

2. LBP

Stenosis and fatty infiltrate

Eur Spine J. 2017 Jul 26. doi: 10.1007/s00586-017-5228-y.

Association between paraspinal muscle morphology, clinical symptoms and functional status in patients with lumbar spinal stenosis.

Fortin M¹, Lazáry A², Varga PP², Battié MC³.

PURPOSE:

Lumbar spinal stenosis (LSS) is a disabling condition associated with narrowing of the spinal canal or vertebral foramina. Paraspinal muscle atrophy and fatty infiltration have been reported in patients with chronic LBP and disc herniation. However, very few imaging studies have examined paraspinal muscle morphology and composition in patients with LSS. The purpose of this study was to investigate the association of paraspinal muscle size, composition and asymmetry with functional status in patients with LSS.

METHODS:

Thirty-six patients diagnosed with LSS at L4-L5 with neurogenic claudication were included. Paraspinal muscle measurements were obtained from axial T2-weighted MR images, bilaterally, at the level of the superior and inferior vertebral endplates of L5. Muscle measurements of interest included: total cross-sectional area (CSA), functional CSA (FCSA), the ratio of FCSA to CSA (FCSA/CSA) as an indicator of muscle composition, and relative % asymmetry in muscle CSA. The association between muscle parameters and other patient characteristics with function as indicated from Oswestry Disability Index (ODI) scores and pain interference status was investigated.

RESULTS:

Greater multifidus muscle fatty infiltration (e.g., lower FCSA/CSA) and lower psoas relative CSA were associated with lower function (higher ODI and pain interference scores) in univariable and multivariable analyses. There was no association between the different muscle parameters and stenosis severity or back or leg pain duration or severity.

CONCLUSIONS:

Our findings suggest an association of multifidus muscle fatty infiltration and psoas muscle size with functional status in patients diagnosed with LSS. Future prospective studies are needed to evaluate whether such muscle parameters are associated with prognosis and functional recovery following surgical treatment.

Critical life events influence future pain events

J Pain Res. 2017 Jul 6;10:1569-1579. doi: 10.2147/JPR.S134976. eCollection 2017.

Risk and protective factors in the clinical rehabilitation of chronic back pain.

Wippert PM^{1,2}, Fliesser M¹, Krause M³.

OBJECTIVES:

Chronic back pain (CBP) can lead to disability and burden. In addition to its medical causes, its development is influenced by psychosocial risk factors, the so-called flag factors, which are categorized and integrated into many treatment guidelines. Currently, most studies investigate single flag factors, which limit the estimation of individual factor significance in the development of chronic pain. Furthermore, factors concerning patients' lifestyle, biography and treatment history are often neglected. Therefore, the objectives of the present study are to identify commonly neglected factors of CBP and integrate them into an analysis model comparing their significance with established flag factors.

METHODS:

A total of 24 patients and therapists were cross-sectionally interviewed to identify commonly neglected factors of CBP. Subsequently, the impact of these factors was surveyed in a longitudinal study. In two rehabilitation clinics, CBP patients (n = 145) were examined before and 6 months after a 3-week inpatient rehabilitation. Outcome variables, chronification factor pain experience (CF-PE) and chronification factor disability (CF-D), were ascertained with confirmatory factor analysis (CFA) of standardized questionnaires. Predictors were evaluated using stepwise calculations of simple and multiple regression models.

RESULTS:

Through interviews, medical history, iatrogenic factors, poor compliance, critical life events (LEs), social support (SS) type and effort-reward were identified as commonly neglected factors. However, only the final three held significance in comparison to established factors such as depression and pain-related cognitions. Longitudinally, lifestyle factors found to influence future pain were initial pain, physically demanding work, nicotine consumption, gender and rehabilitation clinic. LEs were unexpectedly found to be a strong predictor of future pain, as were the protective factors, reward at work and perceived SS.

DISCUSSION:

These findings shed insight regarding often overlooked factors in the development of CBP, suggesting that more detailed operationalization and superordinate frameworks would be beneficial to further research.

CONCLUSION:

In particular, LEs should be taken into account in future research. Protective factors should be integrated in therapeutic settings.

7. PELVIC ORGANS/WOMAN'S HEALTH

Fish oil and neonatal development

Eur J Nutr. 2017 Jul 27. doi: 10.1007/s00394-017-1512-1.

The effect of perinatal fish oil supplementation on neurodevelopment and growth of infants: a randomized controlled trial.

Ostadrahimi A¹, Salehi-Pourmehr H², Mohammad-Alizadeh-Charandabi S³, Heidarabady S⁴, Farshbaf-Khalili A⁵.

INTRODUCTION:

Long-chain polyunsaturated fatty acids, the most abundant fatty acids in the brain, are essential for the growth and development of the brain and the retina.

OBJECTIVE:

To evaluate the effect of fish oil supplementation on the development (primary outcome) and growth of 4- and 6-month-old infants.

METHODS:

In this triple-blind randomized controlled trial, 150 pregnant women aged 18-35 years, who were referred to healthcare centres of Tabriz-Iran, were randomly allocated into two groups. One group of women consumed fish oil supplementation (containing 120 mg docosahexaenoic acid and 180 mg eicosapentaenoic acid) daily, while the other consumed a placebo from the 20th week of pregnancy till 30 days after childbirth in a parallel design by a computer-generated block randomization scheme. The neurodevelopment of infants was the primary outcome; it was assessed using the ages and stages questionnaire (ASQ) at 4- and 6 months of age. The growth of these infants was measured using weight, length and head circumference. The participants, the caregivers, and those assessing the outcomes were blind to the group assignment.

RESULTS:

Only one woman in the placebo group discontinued the intervention because of persistent severe nausea. All 75 neonates aged 4- and 6 months in the fish oil supplementation group, along with 73 and 71 neonates aged 4 and 6 months, respectively in the placebo group, were followed and analysed. Although the mean scores of neurodevelopment at the end of 4 and 6 months were higher in the supplemented group than in the placebo group in each ASQ domain, a statistically significant difference was observed only in the communication domain at the 4th month (adjusted mean difference 2.63; 95% confidence interval 0.36-4.89). There was no significant difference in weight, length, or head circumference between the two groups of infants aged 4 and 6 months ($P \geq 0.05$).

CONCLUSION:

Based on the results, perinatal fish oil supplementation is beneficial for the communication domain of neurodevelopment of 4-month-old infants. The study results relating to the supplementation effect on other domains are inconclusive. There ought to be further studies with up-to-date lipidomic analysis to find biochemical correlate compared to an intervention and developmental finding.

Safety of fertility medications

Curr Opin Obstet Gynecol. 2017 Aug;29(4):195-201. doi: 10.1097/GCO.0000000000000370.

Use of fertility medications and cancer risk: a review and update.

Kroener L¹, Dumesic D, Al-Safi Z.

PURPOSE OF REVIEW:

There is increasing use of fertility medications for ovulation induction and ovarian stimulation for in-vitro fertilization in the treatment of female infertility. In this review, recent literature regarding the association between fertility medication and cancer risk is reviewed.

RECENT FINDINGS:

Several important publications have recently addressed the relationship between use of fertility medications and cancer risk. There are methodological limitations to many of these studies, including unique challenges in studying rare cancers that often develop several years after the time of fertility medication exposure. Although infertility per se is a risk factor for some female cancers, including breast, endometrial and ovarian cancer, most studies do not show a significant risk of these cancers with the use of fertility medications. Some studies, however, have shown a possible increased relative risk of borderline ovarian cancer, although the increased absolute risk is small without a clear causal relationship.

SUMMARY:

The collective data regarding the risk of developing cancer from use of fertility medications are reassuring, although several methodological issues in these studies limit definitive conclusions.

Antibiotic use and IBS in infants

Cell Rep. 2017 Jul 11;20(2):491-504. doi: 10.1016/j.celrep.2017.06.060.

Peripartum Antibiotics Promote Gut Dysbiosis, Loss of Immune Tolerance, and Inflammatory Bowel Disease in Genetically Prone Offspring.

Miyoshi J¹, Bobe AM¹, Miyoshi S¹, Huang Y¹, Hubert N¹, Delmont TO¹, Eren AM¹, Leone V¹, Chang EB².

Factors affecting the developing neonatal gut microbiome and immune networks may increase the risk of developing complex immune disorders such as inflammatory bowel diseases (IBD).

In particular, peripartum antibiotics have been suggested as risk factors for human IBD, although direct evidence is lacking. Therefore, we examined the temporal impact of the commonly used antibiotic cefoperazone on both maternal and offspring microbiota when administered to dams during the peripartum period in the IL-10-deficient murine colitis model. By rigorously controlling for cage, gender, generational, and murine pathobiont confounders, we observed that offspring from cefoperazone-exposed dams develop a persistent gut dysbiosis into adulthood associated with skewing of the host immune system and increased susceptibility to spontaneous and chemically dextran sodium sulfate (DSS)-induced colitis.

Thus, early life exposure to antibiotic-induced maternal dysbiosis during a critical developmental window for gut microbial assemblage and immune programming elicits a lasting impact of increased IBD risk on genetically susceptible offspring.

Vestibular pain**Brain responses to vestibular pain and its anticipation in women with genito-pelvic pain/penetration disorder**

NeuroImage: Clinical
Pazmany E, et al.

What are the new findings?

Despite similar intensity of pain stimuli, both subjective and brain responses during anticipation and induction of vestibular pain are increased in women with GPPPD compared to healthy controls (HC).

At brain level, between-group differences were primarily found in regions involved in cognitive and affective aspects of the pain experience, during induction of vestibular pain.

At the subjective level, pain-related fear and anxiety traits as well as momentary anticipatory fear ratings were positively associated with perceived pain intensity in GPPPD only.

In HC, a negative association between online anticipatory fear ratings and brain responses to pain was found in regions involved in cognitive and affective aspects of pain perception.

Objective In DSM-5, pain-related fear during anticipation of vaginal penetration is a diagnostic criterion of Genito-Pelvic Pain/Penetration Disorder (GPPPD). We aimed to investigate subjective and brain responses during anticipatory fear and subsequent induction of vestibular pain in women with GPPPD.

Methods Women with GPPPD (n = 18) and age-matched healthy controls (HC) (n = 15) underwent fMRI scanning during vestibular pain induction at individually titrated pain threshold after a cued anticipation period. (Pain-related) fear and anxiety traits were measured with questionnaires prior to scanning, and anticipatory fear and pain intensity were rated during scanning using visual analog scales.

Results Women with GPPPD reported significantly higher levels of anticipatory fear and pain intensity. During anticipation and pain induction they had stronger and more extensive brain responses in regions involved in cognitive and affective aspects of pain perception, but the group difference did not reach significance for the anticipation condition. Pain-related fear and anxiety traits as well as anticipatory fear ratings were positively associated with pain ratings in GPPPD, but not in HC. Further, in HC, a negative association was found between anticipatory fear ratings and brain responses in regions involved in cognitive and affective aspects of pain perception, but not in women with GPPPD.

Conclusions Women with GPPPD are characterized by increased subjective and brain responses to vestibular pain and, to a lesser extent, its anticipation, with fear and anxiety associated with responses to pain, supporting the introduction of anticipatory fear as a criterion of GPPPD in DSM-5.

8. VISCERA

Diet and IBS

J Gastroenterol Hepatol. 2017 Aug 2. doi: 10.1111/jgh.13908.

Dietary behaviors in relation to prevalence of irritable bowel syndrome in adolescent girls.

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BACKGROUNDS AND AIMS:

There is limited evidence regarding the relationship between dietary behaviors and irritable bowel syndrome (IBS). This study aimed to explore the association between diet-related practices and prevalence of IBS.

METHODS:

The study was conducted among 988 adolescent girls living in Iran. Dietary behaviors were pre-defined and assessed in nine domains using a pre-tested questionnaire. To investigate the association between diet-related practices and the presence of IBS, we used logistic regression analysis in crude and adjusted models.

RESULTS:

The prevalence of IBS was 16.9% in this population. Compared with individuals who did not consume fluid with their meal, those who always consumed fluid with meals had a greater chance of IBS (OR: 2.91; P: 0.01). We found a direct relationship between a greater intake of spicy food and IBS prevalence (OR: 5.28; P: 0.02). The individuals who ate fried foods every day also had a greater risk of IBS compared with those who did not consume fried foods (OR: 1.65; P: 0.01). The subjects who had lost ≥ 5 teeth had 2.23 times greater odds for IBS than the individual who had lost ≤ 1 tooth (OR: 2.23; P: 0.01) was a significant inverse relationship between the chewing sufficiency and the risk of IBS (OR: 4.04; P: 0.02). These associations remained significant after controlling for potential confounder

CONCLUSIONS: Intra-meal fluid intake, chewing insufficiency, higher tooth loss and the consumption of spicy and fried food were associated with increased risk of IBS. Prospective studies are needed to confirm these findings.

Cardiac health and Omega 3's

Use of Supplemental Long Chain Omega-3 Fatty Acids and Risk for Cardiac Death: An Updated Meta-Analysis and Review of Research Gaps

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Open Access

DOI: <http://dx.doi.org/10.1016/j.jacl.2017.07.010>

Highlights

- •
Clinical trials have shown mixed results regarding effects of omega-3 (OM3) therapy
- •
This meta-analysis evaluated the effects of supplemental OM3s on cardiac death
- •
OM3 supplementation was associated with an 8% reduction in cardiac death
- •
Larger effects were present with higher dosages and in higher risk subgroups

Abstract

Background Randomized, controlled trials (RCTs) assessing use of long chain omega-3 polyunsaturated fatty acids (LC-OM3), primarily eicosapentaenoic acid (EPA) and/or docosahexaenoic acid (DHA), have shown mixed results.

Objective To update and further explore the available RCT data regarding LC-OM3 supplementation and risk for cardiac death, and to propose testable hypotheses for the mixed results obtained in RCTs regarding supplemental LC-OM3 use and cardiac risk.

Methods A literature search was conducted using PubMed and Ovid/Medline for RCTs assessing LC-OM3 supplements or pharmaceuticals with intervention periods of at least one year and reporting on the outcome of cardiac death. Meta-analysis was employed to compare cumulative frequencies of cardiac death events between the LC-OM3 and control groups, including sensitivity and subset analyses.

Results

Fourteen RCTs were identified for the primary analysis (71,899 subjects). In the LC-OM3 arms, 1613 cardiac deaths were recorded (4.48% of subjects), compared to 1746 cardiac deaths in the control groups (4.87% of subjects). The pooled relative risk estimate showed a 8.0% (95% confidence interval 1.6%, 13.9%, $p = 0.015$) lower risk in the LC-OM3 arms vs. controls. Subset analyses showed numerically larger effects (12.9% to 29.1% lower risks, all $p < 0.05$) in subsets of RCTs with EPA+DHA dosages >1 g/d and higher risk samples (secondary prevention, baseline mean or median triglycerides ≥ 150 mg/dL, low-density lipoprotein cholesterol ≥ 130 mg/dL, statin use $<40\%$ of subjects). Heterogeneity was low ($I^2 \leq 15.5\%$, $p > 0.05$) for the primary and subset analyses.

Conclusion

LC-OM3 supplementation is associated with a modest reduction in cardiac death.

Aged garlic extract heart healthy

Integr Blood Press Control. 2016 Jan 27;9:9-21. doi: 10.2147/IBPC.S93335. eCollection 2016.

The effect of aged garlic extract on blood pressure and other cardiovascular risk factors in uncontrolled hypertensives: the AGE at Heart trial.

Ried K¹, Travica N², Sali A².

BACKGROUND:

Hypertension affects 30% of adults worldwide. Garlic supplements have shown promise in the treatment of uncontrolled hypertension, and the mechanism of action is biologically plausible. Our trial is the first to assess the effect of aged garlic extract on central blood pressure and arterial stiffness, regarded as important risk factors for cardiovascular morbidity.

SUBJECTS AND METHODS:

A total of 88 general practice patients and community members with uncontrolled hypertension completed a double-blind randomized placebo-controlled trial of 12 weeks investigating the effect of daily intake of aged garlic extract (1.2 g containing 1.2 mg S-allylcysteine) or placebo on blood pressure, and secondary outcome measures of central-hemodynamics and other cardiovascular markers, including cholesterol, homocysteine, platelet function, and inflammatory markers.

RESULTS:

Mean blood pressure was significantly reduced by 5.0 ± 2.1 mmHg ($P=0.016$) systolic, and in responders by 11.5 ± 1.9 mmHg systolic and 6.3 ± 1.1 mmHg diastolic compared to placebo ($P<0.001$). Central hemodynamic-measures tended to improve in the garlic group more than in the placebo group, including central blood pressure, central pulse pressure, mean arterial pressure, augmentation pressure, pulse-wave velocity, and arterial stiffness. While changes in other cardiovascular markers did not reach significance due to small numbers in subgroups with elevated levels, trends in beneficial effects of garlic on the inflammatory markers $\text{TNF}\alpha$, total cholesterol, low-density lipid cholesterol, and apolipoproteins were observed. Aged garlic extract was highly tolerable and acceptable, and did not increase the risk of bleeding in patients on blood-thinning medication.

CONCLUSION:

Our trial suggests that aged garlic extract is effective in reducing peripheral and central blood pressure in a large proportion of patients with uncontrolled hypertension, and has the potential to improve arterial stiffness, inflammation, and other cardiovascular markers in patients with elevated levels. Aged garlic extract was highly tolerable with a high safety profile as a stand-alone or adjunctive antihypertensive treatment.

FodMAP diet helps IBS

Curr Opin Clin Nutr Metab Care. 2017 Sep;20(5):414-419. doi: 10.1097/MCO.0000000000000398.

The low FODMAP diet: fundamental therapy in the management of irritable bowel syndrome.

Ireton-Jones C¹.

PURPOSE OF REVIEW:

The low FODMAP diet is now recognized as first-line therapy for treatment of irritable bowel syndrome (IBS) symptoms including abdominal pain, gas, bloating, diarrhea and or constipation. This information must be disseminated for application to clinical practice.

RECENT FINDINGS:

There are many people with IBS worldwide who can benefit from following the low FODMAP diet to alleviate or minimize symptoms. Clinical studies and trials demonstrating the positive outcomes of the low FODMAP diet have been based on diet education provided by dietitians. Understanding the types of carbohydrates that are high in FODMAPs and the associated symptoms, nutrition intervention can be targeted using the low FODMAP diet. The nutrition intervention is relatively in expensive, noninvasive and basically without side-effects if monitored by a dietitian and clinical team.

SUMMARY:

Applying the low FODMAP diet in IBS can greatly improve health and quality of life outcomes by alleviating or significantly improves symptoms.

Bowel movement frequency

Am J Gastroenterol. 2017 Aug 1. doi: 10.1038/ajg.2017.213. [Epub ahead of print]

Characterizing Normal Bowel Frequency and Consistency in a Representative Sample of Adults in the United States (NHANES).

Mitsuhashi S¹, Ballou S¹, Jiang ZG¹, Hirsch W¹, Nee J¹, Iturrino J¹, Cheng V¹, Lembo A¹.

OBJECTIVES:

Our current understanding of normal bowel patterns in the United States (US) is limited. Available studies have included individuals with both normal and abnormal bowel patterns, making it difficult to characterize normal bowel patterns in the US. The current study aims to (1) examine frequency and consistency in individuals with self-reported normal bowel habits and (2) determine demographic factors associated with self-reported normalcy.

METHODS:

This study used data from adult participants who completed bowel health questions as part of the National Health and Nutrition Examination Survey (NHANES) in 2009-2010 and who reported normal bowel patterns (N=4,775). Data regarding self-perceived bowel health; stool frequency; stool consistency (using the Bristol Stool Form Scale (BSFS)); and demographic factors were analyzed.

RESULTS:

95.9% of the sample reported between 3 and 21 BMs per week. Among men, 90% reported a BSFS between 3 and 5, while for women it was 2-6. After controlling for age, the following demographic variables were associated with normalcy: male sex, higher education, higher income, <2 daily medications, and high daily fiber intake. Hispanic ethnicity was significantly associated with abnormal self-reported bowel habits.

CONCLUSIONS:

This is the first study to evaluate normal bowel frequency and consistency in a representative sample of adults in the US. The current findings bolster the common "3 and 3" metric of normal frequency (3 BMs/day to 3 BMs/week) while also suggesting different criteria for normal consistency for men and women. Finally, this study provides novel information about demographic factors associated with normal frequency and consistency.

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PMID: 28762379 DOI: 10.1038/ajg.2017.213

IBS and FODMAP

Neurogastroenterol Motil. 2017 Aug 1. doi: 10.1111/nmo.13167.

Effect of intragastric FODMAP infusion on upper gastrointestinal motility, gastrointestinal, and psychological symptoms in irritable bowel syndrome vs healthy controls.

Masuy I¹, Van Oudenhove L¹, Tack J¹, Biesiekierski JR¹.

BACKGROUND:

The low fermentable oligo-, di-, mono-saccharides and polyol (FODMAP) diet is a treatment strategy to reduce symptoms of irritable bowel syndrome (IBS). Acute effects of FODMAPs on upper gastrointestinal motility are incompletely understood. Our objectives were to assess the acute effects of intragastric FODMAP infusions on upper gastrointestinal motility and gastrointestinal and psychological symptoms in healthy controls (HC) and IBS patients.

METHODS:

A high-resolution solid-state manometry probe and an infusion tube were positioned into the stomach. Fructans, fructose, FODMAP mix, or glucose was intragastrically administered to HC, and fructans or glucose was administered to IBS patients until full satiation (score 0-5), in a randomized crossover fashion. Manometric measurements continued for 3 hours. Gastrointestinal and psychological symptoms were assessed by questionnaires at predefined time points. The study was registered on www.clinicaltrials.gov ([NCT02980406](https://doi.org/10.1111/nmo.13167)).

KEY RESULTS:

Twenty HC and 20 IBS patients were included. Fructans induced higher postprandial gastric pressures compared with glucose over both groups ($P < .001$). Bloating, belching, and pain increased more in IBS over both carbohydrates ($P < .041$). In addition, IBS patients reported more flatulence and cramps compared with HC following fructans ($P < .001$). Glucose induced more fatigue and dominance compared with fructans ($P = .028$, $P = .001$). Irritable bowel syndrome patients reported a higher increase in anger ($P = .030$) and a stronger decrease in positive affect ($P = .021$).

CONCLUSIONS & INFERENCES:

The upper gastrointestinal motility response varies between carbohydrates. Irritable bowel syndrome patients are more sensitive to fructan infusion, reflected in their higher gastrointestinal symptom scores. Acute carbohydrate infusion can have differential psychological effects in IBS and HC.

CD and heart problems

Saudi J Gastroenterol. 2017 Jul-Aug;23(4):253-258. doi: 10.4103/sjg.SJG_616_16.

Risk of coronary artery disease in celiac disease population.

Gajulapalli RD¹, Pattanshetty DJ².

BACKGROUND/AIMS:

Celiac disease (CD), a chronic autoimmune condition, is associated with systemic inflammation capable of causing extra intestinal manifestations. Chronic inflammatory process has been implicated in the pathogenesis of accelerated atherosclerosis. Studies examining the burden of coronary artery disease (CAD) in patients with CD are lacking. We evaluated the prevalence of CAD in patients with CD.

PATIENTS AND METHODS:

Electronic health records from different health care systems were obtained utilizing a Health Insurance Portability and Accountability Act-compliant, patient de-identified web application. Among the 48,642,290 patients, 59,010 were diagnosed with CD. The remaining 48,583,280 patients without CD served as comparison controls.

RESULTS:

The prevalence of CAD was significantly higher in patients with CD than in the controls [5140 (8.7%) vs. 2119060 (4.4%), $P < 0.001$], with the odds ratio (OR) being 2.09 (95% confidence interval [CI]: 2.03-2.15, $P < 0.0001$). There was a similarly higher prevalence among younger patients (age, <65 years) with CD compared with those without CD (3.72% vs 1.98% [OR: 1.85, 95% CI: 1.7488-1.9417, $P < 0.0001$]).

CONCLUSIONS:

The prevalence of CAD increased nearly two-fold in patients with CD

13. CRANIUM/TMJ

Light and sleep

Bedroom light exposure at night and the incidence of depressive symptoms: A longitudinal study of the HEIJO-KYO cohort

American Journal of Epidemiology

sponsor

Obayashi K, et al.

This current study was designed to ascertain the link between exposure to light-at-night and depressive symptoms. Findings suggested an independent relation of exposure to light-at-night in home settings to subsequent depression risk in a general elderly population.

Methods

- Bedroom light intensity was measured objectively and depressive symptoms were assessed between 2010–2014 in Nara, Japan.

Results

- Findings demonstrated that out of 863 participants (mean age, 71.5 years) who did not have depressive symptoms at baseline, 73 participants reported development of depressive symptoms during follow-up (median, 24 months).
- Researchers found that compared with the dark group (average <5 lux; n = 710), the light-at-night group (average ≥ 5 lux; n = 153) exhibited a significantly higher depression risk (HR, 1.89; 95%CI, 1.13 to 3.14), according to a Cox proportional hazard model adjusted for age, gender, body mass index, and economic status.
- Further, data revealed that the significance remained in a multivariable model adjusted for hypertension, diabetes, and sleep parameters (HR, 1.72; 95%CI, 1.03 to 2.89).
- In addition, sensitivity analyses using bedroom light data with a cut-off value of ≥ 10 lux suggested consistent results.

Pre-molar removal

August 2017 Volume 152, Issue 2, Pages 232–241

Effects of unilateral premolar extraction treatment on the dental arch forms of Class II subdivision malocclusions

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DOI: <http://dx.doi.org/10.1016/j.ajodo.2017.04.013>

Highlights

- Maxillary arches were evaluated at posttreatment in Class II subdivision malocclusions.
- Unilateral extractions showed asymmetric transverse and sagittal differences in arch form.
- Unilateral extraction results in a narrow posteriorly displaced arch on the extraction side.
- In unilateral extraction patients, the maxillary midline deviates toward the extraction side.

Introduction

A retrospective study evaluating posttreatment symmetry in dental arch form and midlines was carried out in Class II subdivision patients treated with unilateral and bilateral maxillary premolar extractions.

Methods

Using Geomagic (version 14; Geomagic, Research Triangle Park, NC) and MATLAB (version 8.4; MathWorks, Natick, Mass) software, best-fit curves expressed as quartic polynomials were generated for 13 Class II subdivisions treated with unilateral extractions and 20 treated with bilateral maxillary premolar extractions. Transverse and sagittal measurements were recorded to assess symmetry. Dental models were superimposed on constructed reference planes to generate average posttreatment arches. Statistical comparisons were performed with the significance level set at $P \leq 0.05$.

Results

The unilateral extraction group showed significant differences in transverse arch forms between the right and left sides in the anterior, anterior-middle, and middle segments of the arch, and all regions other than the posterior segment in the sagittal dimension. Significant differences were found between groups in the anterior and anterior-middle segments of the arch transversely, the middle and middle-posterior segments sagittally, and the midline deviation relative to the midsagittal plane. Superimposed average arches showed similar results.

Conclusions

Unilateral maxillary extraction treatment generally results in a narrower and more posteriorly displaced arch form on the extraction side, with a deviated maxillary midline toward the extraction side of the arch.

Sleep day

J Sleep Res. 2017 Jul 26. doi: 10.1111/jsr.12583.

Integrative body-mind-spirit intervention for concurrent sleep and mood disturbances: sleep-specific daytime functioning mediates sleep and mood improvements.

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Sleep disturbances and depressive symptoms are associated closely with daytime dysfunctions, yet few studies have investigated their temporal relationship in a randomized controlled trial. We investigated the inter-relationships among sleep, depressive symptoms and daytime functioning following an integrative body-mind-spirit (I-BMS) intervention.

One hundred and eighty-five participants (mean age 55.28 years, 75.1% female) with co-existing sleep and depressive symptoms were randomized to I-BMS or waiting-list. Daytime functioning variables included the daytime dysfunction items of the Pittsburg Sleep Quality Index (PSQI-day), Somatic Symptom Inventory, Hospital Anxiety Depression Scale and Short Form Health Survey collected at baseline, post-treatment and 3-month follow-up. Sleep and depressive symptoms were measured by the sleep items of the PSQI (PSQI-night) and Center for Epidemiological Studies Depression Scale (excluding the sleep item) (CESD-M). Regression and path analyses were used to understand the role of daytime functioning in sleep and depressive symptoms. We found significant group and time effects on almost all daytime variables and significant group \times time interactions on PSQI-day and somatic symptoms. The adjusted regression model showed that CESD-M was associated with all daytime variables. However, PSQI-night was associated only with PSQI-day. Path analyses indicated that PSQI-day bridged PSQI-night and CESD-M in a two-way direction after the I-BMS intervention.

The conclusion was that, following I-BMS intervention, improvement in daytime functioning was related predominantly to improvement in depressive symptoms. Night-time sleep related only to daytime dysfunction that was specific to sleep disturbances. Therefore, 'sleep-specific daytime impairment' could be regarded as a major link from night-time sleep to depressive symptoms. More studies are required to understand the concept of 'sleep-specific daytime impairment'.

Maxillary advancement for apnea

Int J Oral Maxillofac Surg. 2017 Jul 28. pii: S0901-5027(17)31540-0. doi: 10.1016/j.ijom.2017.07.003.

Maxillomandibular advancement as the initial treatment of obstructive sleep apnoea: Is the mandibular occlusal plane the key?

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Maxillomandibular advancement (MMA) can be effective for managing obstructive sleep apnoea (OSA); however, limited information is available on the predictor surgical variables.

This study investigated whether normalization of the mandibular occlusal plane (MOP) was a determinant factor in curing OSA. Patients with moderate or severe OSA who underwent MMA were evaluated by preoperative and postoperative three-dimensional (3D) scans and polysomnograms. The postoperative value of MOP and the magnitude of skeletal advancement were the predictor variables; change in the apnoea-hypopnoea index (AHI) was the main outcome variable. Thirty-four subjects with a mean age of 41±14years and 58,8% female were analysed. The Epworth Sleepiness Scale (ESS) was 17.4±5.4 and AHI was 38.3±10.7 per hour before surgery. Postoperative AHI was 6.5±4.3 per hour (P<0.001) with 52.94% of the patients considered as cured, and 47.06% suffering from a mild residual OSA with ESS 0.8±1.4 (P<0.001). 3D changes revealed a volume increase of 106.3±38.8%.

The mandible was advanced 10.4±3.9mm and maxilla 4.9±3.2mm. MOP postoperative value was concluded to be the best predictor variable. Treatment planning should include MOP normalization and a mandibular advancement between 6 and 10mm. The maxillary advancement would depend on the desired aesthetic changes and final occlusion.

Malocclusion orthopedic care

Am J Orthod Dentofacial Orthop. 2017 Aug;152(2):193-203. doi: 10.1016/j.ajodo.2016.12.018.

Prediction of long-term success of orthopedic treatment in skeletal Class III malocclusions.

Choi YJ¹, Chang JE², Chung CJ², Tahk JH³, Kim KH⁴.

INTRODUCTION:

We investigated the long-term success of orthopedic treatment in skeletal Class III malocclusions, established a model to predict its long-term success, and verified previously reported success rates and prediction models.

METHODS:

Fifty-nine patients who underwent successful facemask treatment and were followed until growth completion were evaluated. After completion of growth, the patients were divided into successful and unsuccessful groups according to overjet, overbite, and facial profile. Pretreatment cephalometric measurements were compared between groups, and logistic regression analysis was used to identify the predictors of long-term success. Four previously published articles were selected to verify the success rate and predictability of the prediction models with regard to our patient sample.

RESULTS:

The treatment success rate was 62.7%. The AB-mandibular plane angle, Wits appraisal, and the articular angle were identified as predictors. The success rates differed according to success criteria and patient characteristics. The prediction models proposed by the 4 previous studies and our study showed similar predictabilities (61.0%-64.4%) for our patient sample. The predictability for the unsuccessful group was low.

CONCLUSIONS:

Our results suggest that no particular method or factor can predict the long-term success of orthopedic treatment for skeletal Class III malocclusion

Craniofacial microsomia**Characterizing the skull base in craniofacial microsomia using principal component analysis**

S.C. Schaal C. Ruff B.I. Pluijmers E. Pauws C.W.N. Looman M.J. Koudstaal D.J. Dunaway

DOI: <http://dx.doi.org/10.1016/j.ijom.2017.07.008>

Abstract

The aim of this study was to compare the anatomical differences in the skull base between the affected and non-affected side in patients with craniofacial microsomia (CFM), and to compare the affected and non-affected sides with measurements from a normal population.

Three-dimensional computed tomography scans of 13 patients with unilateral CFM and 19 normal patients (age range 7–12 years) were marked manually with reliable homologous landmarks. Principal component analysis (PCA), as part of a point distribution model (PDM), was used to analyse the variability within the normal and preoperative CFM patient groups. Through analysis of the differences in the principal components calculated for the two groups, a model was created to describe the differences between CFM patients and normal age-matched controls. The PDMs were also used to describe the shape changes in the skull base between the cohorts and validated this model. Using thin-plate splines as a means of interpolation, videos were created to visualize the transformation from CFM skull to normal skull, and to display the variability in shape changes within the groups themselves.

In CFM cases, the skull base showed significant asymmetry. Anatomical areas around the glenoid fossa and mastoid process showed the most asymmetry and restriction of growth, suggesting a pathology involving the first and second pharyngeal arches.

Maxillomandibular advancement

Int J Oral Maxillofac Surg. 2017 Jul 20. pii: S0901-5027(17)31530-8. doi: 10.1016/j.ijom.2017.06.020.

Three-dimensional volumetric changes in the upper airway after maxillomandibular advancement in obstructive sleep apnoea patients and the impact on quality of life.

Veys B¹, Pottel L², Mollemans W³, Abeloos J², Swennen G², Neyt N².

Obstructive sleep apnoea (OSA) is a sleep-related breathing disorder, characterized by repetitive airway obstructions, causing disruptive snoring and daytime sleepiness. \

Maxillomandibular advancement (MMA), which enlarges the upper airway, is a therapeutic surgical approach. However, no study has performed an upper airway sub-region analysis using validated three-dimensional (3D) anatomical and technical limits on cone beam computed tomography (CBCT). Hence, this prospective, observational trial was performed to evaluate 3D volumetric changes in the upper airway according to validated 3D cephalometric landmarks, before and after MMA, for all patients with a polysomnography diagnosis of OSA (apnoea-hypopnoea index (AHI) ≥ 5). The secondary objective was to evaluate the impact of MMA on the AHI and in a subjective manner with the Epworth Sleepiness Scale (ESS) and OSA questionnaire. Eleven consecutive OSA patients were included. A significant volume increase in the oropharynx ($P=0.002$) and hypopharynx ($P=0.02$) was observed, in contrast to a non-significant volume reduction in the nasopharynx ($P > 0.05$). The median AHI ($P=0.03$) and ESS score ($P=0.004$) decreased significantly as a result of surgery.

In conclusion, MMA significantly enlarges the airway volume of the oropharynx and hypopharynx and is associated with improved quality of life.

Sleep disorders among football players

Sleep-Disordered Breathing and Cardiovascular Correlates in College Football Players

Jonathan H. Kim, MD Casey Hollowed, MSc Morgan Irwin-Weyant, BS Keyur Patel, MBBS
Craig Clark, ATC Yi-An Ko, PhD Arshed A. Quyyumi, MD Nancy A. Collop, MD ,
Aaron L. Baggish, MD

DOI: <http://dx.doi.org/10.1016/j.amjcard.2017.07.030>

Abstract

This study sought to determine the cardiovascular physiologic correlates of sleep disordered breathing (SDB) among American-style football (ASF) participants using echocardiography, vascular applanation tonometry, and peripheral arterial tonometry.

40 collegiate ASF participants were analyzed at pre- and post-season time points with echocardiography and vascular applanation tonometry. WatchPAT[®] (inclusive of peripheral arterial tonometry) used to assess for SDB was then performed at the post-season time point. 22/40 (55%) ASF participants demonstrated SDB with an apnea-hypopnea index (pAHI) ≥ 5 . ASF participants with SDB were larger (109 ± 20 vs. 92 ± 14 kg, $P=0.004$) and more likely linemen position players (83% vs. 50%, $P=0.03$). Compared to those without SDB, ASF participants with SDB demonstrated relative impairments in left ventricular diastolic and vascular function as reflected by lower lateral e' (14 ± 3 vs. 17 ± 3 cm/s, $P = 0.007$) and septal e' (11 ± 2 vs. 13 ± 2 cm/s, $P=0.009$) tissue velocities and higher pulse wave velocity (5.4 ± 0.9 vs. 4.8 ± 0.5 m/s, $P=0.02$). In the total cohort, there were significant positive correlations between pAHI and pulse wave velocity ($r=0.42$, $P=0.008$) and inverse correlations between pAHI and the averaged e' tissue velocities ($r=-0.42$, $P=0.01$).

In conclusion, SDB is highly prevalent among youthful collegiate ASF participants and associated with relative impairments in cardiac and vascular function. Targeted efforts to identify youthful populations with SDB, including ASF participants, and implement SDB treatment algorithms represent important future clinical directives.

14. HEADACHES

Athlete's screening

Arch Clin Neuropsychol. 2017 Jun 28:1-11. doi: 10.1093/arclin/acx059.

Two-year Test-Retest Reliability in High School Athletes Using the Four- and Two-Factor ImPACT Composite Structures: The Effects of Learning Disorders and Headache/Migraine Treatment History.

Brett BL^{1,2}, Solomon GS^{2,3}, Hill J⁴, Schatz P⁴.

OBJECTIVE:

This study examined the test-retest reliability of the four- and two-factor structures (i.e., Memory and Speed) of ImPACT over a 2-year interval across multiple groups with premorbid conditions, including those with a history of special education or learning disorders (LD; n = 114), treatment history for headache/migraine (n = 81), and a control group (n = 792).

METHODS:

Nine hundred and eighty seven high school athletes completed baseline testing using online ImPACT across a 2-year interval. Paired-samples t-tests documented improvement from initial to follow-up assessments. Test stability was examined using Regression-based measures (RBM) and Reliable change indices (RCI). Reliability was examined using intraclass correlation coefficients (ICC).

RESULTS:

Significant improvement on all four composites were observed for the control group over a 2-year interval; whereas significant differences were observed only on Visual Motor Speed for the LD and headache/migraine treatment history groups. ICCs ranges were similar across groups and greater or comparable reliability was observed for the two-factor structure on Memory (0.67-0.73) and Speed (0.76-0.78) composites. RCIs and RBMs demonstrated stability for the four- and two-factor structures, with few cases falling outside the range of expected change within a healthy sample at the 90% and 95% CIs.

CONCLUSION:

Typical practices of obtaining new baselines every 2 years in the high school population can be applied to athletes with a history of special education or LD and headache/migraine treatment. The two-factor structure has potential to increase test-retest reliability. Further research regarding clinical utility is needed.

28. REPLACEMENTS**Impact of total hip**

Int Orthop. 2017 Jul 12. doi: 10.1007/s00264-017-3541-z.

Function and activity after minimally invasive total hip arthroplasty compared to a healthy population.

von Rottkay E¹, Rackwitz L¹, Rudert M², Nöth U³, Reichert JC^{1,2}.

PURPOSE:

The aim of the present study was to compare the daily activity and functionality in a patient cohort 12 months after total hip arthroplasty (THA) using a direct anterior approach with a healthy non-operated control population.

METHODS:

Sixty-four patients who underwent THA and 59 healthy individuals (control) were assessed regarding their daily activity and joint functionality utilizing the Harris hip score (HHS), the extra short musculoskeletal functional assessment questionnaire (XSFMA), the Short Form 36 (SF-36) health survey and a Stepwatch™ Activity Monitor (SAM). Post-operative x-ray images after THA were analysed regarding inclination and stem positioning.

RESULTS:

Twelve months after surgery, the average HHS showed no significant difference between both groups equalling 90.7 points in the THA patient group and 90.8 in the healthy volunteer group. The XSFMA functional index scores were 11.0 (THA) and 5.0 (control) while the bother index summed up to a score of 15.3 (THA) and 7.6 (control) respectively thus differing significantly ($p < 0.001$). Daily activity equalled 4227 (THA) and 4687 (control) load cycles per day ($p = 0.327$) while a number of 5658 (THA) and 6417 (control) steps per day ($p = 0.011$) was recorded. The SF-36 physical component scores were 47.3 (THA) and 50.6 (control) points while the psychometric properties added up to a score of 56.1 (THA) and 55.9 (control). The physical component was determined to be significantly different ($p < 0.001$) whereas no statistically significant difference could be shown for the psychometric properties ($p = 0.511$). The radiographic analysis revealed an average cup inclination of 39.9° without signs of migration. Stem positioning was neutral in 53% of all cases while 36% were graded varus and 11% valgus.

CONCLUSION:

In summary, our short-term results show an activity, functionality and quality of life for patients one year after THA comparable to healthy control individuals.

34. PATELLA**Instability management**

Arch Orthop Trauma Surg. 2017 Aug;137(8):1087-1095. doi: 10.1007/s00402-017-2705-z. Epub 2017 May 16.

Surgical treatment of patellar instability: clinical and radiological outcome after medial patellofemoral ligament reconstruction and tibial tuberosity medialisation.

Lobner S^{1,2}, Krauss C^{3,4}, Reichwein F⁴, Patzer T⁵, Nebelung W⁴, Venjakob AJ⁴.

INTRODUCTION:

The aim of this retrospective study was to analyse clinical and radiological outcome after medial patellofemoral ligament reconstruction (MPFLR) and tibial tuberosity medialisation (TTM) in patients with recurrent patellar instability.

MATERIALS AND METHODS:

Thirty-five patients were included between 2008 and 2012. According to defined criteria such as tibial tuberosity-trochlear groove (TTTG) distance, hyperpression on the lateral patella facet and lateral retropatellar cartilage damage either MPFLR (group A) or TTM (group B) was performed: 18 patients underwent TTM, the other 17 patients underwent MPFLR. At a mean of 25.4 ± 9.7 (group A) and 35.2 ± 17.6 months (group B) patients were clinically and radiologically reviewed. Validated knee scores such as Kujala, Lysholm and Tegner score were evaluated.

RESULTS:

In both groups one patient reported of a non-traumatic patellar redislocation. Patients who underwent MPFLR (group A) had less pain postoperatively during activity according to the Visual Analogue Scale (group A: 2.0 ± 2.1 points, group B: 3.9 ± 2.3 points). Retropatellar cartilage damage increased in group B from grade 1 (range: 1-3) preoperatively to grade 2 (range 1-3) postoperatively ($p > 0.05$). All other clinically evaluated items, as well as the applied knee scoring systems, indicated no significant difference ($p > 0.05$) and displayed good to excellent results.

CONCLUSIONS:

MPFLR and TTM lead to good clinical results despite its own indications. For this reason-in selected cases-TTM may still be a suitable procedure for surgical treatment of patellar instability. However, patients treated by TTM (group B) revealed an increased retropatellar cartilage damage as well as significantly more pain during activity.

44. RHUMATOID ARTHRITIS**AS limited mobility of aorta**

Clin Spine Surg. 2017 Aug;30(7):328-334. doi: 10.1097/BSD.0000000000000304.

Does the Position of the Aorta Change With the Altered Body Position in Ankylosing Spondylitis Patients With Thoracolumbar Kyphosis?: A Magnetic Resonance Imaging Investigation.

Qu Z¹, Bang-Ping Q, Qiu Y, Shi BL, Ji ML, Wang B, Yu Y, Zhu ZZ.

STUDY DESIGN:

A prospective magnetic resonance imaging study.

OBJECTIVE:

To quantitatively explore the differences in the anatomic position of the aorta relative to the spine between supine and prone positions in ankylosing spondylitis (AS) patients with thoracolumbar kyphosis.

SUMMARY OF BACKGROUND DATA:

Aortic complications may occur during the lumbar spine osteotomy in correcting thoracolumbar kyphosis secondary to AS, and a clear understanding of the spatial relationship between the aorta and the vertebrae is essential to prevent these iatrogenic complications. However, previous anatomic study was performed with AS patients in the supine position, which was different from the prone position adopted in surgery. To date, no report has been published to investigate the mobility of the aorta relative to the vertebrae between supine and prone positions in AS patients with thoracolumbar kyphosis.

MATERIALS AND METHODS:

From March 2013 to September 2014, 22 AS patients (21 males, 1 female) with thoracolumbar kyphosis with a mean age of 30.7 years (range, 19-46 y) were recruited. Magnetic resonance imaging examinations from T9 to L3 in both the supine and prone positions were performed, and the left pedicle-aorta (LtP-Ao) angle and LtP-Ao distance were measured at each level. The differences of these parameters between the 2 positions were compared by the paired sample t test, and the relationships between the shifting of the aorta and the change of global kyphosis and lumbar lordosis were evaluated by the Pearson correlation coefficient. The level of significance (α) was set at 0.05.

RESULTS:

At T9-L3 levels, no significant difference was noted in LtP-Ao distances (43.78 vs. 44.42 mm; $P=0.077$) and LtP-Ao angles (0.82 vs. 0.22 degrees; $P=0.053$) between supine and prone positions. The correlation analysis also revealed no remarkable correlation between the change of LtP-Ao angle and increase of global kyphosis and lumbar lordosis in the prone position.

CONCLUSIONS:

There is no significant change of the relative positions between the aorta and the vertebrae at T9-L3 levels after the patient turned to a prone position, which implied that the mobility and range of motion of the aorta is limited in advanced stage of AS.

45 A. MANUAL THERAPY LUMBAR & GENERAL**MT and ex**

Musculoskelet Sci Pract. 2017 Jul 21;31:62-71. doi: 10.1016/j.msksp.2017.07.005.

Manual therapy, exercise therapy or combined treatment in the management of adult neck pain - A systematic review and meta-analysis.

Fredin K¹, Lorås H².

BACKGROUND:

Neck pain is a common and often disabling musculoskeletal condition. Two therapies frequently prescribed for its management are manual therapy (MT) and exercise therapy (ET), and combining these treatment approaches are common.

OBJECTIVE:

To assess whether or not combined treatment consisting of MT and ET is more effective than either therapy alone in relieving pain and improving function in adult patients with grade I-II neck pain.

DESIGN:

Systematic review with meta-analysis.

METHODS:

A systematic search on EMBASE, MEDLINE, AMED, CENTRAL and PEDro were performed until June 2017. Randomized controlled trials with adult grade I-II neck pain patients were included if they investigated the combined effect of MT and ET to the same ET or MT alone, and reported pain intensity or disability on numerical scales. Quality of life was assessed as a secondary outcome. Quality of the included trials was assessed with the PEDro scale, and the quality of evidence was assessed with GRADE.

RESULTS:

1169 articles were screened, and 7 studies were included, all of which investigated the addition of ET to MT. Only very small and non-significant between group differences was found on pain intensity at rest, neck disability, and quality of life at immediate post-treatment, 6 months, and 12 months follow-up. The quality of evidence was moderate for pain-at-rest outcomes and moderate too low for neck disability and quality of life outcomes.

CONCLUSION:

Combined treatment consisting of MT and ET does not seem to be more effective in reducing neck pain intensity at rest, neck disability or improving quality of life in adult patients with grade I-II neck pain, than ET alone.

Kinesio tape does not add to effects of Manip in LBP

Comparing manipulation with and without Kinesio Taping in the treatment of chronic low back pain

Journal of Bodywork & Movement Therapies

Kamali F, et al.

This study was performed to examine whether adding Kinesio Tape (KT) to spinal manipulation (SM) could provide any extra effect in athletes with chronic non-specific low back pain (CNLBP) or not. The clinicians indicated that in athletes with CNLBP, adding KT to SM did not appear to have a significant extra effect on pain, disability and muscle endurance. However, to examine the therapeutic effects of KT in treating these patients, more studies were needed.

Methods

- The clinicians randomized 42 athletes (21males, 21females) with CNLBP into 2 groups of SM (n = 21) and SM plus KT (n = 21).
- They assessed pain intensity, functional disability level, and trunk flexor-extensor muscles endurance by Numerical Rating Scale (NRS), Oswestry pain and disability index (ODI), McQuade test, and unsupported trunk holding test, respectively.
- They performed the tests before and immediately, 1 day, 1 week, and 1 month after the interventions and compared between the two groups.

Results

- In both groups, pain intensity and disability level decreased and endurance of trunk flexor-extensor muscles increased significantly after treatments.
- However, repeated measures analysis demonstrated that there was no significant difference between the groups in any of the evaluations.

45 B. MANUAL THERAPY CERVICAL**Neck pain and MT**

Musculoskelet Sci Pract. 2017 Jul 21;31:62-71. doi: 10.1016/j.msksp.2017.07.005

Manual therapy, exercise therapy or combined treatment in the management of adult neck pain - A systematic review and meta-analysis.

Fredin K¹, Lorås H².

BACKGROUND:

Neck pain is a common and often disabling musculoskeletal condition. Two therapies frequently prescribed for its management are manual therapy (MT) and exercise therapy (ET), and combining these treatment approaches are common.

OBJECTIVE:

To assess whether or not combined treatment consisting of MT and ET is more effective than either therapy alone in relieving pain and improving function in adult patients with grade I-II neck pain.

DESIGN:

Systematic review with meta-analysis.

METHODS:

A systematic search on EMBASE, MEDLINE, AMED, CENTRAL and PEDro were performed until June 2017. Randomized controlled trials with adult grade I-II neck pain patients were included if they investigated the combined effect of MT and ET to the same ET or MT alone, and reported pain intensity or disability on numerical scales. Quality of life was assessed as a secondary outcome. Quality of the included trials was assessed with the PEDro scale, and the quality of evidence was assessed with GRADE.

RESULTS:

1169 articles were screened, and 7 studies were included, all of which investigated the addition of ET to MT. Only very small and non-significant between group differences was found on pain intensity at rest, neck disability, and quality of life at immediate post-treatment, 6 months, and 12 months follow-up. The quality of evidence was moderate for pain-at-rest outcomes and moderate too low for neck disability and quality of life outcomes.

CONCLUSION:

Combined treatment consisting of MT and ET does not seem to be more effective in reducing neck pain intensity at rest, neck disability or improving quality of life in adult patients with grade I-II neck pain, than ET alone.

54. POSTURE**Postural sway in truck drivers**

BMJ Open. 2017 Jul 12;7(7):e013281. doi: 10.1136/bmjopen-2016-013281.

Postural sway, working years and BMI in healthy truck drivers: an observational study.

Ohlendorf D¹, Troebs P¹, Lenk A¹, Wanke E¹, Natrup J², Groneberg D¹.

OBJECTIVES:

The following study analyses the influence of risk factors among the occupational group of truck drivers on postural control and body mass index (BMI).

DESIGN:

Observational study.

SETTING:

One motorway station close to several highways in Germany.

PARTICIPANTS:

180 truck drivers (177 male/3 female), aged 21-65 years old, took part in this study.

OUTCOME MEASURES:

Postural control was examined using a pressure plate. In order to examine the influence of body weight (BMI) and working years on postural control, subjects were divided into samples of five and three groups, respectively. Furthermore, it was evaluated whether the subjects suffered from back pain. For data analysis, the Kruskal-Wallis test was used as the data were not normally distributed. Once the p value of the Kruskal-Wallis test was $p \leq 0.05$, the Conover-Iman comparison and afterwards the Bonferroni-Holm correction were used. The significance level was set at $\alpha \leq 0.05$.

RESULTS:

Regarding the number of working years, a significant increase of frontal ($p \leq 0.04$) and sagittal ($p \leq 0.001$) sway were observed. The correlation of the five BMI groups with the number of working years demonstrates that an increase of the working years leads to an increase of BMI ($p \leq 0.03$). Furthermore, the majority of truck drivers participating in this study suffered from back pain (61.7%).

CONCLUSIONS:

BMI and musculoskeletal impairment are indicators of health risk factors. In this study, it is shown that an increasing number of working years and an increasing BMI lead to a decrease in frontal and sagittal postural sway. In addition, the number of working years correlates with body weight and back pain.

Subgrouping in LBP

Eur Spine J. 2017 Jul 21. doi: 10.1007/s00586-017-5217-1

Non-specific chronic low back pain: differences in spinal kinematics in subgroups during functional tasks.

Hemming R¹, Sheeran L², van Deursen R², Sparkes V².

PURPOSE:

A multidimensional classification approach suggests that motor control impairment subgroups exist in non-specific chronic low back pain (NSCLBP). Differences in sitting lumbar posture have been identified between two such subgroups [flexion pattern (FP) and active extension pattern (AEP)] and healthy individuals; however, functional spinal movement has not been explored. This study will evaluate whether NSCLBP subgroups exhibit regional spinal kinematic differences, compared to healthy individuals, during functional tasks.

METHODS:

Observational, cross-sectional study design. Spinal kinematics of 50 NSCLBP subjects (27 FP, 23 AEP) and 28 healthy individuals were investigated using 3D motion analysis (Vicon™) during functional tasks [reaching upwards, step down, step up, lifting, and replacing a box, stand-to-sit, sit-to-stand, bending to retrieve (and returning from retrieving) a pen from the floor]. Mean sagittal angle for the total thoracic, total lumbar, upper thoracic, lower thoracic, upper lumbar, and lower lumbar regions between groups was compared.

RESULTS:

Significant differences were observed in lower thoracic and upper lumbar regions between NSCLBP subgroups during most tasks. Significant differences were observed between the FP and healthy group in the lower thoracic region during stand-to-sit-to-stand tasks and bending (and returning from) to retrieve a pen from the floor. All significant results demonstrated the FP group to operate in comparatively greater flexion.

CONCLUSIONS:

The thoraco-lumbar spine discriminated between FP and AEP, and FP and healthy groups during functional tasks. FP individuals demonstrated more kyphotic thoraco-lumbar postures, which may be pain provocative. No significant differences were observed between AEP and healthy groups, suggesting that alternative mechanisms may occur in AEP.

55. SCOLIOSIS**Pain and curves**

Spine (Phila Pa 1976). 2017 Aug 1;42(15):E914-E919. doi: 10.1097/BRS.0000000000001986.

Back Pain Prevalence Is Associated With Curve-type and Severity in Adolescents With Idiopathic Scoliosis: A Cross-sectional Study.

Théroux J¹, Le May S, Hebert JJ, Labelle H.

STUDY DESIGN:

A cross-sectional study.

OBJECTIVES:

The aim of this study was to investigate spinal pain prevalence in adolescents with idiopathic scoliosis (AIS) and to explore associations between pain intensity and pain-related disability with scoliosis site, severity, and spinal bracing.

SUMMARY OF BACKGROUND DATA:

The causal link between spinal pain and AIS remains unclear. Spinal asymmetry has been recognized as a back pain risk factor, which is a known cause of care-seeking in adolescents.

METHODS:

Participants were recruited from an outpatient tertiary-care scoliosis clinic. Pain intensity and pain-related disability were measured by the Brief Pain Inventory questionnaire and the Roland-Morris Disability Questionnaire. Scoliosis severity estimation was performed using Cobb angles. Associations were explored using multiple linear regressions and reported with unstandardized beta coefficients (β) adjusted for age and sex.

RESULTS:

We recruited 500 patients (85% female) with mean (SD) age of 14.2 (1.8) years. Means (SD) of thoracic and lumbar Cobb angle were 24.54(9.77) and 24.13 (12.40), respectively. Spinal pain prevalence was 68% [95% confidence interval (95% CI): 64.5-72.4] with a mean intensity of 1.63 (SD, 1.89). Spinal pain intensity was positively associated with scoliosis severity in the main thoracic ($P=0.003$) and lumbar ($P=0.001$) regions. The mean (SD) disability score was 1.73 (2.98). Disability was positively associated with scoliosis severity in the proximal thoracic ($P=0.035$), main thoracic ($P=0.000$), and lumbar ($P=0.000$) regions. Spinal bracing was associated with lower spinal pain intensity in the thoracic ($P=0.000$) and lumbar regions ($P=0.009$). Bracing was also related with lower disability for all spinal areas ($P<0.045$).

CONCLUSION:

Spinal pain is common among patients with AIS, and greater spinal deformity was associated with higher pain intensity. These findings should inform clinical decision-making when caring for patients with AIS.

LEVEL OF EVIDENCE: 3.

56. ATHLETICS**Calf strains**

Br J Sports Med. 2017 Aug;51(16):1189-1194. doi: 10.1136/bjsports-2016-097177. Epub 2017 Mar 4.

Calf muscle strain injuries in sport: a systematic review of risk factors for injury.

Green B^{1,2}, Pizzari T^{1,2}.

OBJECTIVE:

To systematically review the literature to identify risk factors for calf strain injury, and to direct future research into calf muscle injuries.

DESIGN:

Systematic review DATA SOURCES: Database searches conducted for Medline, CINAHL, EMBASE, AMED, AUSPORT, SportDiscus, PEDro and Cochrane Library. Manual reference checks, ahead of press searches, citation tracking. From inception to June 2016.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES:

Studies evaluating and presenting data related to intrinsic or extrinsic risk factors for sustaining future calf injury.

RESULTS:

Ten studies were obtained for review. Subjects across football, Australian football, rugby union, basketball and triathlon were reported on, representing 5397 athletes and 518 calf/ lower leg muscle injuries. Best evidence synthesis highlights chronological age and previous history of calf strain are the strongest risk factors for future calf muscle injury. Previous lower limb injuries (hamstring, quadriceps, adductor, knee) show some limited evidence for an association. Numerous factors lack evidence of an association, including height, weight, gender and side dominance.

SUMMARY/CONCLUSION:

Increasing age and previous calf strain injury are the most predictive of future calf injury. The overall paucity of evidence and the trend for studies of a high risk of bias show that further research needs to be undertaken.

57. GAIT**Ankle motions and muscles during gait****Inter-individual similarities and variations in muscle forces acting on the ankle joint during gait**

Michalina Błażkiewicz Ida Wiszomirska Katarzyna Kaczmarczyk Roozbeh Naemi Andrzej Wit

DOI: <http://dx.doi.org/10.1016/j.gaitpost.2017.07.119>

Highlights

- Maximum-peaks of individual ankle muscles forces during gait is found.
- Variation in maximum-peaks of ankle muscle force across subjects was demonstrated.
- The order over which the muscles are sorted was determined.

Abstract

Muscle forces acting over the ankle joint play an important role in the forward progression of the body during gait. Yet despite the importance of ankle muscle forces, direct in-vivo measurements are neither possible nor practical.

This makes musculoskeletal simulation useful as an indirect technique to quantify the muscle forces at work during locomotion. The purpose of this study was to: 1) identify the maximum peaks of individual ankle muscle forces during gait; 2) investigate the order over which the muscles are sorted based on their maximum peak force. Three-dimensional kinematics and ground reaction forces were measured during the gait of 10 healthy subjects, and the data so obtained were input into the musculoskeletal model distributed with the OpenSim software.

In all 10 individuals we observed that the soleus muscle generated the greatest strength both in dynamic (1856.1N) and isometric (3549N) conditions, followed by the gastrocnemius in dynamic conditions (1232.5N).

For all other muscles, however, the sequence looks different across subjects, so the k-means clustering method was used to obtain one main order over which the muscles' peak-forces are sorted. The results indicate a common theme, with some variations in the maximum peaks of ankle muscle force across subjects.

58. RUNNING**Muscle activity****Hamstring and calf muscle activation as a function of bodyweight support during treadmill running in ACL reconstructed athletes**

Clint Hansen Einar Einarson Athol Thomson Rodney Whiteley Erik Witvrouw

DOI: <http://dx.doi.org/10.1016/j.gaitpost.2017.07.120>

Highlights

- Muscle activity changes during 16 km/h running trials with bodyweight support.
- Statistical Parametric Mapping confirmed differences during running cycles.
- In controls muscle activation is constant once relative loading reaches 80% BW.
- BTB and hamstring graft patients react differently to a relative loading increase.
- From 70% BW, no difference in hamstring activation patterns for any of the groups.

Abstract

Rehabilitation after injury and reconstruction to the anterior cruciate ligament is thought to require a gradual reintroduction of loading, particularly during resumption of running.

One strategy to achieve this is via the use of a reduced-gravity treadmill but it is unknown, if and how muscle activity varies in the reduced gravity conditions compared to regular treadmill running. Nineteen healthy participants and 18 male patients at the end of their rehabilitation (8 with a bone-patellar-bone graft, 10 with a hamstring graft) participated in this multi-muscle surface electromyography (sEMG) running study. The hamstrings and triceps surae were evaluated during a 16 km/h running while at 6 different relative bodyweight conditions from 50% (half weight-bearing) to 100% (full weight-bearing). Muscle activation was examined individually as well as normalized to a composite “entire” activation and considered across the entire gait cycle using Statistical Parametric Mapping.

The healthy participants showed differences between the 50-100% BW and 60- 100% conditions and in the hamstring graft group for 60-100% and 80-100% conditions. No differences were seen comparing all loading conditions in the bone-patellar-bone graft group. For the hamstrings, from 70% BW and above, there appear to be no difference in activation patterns for any of the groups.

The activation patterns of the hamstrings was essentially the same from 70% indicated bodyweight through to full weight bearing when running at 16 km/h. Accordingly, when running at this relatively high speed, we do not expect any adverse effects in terms of altered motor patterns during rehabilitation of these muscles.

62 A. NUTRITION/VITAMINS**Inflammatory diets and colon cancer**

Am J Epidemiol. 2017 May 9. doi: 10.1093/aje/kwx115.

Changes in the inflammatory potential of diet over time and risk of colorectal cancer in postmenopausal women.

Tabung FK, Steck SE, Ma Y, Liese AD, Zhang J, Lane DS, Ho GYF, Hou L, Snetselaar L, Ockene JK, Hebert JR.

We examined the associations between changes in dietary inflammatory potential and risk of colorectal cancer (CRC) in 87,042 postmenopausal women recruited from 1993-1998 into the Women's Health Initiative.

Food frequency questionnaire data were used to compute patterns of change in dietary inflammatory index (DII) scores and cumulative average DII scores over 3 years. Cox regression models were used to estimate hazard ratios for CRC risk. After a median 16.2 years follow-up, 1,038 CRC cases were diagnosed. DII changes were not substantially associated with overall CRC, but proximal colon cancer risk was higher in the pro-inflammatory change DII compared to the anti-inflammatory stable DII groups (hazard ratio = 1.32; 95% confidence interval: 1.01, 1.74). Among non-users of nonsteroidal anti-inflammatory drugs (NSAID) (Pinteraction = 0.055) the pro-inflammatory stable DII group was at increased risk of overall CRC and proximal colon cancer. Also among non-users of NSAID, risks of overall CRC, colon cancer, and proximal colon cancer were higher in the highest quintile compared to the lowest cumulative average DII quintile (65%, 61%, and 91% increased risk, respectively).

Dietary changes towards, or a history of, pro-inflammatory diets are associated with an elevated risk of colon cancer, particularly for proximal colon cancer and among non-users of NSAID.

Vit D 2

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Effects of Vitamin D2 Supplementation on Vitamin D3 Metabolism in Health and CKD.

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BACKGROUND AND OBJECTIVES:

Vitamin D supplements are prescribed to correct low circulating concentrations of 25-hydroxyvitamin D. In CKD, vitamin D metabolism is complicated by decreased conversion of 25-hydroxyvitamin D to 1,25-dihydroxyvitamin D by CYP27B1 and possibly decreased conversion of 25-hydroxyvitamin D to 24,25-dihydroxyvitamin D by CYP24A1. The aim of this study was to determine the effects of vitamin D₂ supplementation on vitamin D metabolism in health and CKD.

DESIGN, SETTING, PARTICIPANTS, & MEASUREMENTS:

We conducted a treatment-only intervention study of 25 individuals with CKD (eGFR<60 ml/min per 1.73 m²) and 44 individuals without CKD from three academic centers, all with screening 25-hydroxyvitamin D <30 ng/ml. Each participant was prescribed vitamin D₂ (ergocalciferol) 50,000 IU orally twice weekly for 5 weeks. We tested whether changes in plasma concentrations of vitamin D metabolites and vitamin D metabolic ratios differed by CKD status. Plasma 1,25-dihydroxyvitamin D₃-to-25-hydroxyvitamin D₃ ratio and 24,25-dihydroxyvitamin D₃-to-25-hydroxyvitamin D₃ ratio were calculated as estimates of CYP27B1 and CYP24A1 function, respectively.

RESULTS:

With treatment, plasma 25-hydroxyvitamin D₂ and total 25-hydroxyvitamin D concentrations increased similarly for participants with and without CKD. For participants without CKD, 1,25-dihydroxyvitamin D₂ increased (2.8±1.3-32.9±1.4 pg/ml), whereas 1,25-dihydroxyvitamin D₃ decreased (45.6±1.9-14.6±1.9 pg/ml), resulting in no significant change in total 1,25-dihydroxyvitamin D; 1,25-dihydroxyvitamin D₃-to-25-hydroxyvitamin D₃ ratio decreased (3.0±0.2-1.7±0.2 pg/ng), and 24,25-dihydroxyvitamin D₃-to-25-hydroxyvitamin D₃ ratio increased (115.7±7.8-195.2±7.9 pg/ng). Individuals with CKD had lower baseline levels and smaller changes in magnitude for 1,25-dihydroxyvitamin D₂ (2.1±1.6-24.4±1.6 pg/ml; *P* interaction =0.01), 1,25-dihydroxyvitamin D₃-to-25-hydroxyvitamin D₃ratio (1.8±0.2-1.1±0.2 pg/ng; *P* interaction =0.05), and 24,25-dihydroxyvitamin D₃-to-25-hydroxyvitamin D₃ ratio (72.0±9.1-110.3±9.3 pg/ng; *P* interaction <0.001). Fibroblast growth factor-23 and parathyroid hormone were not significantly changed in either group.

CONCLUSIONS:

Vitamin D₂ supplementation decreases conversion of 25-hydroxyvitamin D₃ to 1,25-dihydroxyvitamin D₃ and induces vitamin D₃ catabolism as evidenced by changes in D₃ metabolites and vitamin D metabolic ratios. These effects occur without significant changes in fibroblast growth factor-23 or parathyroid hormone and are blunted in CKD.

Organic foods decrease chance of metabolic syndrome

Eur J Nutr. 2017 Aug 2. doi: 10.1007/s00394-017-1520-1.

Association between organic food consumption and metabolic syndrome: cross-sectional results from the NutriNet-Santé study.

Baudry J¹, Lelong H², Adriouch S², Julia C², Allès B², Hercberg S^{2,3}, Touvier M², Lairon D⁴, Galan P², Kesse-Guyot E².

PURPOSE:

Metabolic syndrome (MetS), a multicomponent condition, is a cardiovascular disease predictor. Although exposure to agricultural pesticides has been suggested as a potential contributor to the rising rates of obesity, type 2 diabetes, and other features of metabolic disorders, no studies have focused on the association between consumption of organic food (produced without synthetic pesticides) and MetS. We aimed to investigate the cross-sectional association between organic food consumption and MetS in French adults to determine whether it would be worth conducting further studies, particularly large prospective and randomised trials.

METHODS:

A total of 8174 participants from the NutriNet-Santé study who attended a clinical visit and completed an organic food frequency questionnaire were included in this cross-sectional analysis. We evaluated the association between the proportion of organic food in the diet (overall and by food group) and MetS using Poisson regression models while adjusting for potential confounders.

RESULTS:

Higher organic food consumption was negatively associated with the prevalence of MetS: adjusted prevalence ratio was 0.69 (95% CI 0.61, 0.78) when comparing the third tertile of proportion of organic food in the diet with the first one (p value <0.0001). Higher consumption of organic plant-based foods was also related to a lower probability of having MetS. In addition, when stratifying by lifestyle factors (nutritional quality of the diet, smoking status, and physical activity), a significant negative association was detected in each subgroup (p values <0.05), except among smokers.

CONCLUSIONS:

Our results showed that a higher organic food consumption was associated with a lower probability of having MetS. Additional prospective studies and randomised trials are required to ascertain the relationship between organic food consumption and metabolic disorders.

Men and veg diet and depression

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Vegetarian diets and depressive symptoms among men.

Hibbeln JR¹, Northstone K², Evans J², Golding J².

BACKGROUND:

Vegetarian diets are associated with cardiovascular and other health benefits, but little is known about mental health benefits or risks.

AIMS:

To determine whether self-identification of vegetarian dietary habits is associated with significant depressive symptoms in men.

METHOD:

Self-report data from 9668 adult male partners of pregnant women in the Avon Longitudinal Study of Parents and Children (ALSPAC) included identification as vegetarian or vegan, dietary frequency data and the Edinburgh Post Natal Depression Scale (EPDS). Continuous and binary outcomes were assessed using multiple linear and logistic regression taking account of potential confounding variables including: age, marital status, employment status, housing tenure, number of children in the household, religion, family history of depression previous childhood psychiatric contact, cigarette and alcohol consumption.

RESULTS:

Vegetarians [n = 350 (3.6% of sample)], had higher depression scores on average than non-vegetarians (mean difference 0.96 points [95%CI + 0.53, + 1.40]) and a greater risk for EPDS scores above 10 (adjusted OR = 1.67 [95% CI: 1.14,2.44]) than non-vegetarians after adjustment for potential confounding factors.

CONCLUSIONS:

Vegetarian men have more depressive symptoms after adjustment for socio-demographic factors. Nutritional deficiencies (e.g. in cobalamin or iron) are a possible explanation for these findings, however reverse causation cannot be ruled out.

63. PHARMACOLOGY**Opioids and smoking**

Clin J Pain. 2017 Aug;33(8):730-737. doi: 10.1097/AJP.0000000000000461.

Smoking Status and Opioid-related Problems and Concerns Among Men and Women on Chronic Opioid Therapy.

Young-Wolff KC¹, Klebaner D, Weisner C, Von Korff M, Campbell CI.

OBJECTIVES:

Smokers on chronic opioid therapy (COT) for noncancer pain use prescription opioids at higher dosages and are at increased risk for opioid misuse and dependence relative to nonsmokers. The current study aims to assess whether smoking is associated with problems and concerns with COT from the perspective of the patient.

MATERIALS AND METHODS:

In a large sample (N=972) of adult patients prescribed opioids for chronic noncancer pain, we examined sex-specific associations between smoking status and patient perceptions of problems and concerns with COT using regression analyses, adjusting for covariates.

RESULTS:

The sample self-identified as 27% current smokers, 44% former smokers, and 29% never smokers. Current smoking (vs. never smoking) was associated with increased odds of an opioid use disorder among males and females, and higher daily opioid dose among males only. Current and former smokers reported significantly fewer problems with opioids relative to never smokers, and this was driven primarily by lower endorsement of problems that are affected by the stimulant properties of nicotine (eg, difficulties thinking clearly, felt less alert or sleepy).

DISCUSSION:

This study contributes to an understanding of perceived problems and concerns with COT among current, former, and never smokers with chronic noncancer pain. Results suggest that current and former smokers may be a difficult population to target to decrease COT, given that they perceive fewer problems with prescription opioid use, despite higher odds of having an opioid use disorder (males and females) and greater opioid doses (males only).