2. LBP

LBP and knee OA

Osteoarthritis and Cartilage
Interaction between low back pain and knee pain contributes to disability level in individuals with knee osteoarthritis: a cross-sectional study
panelH.Iijima†‡§Y.Suzuki‡T.Aoyama‡M.Takahashi†
https://doi.org/10.1016/j.joca.2018.06.012Get rights and content

Summary

Objective
To test the hypothesis that the interaction between low back pain (LBP) and knee pain intensity contributes to the disability level of individuals with knee osteoarthritis (OA).

Design
Community-dwelling participants with knee OA (Kellgren/Lawrence [K/L] grade ≥1) were enrolled. LBP and its severity were identified using questionnaires. Knee pain severity and disability level were evaluated using the Japanese Knee Osteoarthritis Measure (JKOM) subscale. Multiple linear regression analyses were performed to examine the effect of the LBP–knee pain interaction, an independent variable, on disability, a dependent variable.

Results
A total of 260 participants (age, 48–88 years; 77.7% women) were included. Of them, 151 (58.1%) had LBP. The LBP–knee pain interaction was significantly associated with disability after the adjustment for covariates. A post-hoc subgroup analysis revealed that the relationship between knee pain intensity and disability level was higher in individuals with LBP (beta: 0.621 points; 95% confidence interval [CI]: 0.511 to 0.731 points) than in those without LBP (beta: 0.402 points; 95% CI: 0.316 to 0.487 points).

Conclusions
LBP interacts with knee pain intensity and contributes to disability level in individuals with knee OA. Coexisting LBP and knee pain had a stronger impact on disability level than LBP or knee pain alone. These findings highlight the potential deteriorative effects of the LBP–knee interaction on disability. Maximal treatment effects for disability might be achieved when LBP and knee pain are targeted simultaneously, rather than separately.
Pain sensitization and race differences

Sex and Race Differences in Pain Sensitization among Patients with Chronic Low Back Pain

S.M. Meints, Ph.D. V. Wang, M.D. R.R. Edwards, Ph.D.

DOI: https://doi.org/10.1016/j.jpain.2018.07.001

Highlights

• We examined race and sex differences in pain sensitivity in patients with CLBP.
• There were race and sex differences in deep muscle and mechanical punctate pain.
• Catastrophizing contributed to race differences in deep muscle pain.
• Further research is needed to better understand these complex relationships.

Abstract

Growing evidence suggests that chronic low back pain (CLBP) is associated with pain sensitization, and that there are sex and race disparities in CLBP. Given the sex and race differences in pain sensitization, this has been hypothesized as a mechanism contributing to the sex and race disparities in CLBP.

This study examined sex and race differences in pain sensitization among patients with CLBP as well as the role of catastrophizing as a potential mediator of those differences. We found that compared to males, females required less pressure to produce deep muscle pain and rated mechanical punctate pain as more painful. Compared to non-Hispanic White (NHW) patients, Black patients demonstrated greater pain sensitivity for measures of deep muscle hyperalgesia and mechanical punctate pain. Furthermore, catastrophizing partially mediated the race differences in deep muscle pain such that Black participants endorsed greater pain catastrophizing, which partially accounted for their increased sensitivity to, and temporal summation of, deep muscle pain. Taken together, these results support the need to further examine the role of catastrophizing and pain sensitization in the context of sex and race disparities in the experience of CLBP.

Perspective: This study identifies sex and race differences in pain sensitization among patients with CLBP. Further, it recognizes the role of catastrophizing as a contributor to such race differences. More research is needed to further dissect these complex relationships.
5. SURGERY

Long term outcomes of fusions


Pain and disability after first-time spinal fusion for lumbar degenerative disorders: a systematic review and meta-analysis.

Koenders N¹, Rushton A², Verra ML³, Willems PC⁴, Hoogeboom TJ⁵, Staal JB⁵,⁶

PURPOSE:
Lumbar spinal fusion (LSF) is frequently and increasingly used in lumbar degenerative disorders despite conflicting results and recommendations. A thorough understanding of patient outcomes after LSF is required to inform decisions regarding surgery and to improve post-surgery management. The current study aims to evaluate the course of pain and disability in patients with degenerative disorders of the lumbar spine after first-time LSF.

METHODS:
A systematic review and meta-analysis of pain and disability outcomes in prospective cohort studies up to 31 March 2017 is identified in four electronic databases. Two independent researchers determined study eligibility, extracted data, and assessed risk of bias (modified Quality in Prognostics tool). A random effects model (maximum likelihood) was used to calculate means and 95% confidence intervals. The primary analysis was performed on complete data, and a sensitivity analysis was performed on all data.

RESULTS:
Twenty-five studies (n = 1777 participants) were included. The mean (95% confidence interval) Visual Analogue Scale (VAS) back pain (n = 9 studies) decreased from 64 (57-71) pre-surgery to 20 (16-24) at 24-month follow-up. Leg pain (n = 9 studies) improved from VAS 70 (65-74) pre-surgery to 17 (12-23) at 24-month interval. Disability (n = 12 studies), measured with the Oswestry Disability Index, decreased from 44.8 (40.1-49.4) pre-surgery to 17.3 (11.9-22.8) at 24-month follow-up. The sensitivity analysis yielded similar results.

CONCLUSION:
There is a substantial improvement in pain and disability after first-time LSF for degenerative disorders. However, long-term outcomes indicate that leg pain might be more reduced and for a longer period of time than axial back pain and disability. Registration PROSPERO CRD42015026922. These slides can be retrieved under Electronic Supplementary Material.
ABSTRACTS

7. PELVIC ORGANS/WOMAN’S HEALTH

Pilates and pelvic floor function

The pilates method in the function of pelvic floor muscles: Systematic review and meta-analysis

Amanda Queiroz Lemos, Cristina Aires Brasil, Danielle Valverde, Janine dos Santos Ferreira, Patrícia Lordêlo, Kátia Nunes Sá

DOI: https://doi.org/10.1016/j.jbmt.2018.07.002

Background

Many Pilates instructors believe that the method can produce significant improvement in the resistance of pelvic floor muscles, but it is known that about 49% of women who can contract this muscle do not perform an adequate contraction and cannot increase urethral closure pressure.

Objectives

To evaluate the response of the Pilates method in the function of the pelvic floor muscles, compared to the control group, in healthy women.

Search methods

The articles searched from October to December 2016 in the databases: PUBMED, SCIELO, LILACS, MEDLINE, WEB OF SCIENCE and CINAHL via PERIODICOS CAPES, without restriction of language and year of publication.

Selection criteria

Randomized (RCTs), quasi-randomized and non-randomized clinical trials assessing the effectiveness of the Pilates method in the PFM in healthy women were included.

Data collection and analysis

Two reviewers independently selected the studies, assessed the risk of bias and performed the data extraction. Primary outcomes were the method of evaluation of strength, function, coordination and symmetry of contraction of the pelvic floor muscles.

Results

4,434 articles were identified and 2 articles were selected to compose this review and the meta-analysis. Demonstrated that the pelvic floor muscle function mentioned by the perineometry did not present a difference between the groups, in which a difference of the mean of -2.18 (-6.43, 2.08) (p=0.32).

Conclusions

No evidence showed a modification of the function of pelvic floor muscles in healthy women practicing the Pilates method.
8. VISCERA

Vegetable consumption decreased heart disease


Greater vegetable variety and amount are associated with lower prevalence of coronary heart disease: National Health and Nutrition Examination Survey, 1999-2014.

Conrad Z¹, Raatz S²,³, Jahns L².

BACKGROUND:
The 2015-2020 Dietary Guidelines for Americans (DGA) provides specific intake recommendations for vegetable variety and amount in order to protect against chronic disease. However, to the best of our knowledge, no studies have examined the link between DGA recommended vegetable variety and cardiometabolic disease. To address this research gap, our aim was to estimate the relationship between vegetable variety, vegetable amount, and prevalent cardiometabolic disease subtypes, and to assess potential determinants of vegetable variety.

METHODS:
Data on food intake and reported cardiometabolic disease status were acquired for 38,981 adults from the National Health and Nutrition Examination Survey (1999-2014). Vegetable variety was measured using a modified dietary diversity index that was adjusted for the potential confounding effects of vegetable amount. Temporal trends in vegetable variety and amount were assessed using univariate linear regression models. Multivariate logistic regression models were used to estimate the relationship between vegetable variety and prevalent disease, and between vegetable amount and prevalent disease. Multivariate ordered logistic regression models were used to assess the relationship between vegetable variety and explanatory variables.

RESULTS:
Overall, vegetable variety decreased (P = 0.035) from 1999 to 2014, but vegetable amount did not (P = 0.864). Intake of starchy vegetables decreased (P < 0.001), and intake of dark green vegetables increased (P < 0.001) over this 16-year period, but no trends were observed for other subgroups. An inverse linear relationship was observed between vegetable variety and prevalent coronary heart disease (P-trend = 0.032) but not other prevalent diseases; and between vegetable amount and coronary heart disease (P-trend = 0.026) but not other prevalent diseases. Individuals who reported consuming dark green vegetables had lower odds of having cardiovascular disease (0.86, 95% CI: 0.74-0.99) and coronary heart disease (0.78, 0.65-0.94) compared to individuals who reported not consuming any green vegetables. Living with a domestic partner was associated with greater vegetable variety (P = < 0.001), and currently smoking was associated with lower vegetable variety (P = < 0.001). Vegetable variety and amount were positively associated (P < 0.001).

CONCLUSIONS:
Vegetable variety and amount were inversely associated with prevalent coronary heart disease. Vegetable variety was strongly associated with vegetable amount, likely mediated by reduced habituation and increased liking. Increasing vegetable variety and amount are still important messages for the public.
IBS and obesity

Journal Summaries in Family Medicine

Obesity is independently associated with higher annual burden and costs of hospitalization in patients with inflammatory bowel diseases

Clinical Gastroenterology and Hepatology — Nguyen NH, et al. | July 17, 2018

A nationally representative cohort study was conducted to evaluate and compare the burden, costs, and causes for hospitalization in obese vs non-obese patients with inflammatory bowel diseases (IBD). Researchers identified obese and non-obese patients who had been hospitalized at least once, from January through June 2013, and followed them for re-hospitalization until December 2013 using the Nationwide Readmissions Database 2013.

They found obesity to be independently correlated with higher burden and costs of hospitalizations. For patients with IBD, strategies should be considered to target obesity as adjunctive therapy.
IBS and risk of fx

Archives of Osteoporosis December 2018, 13:80
Risk of fractures at different anatomic sites in patients with irritable bowel syndrome: a nationwide population-based cohort study

- Herng-Sheng Lee Chi-Yi Chen Wan-Ting Huang Li-Jen Chang Solomon Chih-Cheng Chen Hsin-Yi Yang

Summary

This study was to investigate the fracture risk of irritable bowel syndrome (IBS) in comparison with non-IBS group. Our results found that IBS group has increased risk for fracture, in particular of the spine, forearm, hip, and hand.

Introduction

Patients with IBS might also be at increased risk of osteoporosis and osteoporotic fractures. Up to now, the association between IBS and the risk of fractures at different anatomic sites occurrences is not completely clear. We conducted a population-based cohort analysis to investigate the fracture risk of IBS in comparison with non-IBS group.

Methods

We identified 29,505 adults aged ≥20 years with newly diagnosed IBS using the Taiwan National Health Insurance Research Database in 2000–2012. A comparison group was constructed of patients without IBS who were matched according to gender and age. The occurrence of fracture was monitored until the end of 2013. We analyzed the risk of fracture events to occur in IBS by using Cox proportional hazards regression models.

Results

Patients with IBS had a higher incidence of osteoporotic fractures compared with the non-IBS group (12.34 versus 9.45 per 1000 person-years) and an increased risk of osteoporotic fractures (adjusted hazard ratio [aHR] = 1.27, 95% confidence interval [CI] = 1.20–1.35). Site-specific analysis showed that the IBS group had a higher risk of fractures for spine, forearm, hip, and hand than did the non-IBS group. With further stratification for gender and age, a higher aHR value for osteoporotic fractures in the IBS group was seen across all age groups in males, but seen in elderly females. In addition, female, elderly, low income, hypertension, coronary artery disease, cerebrovascular disease, and depressive disorders as independent osteoporotic fracture risk factors in IBS patients.

Conclusions

The IBS is considered as a risk factor for osteoporotic fractures, particularly in female individuals and fracture sites located at the spine, forearm, hip, and hand.
CV health and childhood nutrition – Protein

Journal Summaries in Family Medicine

Exposure to improved nutrition from conception to age 2 years and adult cardiometabolic disease risk: A modelling study
Whether the improvement of protein-energy nutrition from conception to age 2 years can attenuate the risk of cardiometabolic disease was investigated in this analysis. Researchers reported that improved protein-energy nutrition from conception to the 2nd birthday decreased the odds of diabetes at ages 37–54 years. The risk of obesity and several obesity-related conditions including diastolic blood pressure and dyslipidaemia was also increased by this protein-energy supplementation. The findings suggested a mixed ability of protein-energy nutritional supplementation to prevent adult cardiometabolic disease incidence in contexts of chronic childhood undernutrition and an obesogenic adult environment.

Methods

• For this investigation, the researchers followed up a cohort of 2392 people born between Jan 1, 1962, and Feb 28, 1977, in four villages in Guatemala who had taken an interest in a cluster-randomised protein-energy nutritional supplementation (Atole) trial.
• Out of 1661 members available for follow-up from Feb 26, 2015, to April 29, 2017, 684 women and 455 men were studied.
• Using anthropometry, fasting and post-challenge glucose, fasting lipid concentrations, and blood pressure, they evaluated cardiometabolic disease risk at ages 37–54 years.
• Generalised linear and logistic regression modelling were used to assess the impact of Atole from conception to age 2 years (the first 1000 days) on cardiometabolic disease risk.

Results

• The study results showed that exposure to Atole from conception to age 2 years was correlated with increased fatness (body-mass index [1·29 kg/m², 95% CI 0·08 to 2·50], body fat [1·73%, 0·20 to 3·26], and obesity [odds ratio 1·94, 1·11 to 3·40]), diastolic blood pressure (1·59 mm Hg, -0·74 to 3·92), and blood lipids (total cholesterol [10·10 mg/dL, 0·80 to 19·40] and non-HDL cholesterol [10·41 mg/dL, 1·51 to 19·31]), reduced post-challenge glucose (~5·84 mg/dL, -12·51 to 0·83), and reduced odds of diabetes (odds ratio 0·46, 0·21 to 0·97).
• They discovered stratum heterogeneity by sex in pooled models for non-HDL cholesterol (4·34 mg/dL, 95% CI -6·86 to 15·55 for women vs 19·84 mg/dL, 5·86 to 33·82 for men) and post-challenge glucose (~0·19 mg/dL, -8·63 to 8·24 for women vs -13·10 mg/dL, -23·64 to -2·56 for men).
• Findings revealed that p values for interaction of sex and exposure to Atole from conception to age 2 years were 0·09 and 0·04, respectively.
Obesity and fatty liver disease

Article in Press

Obesity and Weight Gain Are Associated With Progression of Fibrosis in Patients with Non-alcoholic Fatty Liver Disease

Yejin Kim  Seungho Ryu

Background & Aims
The effects of weight change on the progression of liver fibrosis in patients with non-alcoholic fatty liver disease (NAFLD) in the general population are unclear. We evaluated the association of weight change and baseline body mass index (BMI) with fibrosis progression, determined by non-invasive measurement of a marker, in young and middle-aged adults with NAFLD.

Methods
We performed a prospective cohort study of 40,700 adults with NAFLD in Korea who received regular health screening examinations and were followed for a median 6.0 years. Weight change was defined as the difference between weights measured at baseline and at a subsequent follow-up visit. The progression from a low to an intermediate or high probability of advanced fibrosis was assessed using the aspartate aminotransferase to platelet ratio index (APRI).

Results
During 275,451.5 person-years of follow-up, 5454 subjects with a low APRI progressed to an intermediate or high APRI. Multivariable-adjusted hazard ratios for APRI progression, determined by comparing the first and second weight change quintiles (the weight-loss group) and the fourth and fifth quintiles (weight-gain group) with the third quintile (weight-stable group, reference), were 0.68 (95% CI, 0.62–0.74), 0.86 (95% CI, 0.78–0.94), 1.17 (95% CI, 1.07–1.28), and 1.71 (95% CI, 1.58–1.85), respectively. The multivariable-adjusted hazard ratios for APRI progression were determined by comparing subjects with BMIs of 23–24.9, 25–29.9, and ≥30 with subjects with BMIs of 18.5–22.9 kg/m² (reference); these ratios were 1.13 (95% CI, 1.02–1.26), 1.41 (95% CI, 1.28–1.55), and 2.09 (95% CI, 1.86–2.36), respectively.

Conclusion
In a prospective cohort study of 40,700 adults with NAFLD, we found obesity and weight gain to be independently associated with increased risk of fibrosis progression, based on APRI. Maintaining a normal healthy weight and preventing weight gain may help reduce fibrosis progression in individuals with NAFLD.
Smoking and lung CA

Lifetime Smoking History and Risk of Lung Cancer: Results From the Framingham Heart Study
Hilary A Tindle Meredith Stevenson Duncan Robert A GreevyRamachandran S Vasan Suman Kundu Pierre P Massion Matthew S Freiberg
*JNCI: Journal of the National Cancer Institute*, jy041,https://doi.org/10.1093/jnci/djy041
*JNCI: Journal of the National Cancer Institute*, djy113,https://doi.org/10.1093/jnci/djy113

**Background**
The relative risk of lung cancer decreases with years since quitting (YSQ) smoking, but risk beyond 25 YSQ remains unclear. Current lung cancer screening guidelines, which exclude smokers with more than 15 YSQ, may not detect lung cancers in this population.

**Methods**
We analyzed data from Framingham Heart Study Original (n = 3905) and Offspring cohort (n = 5002) participants for lifetime smoking and lung cancer incidence from 1954 to 1958 (Exam 4) and 1971 to 1975 (Exam 1), respectively, through 2013. We used multivariable-adjusted Cox proportional hazards regression models to compare current, former, and never smokers and lung cancer risk. Smoking status and covariates were time-updated every two years (Original) or four years (Offspring). Primary analyses were restricted to heavy ever smokers with more than 21.3 pack-years; additional analyses included all ever smokers.

**Results**
On follow-up (median = 28.7 years), 284 lung cancers were detected: incidence rates/1000 person-years in current, former, and never smokers were 1.97 (95% confidence interval [CI] = 1.66 to 2.33), 1.61 (95% CI = 1.34 to 1.93), and 0.26 (95% CI = 0.17 to 0.39), respectively. Heavy former (vs never) smokers had elevated lung cancer risk at all YSQ (<5: hazard ratio [HR] = 12.12, 95% CI = 6.94 to 21.17; 5–9: HR = 11.77, 95% CI = 6.78 to 20.45; 10–14: HR = 7.81, 95% CI = 3.98 to 15.33; 15–24: HR = 5.88, 95% CI = 3.19–10.83; ≥25: HR = 3.85, 95% CI = 1.80 to 8.26). Heavy former (vs current) smokers had 39.1% lower lung cancer risk within five YSQ. Among all former smokers, 40.8% of lung cancers occurred after more than 15 YSQ.

**Conclusions**
Among heavy former smokers, lung cancer risk drops within five YSQ relative to continuing smokers, yet it remains more than threefold higher than never smokers after 25 YSQ. Four of ten lung cancers occurred in former smokers with more 15 YSQ, beyond the screening window of the current guideline.
Smoking cessation reduces periodontal disease


Impact of smoking cessation on periodontitis: A systematic review and meta-analysis of prospective longitudinal observational and interventional studies.

Leite FRM, Nascimento GG, Baake S, Pedersen LD, Scheutz F, López R.

AIMS:
This systematic review aimed to estimate the effect of tobacco smoking cessation on the risk for periodontitis compared to the risk among never-smokers and to evaluate the effect of tobacco smoking cessation on the clinical outcomes of non-surgical periodontal treatment.

METHODS:
Electronic searches were performed in PubMed, Scopus and Embase. Search strategy included MeSH and free terms: periodontitis, periodontal diseases, smoking, tobacco use, tobacco, tobacco products, cigarette, pipe and cigar. Only original prospective longitudinal observational and interventional studies that investigated the association between smoking and periodontitis onset or progression were included. Meta-analyses were conducted to summarize the evidence.

RESULTS:
2,743 articles were identified in electronic searches; out of which only six were included in the meta-analysis. Pooled estimates showed that the risk of periodontitis incidence or progression among those who quitted smoking was not significantly different from the risk for never-smokers (RR 0.97; 95% CI 0.87-1.08). Smokers had approximately 80% higher risk of periodontitis than quitters (RR 1.79; 95%CI 1.36-2.35) and never-smokers (RR 1.82; 95%CI 1.43-2.31).
Periodontal therapy resulted in up to 0.2 mm (95%CI -0.32;0.08) higher gain in attachment level and extra 0.32 mm (95%CI 0.07;0.52) reduction in pocket depth among quitters over non-quitters after short follow-up (12-24 months).

CONCLUSIONS:
Few studies on the topic were identified. Smoking cessation reduced the risk for periodontitis onset and progression, and improved the outcomes of nonsurgical periodontal therapy.

IMPLICATIONS:
This review provides the first quantitative evidence of the impact of smoking cessation on the risk for periodontitis onset and progression. The findings have demonstrated that the risk for periodontitis becomes comparable to that of never-smokers and that nonsurgical periodontal treatment outcomes improve after smoking cessation. Dental professionals ought to consider smoking cessation interventions as a relevant component of the periodontal therapy.
Sleep disturbances and IBS

PMCID: PMC3995194 PMID: 24764789

Sleep and Inflammatory Bowel Disease: Exploring the Relationship Between Sleep Disturbances and Inflammation

Jami A. Kinnucan, MD, David T. Rubin, MD, and Tauseef Ali, MD

Sleep disturbances are associated with a greater risk of serious adverse health events, economic consequences, and, most importantly, increased all-cause mortality. Several studies support the associations among sleep, immune function, and inflammation. The relationship between sleep disturbances and inflammatory conditions is complex and not completely understood. Sleep deprivation can lead to increased levels of inflammatory cytokines, including interleukin (IL)-1β IL-6, tumor necrosis factor-α and C-reactive protein, which can lead to further activation of the inflammatory cascade. The relevance of sleep in inflammatory bowel disease (IBD), a chronic immune-mediated inflammatory disease of the gastrointestinal tract, has recently received more attention. Several studies have shown that patients with both inactive and active IBD have self-reported sleep disturbances. Here, we present a concise review of sleep and its association with the immune system and the process of inflammation.

We discuss the studies that have evaluated sleep in patients with IBD as well as possible treatment options for those patients with sleep disturbances. An algorithm for evaluating sleep disturbances in the IBD population is also proposed. Further research is still needed to better characterize sleep disturbances in the IBD population as well as to assess the effects of various therapeutic interventions to improve sleep quality.

It is possible that the diagnosis and treatment of sleep disturbances in this population may provide an opportunity to alter disease outcomes.
Adropin and SA


Adropin and Inflammation Biomarker Levels in Male Patients With Obstructive Sleep Apnea: A Link With Glucose Metabolism and Sleep Parameters.

Bozic J1,2, Borovac JA1, Galic T2,3, Kurir TT1, Supe-Domic D4, Dogas Z2,5,6.

STUDY OBJECTIVES:
The main objectives of the study were to determine plasma adropin, systemic inflammation biomarker levels, and glucose metabolism parameters in patients with moderate and severe obstructive sleep apnea (OSA) compared to healthy controls.

METHODS:
In this study, we included 50 male patients with OSA (25 moderate and 25 severe) and 25 age- and sex-matched control subjects. All subjects underwent fasting sampling of peripheral blood for laboratory analyses.

RESULTS:
Adropin plasma levels were significantly lower in the severe OSA group in comparison with the moderate and control groups (4.50 ± 1.45 versus 6.55 ± 1.68 versus 8.15 ± 1.79 ng/mL, P < .001). Plasma biomarkers of systemic inflammation were significantly increased in patients with moderate OSA (interleukin [IL]-6 and tumor necrosis factor alpha [TNF-α]) and severe OSA (IL-6, TNF-α, high-sensitivity C-reactive protein) when compared with controls (P < .001). Adropin levels showed a significant negative correlation with IL-6 (r = -.419, P < .001), TNF-α (r = -.540, P < .001), fasting glucose (r = -.331, P = .004), hemoglobin A1c (r = -.438, P < .001), homeostatic model assessment insulin resistance index (r = -.213, P = .046), and polysomnographic parameters including apnea-hypopnea index (r = -.615, P < .001) and oxygen desaturation index (r = -.573, P < .001). A multivariate regression analysis showed that plasma adropin remained as a significant negative predictor of severe OSA status, when adjusted for age and body mass index and computed along with other inflammatory biomarkers in the regression model (odds ratio 0.069, 95% confidence interval 0.009-0.517, P = .009).

CONCLUSIONS:
Plasma adropin concentrations significantly correlate with indices of disease severity in patients with OSA, suggesting that adropin potentially plays an important role in the complex pathophysiology of the disease.
Sleep and dementia

Sleep disturbances and dementia risk: A multicenter study
*Alzheimer's & Dementia* (IF 12.74) **Pub Date: 2018-07-17**, DOI: 10.1016/j.jalz.2018.05.012

Introduction

Few longitudinal studies assessed whether sleep disturbances are associated with dementia risk.

Methods

Sleep disturbances were assessed in three population-based studies (H70 study and Kungsholmen Project [Sweden]; Cardiovascular Risk Factors, Aging and Dementia study [Finland]). Late-life baseline analyses (3–10 years follow-up) used all three studies (N = 1446). Baseline ages ≈70 years (Cardiovascular Risk Factors, Aging and Dementia, H70), and ≈84 years (Kungsholmen Project). Midlife baseline (age ≈50 years) analyses used Cardiovascular Risk Factors, Aging and Dementia (21 and 32 years follow-up) (N = 1407).

Results

Midlife insomnia (fully adjusted hazard ratio = 1.24, 95% confidence interval = 1.02–1.50) and late-life terminal insomnia (fully adjusted odds ratio = 1.94, 95% confidence interval = 1.08–3.49) were associated with a higher dementia risk. Late-life long sleep duration (>9 hours) was also associated with an increased dementia risk (adjusted odds ratio = 3.98, 95% confidence interval = 1.87–8.48).

Discussion

Midlife insomnia and late-life terminal insomnia or long sleep duration were associated with a higher late-life dementia risk.
14. HEADACHES

Subgroups of migraine’s

2018 Harold G. Wolff Award Paper

Identifying Natural Subgroups of Migraine Based on Comorbidity and Concomitant Condition Profiles: Results of the Chronic Migraine Epidemiology and Outcomes (CaMEO) Study

https://doi.org/10.1111/head.13342

Objective

To identify natural subgroups of people with migraine based on profiles of comorbidities and concomitant conditions, hereafter referred to as comorbidities.

Background Migraine is a heterogeneous disease. Identifying natural subgroups (endophenotypes) may facilitate biological and genetic characterization and the development of personalized treatment.

Methods The Chronic Migraine Epidemiology and Outcomes Study is a prospective web-based survey study designed to characterize the course of migraine and related comorbidities in a systematic US sample of people with migraine. Respondents were asked if they ever had a specific comorbidity and, if present, whether the comorbidity was confirmed/diagnosed by a “doctor”; 62 comorbidities were available for analysis. Latent class analysis (LCA) modeling determined the optimal number of classes and a parsimonious set of comorbidities.

Results

Of the 12,810 respondents with migraine, 11,837 reported ≥1 comorbidity and were included in this analysis. After statistical analysis and clinical judgment reduced the number of comorbidities, we selected an 8-class model based on 22 comorbidities. Each class had a distinct pattern summarized as follows: Class 1, Most Comorbidities; Class 2, Respiratory/Psychiatric; Class 3, Respiratory/Pain; Class 4, Respiratory; Class 5, Psychiatric; Class 6, Cardiovascular; Class 7, Pain; Class 8, Fewest Comorbidities. The distribution of individuals across models was variable, with one-third of respondents in Class 8 (Fewest Comorbidities) and <10% in Class 1 (Most Comorbidities). Demographic and headache characteristics, not used in assigning class membership, varied across classes. For example, comparing Class 1 (Most Comorbidities) and Class 8 (Fewest Comorbidities), Class 1 had a greater proportion of individuals with severe disability (Migraine Disability Assessment grade IV; 48.1% vs 22.3% of overall individuals) and higher rates of allodynia (67.6% vs 47.0%), medication overuse (36.4% vs 15.0%), chronic migraine (23.1% vs 9.1%), and aura (40.1% vs 28.8%).

Conclusions

LCA modeling identified 8 natural subgroups of persons with migraine based on comorbidity profiles. These classes show differences in demographic and headache features not used to form the classes. Subsequent research will assess prognostic and biologic differences among the classes.
Migraine and depression

Journal Summaries in Neurology

Migraine and greater pain symptoms at 10-year follow-up among patients with major depressive disorder

The Journal of Headache and Pain — Hung CI, et al. | July 20, 2018

The associations of migraine with pain symptoms over a ten-year period among outpatients with major depressive disorder (MDD) were investigated.

Based on the International Classification of Headache Disorders, researchers diagnosed a migraine. They also used the bodily pain subscale of the Short Form 36 (SF-BP) and the pain subscale (PS) of the Depression and Somatic Symptoms scale. The longitudinal impacts of migraine on pain symptoms was assessed using Generalized Estimating Equation models. During long-term follow-up, migraine was identified as an important comorbidity associated with greater severities of pain symptoms.

Hence they suggest integrating migraine treatment into the treatment of depression to improve pain symptoms and quality of life in the pain dimension.
Migraine and cochlear disorders

July 12, 2018

**Association of Tinnitus and Other Cochlear Disorders With a History of Migraines**

Juen-Haur Hwang, MD, PhD; Shiang-Jiun Tsai; Tien-Chen Liu, PhD; et al; Yi-Chun Chen, MD; Jen-Tsung Lai, MD

*JAMA Otolaryngol Head Neck Surg.* Published online July 12, 2018.

**Findings** In this cohort study of claims data among patients in Taiwan, 1056 patients with a history of migraines and 4224 controls were identified. The cumulative incidence of cochlear disorders, especially tinnitus, was found to be significantly higher among patients with history of migraines than those without a history of migraines.

**Meaning** A history of migraines may increase the risk of tinnitus and other cochlear disorders.

Abstract

**Importance** A headache is a symptom of a migraine, but not all patients with migraine have headaches. It is still unclear whether a migraine might increase the risk of cochlear disorders, even though a migraine does not occur concurrently with cochlear disorders.

**Objective** To investigate the risk of cochlear disorders for patients with a history of migraines.

**Design, Setting, and Participants** This study used claims data from the Taiwan Longitudinal Health Insurance Database 2005 to identify 1056 patients with migraines diagnosed between January 1, 1996, and December 31, 2012. A total of 4224 controls were also identified from the same database based on propensity score matching. Statistical analysis was performed from January 23, 1996, to December 28, 2012.

**Main Outcomes and Measures** The incidence rate of cochlear disorders (tinnitus, sensorineural hearing impairment, and/or sudden deafness) was compared between the cohorts by use of the Kaplan-Meier method. The Cox proportional hazards regression model was also used to examine the association of cochlear disorders with migraines.

**Results** Of the 1056 patients with migraines, 672 were women and 384 were men, and the mean (SD) age was 36.7 (15.3) years. Compared with the nonmigraine cohort, the crude hazard ratio for cochlear disorders in the migraine cohort was 2.83 (95% CI, 2.01-3.99), and the adjusted hazard ratio was 2.71 (95% CI, 1.86-3.93). The incidence rates of cochlear disorders were 81.4 (95% CI, 81.1-81.8) per 1 million person-years for the migraine cohort and 29.4 (95% CI, 29.2-29.7) per 1 million person-years for the nonmigraine cohort. The cumulative incidence of cochlear disorders in the migraine cohort (12.2%) was significantly higher than that in the matched nonmigraine cohort (5.5%). Subgroup analysis showed that, compared with the nonmigraine cohort, the adjusted hazard ratios in the migraine cohort were 3.30 (95% CI, 2.17-5.00) for tinnitus, 1.03 (95% CI, 0.17-6.41) for sensorineural hearing impairment, and 1.22 (95% CI, 0.53-2.83) for sudden deafness.

**Conclusions and Relevance** In this population-based study, the risk of cochlear disorders, especially for tinnitus, was found to be significantly higher among patients with a history of migraines. This finding may support the presence and/or concept of “cochlear migraine.”
Vitamin D deficiency in patients with cluster headache: a preliminary study
Jong-Hee Sohn Min-Kyung Chu Kwang-Yeol Park Hong-Yup Ahn Soo-Jin Cho

Background
Cluster headache is famous for attacks with seasonal and diurnal periodicity. This diurnal and seasonal variation might be related to sunlight and vitamin D metabolism. We investigated the serum vitamin D levels in patients with cluster headache.

Methods
We enrolled patients with cluster headache and age- and sex-matched migraineurs and normal controls. From October 2016 to March 2018, non-fasting serum 25(OH)D concentrations were measured using a chemiluminescent immunoassay. Vitamin D deficiency was defined as a concentration < 20 ng/mL.

Results
The study enrolled 28 patients with cluster headache, 36 migraineurs, and 36 normal controls. In the patients with cluster headache, the serum 25(OH)D concentration averaged 14.0 ± 3.9 ng/mL and 92.8% had vitamin D deficiency. There was no significant difference among the patients with cluster headache, migraineurs, and controls. In the patients with cluster headache, there was no difference in the serum 25(OH)D concentrations between men and women, cluster and remission periods, first and recurrent attack, presence and absence of daily or seasonal periodicity, and 3-month recurrence. In the 14 patients with seasonal periodicity, patients with periodicity of winter to spring had a trend of lower serum 25(OH)D concentrations than those with periodicity of summer to autumn (12.30 ± 1.58 vs. 16.96 ± 4.69 ng/mL, p = 0.097).

Conclusions
Vitamin D deficiency is common in patients with cluster headache, but the role of vitamin D deficiency is uncertain, except for its seasonal influence.
Asthma and migraines

Original Article

**Association between Asthma and Migraine - A Cross-Sectional Study of over 110,000 Adolescents**

Yael Graif  Tamy Shohat  Yossy Machluf  Rivka Farkash  Yoram Chaiter

[https://doi.org/10.1111/crj.12939](https://doi.org/10.1111/crj.12939)

**Background**

Epidemiological studies have reported an association between asthma and migraine, mainly in adults.

**Objective**

To examine the association between specialist-diagnosed asthma and migraine among adolescents.

**Methods**

The electronic database of a recruitment center was retrospectively searched for all 17-year-old draftees during the years 1987-2010. Diagnoses of asthma and migraine were made by certified specialists. The prevalence of migraine was compared among draftees with and without asthma. Covariate data on socio-demographics and associated medical conditions were recorded.

**Results**

A total of 113,671 adolescents were available for analysis. Asthma was diagnosed among 4.0% and migraine among 1.9%. Migraine was significantly more prevalent among adolescents with asthma [174 of the 4,581 subjects (3.8%)] compared to those without asthma [1,946 of the 109,090 (1.8%)] [OR=2.17 (95% CI 1.86-2.55; P <0.001)]. Rates of migraine among subjects with and without allergic rhinitis were 6.3% and 1.7%, respectively [OR=4.04(95%CI 3.58-4.56; P <0.001)]. On multivariate analysis, there was a significant association between migraine and both asthma [OR 1.42 (95% CI 1.19-1.68)] and allergic rhinitis [OR 3.18 (95% CI 2.80-3.63)]. Other factors significantly associated with migraine were female gender, urban area of residence, recent immigration to Israel, having three or fewer siblings, and abnormal body mass index.

**Conclusion**

Clinicians should be aware that asthma and allergic rhinitis are potential risk factors for migraine in adolescents. A combined finding of these conditions and recurrent headache is highly suggestive of migraine and warrants a different diagnosis and treatment approach from sinusitis.
15. VESTIBULAR

Migraines and cochlear disorders

July 12, 2018

Association of Tinnitus and Other Cochlear Disorders With a History of Migraines

Juen-Haur Hwang, MD, PhD1,2; Shiang-Jiun Tsai3; Tien-Chen Liu, PhD4; et alYi-Chun Chen, MD5,6; Jen-Tsung Lai, MD6

JAMA Otolaryngol Head Neck Surg. Published online July 12, 2018.

Findings In this cohort study of claims data among patients in Taiwan, 1056 patients with a history of migraines and 4224 controls were identified. The cumulative incidence of cochlear disorders, especially tinnitus, was found to be significantly higher among patients with history of migraines than those without a history of migraines.

Meaning A history of migraines may increase the risk of tinnitus and other cochlear disorders. Importance A headache is a symptom of a migraine, but not all patients with migraine have headaches. It is still unclear whether a migraine might increase the risk of cochlear disorders, even though a migraine does not occur concurrently with cochlear disorders.

Objective To investigate the risk of cochlear disorders for patients with a history of migraines.

Design, Setting, and Participants This study used claims data from the Taiwan Longitudinal Health Insurance Database 2005 to identify 1056 patients with migraines diagnosed between January 1, 1996, and December 31, 2012. A total of 4224 controls were also identified from the same database based on propensity score matching. Statistical analysis was performed from January 23, 1996, to December 28, 2012.

Main Outcomes and Measures The incidence rate of cochlear disorders (tinnitus, sensorineural hearing impairment, and/or sudden deafness) was compared between the cohorts by use of the Kaplan-Meier method. The Cox proportional hazards regression model was also used to examine the association of cochlear disorders with migraines.

Results Of the 1056 patients with migraines, 672 were women and 384 were men, and the mean (SD) age was 36.7 (15.3) years. Compared with the nonmigraine cohort, the crude hazard ratio for cochlear disorders in the migraine cohort was 2.83 (95% CI, 2.01-3.99), and the adjusted hazard ratio was 2.71 (95% CI, 1.86-3.93). The incidence rates of cochlear disorders were 81.4 (95% CI, 81.1-81.8) per 1 million person-years for the migraine cohort and 29.4 (95% CI, 29.2-29.7) per 1 million person-years for the nonmigraine cohort. The cumulative incidence of cochlear disorders in the migraine cohort (12.2%) was significantly higher than that in the matched nonmigraine cohort (5.5%). Subgroup analysis showed that, compared with the nonmigraine cohort, the adjusted hazard ratios in the migraine cohort were 3.30 (95% CI, 2.17-5.00) for tinnitus, 1.03 (95% CI, 0.17-6.41) for sensorineural hearing impairment, and 1.22 (95% CI, 0.53-2.83) for sudden deafness.

Conclusions and Relevance In this population-based study, the risk of cochlear disorders, especially for tinnitus, was found to be significantly higher among patients with a history of migraines. This finding may support the presence and/or concept of “cochlear migraine.”
18. CLAVICLE

New approach to AC reconstruction


Treatment of AC dislocation by reconstructing CC and AC ligaments with allogenic tendons compared with hook plates.

Wang G1, Xie R2,3, Mao T1, Xing S1.

BACKGROUND:
The purpose of this study was to compare outcomes between allograft reconstruction and hook plate fixation for acute dislocation of the acromioclavicular joint with a minimum 2-year follow-up.

METHODS:
A retrospective comparative study of patients treated for acute acromioclavicular joint dislocation from February 2010 to December 2014 in our hospital, consisting of 16 patients who were followed-up, was performed. Eight patients were treated for acute AC dislocation and underwent surgical reconstruction as follows: the coracoclavicular and acromioclavicular ligaments were reconstructed with the allogenic tendon. The other eight patients were treated with hook plates to maintain the AC joint reset. At the latest follow-up, radiographic analysis and the Constant and University of California-Los Angeles (UCLA) scores were used to evaluate shoulder function. The satisfaction of the patients in terms of the efficacy and visual analog scale (VAS) data were also recorded.

RESULTS:
After an average follow-up of 30.3 months (range 24-46 months), no patient had dislocated their joint again at the final follow-up based on X-ray examination. The Constant score was 94.4 for the allogenic tendon group and 93.8 for the hook plate group (P = 0.57). According to the UCLA scale (P = 0.23) or VAS (P = 0.16), we found no significant difference between the two groups. All patients reported that they were very satisfied or satisfied with the outcome of surgery, and no significant difference (P = 0.08) was found between the two groups.

CONCLUSIONS:
The use of allogenic tendon for reconstruction of the coracoclavicular and acromioclavicular ligaments shows excellent outcomes in terms of the recovery of clinical function or radiographic outcomes for acute AC dislocation. Compared with the hook plate, the hardware did not need to be removed.
Sensitization with LE

The Journal of Hand Surgery
Scientific article
The Prognostic Value of Pain Sensitization in Patients With Lateral Epicondylitis
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https://doi.org/10.1016/j.jhsa.2018.06.013

Purpose
Pain sensitization is a contributing factor to conditions of chronic pain. The aim of this study was to evaluate the influence of pain sensitization on the prognosis of lateral epicondylitis (LE) treated by self-stretching exercises and the use of a counterforce brace.

Methods
We enrolled 131 patients who presented with isolated LE symptoms for less than 6 months. We initially measured pain sensitization by assessing patients’ pressure pain thresholds (PPTs) in the contralateral middorsal forearm and administering a pain sensitization questionnaire (PSQ). For outcome assessments, we assessed the self-administered, patient-reported Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire at 6 and 12 months’ follow-up.

Results
Initial PSQ scores correlated moderately with baseline DASH scores and slightly with symptom duration; PPTs correlated slightly with baseline DASH scores. After we accounted for confounding variables, patient-reported disability was associated with lower PPTs, higher PSQ scores, and manual labor at 6 months. These 3 factors accounted for 36% of variance in the DASH scores; however, at 12 months only the PSQ score was associated with higher DASH scores, accounting for 14% of variance.

Conclusions
Pain sensitization during the early stages of LE correlated with initial symptom severity and duration and was associated with persistently increasing disability after 1 year of nonsurgical treatment. More research is needed to show whether early identification and treatment of pain sensitization will enhance LE treatment outcomes.

Type of study/level of evidence Prognostic IV.
Balance disorders in ACL deficient knee


Poor Static Balance is a Novel Risk Factor for Non-contact Anterior Cruciate Ligament Injury

Takeshi Oshima, M.D.,1 Junsuke Nakase, MD, PhD,2 Yasushi Takata, MD,3 Hitoaki Numata, MD,4 and Hiroyuki Tsuchiya, MD, PhD4

Objectives: The anterior cruciate ligament (ACL) injury is common and affects young individuals, particularly female, who are active in sports that involve jumping, pivoting, and change of direction. ACL injury is associated with potential long-term complications including reduction in activity levels and osteoarthritis. In recent years, the focus on the ACL injury prevention has increased and many studies exploring risk factors for ACL injury have been published. However, the influence of the static balance on ACL injuries is poorly documented. The purpose of this study was to investigate the relationship between the static balance and incidence of ACL injury among high school female athletes.

Methods: A 3-year prospective cohort study was conducted with 287 high school female handball or basketball players. All subjects were 15 years old and included 111 handball players and 176 basketball players. At baseline, using gravicorder, postural sway was measured for 30 seconds during two-leg standing with eye open. The measured parameters of postural sway were locus length per time (LG), which indicates postural control function by proprioceptive reflexes, and environmental area (AR), which indicates the degree of equilibrium impairment. After the baseline examination was performed at high school entry, all players were followed for 36 months to register any subsequent incidence of ACL injury. We compared the differences in the static balance between injured and uninjured players using an unpaired t-test. Values of p < 0.05 were considered statistically significant.

Results: In the present study, 28 of the 287 players (9.6%) suffered an ACL injury during the 3-year observation period. Two players suffered both knees. Twenty five injured players sustained a non-contact injury and three injured players sustained a contact injury. Sixteen players were injured during the game and other players were injured during the practice. In this study three contact injury players were excluded. There were not significantly different between the ACL injured group and uninjured group in the stature characteristics such as age, height and weight. The mean values for LG and AR for the two-leg standing of the eye-open test were 1.30 ± 0.36 cm/s and 2.44 ± 1.34 cm2 (ACL injured group), 1.15 ± 0.26 cm/s and 1.98 ± 1.02 cm2 (uninjured group). There was significantly difference between the injured group and uninjured group in LG (p = 0.045). However there was no significant difference two groups in AR (P = 0.107). (Table1)

Conclusion: In the present study, locus length per time was significantly longer in injured players compared with uninjured players. This result showed that the postural control function by proprioceptive reflexes is the one of the risk factors for non-contact ACL injury. The proprioceptive training may be effective in ACL prevention with clinical relevance.
34. PATELLA

Structural factors lending to patella instability


Short lateral posterior condyle is associated with trochlea dysplasia and patellar dislocation.
Roger J1,2, Lustig S3, Cerciello S4, Bruno CF5, Neyret P6, Servien E5,7.

PURPOSE:
Surgeons mainly consider the anterior anatomy of the distal femur in the treatment of patellar instability (PI) with trochlear dysplasia (TD). Through this research, the idea was to analyse the posterior femoral condyle length in TD. The research team posited the presence of morphological differences in the posterior part of the femoral epiphysis in TD compared to a control group. They also postulated that the posterior bicondylar angle (PCA), in the axial plane, was increased in TD.

METHODS:
This is a single-centre morphological study of 100 patients who had a computed tomography (CT) using the same protocol. 50 patients with PI (25 dysplasias A and 25 B-C-D according to the Dejour classification), and 50 controls were included. All patients presenting a clinical PI were considered for the study. None of these patients had undergone a surgical treatment prior to imaging. Demographic characteristics, BMI, and laterality were comparable in all patients. 20 pilot CT scans were used to establish the methodology. The following measurements were performed: anterior bicondylar angle, PCA, and condylar lengths with respect to the surgical transepicondylar axis. Ratios were calculated in relation to the femoral width. TD was classified according to the Dejour classification in grade A or grades B-C-D. An analysis of variance and a linear model were performed within some groups to investigate which parameters correlated with the classification's grade.

RESULTS:
This study showed a link between TD and the PCA: control group (1.4 ± 0.2°), type A group (1.6 ± 0.3°), and types B, C, D group (2.6 ± 0.3°) (p = 0.01). The difference between the control group and types B, C, D TD group was significant (p = 0.002). In groups B, C, D, the PCA was more important, which proves that in these groups the posterior part of the lateral condyle was relatively shorter compared to the medial condyle. The greater the dysplasia, the longer the medial condyle was in the anterior posterior (p = 0.02).

CONCLUSIONS:
This study shows not only an anterior but also a posterior anomaly in PI with TD. There is a correlation between the severity of the anterior deformation and the PCA: in other words, the knee is placed in valgus in flexure which promotes the external dislocation of the patella. This anatomical study could open a field of research on the development of surgical treatments based on the correction of posterior condylar femoral anomalies in PI.
37. OSTEOARTHRITIS/KNEE

LBP and knee OA

Osteoarthritis and Cartilage
Interaction between low back pain and knee pain contributes to disability level in individuals with knee osteoarthritis: a cross-sectional study

Panel

H. Iijima†‡§, Y. Suzuki‡, T. Aoyama‡, M. Takahashi†

https://doi.org/10.1016/j.joca.2018.06.012

Get rights and content

Summary

Objective

To test the hypothesis that the interaction between low back pain (LBP) and knee pain intensity contributes to the disability level of individuals with knee osteoarthritis (OA).

Design

Community-dwelling participants with knee OA (Kellgren/Lawrence [K/L] grade ≥1) were enrolled. LBP and its severity were identified using questionnaires. Knee pain severity and disability level were evaluated using the Japanese Knee Osteoarthritis Measure (JKOM) subscale. Multiple linear regression analyses were performed to examine the effect of the LBP–knee pain interaction, an independent variable, on disability, a dependent variable.

Results

A total of 260 participants (age, 48–88 years; 77.7% women) were included. Of them, 151 (58.1%) had LBP. The LBP–knee pain interaction was significantly associated with disability after the adjustment for covariates. A post-hoc subgroup analysis revealed that the relationship between knee pain intensity and disability level was higher in individuals with LBP (beta: 0.621 points; 95% confidence interval [CI]: 0.511 to 0.731 points) than in those without LBP (beta: 0.402 points; 95% CI: 0.316 to 0.487 points).

Conclusions

LBP interacts with knee pain intensity and contributes to disability level in individuals with knee OA. Coexisting LBP and knee pain had a stronger impact on disability level than LBP or knee pain alone. These findings highlight the potential deteriorative effects of the LBP–knee interaction on disability. Maximal treatment effects for disability might be achieved when LBP and knee pain are targeted simultaneously, rather than separately.
Motor neuron excitability


Dishman JD¹, Burke JR², Dougherty P³.

OBJECTIVE:
The purpose of the study was to compare a time series of tibial nerve H-reflex trials between patients with subacute low back pain (LBP) and asymptomatic adults using pre and post high-velocity, low-amplitude (HVLA) spinal manipulation (SM) and control procedures.

METHODS:
Asymptomatic adults (n = 66) and patients with subacute LBP (n = 45) were randomized into 3 lumbosacral procedures: side-posture positioning, joint preloading with no thrust, and HVLA SM. A time series of 40 $H_{\text{max}}/M_{\text{max}}$ ratios at a rate of 0.1 Hz were recorded in blocks of 10 trials at baseline and after the lumbosacral procedures at time points corresponding to immediately after, 5 minutes after, and 10 minutes after the procedure. Descriptive time series analysis techniques included time plots, outlier detection, and autocorrelation functions. A mixed analysis of variance model (group × procedure × time) was used to compare the effects of lumbosacral procedures on $H_{\text{max}}/M_{\text{max}}$ ratios between the patients with subacute LBP and asymptomatic participants.

RESULTS:
The time series analysis and the significant lumbosacral × time interaction term (P < .05) indicated that inhibition of the $H_{\text{max}}/M_{\text{max}}$ ratios at the 10-second postlumbosacral procedure time point was greatest after the HVLA SM procedure. The effects of lumbosacral procedures on $H_{\text{max}}/M_{\text{max}}$ ratios were similar between patients with subacute LBP and asymptomatic participants.

CONCLUSIONS:
Although nonspecific effects of movement or position artifacts on the $H_{\text{max}}/M_{\text{max}}$ ratio were present, a reliable and valid attenuation of the $H_{\text{max}}/M_{\text{max}}$ ratio occurred as a specific aspect of HVLA SM in both asymptomatic adults and patients with subacute LBP.
Workplace Factors Associated With Neck Pain Experienced by Computer Users: A Systematic Review

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DOI: https://doi.org/10.1016/j.jmpt.2018.01.005

Introduction
The purpose of this systematic review was to examine literature on workplace factors associated with neck pain or symptoms in computer users performing clerical functions.

Methods
A systematic search of the Cochrane, Medline, CINAHL, and EMBASE databases was conducted for observational and experimental studies published since 2000. This review applied the case definition of The Bone and Joint Decade 2000-2010 Task Force on Neck Pain and Its Associated Disorders.

Results
Seven hundred twenty-nine studies were identified. Seven hundred and two studies were excluded. Twenty-seven studies fulfilled inclusion criteria and were assessed for risk of bias. Cross-sectional studies were commonly at risk from nonresponse bias and lack of adequate case definitions. Experimental studies were mostly at risk of bias due to confounding and participant recruitment methods.

Conclusions
Neck pain was not significantly associated with high job demands, low skill discretion, low decision authority, or low peer support. However, when these variables were combined with increased duration of computing tasks, or ergonomic demands, they reached significance. Supervisor support was found to be the only significant buffer capable of preventing these variables reaching significance in female office workers.
Pilates and pelvic floor function

The pilates method in the function of pelvic floor muscles: Systematic review and meta-analysis

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DOI: https://doi.org/10.1016/j.jbmt.2018.07.002

Background
Many Pilates instructors believe that the method can produce significant improvement in the resistance of pelvic floor muscles, but it is known that about 49% of women who can contract this muscle do not perform an adequate contraction and cannot increase urethral closure pressure.

Objectives
To evaluate the response of the Pilates method in the function of the pelvic floor muscles, compared to the control group, in healthy women.

Search methods
The articles searched from October to December 2016 in the databases: PUBMED, SCIELO, LILACS, MEDLINE, WEB OF SCIENCE and CINAHL via PERIÓDICOS CAPES, without restriction of language and year of publication.

Selection criteria
Randomized (RCTs), quasi-randomized and non-randomized clinical trials assessing the effectiveness of the Pilates method in the PFM in healthy women were included.

Data collection and analysis
Two reviewers independently selected the studies, assessed the risk of bias and performed the data extraction. Primary outcomes were the method of evaluation of strength, function, coordination and symmetry of contraction of the pelvic floor muscles.

Results
4,434 articles were identified and 2 articles were selected to compose this review and the meta-analysis. Demonstrated that the pelvic floor muscle function mentioned by the perineometry did not present a difference between the groups, in which a difference of the mean of -2.18 (-6.43,2.08) (p=0.32).

Conclusions
No evidence showed a modification of the function of pelvic floor muscles in healthy women practicing the Pilates method.
Severe Hyperkyphosis Reduces the Aerobic Capacity and Maximal Exercise Tolerance in Patients with Scheuermann Disease

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DOI: https://doi.org/10.1016/j.spinee.2018.07.002

BACKGROUND CONTEXT The evaluation of ventilatory functional restrictions during a maximal exercise tolerance test in patients with Scheuermann disease has never been described.

PURPOSE This study evaluated the respiratory functional capacity of patients with Scheuermann disease compared to healthy adolescents matched in age.

STUDY DESIGN/SETTING Prospective comparative study.

PATIENTS SAMPLE Forty-one consecutive adolescents with Scheuermann hyperkyphosis (SK) and 20 healthy controls matched in age were included in the study.

OUTCOME MEASURES Basal spirometry and dynamic ventilatory parameters were measured during a maximal cardiopulmonary exercise tolerance test. Heart rate, oxygen saturation (SatO\textsubscript{2}), maximum oxygen uptake (VO\textsubscript{2} max), quotient between ventilation and volume of exhaled carbon dioxide (VE/CO\textsubscript{2}), respiratory exchange rate (RER), ventilatory capacity at maximal exercise (VEmax), and test duration were recorded at initiation and at maximal exercise.

METHODS The exercise tolerance test was completed to exhaustion using a standard Bruce protocol on a ramp treadmill. Comparisons of quantitative variables between SK and control group were analyzed by statistical nonparametric test. The correlations between the magnitude of the thoracic kyphosis and both the VO\textsubscript{2} max/kg and VEmax of the SK group were also analyzed. No funds were required. The authors have no conflicts of interests.

RESULTS Patients with SK started the test with a higher heart rate (p<0.01) and reached exhaustion with a lower heart rate (p<0.05) than healthy controls. At maximal exercise, the SatO\textsubscript{2} was declined in Scheuermann patients compared to healthy subjects (p<0.05). The maximal aerobic power (VO\textsubscript{2} max) was greater in healthy controls than in hyperkyphotic patients (50.0 ± 6.7 vs. 43.4 ± 11.3 mL/kg/minute; p<0.05). There was an inverse correlation between the increase in the magnitude of thoracic kyphosis and the deterioration of the maximal aerobic power. VO\textsubscript{2}max and VEmax were severely deteriorated in patients with more than 75° kyphosis. Patients with >75° thoracic kyphosis also showed an impairment in their cardiovascular efficiency as measured by the HR/VO\textsubscript{2} quotient. The limited tolerance to the exercise in SK patients was reflected by a shorter duration of the exercise test and a lower energy cost measured in METS (metabolic equivalents) as compared to healthy controls.

CONCLUSIONS Patients with severe hyperkyphosis (>75°) show significant respiratory inefficiency together with a lower ventilation capacity and lower VO\textsubscript{2}max. There is an inverse correlation between the increase in the magnitude of thoracic kyphosis and the deterioration of the maximal aerobic power.
57. GAIT

OA of the hip changes

Different reliability of instrumented gait analysis between patients with unilateral hip osteoarthritis, unilateral hip prosthesis and healthy controls

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BMC Musculoskeletal Disorders 2018 19:224
https://doi.org/10.1186/s12891-018-2145-0

Background

The gait pattern varies within the population and between patient groups with different musculoskeletal diseases. It also varies over time due to various reasons. Three-dimensional gait analysis (3DGA) is frequently used to measure these changes, but the precision of this methodology may vary.

Methods

We primarily aimed to study the repeatability of hip motion measurements in patients with unilateral osteoarthritis (OA), patients with unilateral total hip arthroplasty (THA) and healthy controls. A secondary aim was to delineate any differences in hip motion during walking between these groups. Ten males and 10 females in each group were recruited. All patients underwent gait assessments using 3DGA recorded by 2 examiners. Data was analysed with comparison of variance and linear regression.

Results

The variability of the extension-flexion recordings was smallest in healthy controls (SD < 7.7°), increased in patients with THA (SD < 11.1°) and was most pronounced in the OA patients (SD < 12.2°). The degree of hip extension-flexion turned out to be the variable that most effectively could separate the controls from the 2 patient groups and the patient groups from each other. One to 2 years after THA the gait pattern was improved but still differed comparing a group of THA from a group of healthy controls.

Conclusions

Patients with hip osteoarthritis showed the poorest repeatability between gait recordings collected by different examiners, as compared to patients operated with a THA and healthy controls. The walking pattern after THA still differed from healthy controls 1–2 years after the operation.
62 A. NUTRITION/VITAMINS

Vit D reduces colon CA risk


Circulating Vitamin D and Colorectal Cancer Risk: An International Pooling Project of 17 Cohorts.


BACKGROUND:
Experimental and epidemiological studies suggest a protective role for vitamin D in colorectal carcinogenesis, but evidence is inconclusive. Circulating 25-hydroxyvitamin D (25(OH)D) concentrations that minimize risk are unknown. Current Institute of Medicine (IOM) vitamin D guidance is based solely on bone health.

METHODS:
We pooled participant-level data from 17 cohorts, comprising 5706 colorectal cancer case participants and 7107 control participants with a wide range of circulating 25(OH)D concentrations. For 30.1% of participants, 25(OH)D was newly measured. Previously measured 25(OH)D was calibrated to the same assay to permit estimating risk by absolute concentrations. Study-specific relative risks (RRs) for prediagnostic season-standardized 25(OH)D concentrations were calculated using conditional logistic regression and pooled using random effects models.

RESULTS:
Compared with the lower range of sufficiency for bone health (50–62.5 nmol/L), deficient 25(OH)D (<30 nmol/L) was associated with 31% higher colorectal cancer risk (RR = 1.31, 95% confidence interval [CI] = 1.05 to 1.62); 25(OH)D above sufficiency (75–100 nmol/L) was associated with 19% (RR = 0.81, 95% CI = 0.67 to 0.99) and 27% (RR = 0.73, 95% CI = 0.59 to 0.91) lower risk, respectively. At 25(OH)D of 100 nmol/L or greater, risk did not continue to decline and was not statistically significantly reduced (RR = 0.91, 95% CI = 0.67 to 1.24, 3.5% of control participants). Associations were minimally affected when adjusting for body mass index, physical activity, or other risk factors. For each 25 nmol/L increment in circulating 25(OH)D, colorectal cancer risk was 19% lower in women (RR = 0.81, 95% CI = 0.75 to 0.87) and 7% lower in men (RR = 0.93, 95% CI = 0.86 to 1.00) (two-sided P heterogeneity by sex = .008). Associations were inverse in all subgroups, including colorectal subsite, geographic region, and season of blood collection.

CONCLUSIONS:
Higher circulating 25(OH)D was related to a statistically significant, substantially lower colorectal cancer risk in women and non-statistically significant lower risk in men. Optimal 25(OH)D concentrations for colorectal cancer risk reduction, 75-100 nmol/L, appear higher than current IOM recommendations.
Impact of polypharmacy


Associations Between Polypharmacy and Cognitive and Physical Capability: A British Birth Cohort Study.

Rawle MJ¹, Cooper R¹, Kuh D¹, Richards M¹.

OBJECTIVES:
To investigate longitudinal associations between polypharmacy and cognitive and physical capability and to determine whether these associations differ with cumulative exposure to polypharmacy.

DESIGN:
Prospective birth cohort study.

SETTING:
England, Scotland, and Wales.

PARTICIPANTS:
An eligible sample of men and women from the Medical Research Council National Survey of Health and Development with medication data at age 69 (N=2,122, 79%).

MEASUREMENTS:
Cognitive capability was assessed using a word learning test, visual search speed task, and the Addenbrooke's Cognitive Examination, Third Edition (ACE-III). Physical capability was measured using chair rise speed, standing balance time, walking speed, and grip strength.

RESULTS:
Polypharmacy (5–8 prescribed medications) was present in 18.2% of participants at age 69 and excessive polypharmacy (≥9 prescribed medications) in 4.7%. Both were associated with poorer cognitive and physical capability in models adjusted for sex, education, and disease burden. Stronger associations were found for excessive polypharmacy (e.g., difference in mean ACE-III scores comparing polypharmacy=−2.0, 95% CI=−2.8 to −1.1 and excessive polypharmacy=−2.9, 95% CI=−4.4 to −1.4 with no polypharmacy). Participants with polypharmacy at age 60 to 64 and at age 69 showed stronger negative associations with cognitive and physical capability were stronger still in participants with polypharmacy at both age 60 to 64 and at age 69 (e.g. difference in mean chair rise speed, comparing polypharmacy with no polypharmacy at both ages=−3.9, 95% CI=−5.2 to −2.6 and at age 60-64 only=−2.5, 95% CI=−4.1 to −0.9).

CONCLUSION:
Polypharmacy at age 60 to 64 and age 69 was associated with poorer physical and cognitive capability, even after adjusting for disease burden. Stronger negative associations were seen in participants with longstanding polypharmacy, suggesting a cumulative, dose-dependent relationship (where dose is the number of prescribed medications). Future research aiming to improve cognitive and physical capability should consider interventions to reduce the duration and level of polypharmacy at younger ages, in addition to optimizing disease control with appropriate medications.