, it significantly increased the risk of ACRN among never smokers (AOR 1.17; 95% CI 1.01-1.35) and tended to increase the risk of ACRN among former smokers (AOR 1.26; 95% CI 0.99-1.61). Moreover, the risk of CRN increased with increasing frequency and duration of passive smoking in never and former smokers.

CONCLUSIONS:

Passive smoking was an independent risk factor for CRN in never and former smokers. Never and former smokers who are highly exposed to passive smoke as well as current smokers should be given priority for colonoscopy.

Antibiotic use

JAMA Pediatr. 2017 Oct 9. doi: 10.1001/jamapediatrics.2017.2905.

Association Between Early-Life Antibiotic Use and the Risk of Islet or Celiac Disease Autoimmunity.

Kemppainen KM¹, Vehik K², Lynch KF², Larsson HE³, Canepa RJ¹, Simell V⁴, Koletzko S⁵, Liu E⁶, Simell OG⁷, Toppari J^{8,9}, Ziegler AG^{10,11,12}, Rewers MJ¹³, Lernmark Å³, Hagopian WA¹⁴, She JX¹⁵, Akolkar B¹⁶, Schatz DA¹⁷, Atkinson MA¹⁸, Blaser MJ¹⁹, Krischer JP², Hyöty H^{20,21}, Agardh D³, Triplett EW¹; Environmental Determinants of Diabetes in the Young (TEDDY) Study Group.

IMPORTANCE:

Evidence is lacking regarding the consequences of antibiotic use in early life and the risk of certain autoimmune diseases.

OBJECTIVE:

To test the association between early-life antibiotic use and islet or celiac disease (CD) autoimmunity in genetically at-risk children prospectively followed up for type 1 diabetes (T1D) or CD.

DESIGN, SETTING, AND PARTICIPANTS:

HLA-genotyped newborns from Finland, Germany, Sweden, and the United States were enrolled in the prospective birth cohort of The Environmental Determinants of Diabetes in the Young (TEDDY) study between November 20, 2004, and July 8, 2010. The dates of analysis were November 20, 2004, to August 31, 2014. Individuals from the general population and those having a first-degree relative with T1D were enrolled if they had 1 of 9 HLA genotypes associated with a risk for T1D.

EXPOSURES:

Parental reports of the most common antibiotics (cephalosporins, penicillins, and macrolides) used between age 3 months and age 4 years were recorded prospectively.

MAIN OUTCOMES AND MEASURES:

Islet autoimmunity and CD autoimmunity were defined as being positive for islet or tissue transglutaminase autoantibodies at 2 consecutive clinic visits at least 3 months apart. Hazard ratios and 95% CIs calculated from Cox proportional hazards regression models were used to assess the relationship between antibiotic use in early life before seroconversion and the development of autoimmunity.

RESULTS:

Participants were 8495 children (49.0% female) and 6558 children (48.7% female) enrolled in the TEDDY study who were tested for islet and tissue transglutaminase autoantibodies, respectively. Exposure to and frequency of use of any antibiotic assessed in this study in early life or before seroconversion did not influence the risk of developing islet autoimmunity or CD autoimmunity. Cumulative use of any antibiotic during the first 4 years of life was not associated with the appearance of any autoantibody (hazard ratio [HR], 0.98; 95% CI, 0.95-1.01), multiple islet autoantibodies (HR, 0.99; 95% CI, 0.95-1.03), or the transglutaminase autoantibody (HR, 1.00; 95% CI, 0.98-1.02).

CONCLUSIONS AND RELEVANCE:

The use of the most prescribed antibiotics during the first 4 years of life, regardless of geographic region, was not associated with the development of autoimmunity for T1D or CD. These results suggest that a risk of islet or tissue transglutaminase autoimmunity need not influence the recommendations for clinical use of antibiotics in young children at risk for T1D or CD.

Depression and digestion

J Affect Disord. 2017 Sep 28;226:196-202. doi: 10.1016/j.jad.2017.09.049.

Autonomic dysfunction of gastric motility in major depression.

Haj Kheder S¹, Heller J², Bär JK³, Wutzler A⁴, Menge BA⁵, Juckel G⁶.

BACKGROUND:

Patients suffering from major depressive disorder (MDD) often complain about somatic symptoms. Cardiac complaints have been examined predominantly. However, gastrointestinal complaints are also reported frequently and are associated with worse outcomes. The research concerning changes in gastric motility of these patients is rather sparse. The aim of our study was to determine dysfunction of gastric motility and gastrointestinal symptoms in MDD. The duration and severity of MDD were examined regarding its influence over gastric emptying.

METHODS:

Gastric emptying was determined by a ¹³C-acetate breath test in patients with MDD (n = 29) and healthy control subjects (n = 51). Prior to this, depressive illness was operationalized using external and self-assessment scales (HAMD-21, MADRS, BDI, CGI). Whether the severity or duration of MDD influenced the gastric emptying parameters was examined using Spearman's correlation. In addition, autonomic complaints were recorded by means of an ANS score. Each ANS score item was determined using a Mann-Whitney U or Kruskal-Wallis test concerning the gastric emptying parameters.

RESULTS:

There was a significant difference in the parameters of the maximum gastric emptying rate (T_{max}) and gastric half emptying time $T_{1/2b}$ between patients with MDD and healthy control subjects (T_{max} 66.21min vs 53.35min, $p < 0.006$, $T_{1/2b}$ 207.59min vs 133.27min, $p < 0.005$). There was a significant negative correlation between T_{max} and the severity of MDD determined with the depression rating scales BDI (Spearman's rank - 0.521, $p = 0.013$) and HAMD-21 ($r = -0.384$, $p = 0.048$). No correlation was found between the duration of MDD and the maximum gastric emptying rate ($r = -0.125$, $p = 0.519$) and gastric half emptying time ($r = -0.62$, $p = 0.749$).

CONCLUSION:

Gastrointestinal motility is significantly impaired in patients with MDD compared to healthy control subjects. Autonomic complaints were indicated frequently in MDD patients. The duration of MDD had no influence over the time of gastric emptying. There was a significant negative correlation between the severity of MDD and T_{max} , indicating that the T_{max} was reached earlier with the progression of MDD. The slowing of gastric motility in MDD patients is likely a result of a dysfunction of the autonomic nervous system.

Gluten

BMJ. 2015; 351: h4347.

Published online 2015 Oct 5. doi: 10.1136/bmj.h4347 PMID: PMC4596973

State of the Art Review

Celiac disease and non-celiac gluten sensitivity

Benjamin Lebwohl, assistant professor of medicine and epidemiology,^{1,2} Jonas F Ludvigsson, professor,^{2,3} and Peter H R Green, professor of medicine¹

Celiac disease is a multisystem immune based disorder that is triggered by the ingestion of gluten in genetically susceptible individuals.

The prevalence of celiac disease has risen in recent decades and is currently about 1% in most Western populations. The reason for this rise is unknown, although environmental factors related to the hygiene hypothesis are suspected. The pathophysiology of celiac disease involves both the innate and adaptive immune response to dietary gluten. Clinical features are diverse and include gastrointestinal symptoms, metabolic bone disease, infertility, and many other manifestations. Although a gluten-free diet is effective in most patients, this diet can be burdensome and can limit quality of life; consequently, non-dietary therapies are at various stages of development. This review also covers non-celiac gluten sensitivity.

The pathophysiology of this clinical phenotype is poorly understood, but it is a cause of increasing interest in gluten-free diets in the general population.

FODMAT diet fecal assessment

Volatile Organic Compounds in Feces Associate With Response to Dietary Intervention in Patients With Irritable Bowel Syndrome

Megan Rossi* Raphael Aggio* Heidi M. Staudacher Miranda C. Lomer James O. Lindsay, Peter Irving Chris Probert* Kevin Whelan

*

Abstract**Background & Aims**

Dietary interventions are effective in management of patients with irritable bowel syndrome (IBS), although responses vary. We investigated whether fecal levels of volatile organic compounds (VOCs) associate with response to dietary interventions in patients with IBS.

Methods

Adults who fulfilled the Rome III criteria for IBS were recruited to a 2x2 factorial randomized controlled trial. Patients were randomly assigned to a group counselled to follow a diet low in fructans, galacto-oligosaccharides, lactose, fructose, and polyols (low-FODMAP diet, n=46) or a group that received placebo dietary advice (sham diet, n=47) for 4 weeks. Patients from each group were also given either a multi-strain probiotic or placebo supplement. Response was defined as a reduction of 50 points or more on the validated IBS symptom scoring system. Fecal samples were collected from participants at baseline and end of the 4-week study period; VOCs were analyzed by a gas-chromatography sensor device. VOC profiles were determined using a pipeline involving wavelet transformation followed by feature selection based on random forest. A partial least squares classifier was constructed to classify VOC profiles by response and were accuracies determined using 10-fold cross-validation.

Results

Data from 93 patients who completed the study (63 female) were used in the final analysis. More patients responded to the low-FODMAP diet (37/46, 80%) than the sham diet (21/47, 45%) ($P<.001$), but there was no difference in response between patients given the probiotic (31/49, 63%) vs the placebo (27/44, 61%) ($P=0.850$), with no interaction between the diet and supplement interventions. At baseline, VOC profiles contained 15 features that classified response to the low-FODMAP diet with an accuracy of 100% (95% CI, 96%–99%) and 10 features that classified response to probiotic with an accuracy of 89% (95% CI, 86%–92%). End of treatment models achieved similar predictive powers and accuracies.

Conclusion

Fecal VOC profiling is a low cost, non-invasive tool that might be used to predict responses of patients with IBS to LFD and probiotics and identify their mechanisms of action. ISRCTN registry no: 02275221

10 A. CERVICAL SPINE**Subjective evaluation**

Musculoskelet Sci Pract. 2017 Oct;31:30-44. doi: 10.1016/j.msksp.2017.06.002. Epub 2017 Jun 8.

Self-report and subjective history in the diagnosis of painful neck conditions: A systematic review of diagnostic accuracy studies.

Mizer A¹, Bachmann A¹, Gibson J¹, Donaldson MB².

Rising healthcare costs and inherent risks with over-utilizing diagnostic imaging require a quality subjective examination to improve effectiveness and time management of physical examinations. This systematic review investigates the diagnostic accuracy of subjective history and self-report items to determine if there is significant alteration in the probability of identifying specific painful neck conditions. Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines were followed.

INCLUSION CRITERIA:

1) Written in the English language 2) Cervical pain with/without referred upper extremity or head pain 3) Subjective history or self-report items 4) Study designs that reported diagnostic statistics or allowed calculation of sensitivities, specificities, diagnostic odds ratios, and likelihood ratios 5) used a reference standard that has a sensitivity or specificity $\geq 75\%$ or a diagnostic tool that is strongly supported in the literature where this data is not available. Quality Assessment of Studies of Diagnostic Accuracy II was performed to evaluate risk of bias. Five studies with 830 total patients met the inclusion criteria. Conditions commonly reported in the literature included: cervical radiculopathy, cervical myelopathy, degenerative joint disease, and cervicogenic headache. Individual history questions show minimal diagnostic value in identifying cervical conditions without the physical examination.

The value of the subjective history report is important and requires further investigation for specific neck conditions. Clustering symptoms may provide more insight than individual history items in future studies. The diagnostic value of history for neck conditions may be underrepresented due to the lack of studies that isolate subjective examination from the physical examination

Overlap of C 6 and 7 symptoms

Spine (Phila Pa 1976). 2017 Oct 15;42(20):1545-1551. doi: 10.1097/BRS.0000000000002353.

Comparison of Symptoms From C6 and C7 Radiculopathy.

Rainville J¹, Joyce AA, Laxer E, Pena E, Kim D, Milam RA, Carkner E.

STUDY DESIGN:

Case series.

OBJECTIVE:

This study compared the locations of arm pain, sensory symptoms, and subjective complaints of arm weakness in patients with cervical radiculopathy from MRI confirmed C6 and C7 nerve root compression.

SUMMARY OF BACKGROUND DATA:

Cervical radiculopathy is defined as arm pain, sensory and motor symptoms caused by irritation of a cervical nerve root. The C6 and C7 roots are most commonly involved, and differentiating symptoms associated with each root has proven difficult. Cervical MRI allows accurate identification of nerve root compression and therefore makes it possible to explore symptom patterns that may differentiate C6 from C7 radiculopathy.

METHODS:

A total of 122 patients with symptoms suggestive of cervical radiculopathy were recruited. Of these, 30 patients had MRI confirmed C6 and 39 patients C7 nerve root compression. By completing a study questionnaire, patients reported specific arm weakness, and marked the location of arm pain and tingling/numbness on graphic representations of the arm. Marked areas were interpreted by superimposing a grid that divided the arm into 54 distinct areas. The frequencies of reported symptoms with C6 and C7 were totaled and then compared with likelihood ratios. Power analysis calculated that 27 patients would be needed in each group based on the assumption that a 30 percentage point difference in frequency of specific symptom would be clinically useful for differentiating C6 from C7 radiculopathy.

RESULTS:

Arm pain and sensory symptoms were diffuse, and were not distinctly different for C6 or C7 radiculopathy. Some weakness was reported by 41 percent of patients, with specific descriptions of weakness having limited value for differentiating between radiculopathies.

CONCLUSION:

The location of pain and sensory symptoms, and specific weakness complaints associated with symptomatic C6 and C7 nerve root compression overlap to the extent that caution should be exercised when predicting root involvement based on symptoms.

12 B. CERVICAL SURGERIES**Preventing post-operative dysphagia**

European Spine Journal pp 1–10|

Risk factors and preventative measures of early and persistent dysphagia after anterior cervical spine surgery: a systematic review

Jingwei Liu Yong Hai an Kang Xiaolong Chen Yangpu Zhang

Purpose

To conduct a systematic review of literature to determine risk factors and preventative measures of early and persistent dysphagia after anterior cervical spine surgery (ACSS).

Methods

On March 2017, we searched the database PubMed, Medline, EMBASE, the Cochrane library, Clinical key, Springer link and Wiley Online Library without time restriction using the term ‘dysphagia’, ‘swallowing disorders’, and ‘anterior cervical spine surgery’. Selected papers were examined for the level of evidence by published guidelines as level I, level II, level III, level IV studies. We investigated risk factors and preventative measures of early or persistent dysphagia after ACSS from these papers.

Results

The initial search yielded 515 citations. Fifty-nine of these studies met the inclusion and exclusion criteria. Three of them were level I evidence studies, 29 were level II evidence studies, 22 were level III evidence studies, and 3 were level IV evidence studies. Preventable risk factors included prolonged operative time, use of rhBMP, endotracheal tube cuff pressure, cervical plate type and position, dC2–C7 angle, psychiatric factors, tobacco usage, prevertebral soft tissue swelling, SLN or RLN palsy or injury of branches. Preventative measures included preoperative tracheal traction exercise, maintaining endotracheal tube cuff pressure at 20 mm Hg, avoiding routine use of rhBMP-2, use of zero-profile implant, use of Zephir plate, use of new cervical retractor, steroid application, avoiding prolonged operating time, avoiding overenlargement of cervical lordosis, decreasing surgical levels, ensuring knowledge of anatomy of superior laryngeal nerve and recurrent laryngeal nerve, to comfort always, patients quitting smoking and doctors ensuring improved skills. Unpreventable risk factors included age, gender, multilevel surgery, revision surgery, duration of preexisting pain, BMI, blood loss, upper levels, preoperative comorbidities and surgical type.

Conclusion

Adequate preoperative preparation of the patients including preoperative tracheal traction exercise and quitting smoking, proper preventative measures during surgery including maintaining endotracheal tube cuff pressure at 20 mm Hg, avoiding routine use of rhBMP-2, use of zero-profile implant, use of Zephir plate, use of new cervical retractor, steroid application, avoiding prolonged operating time, avoiding overenlargement of cervical lordosis and decreasing surgical levels, doctors ensuring knowledge of anatomy, improved surgical techniques and to comfort always are essential for preventing early and persistent dysphagia after ACSS.

13 C. AIRWAYS/SWALLOWING/SPEECH**Pediatric sleep disturbance and HA's****Pediatric headache and sleep disturbance: A comparison of diagnostic groups**

Headache: The Journal of Head and Face Pain | October 18, 2017

Rabner J, et al.

This investigation ascertained if sleep disturbance varied by headache diagnosis in a pediatric cohort. It also determined if this effect persisted with the inclusion of other factors affecting sleep. The data displayed the significance of the analysis and treatment of sleep problems in pediatric patients with a chronic headache, being crucial with several contextual and headache diagnostic factors influencing the severity of sleep disturbance.

Methods

- The plot of this trial was a retrospective chart review.
- It enrolled 527 patients, aged 7-17 years, with a primary headache diagnosis of migraine (n = 278), TTH (n = 157), and NDPH (n = 92).
- The measures of disability, anxiety, and depression were completed by the enrollees and their parents completed measures of sleep disturbance.

Results

- Greater sleep disturbance was reported in patients with TTH (10.34 ± 5.94 , $P = .002$) and NDPH (11.52 ± 6.40 , $P < .001$) than migraine (8.31 ± 5.89).
- Greater sleep disturbance illustrated a substantial connection with higher levels of functional disability ($r_s \geq .16$), anxiety ($r_s \geq .30$), and depression ($r_s \geq .32$), across patient groups.
- A prominent link was also found between higher pain levels with greater sleep disturbance among TTH patients ($r = .23$), with this association non-significant among the other headache groups.
- When simultaneously examining demographic, pain-related, and emotional distress factors, older age, higher levels of disability and depression, and NDPH diagnosis served as vital predictors of greater sleep disturbance ($r^2 = .25$).

14. HEADACHES

Childhood abuse and

Headache. 2017 Oct 13. doi: 10.1111/head.13206.

Do Personality Traits Mediate the Relationship Between Childhood Abuse and Migraine? An Exploration of the Relationships in Young Adults Using the Add Health Dataset.

Karmakar M^{1,2}, Elhai JD^{3,4}, Amialchuk AA⁵, Tietjen GE¹. **BACKGROUND:** Personality traits (especially neuroticism) and childhood maltreatment have been independently related to many negative health outcomes later in life, including migraine. Studies have also shown the association between childhood maltreatment and maladaptive personality traits. The mediating role of personality traits on the relationship between childhood maltreatment and depression, psychological distress, and alcohol dependence has been extensively studied. However, this type of mediation has not been studied in the case of the development of migraine. This study investigated (1) the main effects of childhood abuse on personality traits, and of personality traits on migraine, and (2) the mediating role of neuroticism, on the relationship between childhood abuse and migraine in young adults. **METHOD:** We analyzed retrospective, cross-sectional data from 13,493 adults aged 24-32 years in Wave 4 of the National Longitudinal Survey of Adolescent Health ("Add Health") data set. Participants were queried regarding maltreatment (emotional, physical, and sexual) during childhood, current Big Five personality traits (using mini International Personality Item Pool), current depression (using Center for Epidemiologic Studies-Depression Scale), perceived stress (Using Cohen's Perceived Stress Scale), and diagnosis of migraine by a health care provider. Linear and logistic regressions were used to assess the main effects of childhood maltreatment on the five personality traits (openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism) and the main effect of the personality traits on self-reported provider diagnosis of migraine. A structural equation model (SEM) was used to examine the mediating role of neuroticism on the relationship between childhood maltreatment and migraine. **RESULTS:** Linear regression models showed that childhood abuse independently predicted increased neuroticism ($\beta = 0.338$, $SE = \pm 0.05$, $P < .001$), and increased openness to experiences ($\beta = 0.341$, $SE = \pm 0.06$, $P < .001$) after adjusting for socio-demographic characteristics, current depression, and perceived stress. Logistic regression to examine the main effect of personality traits on migraine revealed that only neuroticism had a significant effect ($OR = 1.07$, $95\%CI = 1.04-1.10$) after controlling for childhood abuse, socio-demographic characteristics, current depression, and perceived stress. Our regression analyses showed that neuroticism, but not openness to experience, was a potential mediator for the relationship between childhood abuse and migraine. SEM confirmed significant mediation of the relationship between childhood abuse and migraine through neurotic personality traits (goodness of fit indices: $CFI = 0.992$, $TLI = 0.979$, $RMSEA = 0.025$), unadjusted for socio-demographic variables, depression, and stress. In addition to the indirect effect ($\beta = 0.039$, $P < .01$) of childhood abuse on migraine through neuroticism, there was also a significant direct effect ($\beta = 0.143$, $P < .01$) of childhood abuse on migraine. After adjusting for socio-demographic variables, other personality types, depression, and stress, both the direct effect ($\beta = 0.127$; $P < .01$) of childhood abuse on migraine and the indirect effect ($\beta = 0.09$; $P < .01$) of childhood abuse on migraine through neuroticism were attenuated, but remained significant. **CONCLUSION:** Childhood abuse is associated with personality and migraine. An estimated 21% of the total effect of childhood abuse on migraine could be explained by mediation through neuroticism in the unadjusted model. In the fully adjusted model, an estimated 8.7% of the total effect could be explained by mediation, although, self-reported data limit the ability to draw firm conclusions.

Migraine brain changes

Neurology. 2017 Oct 11. pii: 10.1212/WNL.0000000000004640. doi: 10.1212/WNL.0000000000004640. \

Volumetric brain changes in migraineurs from the general population.

Palm-Meinders IH¹, Arkink EB¹, Koppen H¹, Amlal S¹, Terwindt GM¹, Launer LJ¹, van Buchem MA¹, Ferrari MD¹, Kruit MC².

OBJECTIVE:

To assess volumetric brain changes in migraineurs from the general population compared with controls.

METHODS:

Structural brain changes in migraineurs from the general population-based MRI Cerebral Abnormalities in Migraine, an Epidemiologic Risk Analysis (CAMERA)-2 observational cohort study were assessed by state-of-the-art voxel-based morphometry. T1-weighted MRIs of 84 migraineurs (52 with aura, 32 without aura) and 35 headache-free controls were evaluated. Regional volumes were compared voxelwise, corrected for age, sex, and total intracranial volume, with region-of-interest and whole-brain analyses.

RESULTS:

In region-of-interest analyses, migraineurs showed decreased gray matter volume in the visual areas V3 and V5 of the right occipital cortex compared to controls ($p < 0.05$, familywise error correction). Post hoc analyses revealed that similar changes were present regardless of migraine aura status, disease activity (>1 year attack-free [inactive] vs ≥ 1 attack within the last year [active]) and attack frequency [≤ 1 (low) vs ≥ 1 attack per month [high]). In exploratory whole-brain analyses ($p < 0.001$, uncorrected for multiple comparisons), we identified additional structural differences in migraineurs in other cortical and subcortical areas, including white matter tracts, that are particularly involved in visual processing.

CONCLUSIONS:

Migraineurs from the general population showed small volumetric brain changes, mainly in cortical areas involved in visual motion processing, compared to controls. The presence of morphologic changes regardless of the presence of migraine aura or disease activity suggests that migraines with and without aura share common pathophysiologic pathways and suggests that these changes are (partially) irreversible or might have been present throughout life.

Migraines burden

Headache. 2017 Oct 6. doi: 10.1111/head.13202.

A Real-World Analysis of Migraine: A Cross-Sectional Study of Disease Burden and Treatment Patterns.

Ford JH¹, Jackson J², Milligan G², Cotton S², Ahl J¹, Aurora SK¹.

OBJECTIVE:

The purpose of this cross-sectional study was to assess the sociodemographics, disease burden, and treatment patterns of patients with episodic and chronic migraine in the United States.

BACKGROUND:

Migraine is a disabling neurological disease that places an enormous burden on patients.

METHODS:

Data were drawn from the Adelphi Migraine United States Disease Specific Programme (index period: January to March 2014). Physicians (N = 150) completed a patient report form on 10 consulting patients with migraine. Episodic migraineurs had ≤ 14 headache days per month (HDM) and those with chronic migraine had ≥ 15 . Headache-related disability was assessed with the Migraine Disability Assessment (MIDAS) questionnaire. Disability was also compared across subgroups based on the number of HDM (≤ 3 , 4-7, 8-14, and ≥ 15).

RESULTS:

A total of 1487 patient report forms were completed. Over 70% of the patients were female, 90.8% (n = 1350) were episodic migraineurs, and 9.2% (n = 137) were chronic migraineurs. Acute treatment was prescribed for >90% of the patients, and >50% had a current prescription for preventive treatment. Despite taking acute and/or preventive treatment, 29.2% of episodic migraineurs (including some patients with ≤ 3 headache days/month) and 73.2% of chronic migraineurs had moderate-to-severe headache-related disability (MIDAS total score ≥ 11). Preventive treatment was discontinued/switched at least once by 26.4% of episodic migraineurs and by 53.3% of chronic migraineurs. Of those patients (n = 382) who gave collective reasons for discontinuation/switching preventive treatment, over 70% selected lack of efficacy and tolerability/safety.

CONCLUSIONS:

This real-world analysis provides additional support for the unmet medical need for efficacious therapies that reduce migraine frequency and severity, headache-related disability, and have better tolerability for patients with migraine. In addition, further research is needed to better understand the burden of illness among patients with lower migraine frequency, and to implement treatment strategies to prevent progression of the disease.

Frequency of Migraines

The Journal of Headache and Pain
December 2017, 18:101|

Fluctuations in episodic and chronic migraine status over the course of 1 year: implications for diagnosis, treatment and clinical trial design

Daniel S. Richard B. Lipton Ann I. Scher Michael L. Reed Walter (Buzz) F. Stewart
Aubrey Manack Adams Dawn C. Buse

Background

Relatively little is known about the stability of a diagnosis of episodic migraine (EM) or chronic migraine (CM) over time. This study examines natural fluctuations in self-reported headache frequency as well as the stability and variation in migraine type among individuals meeting criteria for EM and CM at baseline.

Methods

The Chronic Migraine Epidemiology and Outcomes (CaMEO) Study was a longitudinal survey of US adults with EM and CM identified by a web-questionnaire. A validated questionnaire was used to classify respondents with EM (<15 headache days/month) or CM (\geq 15 headache days/month) every three months for a total of five assessments. We described longitudinal persistence of baseline EM and CM classifications. In addition, we modelled longitudinal variation in headache day frequency per month using negative binomial repeated measures regression models (NBRMR).

Results

Among the 5464 respondents with EM at baseline providing four or five waves of data, 5048 (92.4%) had EM in all waves and 416 (7.6%) had CM in at least one wave. Among 526 respondents with CM at baseline providing four or five waves of data, 140 (26.6%) had CM in every wave and 386 (73.4%) had EM for at least one wave. Individual plots revealed striking within-person variations in headache days per month. The NBRMR model revealed that the rate of headache days increased across waves of observation 19% more per wave for CM compared to EM (rate ratio [RR], 1.19; 95% CI, 1.13–1.26). After adjustment for covariates, the relative difference changed to a 26% increase per wave (RR, 1.26; 95% CI, 1.2–1.33).

Conclusions

Follow-up at three-month intervals reveals a high level of short-term variability in headache days per month. As a consequence, many individuals cross the CM diagnostic boundary of \geq 15 headache days per month. Nearly three quarters of persons with CM at baseline drop below this diagnostic boundary at least once over the course of a year. These findings are of interest in the consideration of headache classification and diagnosis, the design and interpretation of epidemiologic and clinical studies, and clinical management.

28. REPLACEMENTS**Robotic replacements successful****Fourteen Year Follow-up of Randomized Clinical Trials of Active Robotic-Assisted Total Hip Arthroplasty**

William L. Bargar, MD Carol A. Parise, PhD Andrea Hankins, MA Natalie A. Marlen ,
Valentina Campanelli, PhD Nathan A. Netravali, Ph

DOI: <http://dx.doi.org/10.1016/j.arth.2017.09.066>

Background

Active robotic total hip replacement has been used clinically for over 20 years, but long-term results have never been studied. The aims of this study are to determine whether active robotic total hip replacement improves clinical outcomes and results in fewer revisions over a long-term follow-up.

Methods

Patients from two US FDA clinical trials (1994-1998, 2001-2006) who had undergone total hip replacement using either an active robotic system or a traditional manual technique were examined to determine if any differences existed in radiographic analysis and patient pain and function using the UCLA, VAS, HSQ pain, HSQ Role Physical, HSQ Physical Functioning, Harris Pain scores, and the Total WOMAC scores at mean follow-up of 14 years.

Results

The ROBODOC group had statistically significantly higher HSQ Pain and Harris Pain scores and lower WOMAC scores. There was no statistically significant difference in probability of a revision for wear between the groups ($\chi^2 = 1.80$, $p = 0.179$) and no revisions for loosening in either group.

Conclusions

Prior studies have demonstrated improved implant fit and alignment with the use of this active robot system. This long-term study now shows no failures for stem loosening at mean follow-up of 14 years and small but potentially important improvements in clinical outcomes in the robot group.

31. KNEE

type of activity with knee pain

Relationship of knee pain to time in moderate and light physical activities: Data from osteoarthritis initiative

Seminars in Arthritis and Rheumatism | October 12, 2017
Song J, et al. T

The cross-sectional relationship of knee pain with physical activity utilizing data from 1874 Osteoarthritis Initiative participants was scrutinized in this study. The outcome revealed that the greater knee pain levels were strongly associated with less moderate intensity activity time, but not time spent in light intensity physical activity.

This association recommends that light activity may be a more acceptable way to increase physical activity than the moderate activity for people with symptomatic knee pain.

32 A. KNEE/ACL

Reinjury rate

October 2017 Volume 33, Issue 10, Supplement, Pages e138–e139

A Randomized Clinical Trial Comparing Patellar Tendon, Hamstring Tendon and Double-Bundle ACL Reconstructions: Patient-Reported and Clinical Outcomes at Five-Year Follow-Up Nick Mohtadi, MD, MSc, FRCSC, CANADA Luis Sobral, MD, PORTUGAL Clara Azevedo, MD, PORTUGAL DOI: <http://dx.doi.org/10.1016/j.arthro.2017.08.169>

Summary This is the largest clinical trial in ACL surgery with 95% follow-up. At 5-years, no difference in disease-specific Q of L, between: patellar tendon (PT), hamstring (HT) and double-bundle hamstring (DB) reconstructions. 11.1% suffered a traumatic graft injury, higher in the HT and DB groups; 8.9% of patients required a repeat arthroscopy and 8.9% suffered a contralateral ACL rupture.

Purpose To compare anterior cruciate ligament reconstruction using patellar tendon (PT), quadruple hamstring tendons (HT) and the double-bundle hamstring tendons (DB) graft options, by measuring patient-reported disease-specific quality of life outcome in patients with isolated ACL deficiency of the knee at a minimum five-years post-operative follow-up.

Methods In this prospective double-blind randomized clinical trial, 330 patients (183 males, 147 females) aged 14-50 years were randomly allocated and equally distributed to one of three ACL autograft reconstruction techniques: 1) Anatomic Patellar Tendon (PT; mean age 28.7 years), 2) Anatomic Quadruple-stranded Hamstring Tendon (HT; mean age 28.5 years), or 3) Anatomic Double-Bundle using hamstring tendons (DB; mean age 28.3 years).

Results 315 randomized patients (95%) completed a minimum five-year follow-up. There was no difference in any baseline characteristics. There were no differences in mean ACL-QOL score at five-years ($p=0.548$): PT = 82.9 (SD 17.4, 95% CI 79.5 – 86.3); HT = 83.7 (SD 18.4, 95% CI 80.1 – 87.3); DB = 81.8 (SD 18.6, 95% CI 78.2 – 85.4); in the proportion of patients with a Pivot Shift grade 2 or greater ($p=0.573$): PT = 11/103 (14%); HT = 16/105 (18%); DB = 20/107 (19%); mean IKDC subjective scores between groups ($p=0.770$): PT = 83.9 (SD = 12.9, 95% CI = 81.4 – 86.5); HT = 85.2 (SD = 13.0, 95% CI = 82.7 – 87.7); DB = 84.3 (SD = 13.4, 95% CI = 81.7 – 86.9), and IKDC objective grades Normal/Nearly Normal knees PT = 85/98 (87%); HT = 82/99 (81%); DB = 75/103 (76%), $p=0.093$. Tegner activity levels and Cincinnati Occupational Scores were not statistically different between the groups ($p=0.874$ and $p=0.813$, respectively).

The frequency of complete traumatic graft ruptures was higher in the Hamstring and Double Bundle groups (PT = 4/103; HT = 11/105; DB = 11/107; $p=0.145$). Revision ACL reconstructions were performed on 22/26 of these patients. There were an additional 11 partial graft re-ruptures (PT=0; HT=5; DB=6) with the total re-injuries much less in the patellar tendon group (Total re-injuries: PT=4; HT=16 and DB=17 $p=0.010$). Twenty-nine additional arthroscopic procedures were required in 28 patients (9.2%) PT=7, HT=10, DB=11. Contra-lateral ACL ruptures occurred in 28 patients (8.9%). Kneeling pain remained more common the PT group (PT=10/98; HT 4/98; DB 2/91; $p=0.029$).

Conclusions At five-years there was no difference in disease-specific quality-of-life outcome or IKDC grades between the PT, HT and DB techniques for ACL reconstruction. There were significantly more traumatic re-injuries in the HT and DB groups compared to the PT group. Contralateral ACL tears and repeat surgery, increased from the 2-year follow-up.

Cartilage thickness following repair

Med Sci Sports Exerc. 2017 Oct 3. doi: 10.1249/MSS.0000000000001437.

Quadriceps Function and Knee Joint Ultrasonography following ACL Reconstruction.

Pamukoff DN1, Montgomery MM, Moffit TJ, Vakula MN.

PURPOSE:

Individuals with anterior cruciate ligament reconstruction (ACLR) are at greater risk for knee osteoarthritis (OA), partially due to chronic quadriceps dysfunction. Articular cartilage is commonly assessed using magnetic resonance imaging and radiography, but these methods are expensive and lack portability. Ultrasound imaging may provide a cost-effective and portable alternative for imaging the femoral cartilage. The purpose of this study was to compare ultrasonography of the femoral cartilage between the injured and uninjured limbs of individuals with unilateral ACLR, and to examine the association between quadriceps function and ultrasonographic measures of femoral cartilage.

METHODS:

Bilateral femoral cartilage ultrasonography and quadriceps function were assessed in 44 individuals with unilateral ACLR. Quadriceps function was assessed using peak isometric strength (PT), and early (RTD100) and late (RTD200) rate of torque development.

RESULTS:

Cartilage thickness at the medial femoral condyle ($P < 0.001$) and femoral cartilage cross-sectional area ($P = 0.007$) were smaller in the injured compared to the uninjured limb. After accounting for time since ACLR, quadriceps PT was associated with cartilage thickness at the medial femoral condyle ($r = 0.35$, $P = 0.02$) and femoral cartilage cross-sectional area ($r = 0.28$, $P = 0.04$). RTD100 and RTD200 were not associated with femoral cartilage thickness or cross-sectional area.

CONCLUSIONS:

Individuals with ACLR have thinner cartilage in their injured compared to uninjured limb, and cartilage thickness is associated with quadriceps function. These results indicate that ultrasonography may be useful for monitoring cartilage health and OA progression following ACLR.

33. MENISCUS

Meniscal extrusion

Clin Rheumatol. 2017 Nov;36(11):2557-2564. doi: 10.1007/s10067-017-3803-6. Epub 2017 Sep 17.

Meniscal extrusion seen on ultrasonography affects the development of radiographic knee osteoarthritis: a 3-year prospective cohort study.

Chiba D¹, Maeda S², Sasaki E², Ota S^{2,3}, Nakaji S³, Tsuda E⁴, Ishibashi Y².

The objective of this study is to determine whether meniscal extrusion (ME) of the medial meniscus on ultrasonography affects knee osteoarthritis (KOA) progression during 3-year follow-up.

Two hundred seventy volunteers (70 men, 200 women; mean age 60.5 years) participated. Weight-bearing radiographs were evaluated. All subjects had medial radiographic KOA (Kellgren-Lawrence grade [KLG], ≥ 2) in at least one knee at baseline (BL). KLG 2 was defined as moderate KOA (MKOA); KLG 3 and 4 were defined as severe KOA (SKOA). Medial and lateral joint space width (MJSW and LJSW) were measured at the minimum width of femoro-tibial compartment. The medial and lateral osteophyte area (MOPA and LOPA) were measured. Rapid joint space narrowing progression (RP) was defined as $\geq 25\%$ loss of JSW from BL. ME was measured at the medial knee joint space on the medial collateral ligament with ultrasonography. The optimal ME cut-off for RP was determined by ROC curve.

The relationship between ME and the longitudinal change of radiographic parameters was elucidated by linear and logistic regression analysis. In the 460 OA knees at BL, both MOPA and LOPA increased, while only MJSW narrowed after 3 years. RP occurred in 25 knees among 281 MKOA knees and 42 among 179 SKOA knees. ME was associated with medial joint space narrowing only in the SKOA group, while the ME was associated with MOPA in the MKOA and SKOA groups. The cut-off value to detect RP was 5.5 mm only in the SKOA group.

Ultrasonographic evaluation of medial ME was useful to detect radiographic KOA progression.

Impact of weight gain

Eur Radiol. 2017 Oct 6. doi: 10.1007/s00330-017-5054-y.

Association of weight change with progression of meniscal intrasubstance degeneration over 48 months: Data from the Osteoarthritis Initiative.

Guimaraes JB^{1,2,3}, Nevitt MC⁴, McCulloch CE⁴, Schwaiger BJ⁵, Gersing AS⁵, Facchetti L⁵, Bucknor MD⁵, Chanchek N⁵, Liu F⁴, Joseph GB⁵, Link TM⁵.

OBJECTIVES:

To investigate the association of weight change over 48 months with progression of meniscal intrasubstance degeneration (MID).

METHODS:

We studied 487 subjects with MID at baseline and after 48 months using 3-T MRI with the same protocol (FSE sequences with and without fat suppression). These participants lost weight ($\geq 3\%$, $n = 141$), had moderate weight gain (3-10%, $n = 77$), substantial weight gain ($>10\%$, $n = 15$) or maintained stable weight ($n = 254$). Progression of MID to a meniscal tear was assessed using the WOMBS grading system and compared among weight change groups using logistic regression. ANOVA and chi-square tests were used to study the differences in subjects' characteristics.

RESULTS:

Progression of MID increased from weight loss to substantial weight gain ($p < 0.001$) and was significantly more likely with both moderate weight gain (odds ratio [OR], 4.9; 95% confidence interval [CI] 2.4-8.9) and substantial weight gain (OR, 9.5; 95% CI 3.2-28.5) compared to stable weight. Results were similar in both menisci for moderate weight gain (medial: OR, 6.8; 95% CI 3.5-11.3; lateral: OR, 2.6; 95% CI 1.1-6.6) and substantial weight gain (medial: OR, 21.0; 95% CI 5.1-80.7; lateral: OR, 9.7; 95% CI 0.95-100.2).

CONCLUSION:

Weight gain is associated with an increased likelihood that meniscal intrasubstance degeneration will progress with the risk increasing with greater weight gain.

KEY POINTS:

- Subjects who gained weight were more likely to develop meniscal tears.
- Greater amount of weight gain was associated with an increasing likelihood of progression.
- Prevention of weight gain has health benefits for the meniscus.

35. KNEE/TOTAL**Patella resurfacing****A Meta-Analysis of Patellar Replacement in Total Knee Arthroplasty for Patients with Knee Osteoarthritis**

Xiao-Bo Tang Jian Wang Pei-Long Dong Rong Zhou

DOI: <http://dx.doi.org/10.1016/j.arth.2017.10.017>

Background

This meta-analysis (MA) aims to compare the clinical outcomes of resurfacing and non-resurfacing the patella in patients undergoing total knee arthroplasty (TKA) in the treatment of knee osteoarthritis (OA).

Methods

Randomized controlled trials (RCTs) were included by retrieving data from electronic English databases. Both fixed and random-effects models were employed, and standardized mean difference (SMDs) and 95% confidence intervals (CIs) were calculated. Stata13.1 software was used for statistical analysis for all the studies included to compare the differences in improving Knee Society Clinical Score and Knee Society Function Score as well as the reduction of rates of infection, re-operation and anterior knee pain.

Results

A total of 394 studies were initially included in this meta-analysis. About 20 RCTs which met the inclusion criteria were finally enrolled in this meta-analysis. The results of our meta-analysis showed that the re-operation rate of the patella resurfacing group was lower than that of the non-resurfacing group. The subgroup analysis was performed according to the follow-up time, and revealed that the increase in the Knee Society Clinical Score was higher in the patella resurfacing group than that in the non-resurfacing group in the follow-up period of 1 to 2 years. The risk of re-operation rate was lower in the patella resurfacing group than that in the non-resurfacing group, while there were no statistical differences in the follow-up time over 2 years.

Conclusion

Our study suggests that during the follow-up of 1 to 2 years, patella resurfacing can significantly increase the Knee Society Clinical Score and reduce the re-operative rates in patients with knee OA.

Total knee and instabilities

Knee. 2017 Sep 29. pii: S0968-0160(17)30281-8. doi: 10.1016/j.knee.2017.08.060.

Knee instability as the primary cause of failure following Total Knee Arthroplasty (TKA): A systematic review on the patient, surgical and implant characteristics of revised TKA patients.

Wilson CJ¹, Theodoulou A², Damarell RA³, Krishnan J⁴.

BACKGROUND:

The aim of this review was to systematically assess the current evidence available regarding knee instability after TKA to identify time to failure between primary and revision TKA. In addition, we considered the patient, surgical and implant characteristics of primary TKA patients revised for knee instability, and investigated methods used for knee instability diagnosis.

METHODS:

A systematic search of six databases and the unpublished literature was performed. Studies referring to instability in post-operative primary TKA patients, reporting on revision TKA due to instability, and published or available between 2005 to 30-Mar-2015 were eligible for inclusion. Quantitative data for continuous variables were pooled in statistical meta-analyses.

RESULTS:

A total of 1841 unique studies were identified, 42 of which met the selection criteria and a total of 22 studies included in the review. Time to failure between primary and revision TKA was 44.7months (95% CI [33.8, 55.7]), and the weighted mean age at time of revision surgery was 67.6years (95% CI [65.38, 69.75]). A gender distribution was identified, with approximately 16.4% more females revised for instability, however this was unable to be corrected for the baseline population. The majority of studies used a combination of radiographic and clinical testing to diagnose knee instability.

CONCLUSION:

Research on knee instability following primary TKA reported early failure and subsequent revision knee surgery. The need for revision due to instability was frequently reported in a younger patient cohort and most commonly in female TKA patients. Early revision at a younger age highlights the severe implications of an unstable knee.

Total or partial for medial. Partial wins

October 2017 Volume 33, Issue 10, Supplement, Page e91 **Total or Partial Knee Replacement for Medial Osteoarthritis? Early Results from the TOPKAT Trial** David J. Beard, Prof. MA, MSc, DPhil, UNITED KINGDOM Robert Kent, Bs, UNITED STATES \

Summary Partial Knee Replacement had better outcomes at 1 yr compared to Total Knee Replacement in a large randomised trial (n=528).

Introduction Late stage knee osteoarthritis of the medial compartment can be treated using Total Knee Replacement (TKR) or Partial (or Unicompartmental) Replacement (PKR). There is high variation in treatment choice and insufficient evidence to guide selection with no large scale randomised trial. The cost efficacy implications for the healthcare provider are substantial.

Methods TOPKAT is a pragmatic comparative effectiveness RCT of TKR versus PKR which included an expertise component in the design. Patients with medial compartment knee osteoarthritis were included from 27 sites and 63 surgeons. The Oxford Knee Score (OKS) at one year was the primary endpoint. Secondary outcomes included activity scores, patient satisfaction and complications, (including revision and composite "failure" – defined by minimal OKS improvement and/or re-operation). The study was funded by the national Health Technology Assessment Programme (HTA), National Institute of Health Research (NIHR).

Results 528 patients were randomised. Baseline variables between groups were well-balanced. A representative range of implants had been used in the trial when compared to National Joint Registry data. One-year OKS was 1.9 points ([95%CI, 0.2 to 3.6] p=0.029) in favour of PKR. Secondary variables mostly reflected this pattern. 89% of PKR patients reported they would have the operation again compared with 77% of TKR patients (p<0.001). Overall there were 8 (3.1%) complications requiring readmission in the PKR group and 12 (4.8%) in the TKR group. Re-operation was similar between groups with only one complete revision in the PKR group. A composite outcome for failure showed that 11% of PKRs "failed" compared with 15% in the TKR group (risk ratio of 0.72 [95% CI 0.46, 1.11]). The expertise based analysis emphasised the differences between groups.

Discussion and conclusion Both operations had good early outcome. There was no evidence that TKR was superior to PKR. There were differences from several separate outcomes in favour of PKR. The expertise component was a useful design and emphasised differences. These early results suggest superiority of PKR over TKR for medial compartment knee OA at one year, however, in view of the importance of longer term outcome and failure of knee replacement, five year results from TOPKAT are essential.

37. OSTEOARTHRITIS/KNEE**Pathology and pain**

Clin Rheumatol. 2017 Nov;36(11):2549-2555. doi: 10.1007/s10067-017-3838-8. Epub 2017 Sep 16.

The association of knee structural pathology with pain at the knee is modified by pain at other sites in those with knee osteoarthritis.

Pan F¹, Tian J¹, Aitken D¹, Cicuttini F², Winzenberg T^{1,3}, Jones G⁴.

The objective of this study was to investigate the associations of knee structural abnormalities with different patterns of pain.

A total of 891 participants (average age 63 years; range 50 to 80 years) participated in this study. Presence of pain at the neck, back, hands, shoulders, hips, knees, and feet was assessed by questionnaire. Participants were categorized as having no pain at any site (no pain), pain only at the knee (KP), pain at other sites but not the knee (OP), and pain at the knee and other sites (KOP). T1-weighted or T2-weighted MRI of the right knee was performed to measure cartilage defects, bone marrow lesions (BMLs), and effusion-synovitis. Osteophytes and joint space narrowing were assessed by X-ray. KP, KOP, and OP were, respectively, present in 3, 43, and 42% of the participants. In multivariable analyses, KOP was associated with the presence of cartilage defects, BMLs, and osteophytes (OR 3.57 (95% CI 1.78 to 7.14), 2.37 (1.27 to 4.43), and 2.87 (1.10 to 7.51), respectively) in those with radiographic knee OA. KP was also associated with presence of these structural abnormalities as well as effusion-synovitis, and these associations were much stronger.

The associations between structural abnormalities and KOP were weaker than those with KP in those with radiographic knee OA. This suggests that mechanisms mediating the association between structural pathology, localized, and generalized pain may be different, and central sensitization is possibly involved in generalized pain. Pain at other sites needs to be considered in the management and treatment of OA-related pain

40. ANKLE SPRAINS AND INSTABILITY**Impact of**

J Orthop Sports Phys Ther. 2017 Oct 7:1-23. doi: 10.2519/jospt.2017.7030.

Influence of Passive Joint Stiffness on Proprioceptive Acuity in Individuals With Functional Ankle Instability.

Marinho HVR^{1,2}, Amaral GM^{2,3}, Moreira BS², Araújo VL², Souza TR^{2,4}, Ocarino JM^{2,4}, da Fonseca ST^{2,4}.

Study Design Controlled Laboratory Study; Cross-sectional. **Background** Deficits in ankle proprioceptive acuity have been reported in persons with functional instability of the ankle. Passive stiffness has been proposed as a possible mechanism underlying proprioceptive acuity.

Objectives 1) to compare proprioceptive acuity and passive ankle stiffness between persons with and without functional ankle instability, and 2) to assess the influence of passive joint stiffness on the proprioceptive acuity in persons with functional ankle instability.

Methods Eighteen subjects with and 18 without complaints of functional ankle instability following lateral ankle sprain participated. An isokinetic dynamometer was used to compare motion perception threshold (MPT), passive position sense (PAPS), and passive ankle stiffness (PAS) between groups. To evaluate the influence of passive stiffness on proprioceptive acuity, individuals in the lateral instability functional group were divided into 2 groups: "high" and "low" passive ankle stiffness.

Results The functional instability group exhibited increased MPT when compared with the corresponding limb of the control group. Between group differences were not found for PAPS and PAS. Those in the functional ankle instability group with higher passive ankle stiffness had smaller MPT than those with lower passive ankle stiffness.

Conclusion Unlike MPT, the PAPS is not affected by the presence of functional ankle instability. PAS appears to influence proprioceptive acuity in persons with functional ankle instability. J Orthop Sports Phys Ther, Epub 7 Oct 2017. doi:10.2519/jospt.2017.7030

42. PLANTAR SURFACE

Stretching

Foot Ankle Int. 2017 Oct 1:1071100717732762. doi: 10.1177/1071100717732762.

Effectiveness of the Simultaneous Stretching of the Achilles Tendon and Plantar Fascia in Individuals With Plantar Fasciitis.

Engkananuwat P¹, Kanlayanaphotporn R¹, Purepong N².

BACKGROUND:

Since the plantar fascia and the Achilles tendon are anatomically connected, it is plausible that stretching of both structures simultaneously will result in a better outcome for plantar fasciitis.

METHODS:

Fifty participants aged 40 to 60 years with a history of plantar fasciitis greater than 1 month were recruited. They were prospectively randomized into 2 groups. Group 1 was instructed to stretch the Achilles tendon while group 2 simultaneously stretched the Achilles tendon and plantar fascia.

RESULTS:

After 4 weeks of both stretching protocols, participants in group 2 demonstrated a significantly greater pressure pain threshold than participants in group 1 ($P = .040$) with post hoc analysis. No significant differences between groups were demonstrated in other variables ($P > .05$).

Concerning within-group comparisons, both interventions resulted in significant reductions in pain at first step in the morning and average pain at the medial plantar calcaneal region over the past 24 hours, while there were increases in the pressure pain threshold, visual analog scale-foot and ankle score, and range of motion in ankle dorsiflexion ($P < .001$). More participants in group 2 described their symptoms as being much improved to being completely improved than those in group 1.

CONCLUSION:

The simultaneous stretching of the Achilles tendon and plantar fascia for 4 weeks was a more effective intervention for plantar fasciitis. Patients who reported complete relief from symptoms at the end of the 4-week intervention in the simultaneous stretching group ($n = 14$; 56%) were double that of the stretching of the Achilles tendon-only group ($n = 7$; 28%).

45 A. MANUAL THERAPY LUMBAR & GENERAL**Chiro for care of preg LBP**

BMC Pregnancy Childbirth. 2017 Sep 29;17(1):331. doi: 10.1186/s12884-017-1528-9.

Chiropractic management of dominating one-sided pelvic girdle pain in pregnant women; a randomized controlled trial.

Gausel AM¹, Kjærmann I², Malmqvist S^{2,3}, Andersen K², Dalen I⁴, Larsen JP², Økland I⁵.

BACKGROUND:

The aim of this study was to investigate the outcome of chiropractic management for a subgroup of pregnant women with dominating one-sided pelvic girdle pain (PGP).

METHODS:

The study population was recruited from a prospective longitudinal cohort study of pregnant women. Women reporting pelvic pain (PP), and who were diagnosed with dominating one-sided PGP after a clinical examination, were invited to participate in the intervention study. Recruitment took place either at 18 weeks, or after an SMS-tracking up to week 29. The women were randomized into a treatment group or a control group. The treatment group received chiropractic treatment individualized to each woman with regards to treatment modality and number of treatments. The control group was asked to return to conventional primary health care. The primary outcome measure was new occurrence of full time and/or graded sick leave due to PP and/or low back pain. Secondary outcome measures were self-reported PP, physical disability and general health status. Proportion of women reporting new occurrence of sick leave were compared using Chi squared tests. Differences in secondary outcome measures were estimated using linear regression analyses.

RESULTS:

Fifty-Six women were recruited, and 28 of them were randomized into the treatment group, and 28 into the control group. There was no statistically significant difference in sick leave, PP, disability or general health status between the two groups during pregnancy or after delivery.

CONCLUSION:

The study did not demonstrate superiority of chiropractic management over conventional care for dominating one-sided PGP during pregnancy. However, the analyses revealed wide confidence intervals containing both positive and negative clinically relevant effects

45 B. MANUAL THERAPY CERVICAL**C spine manip**

J Back Musculoskelet Rehabil. 2017 Sep 22;30(5):1005-1013. doi: 10.3233/BMR-169573.

The immediate effects of manual stretching and cervicothoracic junction manipulation on cervical range of motion and upper trapezius pressure pain thresholds.

Hanney WJ¹, Puentedura EJ², Kolber MJ³, Liu X⁴, Pabian PS¹, Cheatham SW⁵.

INTRODUCTION:

Myofascial pain is a common impairment treated with various manual interventions including spinal thrust manipulation and stretching; however, the comparative efficacy of each intervention is uncertain. Therefore, the purpose of this investigation was to evaluate thrust manipulation targeting the cervicothoracic junction compared to a manual stretch of the upper trapezius muscle on cervical range of motion and upper trapezius pressure pain thresholds (PPTs).

METHODS:

Healthy participants with no significant history of neck pain were randomized into a thrust manipulation group, a stretching group, or a control group. Within group differences were evaluated via a dependent t-test, and group by time interactions were evaluated by a two-way repeated measures ANOVA.

RESULTS:

One hundred and two participants were recruited to participate. Baseline demographics revealed no significant differences between groups. Significant group by time interactions were found for changes in PPTs for both the right and left upper trapezius. Also, significant differences were found for changes in cervical extension, as well as right and left cervical side bending favoring the treatment groups.

DISCUSSION:

This study demonstrates the potential independent effectiveness of spinal thrust manipulation or stretching for reducing PPTs at the upper trapezius. Future research should further evaluate the limitation of PPTs as a measure of muscle sensitivity as well as factors that may contribute to variability in the measurements among individuals seeking care.

46 A. UPPER LIMB NEUROMOBILIZATION**Cervical radiculopathy**

J Back Musculoskelet Rehabil. 2017 Sep 22;30(5):951-959. doi: 10.3233/BMR-140191.

The effects of neural mobilization on cervical radiculopathy patients' pain, disability, ROM, and deep flexor endurance.

Kim DG¹, Chung SH², Jung HB³.

BACKGROUND:

Cervical radiculopathy (CR) is a disease of the cervical spine and a space-occupying lesion that occurs because of pathological problems with cervical nerve roots. Nerve root injury to produce functional disability.

OBJECTIVE:

The purpose of this study was to examine the effects of neural mobilization with manual cervical traction (NMCT) compared with manual cervical traction (MCT) on pain, functional disability, muscle endurance, and range of motion (ROM) in individuals with CR patients.

METHODS:

A blinded randomized clinical trial was conducted. Thirty CR patients were divided into two groups - those who received NMCT and those who received MCT. The intervention was applied three times per week for eight weeks. It was measured in order to determine the pain and functional disability in patients with CR. The numeric pain rating scale (NPRS), neck disability index (NDI), ROM, and deep flexor endurance of patients were measured prior to the experiment, four weeks, and eight weeks after the experiment to compare the time points. A repeated-measures analysis of variance was used to compare differences within each group prior to the experiment. And Bonferroni test was performed to examine the significance of each time point.

RESULTS:

There were significant differences within each group prior to the intervention, four weeks after the intervention, and eight weeks after the intervention in NPRS, NDI, ROM, and deep flexor endurance ($P < 0.05$). NPRS and NDI more decreased, and, ROM and deep flexor endurance increased in the NMCT group than the MCT group ($P < 0.05$).

CONCLUSIONS:

These results suggest that the NMCT can pain relief, recovery from neck disability, ROM, and deep flexor endurance for patients with CR.

48 A. STM**Changes in TP's**

Clin J Pain. 2017 Sep 29. doi: 10.1097/AJP.0000000000000560.

Exploration of Quantitative Sensory Testing in Latent Trigger Points and Referred Pain Areas.

Ambite-Quesada S¹, Arias-Buría JL, Courtney CA, Arendt-Nielsen L, Fernández-de-Las-Peñas C.

OBJECTIVE:

To investigate somato-sensory nerve fibre function by applying different quantitative sensory testing including thermal, mechanical and vibration thresholds over latent trigger points (TrP) and in its associated referred pain area.

METHODS:

A total of 20 subjects with unilateral latent TrPs in the extensor carpi radialis brevis were included. Warmth detection threshold (WDT), cold detection threshold (CDT) and heat/cold pain thresholds (HPT, CPT), mechanical detection (MDT) and pain (MPT) thresholds, vibration threshold (VT), and pressure pain thresholds (PPT) were blindly assessed over the TrP, in the referred pain area, and in the respective contra-lateral mirror areas. A multilevel mixed-model ANOVA with site (TrP, referred pain area) and side (real or contra-lateral) as within-subjects factors and gender as between-subjects factor was conducted.

RESULTS:

No significant differences for thermal detection (WDT, CDT) or thermal pain thresholds (HPT, CPT) were found (all, $P > 0.141$). The assessments over the TrP area showed lower PPT and MDT compared to the mirror contra-lateral TrP area ($P < 0.05$). MDT were higher ($P = 0.001$) but PPT ($P < 0.001$) and MPT ($P = 0.032$) were lower over the TrP area and contra-lateral mirror point compared to their respectively referred pain areas. Finally, VT was higher over the TrP area than in the referred pain area and over both mirror contra-lateral points.

DISCUSSION:

Assessing sensory changes over latent myofascial TrPs reveal mechanical hyperesthesia, pressure pain hyperalgesia, and vibration hypoesthesia compared to a contra-lateral mirror area.

Massage and muscle soreness

Front Physiol. 2017 Sep 27;8:747. doi: 10.3389/fphys.2017.00747. eCollection 2017.

Massage Alleviates Delayed Onset Muscle Soreness after Strenuous Exercise: A Systematic Review and Meta-Analysis.

Guo J^{1,2}, Li L³, Gong Y^{1,2}, Zhu R², Xu J^{1,4}, Zou J¹, Chen X².

Purpose: The purpose of this systematic review and meta-analysis was to evaluate the effects of massage on alleviating delayed onset of muscle soreness (DOMS) and muscle performance after strenuous exercise.

Method: Seven databases consisting of PubMed, Embase, EBSCO, Cochrane Library, Web of Science, CNKI and Wanfang were searched up to December 2016. Randomized controlled trials (RCTs) were eligible and the outcomes of muscle soreness, performance (including muscle maximal isometric force (MIF) and peak torque) and creatine kinase (CK) were used to assess the effectiveness of massage intervention on DOMS.

Results: Eleven articles with a total of 23 data points (involving 504 participants) satisfied the inclusion criteria and were pooled in the meta-analysis. The findings demonstrated that muscle soreness rating decreased significantly when the participants received massage intervention compared with no intervention at 24 h (SMD: -0.61, 95% CI: -1.17 to -0.05, $P = 0.03$), 48 h (SMD: -1.51, 95% CI: -2.24 to -0.77, $P < 0.001$), 72 h (SMD: -1.46, 95% CI: -2.59 to -0.33, $P = 0.01$) and in total (SMD: -1.16, 95% CI: -1.60 to -0.72, $P < 0.001$) after intense exercise. Additionally, massage therapy improved MIF (SMD: 0.56, 95% CI: 0.21-0.90, $P = 0.002$) and peak torque (SMD: 0.38, 95% CI: 0.04-0.71, $P = 0.03$) as total effects. Furthermore, the serum CK level was reduced when participants received massage intervention (SMD: -0.64, 95% CI: -1.04 to -0.25, $P = 0.001$).

Conclusion: The current evidence suggests that massage therapy after strenuous exercise could be effective for alleviating DOMS and improving muscle performance.

50 B. PNF**PNF for neck OA better than MT.**

J Back Musculoskelet Rehabil. 2017 Sep 22;30(5):1095-1101. doi: 10.3233/BMR-169718.

PNF and manual therapy treatment results of patients with cervical spine osteoarthritis.

Maicki T^{1,2}, Bilski J³, Szczygieł E⁴, Trąbka R^{1,2}.

PURPOSE:

The aim of this study was to evaluate the effectiveness of PNF and manual therapy methods in the treatment of patients with cervical spine osteoarthritis, especially their efficacy in reducing pain and improving functionality in everyday life. Long-term results were also compared in order to determine which method of treatment is more effective.

SUBJECTS AND METHODS:

Eighty randomly selected females aged 45-65 were included in the study. They were randomly divided into two groups of 40 persons. One group received PNF treatment and the other received manual therapy (MAN.T). To evaluate functional capabilities, the Functional Rating Index was used. To evaluate changes in pain, a shortened version of the McGill Questionnaire was used.

RESULT:

The PNF group achieved a greater reduction in pain than the MAN.T group. The PNF group showed a greater improvement in performing daily activities such as sleeping, personal care, travelling, work, recreation, lifting, walking and standing as well as decreased intensity and frequency of pain compared to the MAN.T group.

CONCLUSION:

The PNF method proved to be more effective in both short (after two weeks) and long (after three months) term.

51. CFS/BET**Upper trap activity**

Clin J Pain. 2017 Nov;33(11):1006-1013. doi: 10.1097/AJP.0000000000000513.

Muscle Pain Induces a Shift of the Spatial Distribution of Upper Trapezius Muscle Activity During a Repetitive Task: A Mechanism for Perpetuation of Pain With Repetitive Activity?

Falla D¹, Cescon C, Lindstroem R, Barbero M.

OBJECTIVE:

An association exists between repetitive movements and the development or perpetuation of neck-shoulder muscle pain. The mechanisms underlying this association remain unclear. This observational study investigated the effect of upper trapezius muscle pain on the distribution of upper trapezius activity during repetitive lifting. It was hypothesized that nociception would change the distribution of activity resulting in activation of muscle regions which would not normally be active during the task.

MATERIALS AND METHODS:

Healthy men repeatedly lifted a box with a cycle time of 3 seconds for 50 cycles, at baseline, following injection of isotonic and hypertonic saline into the upper trapezius muscle and 15 minutes after the last injection. High-density surface electromyography (EMG) was recorded from the upper trapezius using a grid of 64 electrodes. The EMG amplitude was computed for each location to form a map of the EMG amplitude distribution.

RESULTS:

During the painful condition, the overall EMG amplitude was lower compared with all other conditions ($P < 0.05$) and in addition, the center of upper trapezius activity was shifted toward the caudal region of the muscle ($P < 0.01$), a region not normally active during the task. The described alterations of muscle activity likely play an important role in the perpetuation of pain during repetitive activity.

DISCUSSION:

Novel mapping of the spatial distribution of upper trapezius muscle activity showed that nociception induced a redistribution of activity during repetitive lifting. This knowledge provides new insights into the mechanisms underlying the perpetuation of pain with repetitive activity.

Pregnancy and movements with LBP**Low back pain and causative movements in pregnancy: a prospective cohort study**

Saori Morino, Mika Ishihara, Fumiko Umezaki, Hiroko Hatanaka, Hirotaka Iijima, Mamoru Yamashita, Tomoki Aoyama and Masaki Takahashi

<https://doi.org/10.1186/s12891-017-1776-x>

Background

Low back pain (LBP) during pregnancy might be strongly related to posture and movements of the body, and its management is a clinically important issue. The purpose of this study was to investigate the activities related to LBP during pregnancy.

Methods

Participants included 275 women before 12 weeks of pregnancy. The women were evaluated at 12, 24, 30, and 36 weeks of pregnancy. The intensity of LBP was assessed using the Numerical Rating Scale (NRS). Movements related to LBP were investigated by free descriptive answers. Descriptive statistics were used to compile the movements that pregnant women thought induced LBP at each evaluation. Subsequently, a linear regression analysis was performed to evaluate the degree of association of certain movements with LBP using the data of participants who had LBP. The intensity of LBP (NRS score) was specified as the dependent variable, the movements that were related to pain were specified as the independent variables at the analysis. A significance threshold was set at 0.05.

Results

The final sample used in the analyses was 254, 249, 258, and 245 women at 12, 24, 30, and 36 weeks of pregnancy, respectively. There were 16 kinds of movements that induced LBP and all of them were daily activities rather than special movements that require extra task or effort. As pregnancy progressed, less number of participants attributed pain to a specific movement. At all evaluations, movements, especially sitting up, standing up from a chair, and tossing and turning were thought to be related to LBP. Furthermore, standing up from a chair and tossing and turning were significantly related to LBP throughout the pregnancy. In contrast, lying down and sitting up were significantly related to LBP but the relationship did not continue till late pregnancy.

Conclusions

Daily routine activity is related to LBP during pregnancy. These results suggest that recommendations for pregnant women about basic physical movements, such as ways of standing up that reduce the load on the body might be useful in the management of LBP.

52. EXERCISE**Blood flow restriction**

Sports Medicine pp 1–18 | Cite as

Magnitude of Muscle Strength and Mass Adaptations Between High-Load Resistance Training Versus Low-Load Resistance Training Associated with Blood-Flow Restriction: A Systematic Review and Meta-Analysis

Manoel E. Carlos Ugrinowitsch Ricardo Berton Felipe C. Vechin Miguel S. Conceição
Felipe Damas Cleiton A. Libardi Hamilton Roschel

Background

Low-load resistance training (< 50% of one-repetition maximum [1RM]) associated with blood-flow restriction (BFR-RT) has been thought to promote increases in muscle strength and mass. However, it remains unclear if the magnitude of these adaptations is similar to conventional high-load resistance training (> 65% 1RM; HL-RT).

Objective

To compare the effects of HL- versus BFR-RT on muscle adaptations using a systematic review and meta-analysis procedure.

Methods

Studies were identified via electronic databases based on the following inclusion criteria: (a) pre- and post-training assessment of muscular strength; (b) pre- and post-training assessment of muscle hypertrophy; (c) comparison of HL-RT vs. BFR-RT; (d) score ≥ 4 on PEDro scale; (e) means and standard deviations (or standard errors) are reported from absolute values or allow estimation from graphs. If this last criterion was not met, data were directly requested from the authors.

Results

The main results showed higher increases in muscle strength for HL- as compared with BFR-RT, even when considering test specificity, absolute occlusion pressure, cuff width, and occlusion pressure prescription. Regarding the hypertrophic response, results revealed similar effects between HL- and BFR-RT, regardless of the absolute occlusion pressure, cuff width, and occlusion pressure prescription.

Conclusions

Based on the present data, maximum muscle strength may be optimized by specific training methods (i.e., HL-RT) while both HL- and BFR-RT seem equally effective in increasing muscle mass. Importantly, BFR-RT is a valid and effective approach for increasing muscle strength in a wide spectrum of ages and physical capacity, although it may seem particularly of interest for those individuals with physical limitations to engage in HL-RT.

59. PAIN

Mindfulness in adolescents

Clin J Pain. 2017 Nov;33(11):1019-1029. doi: 10.1097/AJP.0000000000000490.

A Mindfulness Program Adapted for Adolescents With Chronic Pain: Feasibility, Acceptability, and Initial Outcomes.

Ruskin DA¹, Gagnon MM, Kohut SA, Stinson JN, Walker KS.

OBJECTIVES:

Pediatric chronic pain is a major health issue that can lead to significant interference in daily functioning. Mindfulness-based interventions (MBI's), which emphasize acceptance rather than control of pain, have gained increasing attention as a viable treatment option among adults with chronic pain. The effectiveness of MBIs for chronic pain in pediatric populations remains largely unknown. This prospective pre-post interventional study was conducted to examine the feasibility, acceptability, and initial effectiveness of an 8-week group MBI adapted for adolescents (MBI-A) with chronic pain.

MATERIALS AND METHODS:

Self-report measures assessing pain characteristics, anxiety, depression, disability, pain catastrophizing, perceived social support, mindfulness, and pain acceptance were administered at baseline, postintervention, and at a 3-month follow-up. In addition, session data were collected to assess each session's impact on patients' coping with pain and stress, body awareness, and sense of feeling less alone.

RESULTS:

In total, 42 consecutive patients in a tertiary care chronic pain clinic met eligibility criteria to participate in the MBI-A group. Of these, 21 participated. A treatment completion rate of 90.5% was observed. Between session mindfulness practice was reported by 77% of participants. Participants were highly satisfied with the MBI-A and all participants reported they would recommend the group to a friend. Improvements in pain acceptance were observed between baseline and the 3-month follow-up, in domains of Pain Willingness and Activity Engagement. Session data revealed improved body awareness and improved ability to cope with stress across sessions.

DISCUSSION:

The MBI-A is a feasible, well-received intervention for adolescents with chronic pain conditions. Findings support the need for further investigation of the efficacy of MBI-A through randomized-controlled trials.

61. FIBROMYALGIA

Psychopathology and FM

Clin J Pain. 2017 Nov;33(11):991-997. doi: 10.1097/AJP.0000000000000506.

Vulnerability to Psychopathology and Dimensions of Personality in Patients With Fibromyalgia.

Garcia-Fontanals A¹, Portell M, García-Blanco S, Poca-Dias V, García-Fructuoso F, López-Ruiz M, Gutiérrez-Rosado T, Gomà-I-Freixanet M, Deus J.

OBJECTIVE:

Fibromyalgia (FM) patients may present psychopathology and some characteristic personality traits that may affect their adaptation to the disease. The aim of this paper was to study the relationship between personality dimensions according to the psychobiological model of Cloninger and the presence of psychopathology.

MATERIALS AND METHODS:

The study sample consisted of 42 patients with FM and 38 pain-free controls. The assessment instruments administered were the Temperament and Character Inventory-Revised and the Millon Clinical Multiaxial Inventory.

RESULTS:

A higher proportion of clinical psychopathologic syndromes (CPS) was observed in the FM group than in the control group, the most prevalent being anxiety disorder and dysthymia. Patients with FM (with CPS or without CPS) presented higher Harm Avoidance than the control group, and the presence of a CPS also increased Harm Avoidance scores. FM patients with CPS had low Self-directedness (SD) compared with both the control group and with their FM peers without CPS. Purposefulness and Anticipatory worry-Pessimism explained 38% of the variance of dysthymia, and anticipatory worry-Pessimism explained 18% of the variance of anxiety disorders.

CONCLUSIONS:

Patients with FM have a high probability of anxious-depressive-type psychopathologic alterations. Their vulnerability to these conditions may be determined by personality traits. The SD character dimension may have implications for therapy, as low SD is associated with the presence of psychopathology and with a low capacity to cope with the disease.

62 A. NUTRITION/VITAMINS

Vit D and post menopausal syndrome

Vitamin D deficiency is associated with metabolic syndrome in postmenopausal women

Maturitas | October 19, 2017

Schmitt EB, et al.

An observational, cross-sectional cohort study was carried out to assess the relationship between vitamin D (VD) deficiency and risk factors for metabolic syndrome (MetS) in postmenopausal women. According to the outcome obtained, VD deficiency in postmenopausal women was related to a higher prevalence of MetS. They also noticed that the women with VD deficiency had a higher risk of MetS, hypertriglyceridemia and low HDL than those with adequate levels.

Methods

- They enrolled total 463 women, aged 45-75 years, with amenorrhea >12 months, without VD supplementation or established cardiovascular disease.
- They collected clinical and anthropometric data. In this study, biochemical parameters, including total cholesterol (TC), HDL, LDL, triglycerides, glucose, insulin and 25-hydroxyvitamin-D [25(OH)D] were measured.
- Women meeting three or more of the following criteria were diagnosed with MetS: waist circumference >88 cm, triglycerides ≥ 150 mg/dL, HDL <50 mg/dL, blood pressure $\geq 130/85$ mmHg and glucose ≥ 100 mg/dL.
- Serum 25(OH)D levels were classified as sufficient (≥ 30 ng/mL), insufficient (20-29 ng/mL) or deficient (< 20 ng/mL).
- ANOVA, chi-square test and logistic regression (odds ratio, OR) were utilized for statistical analysis.

Results

- They observed that the serum 25(OH)D levels were sufficient in 148 women (32.0%), insufficient in 151 (32.6%) and deficient in 164 (35.4%).
- Women with low 25(OH)D levels had higher TC, triglycerides, insulin and HOMA-IR levels ($p < 0.05$).
- MetS was detected in 57.8% (182/315) of women with hypovitaminosis D (insufficient and deficient) and in 39.8% (59/148) of those with sufficient VD ($p = 0.003$).
- In a multivariate logistic regression analysis, a low 25(OH)D level (<30 ng/mL) was significantly related to MetS (OR1.90, 95%CI = 1.26-2.85), high triglyceride levels (OR1.55, 95%CI = 1.13-2.35), and low HDL levels (OR1.60, 95%CI = 1.19-2.40) ($p < 0.05$) compared with women with sufficient 25(OH)D levels, after adjusting for age, time since menopause, body mass index, smoking and physical exercise.
- The mean concentration of 25(OH)D reduced with increasing numbers of MetS components ($p = 0.016$).

Vit D and Vit K for LE function

Arthritis Care Res (Hoboken). 2017 Oct 17. doi: 10.1002/acr.23451.

Sufficient vitamin K status combined with sufficient vitamin D status is associated with better lower extremity function: a prospective analysis of two knee osteoarthritis cohorts.

Shea MK¹, Loeser RF², McAlindon TE³, Houston DK⁴, Kritchevsky SB⁴, Booth SL¹.

OBJECTIVE:

Vitamins K and D are important for the function of vitamin K-dependent proteins in joint tissues. It is unclear if these nutrients are mutually important to functional outcomes related to knee osteoarthritis (OA). We evaluated the association of vitamin K and D sufficiency with lower-extremity function in the Health, Aging Body Composition Knee OA Sub-study (Health ABC) and conducted a replication analysis in an independent cohort, the Osteoarthritis Initiative (OAI).

METHODS:

In Health ABC (60% female, 75±3 years) baseline nutrient status was measured using circulating vitamin K and 25(OH)D. Lower-extremity function was assessed using the short physical performance battery (SPPB) and usual 20-meter gait speed. In the OAI (58% female, 61±9 years), baseline nutrient intake was estimated by food frequency questionnaire. Lower-extremity function was assessed using usual 20-meter gait speed and chair stand completion time. Multivariate mixed models were used to evaluate the association of vitamin K and D status and intake with lower-extremity function over 4-5 years.

RESULTS:

Health ABC participants with sufficient plasma vitamin K (≥ 1.0 nmol/L) and serum 25(OH)D (≥ 50 nmol/L) generally had better SPPB scores and faster usual gait speed over follow-up ($p \leq 0.002$). In the OAI, sufficient vitamin K and vitamin D intake combined was associated with overall faster usual gait speed and chair stand completion time over follow-up ($p \leq 0.029$).

CONCLUSION:

Sufficient vitamin K status combined with sufficient vitamin D status was associated with better lower-extremity function in two knee OA cohorts. These findings merit confirmation in vitamin K and D co-supplementation trials. This article is protected by copyright. All rights reserved.

Pro-inflammatory dietary pattern is associated with fractures in women: An eight-year longitudinal cohort study

Osteoporosis International | October 13, 2017

Veronese N, et al.

This paper ascertained if higher Dietary Inflammatory Index (DII) scores correlated with fractures in North American population. The data shed light on the connection between higher dietary inflammatory index values with a higher risk of incident fractures in women but not in men.

Methods

- This trial constituted a longitudinal study with a follow-up of 8 years. 3648 participants (1577 males and 2071 females; mean age = 60.6 years) with/at risk of knee osteoarthritis participating with in the Osteoarthritis Initiative were recruited as a part of this study.
- DII scores were computed through the validated Block Brief 2000 Food Frequency Questionnaire, categorized into sex-specific quintiles.
- Data on fracture incidents were gained via self-reported history of fractures at hip, spine, and forearm.
- Cox's regression analysis gauged the link between baseline DII score and incident fracture, adjusted for potential baseline confounders, and reported as hazard ratios (HRs).

Results

- 560 candidates reported fracture (15.4%) incidents, during 8 years of follow-up.
- After adjustment for 10 potential confounders, women in the highest DII score quintile (i.e., most pro-inflammatory diet) exhibited a substantially higher risk for fractures (HR = 1.46; 95% CI = 1.02-2.11) than those in the lowest quintile.
- A rise in one standard deviation of DII scores prominently speculated the fracture onset in women (adjusted HR = 1.14; 95% CI = 1.02-1.27).
- No marked connection was discovered between DII score and fractures, among men or in the sample as a whole.

Bone loss and nutrition

J Bone Miner Res. 2017 Oct 12. doi: 10.1002/jbmr.3308.

Association between dietary fiber intake and bone loss in the Framingham Offspring Study.

Dai Z¹, Zhang Y^{1,2}, Lu N^{1,2}, Felson DT^{1,3}, Kiel DP⁴, Sahni S⁴.

Dietary fiber may increase calcium absorption, but its role in bone mineralization is unclear.

Furthermore, the health effect of dietary fiber may be different between genders. We examined the association between dietary fiber (total fiber and fiber from cereal, fruits, vegetables, nuts and legumes) and bone loss at the femoral neck, trochanter and lumbar spine (L2-4) in older men and women. In the Framingham Offspring Study, at baseline (1996-2001), diet was assessed using the Willett food frequency questionnaire and bone mineral density (BMD) was measured using dual-energy X-ray absorptiometry. Follow-up BMD was measured in 2001-2005 and 2005-2008 among 792 men (mean age, 58.1yr; BMI, 28.6kg/m²) and 1,065 women (57.3yr; 27.2kg/m²). We used sex-specific generalized estimating equations in multivariable regressions to estimate the difference (β) of annualized BMD change in percent (% Δ BMD) at each skeletal site per 5 g/d increase in dietary fiber. We further estimated the adjusted mean for bone loss (annualized % Δ BMD) among participants in each higher quartile (Q2, Q3 or Q4) compared with those in the lowest quartile (Q1) of fiber intake. Higher dietary total fiber ($\beta = 0.06$, $p = 0.003$) and fruit fiber ($\beta = 0.10$, $p = 0.008$) was protective against bone loss at the femoral neck in men but not in women. When examined in quartiles, men in Q2-Q4 of total fiber had significantly less bone loss at the femoral neck versus those in Q1 (all $p < 0.04$). For women, we did not observe associations with hip bone loss, although fiber from vegetables appeared to be protective against spine bone loss in women but not men.

There were no associations with cereal fiber or nut and legume fiber and bone loss in men or women. Our findings suggest that higher dietary fiber may modestly reduce bone loss in men at the hip. This article is protected by copyright. All rights reserved.