

4. INJECTIONS

Complications

Incidence of Local Anesthetic Systemic Toxicity in Orthopedic Patients Receiving Peripheral Nerve Blocks.

Mörwald EE¹, Zubizarreta N, Cozowicz C, Poeran J, Memtsoudis SG.

BACKGROUND AND OBJECTIVES:

Peripheral nerve blocks are increasingly used. However, despite low complication rates, concerns regarding local anesthetic systemic toxicity remain. Although recent studies suggest that this severe complication has decreased considerably, there is a paucity of data about it on a national level. We sought to elucidate the incidence of local anesthetic systemic toxicity on a national level and therefore provide guidance toward the need for preparedness in daily anesthetic practice.

METHODS:

We searched a large administrative database for patients who received peripheral nerve blocks for total joint arthroplasties from 2006 to 2014. Their discharge and billing data were analyzed for International Classification of Diseases, Ninth Revision, Clinical Modification codes coding for local anesthetic systemic toxicity or surrogate outcomes including cardiac arrest, seizures, and use of lipid emulsion on the day of surgery. Rates for these outcomes were determined cumulatively and over time.

RESULTS:

We identified 238,473 patients who received a peripheral nerve block within the study period. The cumulative rate of outcomes among these patients in the study period was 0.18%. There was a significant decrease of overall outcome rates between 2006 and 2014. Use of lipid emulsion on the day of surgery increased significantly in total knee replacement from 0.02% 2006 to 0.26% in 2014.

CONCLUSIONS:

The incidence of local anesthetic systemic toxicity is low but should be considered clinically significant. Since it may cause substantial harm to the patient, appropriate resources and awareness to identify and treat local anesthetic systemic toxicity should be available wherever regional anesthesia is performed.

7. PELVIC ORGANS/WOMAN'S HEALTH

Prolapse and physical activity

Int Urogynecol J. 2017 Jun 17. doi: 10.1007/s00192-017-3356-x.

Physical activity and pelvic floor muscle training in patients with pelvic organ prolapse: a pilot study.

Ouchi M¹, Kato K², Gotoh M³, Suzuki S⁴.

Abstract

INTRODUCTION AND HYPOTHESIS:

The details of the physical activity in patients with mild to moderate pelvicorgan prolapse (Pmoderate pelvic organ prolapse (POP) remain under-studied. The purpose of the present study was to investigate objective physical activity levels and the changes in pelvic floor muscle(PFM) strength, symptoms and quality of life (QOL) between before and after PFM training (PFMT) in patients with POP.

METHODS:

In a prospective pilot study, 29 patients with stage II or III POP completed approximately 16 weeks of PFMT. A reliable activity monitor was used to measure physical activity parameters including step counts, activity and total calories expended, and duration at each intensity level. Maximum vaginal squeeze pressure, POP symptoms and QOL were assessed. Changes in these outcome measures were compared before and after PFMT.

RESULTS:

The step counts per day (mean \pm SD) of women with POP was $7,272.9 \pm 3,091.7$ before PFMT and $7,553.4 \pm 2,831.0$ after PFMT. There was no significant change between before and PFMT. PFM strength was significantly increased after PFMT. POP-related symptoms including stress urinary incontinence, frequency, postmicturition dribble and interference with emptying the bowels were significantly improved. The QOL scores for general health, physical limitations, emotion, and severity measures were significantly improved after PFMT.

CONCLUSIONS:

Although PFMT changed PFM strength symptoms, and QOL, there were no changes for any physical activity parameters before and after PFMT. This is probably because the physical activity levels in patients with mild to moderate POP were almost same as in age-matched healthy women.

Levator ani and prolapses

Int Urogynecol J. 2017 Jun 15. doi: 10.1007/s00192-017-3390-8.

Levator ani defects and the severity of symptoms in women with anterior compartment pelvic organ prolapse.

Oversand SH^{1,2}, Staff AC^{3,4}, Sandvik L⁵, Volløyhaug I⁶, Svenningsen R³.

Author information**Abstract****INTRODUCTION AND HYPOTHESIS:**

The aims of this study were to evaluate the prevalence of levator ani muscle(LAM) avulsions in a selected cohort of patients with primary anterior compartment pelvic organ prolapse (POP) and to assess whether LAM avulsions, as an independent factor, affect the degree of POP symptoms and sexualdysfunction. Additionally, clinical and demographic variables of women with and those without avulsions were compared.

METHODS:

We carried out a cross-sectional analysis of a prospective cohort study including 197 women scheduled for anterior compartment POP surgery. LAM avulsions were diagnosed on transperineal 4D ultrasound. Preoperative symptom severity and sexual dysfunction were evaluated using validated questionnaires (Pelvic Floor Disability Index [PFDI-20] and Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire-Short Form 12 [PISQ-12]). Linear regression was performed with avulsion as the main independent variable against total PFDI-20 and domain scores, bulge symptoms, and PISQ-12 score. Clinical and demographic variables for women with and without avulsions were compared using independent samples t test, Mann-Whitney U test or Chi-squared test.

RESULTS:

The prevalence of LAM avulsions was 50.3%. Avulsions were not associated with symptom severity or sexual dysfunction. "Chronic disease causing pain, fatigue or increased intra-abdominal pressure" was the only independent factor associated with all domains of the PFDI-20. Women with avulsions were younger at presentation, older at their first delivery, had lower BMI, and more often had a history of forceps delivery ($p < 0.01$).

CONCLUSIONS:

LAM avulsions were highly prevalent in this preoperative POP cohort. Avulsions were not associated with the severity of POP symptoms or sexual dysfunction. Women with avulsions seem to require fewer additional cofactors for developing POP.

Probiotics and IBS

Aliment Pharmacol Ther. 2017 Jun 27. doi: 10.1111/apt.14203. [Epub ahead of print]

Systematic review with meta-analysis: the efficacy of probiotics in inflammatory bowel disease.

Derwa Y^{1,2}, Gracie DJ^{1,2}, Hamlin PJ¹, Ford AC^{1,2}.

Author information**Abstract****BACKGROUND:**

Ulcerative colitis (UC) and Crohn's disease (CD) are inflammatory bowel diseases (IBD). Evidence implicates disturbances of the gastrointestinal microbiota in their pathogenesis.

AIM:

To perform a systematic review and meta-analysis to examine the efficacy of probiotics in IBD.

METHODS:

MEDLINE, EMBASE, and the Cochrane Controlled Trials Register were searched (until November 2016). Eligible randomised controlled trials (RCTs) recruited adults with UC or CD, and compared probiotics with 5-aminosalicylates (5-ASAs) or placebo. Dichotomous symptom data were pooled to obtain a relative risk (RR) of failure to achieve remission in active IBD, or RR of relapse of disease activity in quiescent IBD, with 95% confidence intervals (CIs).

RESULTS:

The search identified 12 253 citations. Twenty-two RCTs were eligible. There was no benefit of probiotics over placebo in inducing remission in active UC (RR of failure to achieve remission=0.86; 95% CI=0.68-1.08). However, when only trials of VSL#3 were considered there appeared to be a benefit (RR=0.74; 95% CI=0.63-0.87). Probiotics appeared equivalent to 5-ASAs in preventing UC relapse (RR=1.02; 95% CI=0.85-1.23). There was no benefit of probiotics in inducing remission of active CD, in preventing relapse of quiescent CD, or in preventing relapse of CD after surgically induced remission.

CONCLUSIONS:

VSL#3 may be effective in inducing remission in active UC. Probiotics may be as effective as 5-ASAs in preventing relapse of quiescent UC. The efficacy of probiotics in CD remains uncertain, and more evidence from RCTs is required before their utility is known.

IBS and low FODMAP helps

Gastroenterology. 2017 Jun 15. pii: S0016-5085(17)35744-X. doi: 10.1053/j.gastro.2017.06.010.

Diet Low in FODMAPs Reduces Symptoms in Patients with Irritable Bowel Syndrome and Probiotic Restores Bifidobacterium Species: a Randomized Controlled Trial.

Staudacher HM¹, Lomer MCE², Farquharson FM³, Louis P³, Fava F⁴, Franciosi E⁴, Scholz M⁴, Tuohy KM⁴, Lindsay JO⁵, Irving PM⁶, Whelan K⁷.

BACKGROUND & AIMS:

Dietary restriction of fermentable carbohydrates (a low FODMAP diet) has been reported to reduce symptoms in some patients with irritable bowel syndrome (IBS). We performed a randomized, placebo-controlled study to determine its effects on symptoms and the fecal microbiota in patients with IBS.

METHODS:

We performed a 2x2 factorial trial of 104 patients with IBS (18-65 years old), based on the Rome III criteria, at 2 hospitals in the United Kingdom. Patients were randomly assigned (blinded) to groups given counselling to follow a sham diet or diet low in FODMAPs for 4 weeks, along with a placebo or probiotic supplement (VSL#3), resulting in 4 groups (27 receiving sham diet/placebo, 26 receiving sham diet/probiotic, 24 receiving low FODMAP diet /placebo, and 27 receiving low FODMAP diet /probiotic). The sham diet restricted a similar number of staple and non-staple foods as the low FODMAP diet; the diets had similar degrees of difficulty to follow. Dietary counselling was given to patients in all groups and data on foods eaten and compliance were collected. The incidence and severity of 15 gastrointestinal symptoms and overall symptoms were measured daily for 7 days before the study period; along with stool frequency and consistency. At baseline, global and individual symptoms were measured, along with generic and disease-specific health-related quality of life, using standard scoring systems. All data were collected again at 4 weeks, and patients answered questions about adequate symptom relief. Fecal samples were collected at baseline and after 4 weeks and analyzed by quantitative PCR and 16S rRNA sequencing. The co-primary endpoints were adequate relief of symptoms and stool Bifidobacterium species abundance at 4 weeks.

RESULTS: There was no significant interaction between the interventions in adequate relief of symptoms ($P=.52$) or Bifidobacterium species ($P=.68$). In the intention-to-treat analysis, a higher proportion of patients in the low FODMAP diet had adequate symptom relief (57%) vs than in the sham diet group (38%), although the difference was not statistically significant ($P=.051$). In the per-protocol analysis, a significantly higher proportion of patients on the low FODMAP diet had adequate symptom relief (61%) than in the sham diet group (39%) ($P=.043$). Total mean IBS- Severity Scoring System score was significantly lower for patients on the low FODMAP diet (173 ± 95) than the sham diet (224 ± 89) ($P=.001$), but not different between those given probiotic (207 ± 98) or placebo (192 ± 93) ($P=.721$). Abundance of Bifidobacterium species was lower in fecal samples from patients on the low FODMAP diet (8.8 rRNA genes/g) than patients on the sham diet (9.2 rRNA genes/g) ($P=.008$), but higher in patients given probiotic (9.1 rRNA genes/g) than patients given placebo (8.8 rRNA genes/g) ($P=.019$). There was no effect of the low FODMAP diet on microbiota diversity in fecal samples.

CONCLUSIONS:

In a placebo-controlled study of patients with IBS, a low FODMAP diet associates with adequate symptom relief and significantly reduced symptom scores compared with placebo. It is not clear whether changes resulted from collective FODMAP restriction or removal of a single component, such as lactose. Co-administration of the probiotic VSL#3 increased numbers of Bifidobacterium species, compared with placebo, and might be given to restore these bacteria to patients on a low FODMAP diet. Trial registration no: ISRCTN02275221.

Probiotics

Arch Gerontol Geriatr. 2017 Jul;71:142-149. doi: 10.1016/j.archger.2017.04.004. Epub 2017 Apr 14.

The effect of probiotics as a treatment for constipation in elderly people: A systematic review.

Martínez-Martínez MI¹, Calabuig-Tolsá R¹, Cauli O².

Author information

Abstract

PURPOSE:

Treating constipation in elderly people remains a challenge; the administration of probiotics may be a valid therapy for this problem as an alternative to traditional drug-based treatments. The objective of this systematic review was to evaluate the efficiency of probiotics in treating constipation in elderly people.

METHODS:

Articles related to this topic and published, without any time limitations, in the Medline, Embase, Scopus, Lilacs, or Cochrane databases were systematically reviewed according to Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. The primary search terms were 'constipation' and 'probiotics'. The main inclusion criteria were: 1) the article was original and the whole text was published in English or Spanish and 2) included the primary search terms in the title, summary, or body text; 3) the studies had to have included 60 or more participants defined as 'elderly' and 4) have specifically evaluated the effect of the administration of probiotics.

RESULTS:

Of the 475 articles consulted, 9 met the inclusion criteria. Among the selected studies, there were four randomised and placebo-controlled trials and the remaining five reports were observational. Overall, our analysis of the randomised and placebo-controlled trials suggests that administration of probiotics significantly improved constipation in elderly individuals by 10-40% compared to placebo controls in which no probiotic was administered. The strain of bacteria most commonly tested was *Bifidobacterium longum*. However, caution is needed when interpreting these reports because of the heterogeneity of the original study designs, populations, and the risk of bias. Therefore, further placebo-controlled trials are necessary to determine the most efficient strains, doses, and the optimal treatment duration.

Sexual incontinence

Am J Obstet Gynecol. 2017 Jun 8. pii: S0002-9378(17)30733-0. doi: 10.1016/j.ajog.2017.05.069.

Urine leakage during sexual activity among ethnically diverse, community-dwelling middle-aged and older women.

Munaganuru N¹, van den Eeden SK², Creasman J³, Subak LL⁴, Strano-Paul L¹, Huang AJ⁵.

Abstract**BACKGROUND:**

Urinary incontinence is associated with decreased female sexual function, but little is known about the prevalence, predictors, and impact of urine leakage during sexual activity among women in the community.

OBJECTIVE: The purpose of this study was to evaluate the prevalence and impact of urine leakage during sex in ethnically diverse, community-dwelling midlife and older women.

STUDY DESIGN:

Urinary incontinence and sexual function were assessed by structured questionnaire in a multiethnic, community-based cohort of women enrolled in Kaiser Permanente Northern California, an integrated healthcare delivery system in California. All women were aged 40-80 years and sampled from 1 of 4 racial/ethnic groups (20% black, 20% Latina, 20% Asian, and 40% non-Latina white). Differences in frequency, bother, and fear of urine leakage during sexual activity were examined among women with monthly, weekly, and daily urinary incontinence and across different types of urinary incontinence (stress, urgency, mixed, and other type urinary incontinence), with the use of chi-square tests. Independent risk factors for urine leakage during sexual activity were identified through multivariable logistic regression.

RESULTS:

Of the 509 women who reported being sexually active and having at least monthly urinary incontinence, 127 of them (25%) reported experiencing any urine leakage during sex during the past 3 months. Nineteen percent of the women reported being subjectively bothered by leakage during sex, and 16% of them reported restricting sexual activity because of fear of leakage. Women with more frequent underlying urinary incontinence were more likely to report experiencing or being bothered by leakage during sex and restricting sexual activity because of fear of leakage ($P < .001$ for all). Participants with predominantly stress or mixed type urinary incontinence were more likely to report experiencing leakage during sex and being subjectively bothered by this leakage ($P < .002$ for all). Factors independently associated with leakage during sex were depression (odds ratio, 1.96; 95% confidence interval, 1.20-3.20), symptomatic pelvic organ prolapse (odds ratio, 2.10; 95% confidence interval, 1.11-3.98), mixed vs urgency type urinary incontinence (odds ratio, 3.16; 95% confidence interval, 1.70-5.88), stress vs urgency type urinary incontinence (odds ratio, 1.94; 95% confidence interval, 1.01-3.70), and frequency of sexual activity (odds ratio, 1.6395% confidence interval, 1.05-2.55), but not age or race/ethnicity.

CONCLUSIONS:

Up to a quarter of women with at least monthly urinary incontinence in the community may experience urine leakage during sexual activity. Many incontinent women who leak urine during sex remain sexually active, which indicates that the preservation of sexual function should still be a priority in this population. Among incontinent women, depression, pelvic organ prolapse, and stress mixed-type urinary incontinence may be associated with urine leakage during sexual

PMID:28602772 DOI:10.1016/j.ajog.2017.05.069

Urinary incontinence post-Partum

Acta Obstet Gynecol Scand. 2017 Jun 19. doi: 10.1111/aogs.13183.

Delivery parameters, neonatal parameters and incidence of urinary incontinence 6 months postpartum: a cohort study.

Wesnes SL¹, Hannestad Y¹, Rortveit G^{1,2}.

INTRODUCTION:

Contradictory results have been reported regarding most delivery parameters as risk factors for urinary incontinence. We investigated the association between incidence of urinary incontinence six months postpartum and single obstetric risk factors as well as combinations of risk factors.

MATERIAL AND METHOD:

This study was based on the Norwegian Mother and Child Cohort Study, conducted by the Norwegian Institute of Public Health during 1998-2008. This substudy was based on 7561 primiparous women who were continent before and during pregnancy. Data were obtained from questionnaires answered at weeks 15 and 30 of pregnancy and 6 months postpartum. Data were linked to the Medical Birth Registry of Norway. Single and combined delivery- and neonatal parameters were analyzed by logistic regression analyses.

RESULTS:

Birthweight was associated with significantly higher risk of urinary incontinence 6 months postpartum (3541 - 4180 g; OR 1.4, 95% CI: 1.2-1.6, > 4180 g: OR 1.6, 95% CI: 1.2-2.0). Fetal presentation, obstetric anal sphincter injuries, episiotomy and epidural analgesia were not significantly associated with increased risk of urinary incontinence. The following combinations of risk factors among women delivering by spontaneous vaginal delivery increased the risk of urinary incontinence 6 months postpartum; birthweight \geq 3540 g and \geq 36 cm head circumference; birthweight \geq 3540 g and forceps, birthweight \geq 3540 g and episiotomy; and \geq 36 cm head circumference and episiotomy.

CONCLUSION:

Some combinations of delivery parameters and neonatal parameters seem to act together and may increase the risk of incidence of urinary incontinence 6 months postpartum in a synergetic way.

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Scoliosis and pregnancy

Eur Spine J. 2017 Jun 29. doi: 10.1007/s00586-017-5203-7.

The influence of pregnancy on women with adolescent idiopathic scoliosis.

Dewan MC¹, Mummareddy N², Bonfield C².

Abstract

PURPOSE:

The study's aim was to address three fundamental questions related to pregnancy and adolescent idiopathic scoliosis (AIS), and provide clinically applicable answers to spine specialists and general practitioners alike.

METHODS:

The authors performed a systematic literature review using MEDLINE, EMBASE, Google Scholar, and Cochrane Database of Systematic Reviews to identify articles published between 1980 and 2015 that described pregnancy-related characteristics and outcomes in AIS patients. The search was conducted using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines and evidence was classified according to the Oxford CEBM (Centre for Evidence-Based Medicine) appraisal tool.

RESULTS:

Twenty-two articles incorporating more than 3125 AIS patients were included. All studies concluded level 2b evidence or lower. Nulliparity rates were slightly higher among AIS patients, and more frequent infertility treatment was required. Pregnancy-related back pain was common, and while non-disabling, may have been more severe than in healthy women. Minor curve progression often occurred during pregnancy, though its permanence was questioned and significance unknown. Back pain and curve progression occurred independent of AIS treatment modality. With modern technology, anesthetic and obstetric complications in the perinatal period were not elevated in AIS mothers.

CONCLUSIONS:

Women with AIS experience slightly elevated rates of nulliparity, infertility treatment, prepartum back pain, and peripartum curve progression. However, most women are able to have children and are not at increased risk of pregnancy-related complications. Higher quality evidence is needed to better define these relationships and allow more guided counseling and treatment.

PTSD in pregnant women with HA's

J Headache Pain. 2017 Dec;18(1):67. doi: 10.1186/s10194-017-0775-5. Epub 2017 Jul 6.

Migraine and the risk of post-traumatic stress disorder among a cohort of pregnant women.

Friedman LE¹, Aponte C², Perez Hernandez R², Velez JC³, Gelaye B^{4,5}, Sánchez SE^{6,7}, Williams MA⁴, Peterlin BL⁸.

Abstract

BACKGROUND:

Individually both migraine and post-traumatic stress disorder (PTSD) prevalence estimates are higher among women. However, there is limited data on the association of migraine and PTSD in women during pregnancy.

METHODS:

We examined the association between migraine and PTSD among women attending prenatal clinics in Peru. Migraine was characterized using the International Classification of Headache Disorders (ICHD)-III beta criteria. PTSD was assessed using the PTSD Checklist-Civilian Version (PCL-C). Multivariable logistic regression analyses were performed to estimate odds ratios (OR) and 95% confidence intervals (CI) after adjusting for confounders.

RESULTS:

Of the 2922 pregnant women included, 33.5% fulfilled criteria for any migraine (migraine 12.5%; probable migraine 21.0%) and 37.4% fulfilled PTSD criteria. Even when controlling for depression, women with any migraine had almost a 2-fold increased odds of PTSD (OR: 1.97; 95% CI: 1.64-2.37) as compared to women without migraine. Specifically, women with migraine alone (i.e. excluding probable migraine) had a 2.85-fold increased odds of PTSD (95% CI: 2.18-3.74), and women with probable migraine alone had a 1.61-fold increased odds of PTSD (95% CI: 1.30-1.99) as compared to those without migraine, even after controlling for depression. In those women with both migraine and comorbid depression, the odds of PTSD in all migraine categories were even further increased as compared to those women without migraine.

CONCLUSION:

In a cohort of pregnant women, irrespective of the presence or absence of depression, the odds of PTSD is increased in those with migraine. Our findings suggest the importance of screening for PTSD, specifically in pregnant women with migraine

Pelvic floor**Impact of Pelvic Floor Muscle Training on Sexual function of women with Urinary Incontinence and a comparison of electrical stimulation versus standard treatment (IPSU Trial): a randomised controlled trial**

Stephen J. Walters, Oscar Bortolami, Simon Dixon, Abualbishr Alshreef

DOI: <http://dx.doi.org/10.1016/j.physio.2017.06.003>

Aims

To evaluate the clinical and cost-effectiveness of electric stimulation plus standard pelvic floor muscle training compared to standard pelvic floor muscle training alone in women with urinary incontinence and sexual dysfunction.

Methods

Single centre two arm parallel group randomised controlled trial conducted in a Teaching hospital in England. Participants were women presenting with urinary incontinence and sexual dysfunction. The interventions compared were electric stimulation versus standard pelvic floor muscle training. Outcome measures included Prolapse and Incontinence Sexual function Questionnaire (PISQ) physical function dimension at post-treatment (primary); other dimensions of PISQ, SF-36; EQ-5D, EPAQ, resource use, adverse events and cost-effectiveness (secondary outcomes).

Results

114 women were randomised (Intervention n = 57; Control group n = 57). 64/114 (56%) participants had valid primary outcome data at follow-up (Intervention 30; Control 34). The mean PISQ-PF dimension scores at follow-up were 33.1 (SD 5.5) and 32.3 (SD 5.2) for the Intervention and Control groups respectively; with the Control group having a higher (better) score. After adjusting for baseline score, BMI, menopausal status, time from randomisation and baseline oxford scale score the mean difference was -1.0 (95% CI: -4.0 to 1.9; P = 0.474).

There was no differences between the groups in any of the secondary outcomes at follow-up. Within this study, the use of electrical stimulation was cost-effective with very small incremental costs and quality adjusted life years (QALYs).

Conclusions

In women presenting with urinary incontinence in conjunction with sexual dysfunction, physiotherapy is beneficial to improve overall sexual function. However no specific form of physiotherapy is beneficial over another.

Trial registration ISRCTN09586238.

8. VISCERA

IBS and constipation

Bile acid deficiency in subgroup of patients with irritable bowel syndrome with constipation based on biomarkers in serum and fecal samples

Clinical Gastroenterology and Hepatology

Vijayvargiya P, et al.

Objectives of this study were to compare levels of primary and secondary bile acids (BAs) in fecal samples collected over a 48-hr period from patients with irritable bowel syndrome with constipation (IBS-C) on a diet that contained 100 g fat per day, and compared them with levels in samples from healthy volunteers (controls) also to investigate the relationship between overall colonic transit and biomarkers of BAs in patients with IBS-C. The authors concluded that about 15% of patients with IBS-C had decreased total BAs and level of deoxycholic acid in fecal samples collected over 48 hrs on a 100 g fat diet. Lower levels of excretion of BAs into feces associated with slower colonic transit in these patients.

Methods

- A retrospective study of 45 patients with IBS-C and 184 controls was performed.
- The authors estimated the 10th percentile of fasting serum levels of C4 (n=184) and 48-hr fecal BAs (n=46), and the 90th percentile of fasting serum level of fibroblast growth factor 19 (FGF19, n=50) for controls.
- Using a validated scintigraphic method, colonic transit was measured in patients.
- They examined data from patients with IBS-C using Spearman correlations to determine relationships among levels of C4, FGF19, fecal BAs, and colonic transit.

Results

- 2/45 had low serum levels of C4, 4/43 had increased serum levels of FGF19, and 6/39 had low levels of BAs in feces collected over 48-hrs among the patients with IBS-C.
- Compared with controls (P=.04), patients with IBS-C had a significant increase in proportions of fecal lithocholic acid and decrease in deoxycholic acid compared to controls (P=.03).
- The authors found inverse associations between serum levels of C4 and FGF19 and correlations among levels of 48-hr fecal BAs, colonic transit, and serum C4 and FGF19 in patients with IBS-C.

Celiac disease

Dig Dis Sci. 2017 Jul 7. doi: 10.1007/s10620-017-4666-z

Symptoms of Functional Intestinal Disorders Are Common in Patients with Celiac Disease Following Transition to a Gluten-Free Diet.

Silvester JA^{1,2,3}, Graff LA¹, Rigaux L⁴, Bernstein CN¹, Leffler DA³, Kelly CP³, Walker JR¹, Duerksen DR^{5,6,7}.

Abstract

BACKGROUND:

Celiac disease and functional intestinal disorders may overlap, yet the natural history of functional symptoms in patients with celiac disease is unknown.

AIM:

To investigate the prevalence of irritable bowel syndrome (IBS), functional dyspepsia (FD), and functional bloating (FB) symptoms among patients with celiac disease at diagnosis and during the first year of a gluten-free diet.

METHODS:

Adults with a new diagnosis of celiac disease were surveyed at baseline, 6 months and 1 year using standardized measures for intestinal symptoms [Rome III diagnostic questionnaire and celiac symptom index (CSI)] and gluten-free diet adherence [gluten-free eating assessment tool (GF-EAT) and celiac diet adherence test].

RESULTS:

At diagnosis, two-thirds fulfilled Rome III diagnostic questionnaire symptom criteria for IBS (52%), functional dyspepsia (27%), and/or functional bloating (9%). One year post-diagnosis, there was high adherence to a gluten-free diet as 93% reported gluten exposure less than once per month on the GF-EAT and only 8% had ongoing celiac disease symptoms (CSI score >45). The rates of those meeting IBS (22%) and functional dyspepsia (8%) symptom criteria both decreased significantly on a gluten-free diet. The prevalence of functional symptoms (any of IBS, FD or FB) at 1 year was 47%.

CONCLUSIONS:

Long-term follow-up of patients with celiac disease is necessary because many patients with celiac disease who are adherent to a gluten-free diet have persistent gastrointestinal symptoms.

Migraines and IBS

J Clin Neurosci. 2017 Jul 7. pii: S0967-5868(17)30394-6. doi: 10.1016/j.jocn.2017.06.009.

The effect of anxiety and depression on the risk of irritable bowel syndrome in migraine patients.

Wu MF¹, Yang YW¹, Chen YY².

Abstract

Bidirectional co-morbidity between migraine and depression has been observed. Mood disorders are associated with an increased risk of both migraine and irritable bowel syndrome (IBS). The aim of this study was to evaluate the risk of developing IBS in patients with migraine and to compare the risks between those with and without anxiety or depression. This research used the data contained in the National Health Insurance Research Database (NHIRD). A total of 2859 subjects with migraine and 5718 age-, sex-, hypertension-, diabetes-, mood disorder-matched controls were identified. Both cohorts excluded subjects with pre-existing catastrophic illness and IBS diagnosed before the index visit or within 30days after the index visit. All individuals of both cohorts were tracked until either having the diagnosis of IBS, loss of follow-up, or IBS free up to 7years. During the 7-year follow-up period, 8.4% of patients with migraine and 5.4% of control cohort developed IBS. Migraine is associated with an increased risk of developing IBS (HR=1.58, 95% CI: 1.33-1.87). When separating the cohort into those with mood disorder and without it, migraine is a significant risk factor of IBS in patients without mood disorders, but not in patients with co-existed mood disorders.

The findings of this study suggest that migraine is a risk factor of future IBS development for those without comorbid anxiety or depression. However, migraine does not contribute significantly additional risk to IBS development in patients with comorbid anxiety or depression

Mesh removal

Is pain relief after vaginal mesh and/or sling removal durable long term?

Karen Jong Shreeya Popat Alana Christie Philippe E. Zimmern

DOI: 10.1007/s00192-017-3413-5

Introduction and hypothesis

This study was to review our experience of pain relief durability in women who experienced initial pain resolution after vaginal mesh and/or sling removal (VMSR).

Methods

A retrospective chart review of consecutive, nonneurogenic women who underwent VMSR for pain and reported persistent pain relief at the 6-month postoperative follow-up visit were assessed. Pre- and postoperative data collected were self-reported chief complaints, physical examination, other medical conditions associated with chronic pain, use of pain medications, Urogenital Distress Inventory-6 (in which question 6 specifically addresses pain), and the Numerical Pain Rating Scale (NPRS). Success was defined by continued resolution of pain assessed by score of 0 on NPRS (0 none to 10 terrible), (0–1 on the Urogenital Distress Inventory-6 (UDI-6) question 6, subjective report of pain-free status, and/or no chronic use of pain medications other than those prescribed for non-mesh-related pain.

Results

Between 2006 and 2015, 125 of 356 women met study criteria. Mean follow-up after VMSR was 3.5 (range 0.5–10) years. Among 25 women who did not meet success criteria by questionnaire answers or subjective report, 21 had causes unrelated to their original mesh/sling placement and were pain free after they were addressed. Four women experienced delayed mesh-related pain return at 28, 46, 47, and 54 months, respectively; two required mesh removal surgery. Involvement in lawsuits and chronic pain-related medical conditions did not affect the durability of pain relief.

Conclusions

At a mean follow-up of 3.5 years, the original pain relief noted after VMSR was durably maintained.

IBS and fermented

A Diet Low in Fermentable Oligo-, Di-, and Mono-saccharides and Polyols Improves Quality of Life and Reduces Activity Impairment in Patients with Irritable Bowel Syndrome and Diarrhea

Shanti Eswaran, MD William D. Chey, MD Theresa Han-Markey, MS, RD

Abstract**Background & Aims**

We investigated the effects of a diet low in fermentable oligo-, di-, and mono-saccharides and polyols (FODMAPs) vs traditional dietary recommendations, on health-related quality of life (QOL), anxiety and depression, work productivity, and sleep quality in patients with IBS and diarrhea (IBS-D).

Methods

We conducted a prospective, single-center, single-blind trial of 92 adult patients with IBS-D (65 women; median age, 42.6 years) randomly assigned to groups placed on a diet low in FODMAPs or a modified diet recommended by the National Institute for Health and Care Excellence (mNICE) for 4 weeks. IBS-associated QOL (IBS-QOL), psycho-social distress (based on the Hospital Anxiety and Depression Scale), work productivity (based on the Workplace Activity Impairment Questionnaire), and sleep quality were assessed before and after diet periods.

Results

Eighty-four patients completed the study (45 in the low-FODMAP group and 39 in the mNICE group). At 4 weeks, patients on the diet low in FODMAPs had a larger mean increase in IBS-QOL score than patients on the mNICE diet (15 v 5; 95% CI, -17.4 to -4.3). A significantly higher proportion of patients in the low-FODMAP diet group had a meaningful clinical response, based on IBS-QOL score, than in the mNICE group (52% v 21%; 95% CI, -.52 to -.08). Anxiety scores decreased in the low-FODMAP diet group compared to the mNICE group (95% CI, 0.46-2.80). Activity impairment was significantly reduced with the low-FODMAP diet (-22.89) compared to the mNICE diet (-9.44; 95% CI, 2.72-24.2).

Conclusion

In a randomized, controlled trial, a diet low in FODMAPs led to significantly greater improvements in HRQOL, anxiety, and activity impairment compared with a diet based on traditional recommendations for patients with IBS-D. Clinicaltrials.gov no: NCT01624610

Acupuncture helps esophageal motility

Changes in Esophageal Motility after Acupuncture.

Vieira FM¹, Herbella FAM², Habib DH¹, Patti MG³.

Abstract

BACKGROUND:

Chinese medicine is widely used in the East with good results for the treatment of many diseases. Acupuncture has been increasingly used and recognized as a complementary medical treatment. Some studies on gastrointestinal motility are available; however, acupuncture effect on esophageal motility is still elusive due to the lack of studies with adequate methodology. This study aims to evaluate acupuncture effect on esophageal motility.

METHODS:

We studied 16 (50% females, mean age 26 years) volunteers. No individual underwent acupuncture sessions previously. All individuals underwent high-resolution manometry. The test was performed in three phases: basal measurements, 20 min after acupuncture stimulation of the gastrointestinal point (ST36), or 20 min after acupuncture stimulation of a sham point (5 cm medial to ST36) (crossover). ST36 or sham points were alternated in order based on randomization. Lower esophageal sphincter (LES) resting and residual pressure, distal latency (DL), and distal contractility integral (DCI) were recorded. All tests were reviewed by two experienced investigators blinded to the acupuncture point.

RESULTS:

LES resting pressure was significantly reduced after acupuncture ($p = 0.015$, Wilcoxon signed-rank test). DL was significantly increased after acupuncture (either Sham or ST36) as compared to basal measurement.

CONCLUSION:

Our results showed that acupuncture on the digestive point decreases LES basal pressure. Acupuncture may be an alternative treatment to spastic disorders of the LES.

KEYWORDS: Acupuncture; Esophageal motility; High resolution manometry; Lower esophageal sphincter

Refluxes impact**Health-related Quality of Life and Costs Associated With Eosinophilic Esophagitis: A Systematic Review**

Vincent Mekkada Gary W. Falk Nicholas J. Shaheen
Clinical Gastroenterology and Hepatology

Abstract**Background & Aims**

Eosinophilic esophagitis (EoE) is a chronic immune-mediated disease characterized by esophageal inflammation and dysfunction. Little is known about the humanistic and economic burden of the disease on patients, their caregivers and the healthcare system. A systematic review was conducted to evaluate the existing literature on the disease burden of EoE for patients and their caregivers.

Methods

The MEDLINE, Embase and Evidence-Based Medicine Reviews databases and recent congresses were searched on 23 March 2017 for English-language publications describing the impact of EoE on health-related quality of life (HRQoL) in children and adults, and the economic burden associated with the disease.

Results

Of 676 articles identified, 22 met the inclusion criteria and were included in this analysis (HRQoL, 13; economic burden, 7; cost-effectiveness, 2). The included studies showed that EoE is associated with a significant impact on HRQoL, resulting in disruption to and restrictions on daily life for patients, their caregivers, and, in some instances, their families. Treatment with topical corticosteroids, six food elimination diet or cow's milk elimination diet significantly improved the HRQoL of patients with EoE. Symptom severity was strongly associated with the impact of EoE on HRQoL. Medical resource utilization costs for patients with EoE were significantly higher than those for healthy controls.

Conclusions

EoE negatively impacts the HRQoL of patients and their families, and is a burden to the healthcare system. Although data are sparse, currently available treatments appear to improve HRQoL.

Ectopic pregnancy occurs more in IBS**Ectopic pregnancy in women with inflammatory bowel disease – a 22 year nationwide cohort study**

Punyanganie S. de Silva, MD, MPH Helene H. Hansen, MSc Sonja Wehberg, PhD Sonia Friedman, MD Bente M. Nørgård, MD, DMSc, PhD

Abstract**Background & Aims**

Data on early adverse pregnancy outcomes in inflammatory bowel disease (IBD) such as ectopic pregnancy (EP) remain limited. We assessed the risk of EP in pregnancies of Danish women with IBD compared to all other Danish women over a 22-year period. In addition, we examined the disease-specific risk of EP in pregnancies of women with ulcerative colitis (UC) or Crohn's disease (CD) who underwent IBD-related surgical procedures.

Methods

We obtained nationwide data in all women of child-bearing age who had at least one pregnancy resulting in either an EP, hydatiform mole, induced abortion, miscarriage, or live birth from January 1994 through 2015. The cohorts comprised 7548 UC, 6731 CD and 1,832,732 non-IBD pregnancies. Our primary outcome was EP per pregnancy. We controlled for multiple covariates, including pelvic and abdominal surgery.

Results

The risk of EP in pregnancies of women with CD or UC, compared to pregnancies of women without IBD was OR=1.23 (95% CI 1.01 -1.49), and OR= 0.98 (95% CI 0.80 -1.20) respectively. The risk of EP in pregnancies of women with CD or UC who had IBD-related surgery prior to pregnancy compared to pregnancies of women with IBD who had not had surgery was OR=1.49 (95% CI 0.91-2.44) for CD and OR=1.17 (95% CI 0.54 –2.52) for UC.

Conclusion

We found a statistically significant increased risk of EP in pregnancies of women with CD compared to pregnancies of women without IBD. IBD surgery prior to pregnancy increased EP risk, though this was not statistically significant.

GORD and acupuncture

Acupunct Med. 2017 Jul 8. pii: acupmed-2016-011205. doi: 10.1136/acupmed-2016-011205.

Acupuncture for the treatment of gastro-oesophageal reflux disease: a systematic review and meta-analysis.

Zhu J^{1,2}, Guo Y², Liu S³, Su X², Li Y¹, Yang Y², Hou L², Wang G¹, Zhang J¹, Chen JJ⁴, Wang Q³, Wei R⁵, Wei W².

Abstract**BACKGROUND:**

Gastro-oesophageal reflux disease (GORD) is one of the most common diseases presenting to gastroenterology clinics. Acupuncture is widely used as a complementary and alternative treatment for patients with GORD.

OBJECTIVE:

To explore the effectiveness of acupuncture for the treatment of GORD.

METHODS:

Four English and four Chinese databases were searched through June 2016. Randomised controlled trials investigating the effectiveness of manual acupuncture or electroacupuncture (MA/EA) for GORD versus or as an adjunct to Western medicine (WM) were selected. Data extraction and quality evaluation were performed by two authors independently and RevMan 5.2.0 was used to analyse data.

RESULTS:

A total of 12 trials involving 1235 patients were included. Meta-analyses demonstrated that patients receiving MA/EA combined with WM had a superior global symptom improvement compared with those receiving WM alone (relative risk (RR) 1.17, 95% CI 1.09 to 1.26; $p=0.03$; six studies) with no significant heterogeneity ($I^2=0\%$, $p=0.41$). Recurrence rates of those receiving MA/EA alone were lower than those receiving WM (RR 0.42, 95% CI 0.29 to 0.61; $p<0.001$; three studies) with low heterogeneity ($I^2=7\%$, $p=0.34$), while global symptom improvement (six studies) and symptom scores (three studies) were similar (both $p>0.05$). Descriptive analyses suggested that acupuncture also improves quality of life in patients with GORD.

CONCLUSION:

This meta-analysis suggests that acupuncture is an effective and safe treatment for GORD. However, due to the small sample size and poor methodological quality of the included trials, further studies are required to validate our conclusions.

GERD

Neurogastroenterol Motil. 2017 May 24. doi: 10.1111/nmo.13104.

Classification of esophageal motor findings in gastro-esophageal reflux disease: Conclusions from an international consensus group.

Gyawali CP¹, Roman S², Bredenoord AJ³, Fox M⁴, Keller J⁵, Pandolfino JE⁶, Sifrim D⁷, Tatum R⁸, Yadlapati R⁶, Savarino E⁹; International GERD Consensus Working Group.

Abstract**BACKGROUND:**

High-resolution manometry (HRM) has resulted in new revelations regarding the pathophysiology of gastro-esophageal reflux disease (GERD). The impact of new HRM motor paradigms on reflux burden needs further definition, leading to a modern approach to motor testing in GERD.

METHODS:

Focused literature searches were conducted, evaluating pathophysiology of GERD with emphasis on HRM. The results were discussed with an international group of experts to develop a consensus on the role of HRM in GERD. A proposed classification system for esophageal motor abnormalities associated with GERD was generated.

KEY RESULTS:

Physiologic gastro-esophageal reflux is inherent in all humans, resulting from transient lower esophageal sphincter (LES) relaxations that allow venting of gastric air in the form of a belch. In pathological gastro-esophageal reflux, transient LES relaxations are accompanied by reflux of gastric contents. Structural disruption of the esophagogastric junction (EGJ) barrier, and incomplete clearance of the refluxate can contribute to abnormally high esophageal reflux burden that defines GERD. Esophageal HRM localizes the LES for pH and pH-impedance probe placement, and assesses esophageal body peristaltic performance prior to invasive antireflux therapies and antireflux surgery. Furthermore, HRM can assess EGJ and esophageal body mechanisms contributing to reflux, and exclude conditions that mimic GERD.

CONCLUSIONS & INFERENCES:

Structural and motor EGJ and esophageal processes contribute to the pathophysiology of GERD. A classification scheme is proposed incorporating EGJ and esophageal motor findings, and contraction reserve on provocative tests during HRM.

13. CRANIUM/TMJ

Surgical vs non-surgical

Prog Orthod. 2017 Dec;18(1):16. doi: 10.1186/s40510-017-0171-3. Epub 2017 Jul 3.

Comparison of surgical and non-surgical orthodontic treatment approaches on occlusal and cephalometric outcomes in patients with Class II Division I malocclusions.

Daniels S¹, Brady P¹, Daniels A², Howes S³, Shin K¹, Elangovan S⁴, Allareddy V⁵.

Abstract

BACKGROUND:

This study aimed to examine end-of-treatment outcomes of severe Class II Division I malocclusion patients treated with surgical or non-surgical approaches. This study tests the hypotheses that occlusal outcomes (ABO-OGS) and cephalometric outcomes differ between these groups.

METHODS:

A total of 60 patients were included: 20 of which underwent surgical correction and 40 of which did not. Cast grading of initial and final study models was performed and information was gathered from pre- to post-treatment cephalometric radiographs. The end-of-treatment ABO-OGS and cephalometric outcomes were compared to Mann-Whitney U tests and multivariable linear regression models.

RESULTS:

Following adjustment for multiple confounders (age, gender, complexity of case, and skeletal patterns), the final deband score (ABO-OGS) was similar for both groups (23.8 for surgical group versus 22.5 for non-surgical group). Those treated surgically had a significantly larger reduction in ANB angle, 3.4° reduction versus 1.5° reduction in the non-surgical group ($p = 0.002$). The surgical group also showed increased maxillary incisor proclination ($p = 0.001$) compared to the non-surgical group. This might be attributed to retroclination of maxillary incisors during treatment selection in the non-surgical group—namely, extraction of premolars to mask the discrepancy.

CONCLUSIONS:

Those treated surgically had a significantly larger reduction in ANB angle and increased maxillary incisor proclination compared to those treated non-surgically with no significant changes in occlusal outcomes.

Sleep apnea

Assessment of obstructive sleep apnoea treatment success or failure after maxillomandibular advancement

M.H.T. de Ruiter R.C. Apperloo D.M.J. Milstein J. de Lange

DOI: <http://dx.doi.org/10.1016/j.ijom.2017.06.006>

Abstract

Maxillomandibular advancement (MMA) is an alternative therapeutic option that is highly effective for treating obstructive sleep apnoea (OSA). MMA provides a solution for OSA patients that have difficulty accepting lifelong treatments with continuous positive airway pressure or mandibular advancement devices.

The goal of this study was to investigate the different characteristics that determine OSA treatment success/failure after MMA. The apnoea–hypopnoea index (AHI) was used to determine the success or failure of OSA treatment after MMA. Sixty-two patients underwent MMA for moderate and severe OSA. A 71% success rate was observed with a mean AHI reduction of 69%. A statistically significant larger neck circumference was measured in patients with failed OSA treatments following MMA ($P = 0.008$), and older patients had failed OSA treatments with MMA: 58 vs. 53 years respectively ($P = 0.037$). Cephalometric analysis revealed no differences between successful and failed OSA treatment outcomes. There was no difference in maxillary and mandibular advancements between success and failed MMA-treated OSA patients.

The complications most frequently reported following MMA were sensory disturbances in the inferior alveolar nerve (60%) and malocclusion (24%). The results suggest that age and neck girth may be important factors that could predict susceptibility to OSA treatment failures by MMA

TMJ differences

Orthod Craniofac Res. 2017 Jun;20 Suppl 1:145-150. doi: 10.1111/ocr.12174.

Jaw mechanics in dolichofacial and brachyfacial phenotypes: A longitudinal cephalometric-based study.

Iwasaki LR^{1,2}, Liu Y³, Liu H², Nickel JC^{1,2}.

Abstract

OBJECTIVES:

To determine whether dolichofacial (Frankfort horizontal mandibular plane angle (FHMPA) $\geq 30^\circ$) vs brachyfacial (FHMPA $\leq 22^\circ$) phenotypes differ in temporomandibular joint (TMJ) loads and whether these differences correlate longitudinally with mandibular ramus height (Condylion-Gonion, Co-Go).

SETTING AND SAMPLE POPULATION:

Lateral and posteroanterior cephalographs from ten dolichofacial and ten brachyfacial individuals made at average ages of 6 (T1), 12 (T2) and 18 (T3) years and available online (http://www.aaoflegacycollection.org/aaof_home.html) were used.

MATERIALS AND METHODS:

Three-dimensional anatomical data were derived from cephalographs and used in numerical models to predict TMJ loads for a range of biting angles on incisors, canines and first molars. Two criteria were used to define clinically important between-group TMJ load differences: statistical significance was defined with a two-group t-test, and where differences were also $\geq 20\%$. A statistical approach called response surface analysis was used to assess correlation between TMJ loads and its predictors considered in this study.

RESULTS:

The two phenotypes had significantly different FHMPA at all ages ($P < .05$). No differences in TMJ loads were found at T1. Ipsilateral and contralateral TMJ loads at T2 and T3 were significant and $\geq 20\%$ larger in dolichofacial than brachyfacial phenotypes for specific biting angles (all adjusted $P < .05$). Regression analysis indicated age and ramus height contribute 53% of the variability in normalized values of TMJ loads. At higher ages, dolichofacial phenotypes had significantly higher TMJ loads which were correlated with shorter ramus heights compared to brachyfacial phenotypes.

CONCLUSIONS:

Craniofacial mechanics may explain, in part, mandibular growth differences between dolichofacial and brachyfacial phenotypes.

Dentation and Celiac's disease

Spec Care Dentist. 2017 Jul;37(4):194-198. doi: 10.1111/scd.12227.

Assessing the proposed association between DED and gluten-free diet introduction in celiac children.

de Queiroz AM¹, Arid J¹, de Carvalho FK¹, da Silva RAB¹, Kuchler EC¹, Sawamura R², da Silva LAB¹, Nelson-Filho P¹.

Abstract

A strong association between celiac disease (CD) and dental enamel defects (DEDs) have been extensively reported, however, the nature of this relationship is still unclear. The aim of this study was to evaluate DEDs phenotype in CD individuals according to the time they were introduced to a gluten-free diet (GFD). Forty-five CD individuals were examined by a pediatric dentist. DEDs were classified according to the type of affected teeth. CD individuals were classified into two groups (with or without DEDs) and the differences between these groups were tested using chi-square or Fisher's exact tests and t-test to compare differences between means. The Pearson coefficient test was used to evaluate the degree of the correlation between the age of GFD introduction and number of affected teeth. Individuals with MIH were introduced earlier to the GFD ($p = 0.038$).

An association was also observed for molar DED ($p = 0.013$). In conclusion, our study suggested an association between a specific type of DED and the time that CD individuals were introduced to a GFD.

Tongue thrust

J Oral Rehabil. 2017 Jul 6. doi: 10.1111/joor.12544

Effect of Functional Chewing Training on tongue thrust and drooling in children with cerebral palsy: A randomised controlled trial.

Inal Ö¹, Serel Arslan S², Demir N², Yilmaz ÖT², Karaduman AA².

Abstract

BACKGROUND:

Tongue thrust which is an oral reflex associated with sucking behaviour may cause problems in swallowing, speech, orofacial development, and also drooling.

OBJECTIVE:

We aimed to examine the effect of Functional Chewing Training(FuCT) on tongue thrust and drooling in children with cerebral palsy (CP).

METHODS:

The study included 32 children with a mean age of 58.25±9.58 months who had tongue thrust. Children were divided into two groups: The FuCT group and control group receiving classical oral motor exercises. Each group received training for 12 weeks. Oral motor assessment was performed. Chewing performance level was determined with the Karaduman Chewing Performance Scale(KCPS). Tongue thrust severity was evaluated with the Tongue Thrust Rating Scale(TTRS). The Drooling Severity and Frequency Scale(DSFS) was used to evaluate drooling severity and frequency. The evaluations were performed before and after treatment.

RESULTS:

Groups were well-matched in age, gender, and oral motor assessment. No significant difference was found between groups in terms of pre-treatment chewing function, tongue thrust severity, drooling severity and frequency($p>0.05$). The FuCT group showed improvement in chewing performance($p=0.001$), tongue thrust severity($p=0.046$), and drooling severity($p=0.002$), but no improvement was found in terms of drooling frequency($p=0.082$) after treatment. There was no improvement in chewing performance, tongue thrust, drooling severity and frequency in the control group. A significant difference was found between groups in favour of FuCT group in tongue thrust severity($p = 0.043$).

CONCLUSION:

This study showed that the FuCT is an effective approach on the severity of tongue thrust and drooling in children with CP. This article is protected by copyright. All rights reserved.

Temporal summation and TMJ

Pain. 2017 Jul;158(7):1272-1279. doi: 10.1097/j.pain.0000000000000911.

Temporal summation and motor function modulation during repeated jaw movements in patients with temporomandibular disorder pain and healthy controls.

Zhang Y¹, Shao S, Zhang J, Wang L, Wang K, Svensson P.

Abstract

Temporal summation of nociceptive inputs may be an important pathophysiological mechanism in temporomandibular disorders (TMD) pain; however, it remains unknown how natural jaw function relates to underlying pain mechanisms.

This study evaluated changes in pain and movement patterns during repeated jaw movements in patients with painful temporomandibular joints (TMJ) compared with healthy controls. Twenty patients with TMD with TMJ pain, and an anterior disk displacement without reduction and 20 age- and gender-matched healthy volunteers were included. Participants performed 20 trials (4 × 5 sessions) of standardized and repeated mandibular movements, and scored the movement-associated pain intensity on 0 to 10 numeric rating scale in addition to measurements of jaw movements. Patients with TMJ pain reported higher baseline pain compared to the control group for all types of jaw movements ($P = 0.001$) and significant increases in numeric rating scale pain scores by repetition of jaw movements ($P < 0.001$), which was not observed in the control group ($P > 0.05$). Jaw total opening distance ($P = 0.030$), maximum opening velocity ($P = 0.043$) and average closing velocity ($P = 0.044$) in the TMJ pain group were significantly reduced during the repeated movements. In the control group, however, total opening distance ($P = 0.499$), maximum opening velocity ($P = 0.064$), and average closing velocity ($P = 0.261$) remained unchanged, whereas average opening velocity ($P = 0.040$) and maximum closing velocity ($P = 0.039$) increased.

The study demonstrates that repeated jaw movements constitute a sufficient and adequate stimulation for triggering temporal summation effects associated with significant inhibition of motor function in painful TMJs. These findings have practical implications for diagnosis of TMD pain and for more mechanism-driven management protocols in the future.

Tooth movement

Orthod Craniofac Res. 2017 Jun;20 Suppl 1:63-67. doi: 10.1111/ocr.12161.

Speed of human tooth movement in growers and non-growers: Selection of applied stress matters.

Iwasaki LR^{1,2}, Liu Y³, Liu H², Nickel JC^{1,2}.

Author information

Abstract

OBJECTIVES:

To test that the speed of tooth translation is not affected by stress magnitude and growth status.

SETTING AND SAMPLE POPULATION:

Advanced Education Orthodontic clinics at the Universities of Nebraska Medical Center and Missouri-Kansas City. Forty-six consenting subjects with orthodontic treatment plans involving maxillary first premolar extractions.

MATERIALS AND METHODS:

This randomized split-mouth study used segmental mechanics with definitive posterior anchorage and individual vertical-loop maxillary canine retraction appliances and measured three-dimensional tooth movements. Height and cephalometric superimposition changes determined growing (G) and non-growing (NG) subjects. Subjects were appointed for 9-11 visits over 84 days for maxillary dental impressions to measure three-dimensional tooth movement and to ensure retraction forces were continuously applied via calibrated nitinol coil springs. Springs were custom selected to apply two different stresses of 4, 13, 26, 52 or 78 kPa to maxillary canines in each subject. Statistical analyses ($\alpha=0.050$) included ANOVA, effect size (partial η^2) and Tukey's Honest Significant Difference (HSD) and two-group t tests.

RESULTS:

Distolateral translation speeds were 0.034 ± 0.015 , 0.047 ± 0.019 , 0.066 ± 0.025 , 0.068 ± 0.016 and 0.079 ± 0.030 mm/d for 4, 13, 26, 52 and 78 kPa, respectively. Stress significantly affected speed and partial $\eta^2=0.376$. Overall, more distopalatal rotation was shown by teeth moved by 78 kPa ($18.03\pm 9.50^\circ$) compared to other stresses ($3.86\pm 6.83^\circ$), and speeds were significantly higher ($P=.001$) in G (0.062 ± 0.026 mm/d) than NG subjects (0.041 ± 0.019 mm/d).

CONCLUSIONS:

Stress magnitude and growth status significantly affected the speed of tooth translation. Optimal applied stresses were 26-52 kPa, and overall speeds were 1.5-fold faster in G compared to NG subjects

Oral Pharyngeal

Neurogastroenterol Motil. 2017 May 25. doi: 10.1111/nmo.13100.

The anatomy and physiology of normal and abnormal swallowing in oropharyngeal dysphagia.

Sasegbon A¹, Hamdy S¹.

Abstract

BACKGROUND:

Eating and drinking are enjoyable activities that positively impact on an individual's quality of life. The ability to swallow food and fluid is integral to the process of eating.

Swallowing occupies a dual role being both part of the enjoyment of eating and being a critically important utilitarian activity to enable adequate nutrition and hydration. Any impairment to the process of swallowing can negatively affect a person's perception of their quality of life. The process of swallowing is highly complex and involves muscles in the mouth, pharynx, larynx, and esophagus. The oropharynx is the anatomical region encompassing the oral cavity and the pharynx. Food must be masticated, formed into a bolus and transported to the pharynx by the tongue whereas fluids are usually held within the mouth before being transported ab-orally. The bolus must then be transported through the pharynx to the esophagus without any matter entering the larynx. The muscles needed for all these steps are coordinated by swallowing centers within the brainstem which are supplied with sensory information by afferent nerve fibers from several cranial nerves.

The swallowing centers also receive modulatory input from higher centers within the brain. Hence, a swallow has both voluntary and involuntary physiologic components and the term dysphagia is given to difficult swallowing while oropharyngeal dysphagia is difficult swallowing due to pathology within the oropharynx.

PURPOSE:

Problems affecting any point along the complex swallowing pathway can result in dysphagia. This review focuses on the anatomy and physiology behind normal and abnormal oropharyngeal swallowing. It also details the common diseases and pathology causing oropharyngeal dysphagia.

Fascial types mechanical behaviors

Orthod Craniofac Res. 2017 Jun;20 Suppl 1:139-144. doi: 10.1111/ocr.12148.

Mechanobehaviour in dolichofacial and brachyfacial adolescents.

Nickel JC^{1,2}, Weber AL³, Covington Riddle P⁴, Liu Y⁵, Liu H², Iwasaki LR^{1,2}.

Author information

Abstract

OBJECTIVES:

To test whether mechanobehaviour (temporomandibular joint (TMJ) loads, jaw muscle use) was different between facial types and correlated with ramus height (Condylion-Gonion, mm).

SETTING AND SAMPLE POPULATION:

University of Missouri-Kansas City (UMKC) Orthodontic Clinic. Ten dolichofacial and ten brachyfacial adolescents (Sella-Nasion-Gonion-Gnathion (SN-GoGn) angles $\geq 37^\circ$ and $\leq 27^\circ$, respectively) consented to participate.

MATERIALS AND METHODS:

Numerical models calculated TMJ loads for a range of static biting based on subjects' three-dimensional anatomy. Subjects were trained to record jaw muscle electromyography (EMG) over 2 days and 2 nights in their natural environments. Laboratory EMG/bite-force calibrations determined subject-specific EMG for 20 N bite-force (T_{20Nave}). Jaw muscle use via duty factors (DF=muscle activity duration/total recording time, %) was determined from day and night recordings for muscle-specific thresholds from $\geq 5\%$ to $\geq 80\%T_{20Nave}$. ANOVA and Tukey's HSD post hoc tests assessed for group differences in mechanobehaviour (TMJ loads, DFs). Regression modelling correlated subjects' normalized TMJ loads, DFs and ramus height.

RESULTS:

Dolichofacial compared to brachyfacial subjects produced significantly higher ($P<.05$) TMJ loads, where ipsilateral loads were $\geq 20\%$ larger for some biting angles, but had significantly less (all $P<.05$) masseter (day, night) and temporalis (night) DFs. Regression analysis showed a significant relationship amongst normalized TMJ loads, masseter DF and ramus height ($R^2 = .49$).

CONCLUSIONS:

Mechanobehaviour showed significant differences between facial types and was correlated with ramus height.

Impact of advancement surgery**Three-Dimensional analysis of the pharyngeal airway space and hyoid bone position after orthognathic surgery**

Amanda Lury Yamashita, MSc Lilian Cristina Vessoni Iwaki, PhD

DOI: <http://dx.doi.org/10.1016/j.jcms.2017.06.016>

Summary**Purpose**

The aim of this study was to evaluate changes in the pharyngeal airway space (PAS) and hyoid bone position after orthognathic surgery with cone-beam computed tomography (CBCT).

Material and methods

This study was conducted with the tomographic records of 30 patients with skeletal class II or III deformities submitted to two different types of orthognathic surgery: Group 1 ($n = 15$), maxillary advancement, and mandibular setback; and Group 2 ($n = 15$), maxillomandibular advancement. CBCT scans were acquired preoperatively (T_0); and at around 1.5 months (T_1) and 6.7 months (T_2) postoperatively. PAS volume, minimum cross-sectional area (min CSA), and hyoid bone position changes were assessed with Dolphin Imaging 3D software, and results analysed with ANOVA and a Tukey-Kramer test ($p < 0.05$).

Results

The hyoid bone was significantly displaced in the horizontal dimension, moving posteriorly in Group 1, and anteriorly in Group 2. Although PAS volume and min CSA increased after both surgeries, these measurements were significantly larger only in Group 2. The significant differences that existed between groups preoperatively no longer existed after the surgeries.

Conclusions

Both orthognathic surgeries assessed resulted in changes in hyoid bone position and increased PAS volume and min CSA, particularly after maxillomandibular advancement surgery.

14. HEADACHES

Treatment of migraine

Headache. 2017 Jun 27. doi: 10.1111/head.13120

Preventing Episodic Migraine With Caloric Vestibular Stimulation: A Randomized Controlled Trial.

Wilkinson D¹, Ade KK², Rogers LL², Attix DK³, Kuchibhatla M⁴, Slade MD⁵, Smith LL², Poynter KP², Laskowitz DT³, Freeman MC⁶, Hoffer ME⁷, Saper JR⁸, Scott DL⁹, Sakel M¹⁰, Calhoun AH¹¹, Black RD².

Author information

Abstract

OBJECTIVE:

To evaluate the safety and efficacy of a novel solid-state, caloric vestibular stimulation (CVS) device to provide adjuvant therapy for the prevention of episodic migraine in adult migraineurs.

BACKGROUND:

Migraine causes significant disability in ~12% of the world population. No current migraine preventive treatment provides full clinical relief, and many exhibit high rates of discontinuation due to adverse events. Thus, new therapeutic options are needed. CVS may be an effective and safe adjuvant-therapy for the prevention of episodic migraine.

METHODS:

In a multicenter, parallel-arm, block-randomized, placebo-controlled clinical trial (clinicaltrials.gov: [NCT01899040](#)), subjects completed a 3-month treatment with the TNM™ device for CVS (refer to Fig. 2 for patient enrollment and allocation). The primary endpoint was the change in monthly migraine days from baseline to the third treatment month. Secondary endpoints were 50% responder rates, change in prescription analgesic usage and difference in total subjective headache-related pain scores. Device safety assessments included evaluation of any impact on mood, cognition, or balance.

RESULTS:

Per-protocol, active-arm subjects showed immediate and continued steady declines in migraine frequency over the treatment period. After 3 months of treatment, active-arm subjects exhibited significantly fewer migraine days (-3.9 ± 0.6 from a baseline burden of 7.7 ± 0.5 migraine days). These improvements were significantly greater than those observed in control subjects (-1.1 ± 0.6 from a baseline burden = 6.9 ± 0.7 migraine days) and represented a therapeutic gain of -2.8 migraine days, CI = -0.9 to -4.7 , $P = .012$. Active arm subjects also reported greater reductions in acute medication usage and monthly pain scores compared to controls. No adverse effects on mood, cognition, or balance were reported. Subjects completed the trial with an average rate of 90% treatment adherence. No serious or unexpected adverse events were recorded. The rate of expected adverse events was similar across the active and the placebo groups, and evaluation confirmed that subject blinding remained intact.

CONCLUSION:

The TNM™ device for CVS appears to provide a clinically efficacious and highly tolerable adjuvant therapy for the prevention of episodic migraine.

19. GLENOHUMERAL/SHOULDER

Shoulder girdle dyskinesia and pain

Observational Scapular Dyskinesia: Prevalence in Patients With Shoulder Pain

Authors: Hillary A. Plummer, PhD, ATC¹, Jonathan C. Sum, PT, DPT¹, Federico Pozzi, PT, PhD¹, Rini Varghese, PT, MS¹, Lori A. Michener, PT, PhD, ATC, SCS, FAPTA¹
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2017 **Volume:**0 **Issue:**0 **Pages:**1–25 **DOI:**10.2519/jospt.2017.7268

Study Design

Cross-sectional.

Background

The scapular dyskinesia test (SDT) has demonstrated reliability and validity, but the utility for clinical decision-making is unclear.

Objectives

Characterize the prevalence of scapular dyskinesia in participants with and without shoulder pain, and to determine the influence of blinding to the presence of shoulder pain on prevalence of scapular dyskinesia.

Methods

Participants (n=135), 67 with shoulder pain and 68 healthy controls, were included in this study. The SDT was performed by 2 examiners, from a total of 21 physical therapists. The second examiner was blinded to the participant's presence of shoulder pain. The SDT involved participants performing 5-repetitions of shoulder flexion and abduction, while the clinician observed for scapular dyskinesia characterized by scapular winging or dysrhythmia. Dyskinesia was rated as normal, subtle, or obvious. Ratings were collapsed into 2 groups, dyskinesia (subtle and obvious) and no dyskinesia (normal) as recommended by expert consensus.

Results

There were no significant differences for scapula dyskinesia prevalence between the shoulder pain and control groups during SDT in abduction [shoulder pain=67.2% (95%CI:0.55,0.77); control group=52.9% (95%CI:0.41,0.64); $p=0.09$] or flexion [shoulder pain=67.2% (95%CI:0.55,0.77); control group=61.8% (95%CI:0.50,0.72); $p=0.51$]. There were significant differences ($p<0.001$) between the examiners SDT rating in the shoulder pain group. The unblinded examiners reported a higher prevalence when testing the involved shoulder for dyskinesia in flexion [blinded=67.7% (95%CI:0.56,0.78; unblinded=80% (95%CI:0.69,0.88)], and during abduction [blinded=66.2% (95%CI:0.54,0.76; unblinded=78.5% (95%CI:0.67,0.87)].

Conclusions

Scapular dyskinesia as assessed using the SDT is not more prevalent in those with shoulder pain, but the rating is influenced by the examiners knowledge of shoulder pain presence. Scapular dyskinesia may represent normal movement variability.

Level of Evidence

Diagnosis, level 4. *J Orthop Sports Phys Ther*, Epub 6 Jul 2017. doi:10.2519/jospt.2017.7268

20 A. ROTATOR CUFF**Options of surgery**

Arthroscopy. 2017 Jul 5. pii: S0749-8063(17)30391-2. doi: 10.1016/j.arthro.2017.04.019.

Arthroscopic Versus Open Rotator Cuff Repair: Which Has a Better Complication and 30-Day Readmission Profile?

Baker DK¹, Perez JL¹, Watson SL¹, McGwin G¹, Brabston EW¹, Hudson PW¹, Ponce BA².

Abstract

PURPOSE:

To provide a comparative 30-day postoperative analysis of complications and unplanned readmission rates, using the National Surgical Quality Improvement Program database, after open or arthroscopic rotator cuff repair (RCR).

METHODS:

The American College of Surgeons National Surgical Quality Improvement Program database was reviewed for postoperative complications after open or arthroscopic RCR over an 8-year period, from 2007 through 2014. Patients were identified by use of Current Procedural Terminology codes. The open group contained 3,590 cases (21.8%) and the arthroscopic group had 12,882 cases (78.2%), for a total of 16,472 patients undergoing RCR. The risk of complications was compared between the 2 groups, along with patient demographic characteristics, operative time, length of stay, and unplanned readmission within 30 days. We compared dichotomous variables using the Fisher exact test and continuous variables with 1-way analysis of variance. Relative risks (RRs) and 95% confidence intervals (CIs) were calculated when appropriate.

RESULTS:

The open RCR group had a higher prevalence of patients aged 65 years or older and comorbidities such as hypertension, diabetes, chronic obstructive pulmonary disease, smoking, and alcoholism ($P < .05$). Patients undergoing open RCR had a higher risk of any adverse event when compared with arthroscopic RCR patients (1.48% vs 0.84%; RR, 1.17; 95% CI, 1.05-1.30; $P = .0010$). They were also at higher risk of return to the operating room within 30 days (0.70% vs 0.26%; RR, 1.36; 95% CI, 1.09-1.69; $P = .0004$). Open RCR was associated with a longer average hospital stay (0.48 ± 2.7 days vs 0.23 ± 4.2 days, $P = .0007$), whereas arthroscopic RCR had a longer average operative time (90 ± 45 minutes vs 79 ± 45 minutes, $P < .0001$).

CONCLUSIONS:

Although both open and arthroscopic approaches to RCR had low morbidity, arthroscopy was associated with lower risks of any adverse event and return to the operating room during the initial 30-day postoperative period

22 A. IMPINGEMENT

Conservative care

Effectiveness of conservative interventions including exercise, manual therapy and medical management in adults with shoulder impingement: a systematic review and meta-analysis of RCTs.

Steuri R1,2, Sattelmayer M2,3, Elsig S2,3, Kolly C2,3, Tal A1, Taeymans J1,4, Hilfiker R2,3.

OBJECTIVE: To investigate the effectiveness of conservative interventions for pain, function and range of motion in adults with shoulder impingement.

DESIGN: Systematic review and meta-analysis of randomised trials.

DATA SOURCES: Medline, CENTRAL, CINAHL, Embase and PEDro were searched from inception to January 2017.

STUDY SELECTION CRITERIA: Randomised controlled trials including participants with shoulder impingement and evaluating at least one conservative intervention against sham or other treatments.

RESULTS: For pain, exercise was superior to non-exercise control interventions (standardised mean difference (SMD) -0.94, 95% CI -1.69 to -0.19). Specific exercises were superior to generic exercises (SMD -0.65, 95% CI -0.99 to -0.32). Corticosteroid injections were superior to no treatment (SMD -0.65, 95% CI -1.04 to -0.26), and ultrasound guided injections were superior to non-guided injections (SMD -0.51, 95% CI -0.89 to -0.13). Nonsteroidal anti-inflammatory drugs (NSAIDs) had a small to moderate SMD of -0.29 (95% CI -0.53 to -0.05) compared with placebo. Manual therapy was superior to placebo (SMD -0.35, 95% CI -0.69 to -0.01). When combined with exercise, manual therapy was superior to exercise alone, but only at the shortest follow-up (SMD -0.32, 95% CI -0.62 to -0.01). Laser was superior to sham laser (SMD -0.88, 95% CI -1.48 to -0.27). Extracorporeal shockwave therapy (ECSWT) was superior to sham (-0.39, 95% CI -0.78 to -0.01) and tape was superior to sham (-0.64, 95% CI -1.16 to -0.12), with small to moderate SMDs.

CONCLUSION: Although there was only very low quality evidence, exercise should be considered for patients with shoulder impingement symptoms and tape, ECSWT, laser or manual therapy might be added. NSAIDs and corticosteroids are superior to placebo, but it is unclear how these treatments compare to exercise.

Scapular stabilization ex.

Effects of scapular stabilization exercise training on scapular kinematics, disability, and pain in subacromial impingement: A randomized controlled trial.

Turgut E¹, Duzgun I², Baltaci G³.

Abstract

OBJECTIVE:

To investigate the effects of two different exercise programs on three-dimensional scapular kinematics, disability, and pain in participants with subacromial impingement syndrome (SIS).

DESIGN:

Randomized controlled trial.

SETTING:

Outpatient clinic and research laboratory.

PARTICIPANTS:

Thirty participants who were diagnosed with SIS and who also exhibited scapular dyskinesis.

INTERVENTIONS:

The participants were randomized in two different exercise groups: 1) shoulder girdle stretching and strengthening with additional scapular stabilization exercises based on a kinetic chain approach (intervention group), and 2) shoulder girdle stretching and strengthening exercises only (control group).

MAIN OUTCOME MEASURES:

Three-dimensional scapular kinematics, self-reported shoulder pain, and disability were evaluated at baseline, after 6 weeks of training, and after 12 weeks of training.

RESULTS:

Significant differences were observed between the control and intervention group in external rotation and posterior tilt after 6 weeks of training and in external rotation, posterior tilt, and upward rotation after 12 weeks of training. All groups showed improvement in self-reported pain and disability scores, however there were no significant differences between the groups.

CONCLUSION:

Progressive exercise training independent from specific scapular stabilization exercises provides decreased disability and pain severity in impingement syndrome.

Copyright © 2017 American Congress of Rehabilitation Medicine. Published by Elsevier Inc. All rights reserved. PMID:28619697 DOI:10.1016/j.jpain.2017.05.007

22 B. INSTABILITY**Comparisons of surgical approaches**

J Shoulder Elbow Surg. 2017 Jul 5. pii: S1058-2746(17)30243-4. doi: 10.1016/j.jse.2017.04.009.

Open versus arthroscopic surgical treatment for anterior shoulder dislocation: a comparative systematic review and meta-analysis over the past 20 years.

Hohmann E¹, Tetsworth K², Glatt V³.

Abstract

BACKGROUND:

The purpose of this study was to perform a meta-analysis comparing open and arthroscopic surgery for the treatment of anterior shoulder instability by analyzing comparative studies during 2 different time intervals during the last 20 years.

METHODS:

We conducted a systematic review of MEDLINE, Embase, Scopus, and Google Scholar. Two groups were created by dividing studies according to the year of publication, those published from 1995 to 2004 or from 2005 to 2015. Publication bias and risk of bias were assessed using the Cochrane Collaboration's tools. Heterogeneity was assessed using the I^2 statistics.

RESULTS:

A total of 22 studies (n = 1633) met the eligibility criteria. Comparison of the pooled estimate for all of these studies demonstrated no significant differences (P = .64) in clinical outcomes between open and arthroscopic shoulder stabilization. However, studies published from 1995 through 2004 demonstrated significant differences (P = .015) in recurrence rates favoring open surgery. In contrast, no significant differences (P = .09) in recurrence rates were observed for studies published from 2005 through 2015. The pooled estimate for all studies in both groups demonstrated significant differences (P = .001) in external rotation deficits between open and arthroscopic shoulder stabilization favoring arthroscopic surgery.

CONCLUSION:

Despite advances in surgical techniques and devices during the last 20 years, either open or arthroscopic surgical treatment of anterior shoulder dislocation results in similar clinical outcomes. The recurrence rate for arthroscopic surgical stabilization has only marginally decreased, from 16.8% to 14.2%. However, during the earlier decade from 1995 through 2004, patients treated with arthroscopic surgery had twice the risk of recurrence compared with an open procedure.

28. REPLACEMENTS**Prior surgery impacts outcomes****Prior Arthroscopy Leads to Inferior Outcomes in Total Hip Replacement: A Match-Controlled Study**

Itay Perets, MD Yosif Mansor, MD Brian Mu, MD John P. Walsh, MA Victor Ortiz-Declet, MD Benjamin G. Domb, MD

DOI: <http://dx.doi.org/10.1016/j.arth.2017.06.050>

Abstract**Background**

Total hip arthroplasty (THA) is one of the most common reoperations after hip arthroscopy. Although arthroscopy causes changes in the hip joint and the surrounding soft tissues that can make THA more challenging, previous reports on arthroscopy prior to THA have not demonstrated any significant effect on clinical outcomes.

Methods

Patients that underwent a THA following an ipsilateral hip arthroscopy were matched to a control group of THA patients with no history of ipsilateral hip surgery. Matching criteria were age within five years, sex, BMI within five, surgical approach, and robotic assistance. Harris Hip Score (HHS), Forgotten Joint Score 12 (FJS-12), visual analog score (VAS), satisfaction, and postoperative complication and reoperation rates were compared at minimum two-year follow-up.

Results

Thirty-five prior arthroscopy patients were successfully matched to control patients. There were no significant differences in demographics between study groups. The prior arthroscopy group had significantly lower HHS, FJS-12, and satisfaction at latest follow-up. They had higher VAS and complication rate in differences that closely approached significance. There was no significant difference in reoperation rate.

Conclusion

A prior hip arthroscopy may adversely affect the clinical outcomes of THA. This potential risk should be considered when assessing the candidacy of a patient for hip arthroscopy.

31. KNEE

Knee pain CPR

Clinical Prediction Models for Patients With Nontraumatic Knee Pain in Primary Care: A Systematic Review and Internal Validation Study

Authors: Guus Panken, MSc^{1,2}, Arianne P. Verhagen, PhD³, Caroline B. Terwee, PhD¹, Martijn W. Heymans, PhD^{1,4}

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**0 **Issue:**0 **Pages:**1–29 **DOI:**10.2519/jospt.2017.7142

Study Design

A systematic review and validation study.

Background

Many prognostic models of knee pain outcomes have been developed for use in primary care. Variability among published studies with regard to patient population, outcome measures, and relevant prognostic factors hampers the generalizability and implementation of these models.

Objectives

To summarise existing prognostic models in patients with knee pain in a primary care setting and to develop and internally validate new summary prognostic model(s).

Methods

After a sensitive search strategy two reviewers independently selected prognostic models for patients with non-traumatic knee pain and assessed the methodological quality of the included studies. All predictors of the included studies were evaluated, summarized and classified. The predictors assessed in multiple studies of sufficient quality are presented in this review. We used predictors with a strong level of evidence to develop new prognostic models for each outcome measure and internally validated these models.

Results

Sixteen studies were eligible for inclusion. We considered eleven studies of sufficient quality. None of these studies validated their models. Five predictors with strong evidence were related to function and six to recovery and were used to compose two prognostic models for patients with knee pain at one year. Running these new models in another dataset showed explained variances (R^2) of 0.36 (function) and 0.33 (recovery). The area under the curve (AUC) of the recovery model was 0.79. After internal validation, the adjusted R^2 of the models were 0.30 (function) and 0.20 (recovery) respectively, and the AUC 0.73.

Conclusions

We developed two valid prognostic models for function and recovery for patients with non-traumatic knee pain, based on predictors with strong evidence. A longer duration of complaints predicts poor function or less chance of recovery.

35. KNEE/TOTAL**Later age of menarche reduces risk of TKR****Age of menarche is associated with knee joint replacement due to primary osteoarthritis. (The HUNT Study and the Norwegian Arthroplasty Register)**

Osteoarthritis and Cartilage

Hellevik AI, et al.

The specialists attempted this study to examine whether parity, age at menarche, menopausal status, age at menopause, use of oral contraceptives or use of hormone replacement therapy (HRT) were associated with total knee replacement (TKR) or total hip replacement (THR) due to primary osteoarthritis. They discovered that increasing age at menarche reduced the risk of TKR. Past users and users of systemic hormone replacement therapy were at higher risk of TKR compared to never users. However, parity did not increase the risk of THR or TKR.

Methods

- In this prospective study of 30 289 women from the second and third surveys of the Nord-Trøndelag Health Study, data were linked to the Norwegian Arthroplasty Register in order to identify TKR or THR due to primary osteoarthritis
- To estimate the hazard ratios (Hrs), Cox proportional hazards models were used.

Results

- During a mean follow-up time of 8.3 years, the specialists reported 430 TKRs and 675 THRs.
- Findings revealed that increasing age at menarche was inversely associated with the risk of TKR (p -trend < 0.001).
- Past users and users of systemic hormone replacement therapy (HRT) were at higher risk of TKR compared to never users (HR 1.42 (95% CI 1.06–1.90) and HR 1.40 (95% CI 1.03–1.90), respectively).
- However, no association was found between parity, age at menarche, menopausal status, age at menopause, oral contraceptive use or HRT use and THR.

37. OSTEOARTHRITIS/KNEE

Rapidly progressing

Curr Rheumatol Rep. 2017 Jul;19(7):42. doi: 10.1007/s11926-017-0665-5.

Rapidly Progressive Osteoarthritis: a Review of the Clinical and Radiologic Presentation.

Flemming DJ¹, Gustas-French CN².

PURPOSE OF REVIEW:

The purpose of this paper is to review the distinct clinical and radiographic features that may lead to prompt diagnosis of rapidly progressive osteoarthritis (RPOA) and thus obviate unnecessary and costly diagnostic workup.

RECENT FINDINGS:

RPOA is uncommon but is more frequently seen in practice because of the aging population. RPOA is a destructive arthropathy that occurs most commonly in elderly women but can also be seen in patients that have sustained trauma. The dramatic radiologic manifestations of RPOA can lead to diagnostic confusion with other arthropathies, infection, and osteonecrosis. RPOA was originally described in the hip but may also involve the shoulder. The etiology of RPOA is not well understood, but subchondral fracture probably plays a role in the development of dramatic destruction of the joint that is seen in affected patients. Early diagnosis may reduce the complexity of surgical management. RPOA is an uncommon condition that occurs most frequently in elderly woman or in patients who have sustained trauma. Prompt recognition of the clinical and radiologic features of this arthropathy can reduce unnecessary diagnostic workup and complexity of surgical intervention.

MRI finding correlated to physical function

Magnetic resonance imaging (MRI) -defined cartilage degeneration and joint pain are associated with poor physical function in knee osteoarthritis – The Oulu Knee Osteoarthritis Study
Osteoarthritis and Cartilage
Kaukinen P, et al.

An analysis was carried out to determine the associations between magnetic resonance imaging (MRI)-defined structural pathologies of the knee and physical function. Investigations represented that after adjustments cartilage degeneration was associated with both decreased self-reported physical function and poor performance in the physical function tests. Moreover, significantly worse performance was reported in the stair ascending test in patients with lateral meniscus maceration and extrusions.

Methods

- This study included 80 symptomatic subjects with knee pain and suspicion or diagnosis of knee osteoarthritis (OA) and 57 asymptomatic subjects.
- The subjects underwent knee MRI.
- The severity of structural changes was graded by MRI Osteoarthritis Knee Score (MOAKS) in separate knee locations.
- WOMAC function subscores were recorded and physical function tests (twenty-meter and five-minute walk, stair ascending and descending, timed up & go and repeated sit-to-stand tests) performed.
- With linear regression analysis, the association between MRI-defined structural pathologies and physical function tests and WOMAC function subscores were analyzed with adjustment for demographic factors, other MRI-features and pain with using effect size (ES) as a measure of the magnitude of an association.

Results

- In investigations, cartilage degeneration displayed significant association with poor physical performance in TUG-, stair ascending and descending-, twenty-meter- and five-minute walk – tests (ESs in the subjects with cartilage degeneration anywhere between 0.134[95% CI 0.037–0.238] and 0.224[0.013–0.335]) and with increased WOMAC function subscore (ES in the subjects with cartilage degeneration anywhere 0.088[0.012–0.103]).
- In stair ascending test, lateral meniscus maceration and extrusion were associated with poor performance (ESs 0.067[0.008–0.163] and 0.077[0.012–0.177]).

Soft braces help

Arch Phys Med Rehabil. 2017 Jul 4. pii: S0003-9993(17)30446-X. doi: 10.1016/j.apmr.2017.04.029.

Effect of soft braces on pain and physical function in patients with knee osteoarthritis: systematic review with meta-analyses.

Cudejko T¹, van der Esch M², van der Leeden M³, Roorda LD², Pallari J⁴, Bennell KL⁵, Lund H⁶, Dekker J⁷.

OBJECTIVE:

To systematically review and synthesize the effect of soft braces on pain, and self-reported and performance-based physical function in patients with knee osteoarthritis.

DATA SOURCES:

The following electronic databases were searched from inception to April 20, 2016: The Cochrane Central Registry for Controlled Trials (CENTRAL), PubMed, EMBASE, CINAHL, SportDiscuss, Web of Science and PEDro.

STUDY SELECTION:

Randomized controlled trials (RCT) and non-randomized controlled trials (non-RCTs), such as controlled clinical trials, crossover studies and case-control studies were included. Two reviewers independently screened articles and determined inclusion through predefined criteria.

DATA EXTRACTION:

Data related to participant demographics, study design, and methods, interventions, and outcomes, including numerical means and SDs, were extracted by one reviewer. Methodological quality assessment was independently performed by two reviewers.

DATA SYNTHESIS:

11 studies were identified, including six randomized controlled trials (RCTs) and five non-RCTs. The methodological quality of included RCTs was low. There was a moderate improvement in pain (SMD 0.52, 95% CI 0.14 to 0.89; P=0.007; 284 participants) in favor of wearing a brace compared to not wearing a brace for the immediate, within-group comparison. There was a moderate improvement in pain (SMD 0.61, 95% CI 0.33 to 0.89; P<0.001; 206 participants) and small to moderate improvement in self-reported physical function (SMD 0.39, 95% CI 0.11 to 0.67; P=0.006; 206 participants) in favor of patients receiving soft brace versus standard care for the prolonged effect, between-group comparison.

CONCLUSION:

Currently available evidence indicates that soft braces have moderate effects on pain and small to moderate effects on self-reported physical function in knee osteoarthritis. These findings highlight the importance of soft braces as a technique to improve pain and physical function in both, short and long-term. Further, high quality studies are warranted to improve confidence in the findings.

40. ANKLE SPRAINS AND INSTABILITY

Postural control

Assessment of Relationships Between Joint Motion Quality and Postural Control in Patients With Chronic Ankle Joint Instability

Authors: Dawid Bączkiewicz, PhD¹, Krzysztof Falkowski, MD², Edyta Majorczyk, PhD^{1,3}

Published: *Journal of Orthopaedic & Sports Physical Therapy*,

2016 **Volume:**0 **Issue:**0 **Pages:**1–26 **DOI:**10.2519/jospt.2017.6836

Study Design

Controlled laboratory study, cross sectional.

Background

Lateral ankle sprains are among the most common injuries encountered during athletic participation. Following the initial injury there is an alarmingly high risk of re-injury and development of chronic ankle instability (CAI), which is dependent on a combination of factors, including sensorimotor deficits and changes in the biomechanical environment of the ankle joint.

Objective

To evaluate CAI-related disturbances in arthrokinematic motion quality and postural control and the relationships between them.

Methods

Sixty-three male subjects (31 with CAI and 32 healthy controls) were enrolled in the study. For arthrokinematic motion quality analysis, the vibroarthrographic signals were collected during ankle flexion/extension motion using an acceleration sensor and described by variability (VMS), amplitude (R4) and frequency (P1 and P2) parameters. Using the Biodex Balance System, single leg dynamic balance was measured by overall (OSI), anteroposterior (APSI), and mediolateral (MLSI) stability indices.

Results

In the CAI group values of vibroarthrographic parameters (VMS, R4, P1 and P2) were significantly higher than in the controls ($p < 0.01$). Similar results were obtained for all postural control parameters (OSI, APSI, MLSI; $p < 0.05$). Moreover, correlations between OSI and VMS, P1 and P2, as well as APSI and P1 and P2 were observed in the CAI patient group but not in controls.

Conclusions

In patients with CAI, deficits in both quality of ankle arthrokinematic motion and postural control was present. Therefore physical therapy interventions focused on improving ankle neuromuscular control and arthrokinematic function are necessary in CAI patient care. *J Orthop Sports Phys Ther*, Epub 4 Nov 2016. doi:10.2519/jospt.2017.6836

Plantar flexion injuries

Br J Sports Med. 2017 Jun 27. pii: bjsports-2016-097155. doi: 10.1136/bjsports-2016-097155.

Landing-related ankle injuries do not occur in plantarflexion as once thought: a systematic video analysis of ankle injuries in world-class volleyball.

Skazalski C¹, Kruczynski J^{2,3}, Bahr MA⁴, Bere T^{1,4}, Whiteley R¹, Bahr R^{1,3,4}.

Author information

Abstract

BACKGROUND:

Ankle injuries are prevalent in elite volleyball and suggested to result from player contact at the net. Traditionally, ankle sprains are thought to happen in a plantarflexed position, but case studies suggest plantarflexion may not be involved.

AIM:

Describe the injury situations and mechanisms of ankle injuries in world-class volleyball based on systematic video analysis of injuries reported through the Fédération Internationale de Volleyball (FIVB) Injury Surveillance System.

METHODS:

Videos of 24 injuries from major FIVB tournaments were included for analysis (14 men, 10 women). Five analysts reviewed the videos to determine specific situations and mechanisms leading to injuries.

RESULTS:

The majority of injuries occurred during two volleyball situations, blocking (n=15) and attacking (n=6). Injuries to blockers were the result of landing on an opponent (n=11) or teammate (n=4). Attacking injuries most frequently occurred when a back-row player landed on a front-row teammate (n=4 of 6). When landing on an opponent under the net, the attacker landed into the opponent's court in 11 of 12 situations but without violating the centre line rule. Injuries mostly resulted from rapid inversion without any substantial plantarflexion.

CONCLUSIONS:

The majority of injuries occur while blocking, often landing on an opponent. The attacker is overwhelmingly to blame for injuries at the net secondary to crossing the centre line. Injuries while attacking often result from a back-row player landing on a front-row teammate. Landing-related injuries mostly result from rapid inversion with the absence of plantarflexion.

44. RHUMATOID ARTHRITIS

Healthy diet helps

Ann Rheum Dis. 2017 Jan 30. pii: annrheumdis-2016-210431. doi: 10.1136/annrheumdis-2016-210431.

Long-term dietary quality and risk of developing rheumatoid arthritis in women.

Hu Y¹, Sparks JA², Malspeis S², Costenbader KH², Hu FB^{3,4}, Karlson EW², Lu B².

OBJECTIVES:

To evaluate the association between long-term dietary quality, measured by the 2010 Alternative Healthy Eating Index, and risk of rheumatoid arthritis (RA) in women.

METHODS:

We prospectively followed 76 597 women in the Nurses' Health Study aged 30-55 years and 93 392 women in the Nurses' Health Study II aged 25-42 years at baseline and free from RA or other connective tissue diseases. The lifestyle, environmental exposure and anthropometric information were collected at baseline and updated biennially. Cumulative follow-up rates were more than 90% for both cohorts. The primary outcome was RA alone with two subtypes of the disease: seropositive and seronegative RA.

RESULTS:

During 3 678 104 person-years, 1007 RA cases were confirmed. In the multivariable-adjusted model, long-term adherence to healthy eating patterns was marginally associated with reduced RA risk. To assess potential effect modification by age at diagnosis, we stratified by age. Among women aged ≤ 55 years, better quality diet was associated with lower RA risk (HR_{Q4 vs Q1}: 0.67; 95% CI 0.51 to 0.88; p trend: 0.002), but no significant association was found for women aged > 55 years (p interaction: 0.005). When stratifying by serostatus, the inverse association among those aged ≤ 55 years was strongest for seropositive RA (HR_{Q4 vs Q1}: 0.60; 95% CI 0.42 to 0.86; p trend: 0.003).

CONCLUSIONS:

A healthier diet was associated with a reduced risk of RA occurring at 55 years of age or younger, particularly seropositive RA.

48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE**Dry needling helps LBP**

Arch Phys Med Rehabil. 2017 Jul 6. pii: S0003-9993(17)30452-5. doi: 10.1016/j.apmr.2017.06.008

Evidence for Dry Needling in the Management of Myofascial Trigger Points Associated with Low Back Pain: A Systematic Review and Meta-analysis.

Liu L, Huang QM, Liu QG, Thitham N, Li LH, Ma YT, Zhao JM.

OBJECTIVE:

To evaluate the current evidence of the effectiveness of dry needling of myofascial trigger points (MTrPs) associated with low back pain (LBP).

DATA SOURCES:

PubMed, Ovid, EBSCO, ScienceDirect, Web of Science, Cochrane Library, Cumulative Index to Nursing and Allied Health, and China National Knowledge Infrastructure databases were searched until January 2017.

STUDY SELECTION:

Randomized controlled trials (RCTs) that used dry needling as the main treatment and included participants diagnosed with LBP with the presence of MTrPs were included.

DATA EXTRACTION:

Two reviewers independently screened articles, scored methodological quality, and extracted data. The primary outcomes were pain intensity and functional disability at post-intervention and follow-up.

DATA SYNTHESIS:

A total of 11 RCTs involving 802 patients were included in the meta-analysis. Results suggested that compared with other treatments, dry needling of MTrPs was more effective in alleviating the intensity of LBP (Standardized Mean Difference [SMD] = -1.06, 95% Confidence Interval [CI]: -1.77 to -0.36, $P = 0.003$) and functional disability (SMD = -0.76, 95% CI: -1.46 to -0.06, $P = 0.03$); however, the significant effects of dry needling plus other treatments on pain intensity could be superior to dry needling alone for LBP at post-intervention (SMD = 0.83, 95% CI: 0.55 to 1.11, $P < 0.00001$).

CONCLUSIONS:

Moderate evidence showed that dry needling of MTrPs, especially if associated with other therapies, could be recommended to relieve the intensity of LBP at post-intervention; however, the clinical superiority of dry needling in improving functional disability and its follow-up effects still remain unclear.

48 C. MUSCLES**MRI hamstring tears**

Br J Sports Med. 2017 Jul;51(14):1087-1092. doi: 10.1136/bjsports-2016-096881. Epub 2016 Dec 28.

MRI appearance does not change in the first 7 days after acute hamstring injury-a prospective study.

Wangensteen A^{1,2}, Bahr R^{1,2}, Van Linschoten R¹, Almusa E¹, Whiteley R¹, Witvrouw E^{1,3}, Tol JL^{1,4,5}.

BACKGROUND:

The optimal timing of MRI following acute hamstring injury is not known and is mainly based on expert opinions.

AIMS:

To describe the day-to-day changes in the extent of oedema and investigate the optimal timing for detection of fibre disruption on MRI following acute hamstring injuries.

STUDY DESIGN:

Prospective, descriptive study.

METHODS:

We performed standardised MRI (1.5T) ≤ 1 day after injury in male athletes with acute hamstring injury. If initial MRI revealed positive signs of injury (increased signal intensity on fluid sensitive sequences), consecutive MRIs were obtained daily throughout the subsequent week (ie, 7 times). The MRI parameters (day 1-7) were scored by a single radiologist using a standardised scoring form. The day-to-day changes in the extent of oedema (distance from tuber, craniocaudal length, mediolateral width and anteroposterior depth) and the presence and extent of fibre disruption (tear) were assessed with descriptive statistics and repeated measures using analysis of variance of log-transformed data. The overall main effect for time was reported with a significance level set at $p < 0.05$.

RESULTS:

13 out of 132 male athletes assessed for eligibility between January 2014 and December 2015 were included. 1 dropped out, while 12 (31 years, range 20-49) completed the study; 11 had 7 MRI scans each and one had 5 MRI scans performed. There were no significant day-to-day changes for any of the extent of oedema measures (p values ranging from 0.12 to 0.81). Fibre disruption (tear), present in 5 of the athletes, was detectable from day 1, with small and insignificant day-to-day changes (p values ranging from 0.45 to 0.95).

CONCLUSIONS:

We observed insignificant day-to-day changes in the extent of oedema throughout the first week following acute hamstring injury. Fibre disruption (tear) was detectable from the first day after injury. These findings indicate that MRI can be performed on any day during the first week following an acute (hamstring) muscle injury.

52. EXERCISE**Hamstring strengthening**

Br J Sports Med. 2017 Jul;51(13):1021-1028. doi: 10.1136/bjsports-2015-095739. Epub 2016 May 13.

Impact of exercise selection on hamstring muscle activation.

Bourne MN^{1,2,3}, Williams MD⁴, Opar DA⁵, Al Najjar A⁶, Kerr GK^{1,2}, Shield AJ^{1,2}.

OBJECTIVE:

To determine which strength training exercises selectively activate the biceps femoris long head (BF_{LongHead}) muscle.

METHODS:

We recruited 24 recreationally active men for this two-part observational study. Part 1: We explored the amplitudes and the ratios of lateral (BF) to medial hamstring (MH) normalised electromyography (nEMG) during the concentric and eccentric phases of 10 common strength training exercises. Part 2: We used functional MRI (fMRI) to determine the spatial patterns of hamstring activation during two exercises which (1) most selectively and (2) least selectively activated the BF in part 1.

RESULTS:

Eccentrically, the largest BF/MH nEMG ratio occurred in the 45° hip-extension exercise; the lowest was in the Nordic hamstring (Nordic) and bent-knee bridge exercises. Concentrically, the highest BF/MH nEMG ratio occurred during the lunge and 45° hip extension; the lowest was during the leg curl and bent-knee bridge. fMRI revealed a greater BF_(LongHead) to semitendinosus activation ratio in the 45° hip extension than the Nordic ($p < 0.001$). The T2 increase after hip extension for BF_{LongHead}, semitendinosus and semimembranosus muscles was greater than that for BF_{ShortHead} ($p < 0.001$). During the Nordic, the T2 increase was greater for the semitendinosus than for the other hamstring muscles ($p \leq 0.002$).

SUMMARY:

We highlight the heterogeneity of hamstring activation patterns in different tasks. Hip-extension exercise selectively activates the long hamstrings, and the Nordic exercise preferentially recruits the semitendinosus. These findings have implications for strategies to prevent hamstring injury as well as potentially for clinicians targeting specific hamstring components for treatment (mechanotherapy).

Blood flow restriction

Br J Sports Med. 2017 Jul;51(13):1003-1011. doi: 10.1136/bjsports-2016-097071. Epub 2017 Mar 4.

Blood flow restriction training in clinical musculoskeletal rehabilitation: a systematic review and meta-analysis.

Hughes L¹, Paton B², Rosenblatt B³, Gissane C¹, Patterson SD¹.

BACKGROUND AND OBJECTIVE:

Low-load exercise training with blood flow restriction (BFR) can increase muscle strength and may offer an effective clinical musculoskeletal (MSK) rehabilitation tool. The aim of this review was to systematically analyse the evidence regarding the effectiveness of this novel training modality in clinical MSK rehabilitation.

DESIGN:

This is a systematic review and meta-analysis of peer-reviewed literature examining BFR training in clinical MSK rehabilitation (Research Registry; researchregistry91).

DATA SOURCES:

A literature search was conducted across SPORTDiscus (EBSCO), PubMed and Science Direct databases, including the reference lists of relevant papers. Two independent reviewers extracted study characteristics and MSK and functional outcome measures. Study quality and reporting was assessed using the Tool for the assessment of Study quality and reporting in EXercise.

ELIGIBILITY:

Search results were limited to exercise training studies investigating BFR training in clinical MSK rehabilitation, published in a scientific peer-reviewed journal in English.

RESULTS:

Twenty studies were eligible, including ACL reconstruction (n=3), knee osteoarthritis (n=3), older adults at risk of sarcopenia (n=13) and patients with sporadic inclusion body myositis (n=1). Analysis of pooled data indicated low-load BFR training had a moderate effect on increasing strength (Hedges' $g=0.523$, 95% CI 0.263 to 0.784, $p<0.001$), but was less effective than heavy-load training (Hedges' $g=0.674$, 95% CI 0.296 to 1.052, $p<0.001$).

CONCLUSION:

Compared with low-load training, low-load BFR training is more effective, tolerable and therefore a potential clinical rehabilitation tool. There is a need for the development of an individualised approach to training prescription to minimise patient risk and increase effectiveness.

54. POSTURE**Prolonged standing**

Gait Posture. 2017 Jun 27. pii: S0966-6362(17)30228-X. doi: 10.1016/j.gaitpost.2017.06.005.

Low back pain development differentially influences centre of pressure regularity following prolonged standing.

Fewster KM¹, Gallagher KM¹, Howarth SH², Callaghan JP³.

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Occupations requiring prolonged periods of static standing are associated with the development of low back pain (LBP).

Certain individuals are susceptible to LBP development during prolonged standing (pain developers, PDs) while others are not (non-pain developers, NPDs). Linear centre of pressure (COP) measures suggest that standing balance control is negatively influenced following prolonged standing, and that PDs and NPDs may be differentially affected. The objective of this study was to determine if nonlinear standing balance control, quantified on COP, using sample entropy, is altered after 2-h of standing. Thirty two participants stood for 2-h. Separate 2-min standing trials, performed with eyes open and eyes closed, were collected before and after the 2-h standing protocol. Sample entropy, median power frequency and RMS amplitude of the COP time-series, was calculated from the 2-min standing trials for all participants. For comparison, participants were classified, post hoc, as PDs or NPDs according to visual analog scale pain scores. Sample entropy decreased after 2-h of standing for both PDs and NPDs, however, the decrease for NPDs was only 21% of the decrease observed in PDs.

This study demonstrated that nonlinear control of upright standing changes after 2- hours of standing, resulting in an increase in COP regularity post 2- hours of standing for both PDs and NPDs. PDs displayed a greater change in COP regularity, which is supported by the theory that increased COP regularity occurs with pain/pathology.

Exercise and posture

Osteoporos Int. 2017 Jul 8. doi: 10.1007/s00198-017-4109-x.

Targeted spine strengthening exercise and posture training program to reduce hyperkyphosis in older adults: results from the study of hyperkyphosis, exercise, and function (SHEAF) randomized controlled trial.

Katzman WB¹, Vittinghoff E², Lin F², Schafer A^{3,4}, Long RK⁵, Wong S⁶, Gladin A⁷, Fan B⁸, Allaire B⁹, Kado DM¹⁰, Lane NE¹¹.

A 6-month randomized controlled trial of spine-strengthening exercise and posture training reduced both radiographic and clinical measures of kyphosis. Participants receiving the intervention improved self-image and satisfaction with their appearance. Results suggest that spine-strengthening exercise and postural training may be an effective treatment option for older adults with hyperkyphosis.

INTRODUCTION:

The purpose of the present study is to determine in a randomized controlled trial whether spine-strengthening exercises improve Cobb angle of kyphosis in community-dwelling older adults.

METHODS:

We recruited adults ≥ 60 years with kyphosis $\geq 40^\circ$ and enrolled 99 participants (71 women, 28 men), mean age 70.6 ± 0.6 years, range 60-88, with baseline Cobb angle $57.4 \pm 12.5^\circ$. The intervention included group spine-strengthening exercise and postural training, delivered by a physical therapist, 1-h, three times weekly for 6 months. Controls received four group health education meetings. The primary outcome was change in the gold standard Cobb angle of kyphosis measured from standing lateral spine radiographs. Secondary outcomes included change in kyphometer-measured kyphosis, physical function (modified Physical Performance Test, gait speed, Timed Up and Go, Timed Loaded Standing, 6-Min Walk), and health-related quality of life (HRQoL) (PROMIS global health and physical function indexes, SRS-30 self-image domain). ANCOVA was used to assess treatment effects on change from baseline to 6 months in all outcomes.

RESULTS:

There was a -3.0° (95% CI $-5.2, -0.8$) between-group difference in change in Cobb angle, $p = 0.009$, favoring the intervention and approximating the magnitude of change from an incident vertebral fracture. Kyphometer-measured kyphosis ($p = 0.03$) and SRS-30 self-esteem ($p < 0.001$) showed favorable between-group differences in change, with no group differences in physical function or additional HRQoL outcomes, $p > 0.05$.

CONCLUSIONS:

Spine-strengthening exercise and posture training over 6 months reduced kyphosis compared to control. Our randomized controlled trial results suggest that a targeted kyphosis-specific exercise program may be an effective treatment option for older adults with hyperkyphosis.

56. ATHLETICS**Groin injuries**

Scand J Med Sci Sports. 2017 Jun 26. doi: 10.1111/sms.12939.

Characteristics of acute groin injuries in the hip flexor muscles - a detailed MRI study in athletes.

Serner A^{1,2}, Weir A¹, Tol JL^{1,3,4}, Thorborg K², Roemer F^{5,6}, Guermazi A⁵, Yamashiro E¹, Hölmich P^{1,2}.

Hip flexor injuries account for one third of acute groin injuries; however, little is known about specific injury characteristics. The aims of this study was to describe acute hip flexor injuries using magnetic resonance imaging (MRI) in athletes with acute groin pain, and to compare specific muscle injuries with reported injury situations. Male athletes with acute groin pain were prospectively and consecutively included during 3 sports seasons. MRI was performed within 7 days of injury using a standardized protocol and a reliable assessment approach. All athletes with an MRI confirmed acute hip flexor muscle injury were included. 156 athletes presented with acute groin pain of which 33 athletes were included, median age 26 y (range 18-35). There were 16 rectus femoris, 12 iliacus, 7 psoas major, 4 sartorius, and 1 tensor fascia latae injury. Rectus femoris injuries primarily occurred during kicking (10) and sprinting (4), whereas iliacus injuries most frequently occurred during change of direction (5). In 10 (63%) rectus femoris injuries tendinous injury was observed.

The iliacus and psoas major injuries were mainly observed at the musculotendinous junction (MTJ), and two included tendinous injury. We have illustrated specific injury locations within these muscles, which may be relevant for the clinical diagnosis and prognosis of these injuries. Most proximal rectus femoris injuries included tendinous injury. In contrast, distinct acute iliacus and psoas injuries predominantly occurred at the MTJ.

Only the iliacus or psoas major were injured during change of direction, whereas rectus femoris injuries occurred primarily during kicking and sprinting. This article is protected by copyright. All rights reserved.

Physical activity improves LE function

J Am Geriatr Soc. 2017 Jul 4. doi: 10.1111/jgs.14991.

Associations Between Self-Reported Physical Activity and Physical Performance Measures Over Time in Postmenopausal Women: The Women's Health Initiative.

Laddu DR¹, Wertheim BC², Garcia DO³, Brunner R⁴, Groessl E^{5,6}, Shadyab AH⁶, Going SB⁷, LaMonte MJ⁸, Cannell B⁹, LeBoff MS¹⁰, Cauley JA¹¹, Thomson CA^{2,3}, Stefanick ML¹².

OBJECTIVES:

To examine prospective associations between changes in physical activity (PA) and changes in physical performance measures (PPMs) over 6 years in older women.

DESIGN:

Prospective cohort study.

SETTING:

Forty clinical centers in the United States.

PARTICIPANTS:

Women aged 65 and older (mean age 69.8) enrolled in the Women's Health Initiative Clinical Trials with gait speed, timed chair stand, grip strength, and self-reported recreational PA data assessed at baseline (1993-98) and follow-up Years 1, 3, and 6 (N = 5,092).

MEASUREMENTS:

Mixed-effects linear regression models were used to determine the association between time-varying PA and change in each PPM. Potential interactions between time-varying PA and age (<70, ≥70) were also tested.

RESULTS:

Significant, dose-response associations between PA and improvements in all PPMs were observed over the 6 years of follow-up after adjusting for important covariates. High PA groups (≥1,200 metabolic equivalent (MET)-min/wk) had stronger grip strength (0.48 kg greater; P < .01), more chair stands (0.35 more; P < .001), and faster gait speeds (0.06 m/s faster; P < .001) than sedentary women (<100 MET-min/wk). Higher PA levels were associated with a greater increase in chair stands over time in women aged 70 and older (P < .001) than in those younger than 70 (P_{interaction for age} = .01).

CONCLUSION:

In postmenopausal women, maintaining high PA levels over time is associated with better lower extremity function. These data support the view that regular PA plays an important role in maintaining functional status during aging in older women.

Interval training

Sports Med. 2017 Jun 22. doi: 10.1007/s40279-017-0753-8. [Epub ahead of print]

High-Intensity Interval Training Interventions in Children and Adolescents: A Systematic Review.

Eddolls WTB¹, McNarry MA², Stratton G^{2,3}, Winn CON², Mackintosh KA².

BACKGROUND:

Whilst there is increasing interest in the efficacy of high-intensity interval training in children and adolescents as a time-effective method of eliciting health benefits, there remains little consensus within the literature regarding the most effective means for delivering a high-intensity interval training intervention. Given the global health issues surrounding childhood obesity and associated health implications, the identification of effective intervention strategies is imperative.

OBJECTIVES:

The aim of this review was to examine high-intensity interval training as a means of influencing key health parameters and to elucidate the most effective high-intensity interval training protocol.

METHODS:

Studies were included if they: (1) studied healthy children and/or adolescents (aged 5-18 years); (2) prescribed an intervention that was deemed high intensity; and (3) reported health-related outcome measures.

RESULTS:

A total of 2092 studies were initially retrieved from four databases. Studies that were deemed to meet the criteria were downloaded in their entirety and independently assessed for relevance by two authors using the pre-determined criteria. From this, 13 studies were deemed suitable. This review found that high-intensity interval training in children and adolescents is a time-effective method of improving cardiovascular disease biomarkers, but evidence regarding other health-related measures is more equivocal. Running-based sessions, at an intensity of >90% heart rate maximum/100-130% maximal aerobic velocity, two to three times a week and with a minimum intervention duration of 7 weeks, elicit the greatest improvements in participant health.

CONCLUSION:

While high-intensity interval training improves cardiovascular disease biomarkers, and the evidence supports the effectiveness of running-based sessions, as outlined above, further recommendations as to optimal exercise duration and rest intervals remain ambiguous owing to the paucity of literature and the methodological limitations of studies presently available.

Mindfulness practice

Sports Med. 2017 Jun 29. doi: 10.1007/s40279-017-0752-9.

Effects of Mindfulness Practice on Performance-Relevant Parameters and Performance Outcomes in Sports: A Meta-Analytical Review. Bühlmayer L^{1,2}, Birrer D¹, Röthlin P¹, Faude O², Donath L^{3,4}.

BACKGROUND: Mindfulness as a present-oriented form of mental training affects cognitive processes and is increasingly considered meaningful for sport psychological training approaches. However, few intervention studies have examined the effects of mindfulness practice on physiological and psychological performance surrogates or on performance outcomes in sports.

OBJECTIVE: The aim of the present meta-analytical review was to examine the effects of mindfulness practice or mindfulness-based interventions on physiological and psychological performance surrogates and on performance outcomes in sports in athletes over 15 years of age. **STUDY SELECTION:** Randomized and non-randomized controlled studies that compared mindfulness practice techniques as an intervention with an inactive control or a control that followed another psychological training program in healthy sportive participants were screened for eligibility.

DATA EXTRACTION: Eligibility and study quality [Physiotherapy Evidence Database (PEDro)] scales were independently assessed by two researchers. A third independent researcher was consulted to achieve final consensus in case of disagreement between both researchers. Standardized mean differences (SMDs) were calculated as weighted Hedges' g and served as the main outcomes in comparing mindfulness practice versus control. Statistical analyses were conducted using a random-effects inverse-variance model.

RESULTS: Nine trials of fair study quality (mean PEDro score 5.4, standard deviation 1.1) with 290 healthy sportive participants (athletics, cyclists, dart throwers, hammer throwers, hockey players, hurdlers, judo fighters, rugby players, middle-distance runners, long-distance runners, shooters, sprinters, volleyball players) were included. Intervention time varied from 4 weeks to over 2 years. The practice frequency lasted from twice daily to just once a week, and the mean session time covered 50-60 min. In favor of mindfulness practice compared with the control condition, large effects with narrow confidence limits and low heterogeneity were found for mindfulness scores [SMD 1.03, 90% confidence interval (CI) 0.67-1.40, $p < 0.001$, $I^2 = 17\%$]. Physiological performance indices depicted wide confidence limits accompanied with very large heterogeneity. However, the effect sizes remained very large, with confidence limits that did not overlap zero (SMD 3.62, 90% CI 0.03-7.21, $p = 0.10$, $I^2 = 98\%$). Moderate to large effects were observed for both psychological performance surrogates (SMD 0.72, 90% CI 0.46-0.98, $p < 0.001$, $I^2 = 14\%$) and performance outcomes in shooting and dart throwing (SMD 1.35, 90% CI 0.61-2.09, $p = 0.003$, $I^2 = 82\%$).

CONCLUSIONS: Mindfulness practice consistently and beneficially modulates mindfulness scores. Furthermore, physiological and psychological surrogates improved to a meaningful extent following mindfulness practice, as well as performance outcomes in shooting and dart throwing. It seems reasonable to consider mindfulness practice strategies as a regular complementary mental skills training approach for athletes, at least in precision sports; however, more high-quality, randomized, controlled trials on mindfulness practice and performance improvements in diverse sport settings are needed.

57. GAIT**Hippocampus and speed of gait**

Neurology. 2017 Jun 28. pii: 10.1212/WNL.0000000000004153. doi: 10.1212/WNL.0000000000004153.

Slowing gait and risk for cognitive impairment: The hippocampus as a shared neural substrate.

Rosso AL¹, Verghese J², Metti AL², Boudreau RM², Aizenstein HJ², Kritchevsky S², Harris T², Yaffe K², Satterfield S², Studenski S², Rosano C².

OBJECTIVE:

To identify the shared neuroimaging signature of gait slowing and cognitive impairment.

METHODS:

We assessed a cohort of older adults (n = 175, mean age 73 years, 57% female, 65% white) with repeated measures of gait speed over 14 years, MRI for gray matter volume (GMV) at year 10 or 11, and adjudicated cognitive status at year 14. Gait slowing was calculated by bayesian slopes corrected for intercepts, with higher values indicating faster decline. GMV was normalized to intracranial volume, with lower values indicating greater atrophy for 10 regions of interest (hippocampus, anterior and posterior cingulate, primary and supplementary motor cortices, posterior parietal lobe, middle frontal lobe, caudate, putamen, pallidum). Nonparametric correlations adjusted for demographics, comorbidities, muscle strength, and knee pain assessed associations of time to walk with GMV. Logistic regression models calculated odds ratios (ORs) of gait slowing with dementia or mild cognitive impairment with and without adjustment for GMV.

RESULTS:

Gait slowing was associated with cognitive impairment at year 14 (OR per 0.1 s/y slowing 1.47; 95% confidence interval 1.04-2.07). The right hippocampus was the only region that was related to both gait slowing ($\rho = -0.16$, $p = 0.03$) and cognitive impairment (OR 0.17, $p = 0.009$). Adjustment for right hippocampal volume attenuated the association of gait slowing with cognitive impairment by 23%.

CONCLUSIONS:

The association between gait slowing and cognitive impairment is supported by a shared neural substrate that includes a smaller right hippocampus. This finding underscores the value of long-term gait slowing as an early indicator of dementia risk.

58. RUNNING

Sound feedback

Sound Intensity Feedback During Running Reduces Loading Rates and Impact Peak

Authors: Jeremiah J. Tate, PT, PhD¹, Clare E. Milner, PhD²

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**0 **Issue:**0 **Pages:**1–18 **DOI:**10.2519/jospt.2017.7275

Study Design

Controlled laboratory study, within session design.

Background

Gait retraining has been proposed as an effective intervention to reduce impact loading in runners at risk of stress fractures. Interventions that can be easily implemented in the clinic are needed.

Objective

To assess the immediate effects of sound intensity feedback related to impact during running on vertical impact peak (VIP), peak vertical instantaneous loading rate (VILR), and vertical average loading rate (VALR).

Methods

Fourteen healthy, college-aged runners who ran at least 9.7 km per week participated (4 males, 10 females; age, 23.7 ± 2.0 years; height, 1.67 ± 0.08 m; mass, 60.9 ± 8.7 kg). A decibel meter provided real-time sound intensity feedback of treadmill running via an iPad application. Participants were asked to reduce the sound intensity of running while receiving continuous feedback for 15 minutes while running at their self-selected preferred speed. Baseline and follow up ground reaction force data were collected during overground running at their self-selected preferred running speed.

Results

Dependent t-tests indicated a statistically significant reduction in VIP (1.56 BW to 1.13 BW, $P \leq .0001$), VILR (95.48 BW/s to 62.79 BW/s, $P = .001$), and VALR (69.09 BW/s to 43.91 BW/s, $P \leq .001$) after gait retraining compared to baseline.

Conclusion

The results of the current study support the use of sound intensity feedback during treadmill running to immediately reduce loading rate and impact force. Within session reductions in impact peak and loading rates transferred to over ground running were demonstrated. Decreases in loading were of comparable magnitude to other gait retraining methods. *J Orthop Sports Phys Ther*, Epub 6 Jul 2017. doi:10.2519/jospt.2017.7275

59. PAIN**Factors for chronic pain**

BMJ Open. 2017 Jul 2;7(6):e014939. doi: 10.1136/bmjopen-2016-014939.

Factors associated with return to work among people on work absence due to long-term neck or back pain: a narrative systematic review.

Rashid M¹, Kristofferzon ML^{2,3}, Nilsson A^{2,3}, Heiden M¹.

OBJECTIVE:

The purpose of this narrative systematic review was to summarise prognostic factors for return to work (RTW) among people with long-term neck/shoulder or back pain.

METHODS:

A systematic literature search was performed through three databases (Medline, CINAHL and PsycINFO) for studies published until February 2016. Only observational studies of people on work absence (≥2 weeks) due to neck/shoulder or back pain were included. The methodological quality of the included studies was assessed using guidelines for assessing quality in prognostic studies on the basis of Framework of Potential Biases. Factors found in the included studies were grouped into categories based on similarities and then labelled according to the aspects covered by the factors in the category.

RESULTS:

Nine longitudinal prospective cohort studies and one retrospective study fulfilled the inclusion criteria. From these, five categories of factors were extracted. Our findings indicate that recovery beliefs, health-related factors and work capacity are important for RTW among people with long-term neck or back pain. We did not find support for workplace factors and behaviour being predictive of RTW.

CONCLUSIONS:

Our findings suggest that recovery beliefs, perceived health and work capacity may be important targets of intervention for people with long-term neck or back pain. However, more high-quality prospective studies are needed to confirm the results and improve our understanding of what is needed to facilitate RTW in this population.

60. COMPLEX REGIONAL PAIN**Common factors**

Pain Pract. 2017 Jul 10. doi: 10.1111/papr.12610. [Epub ahead of print]

Risk factors for post-treatment complex regional pain syndrome (CRPS) - an analysis of 647 cases of CRPS from the Danish Patient Compensation Association.

Petersen PB^{1,2,3}, Mikkelsen KL², Lauritzen JB³, Krogsgaard MR¹.

OBJECTIVES:

Complex regional pain syndrome is a challenging condition including a broad spectrum of sensory, autonomic and motor features predominantly in extremities recovering from a trauma. Few large-scale studies have addressed occurrence of and factors associated with CRPS following orthopedic treatment. The present study aimed to identify factors associated with post-treatment development of CRPS.

METHODS:

Using the Danish Patient Compensation Association's (DPCA) database we identified 647 patients claiming post-treatment CRPS, between 1992 and 2015. Age, gender, initial diagnosis, treatment, and size of compensation were extracted. Multivariate logistic regressions were performed to identify variables associated with approval of the claim. For carpal tunnel syndrome (CTS) patients we registered if symptoms were bilateral or unilateral and if neurophysiology prior to treatment was pathologic.

RESULTS:

The following characteristics were found; women:men 4:1, primary diagnosis to the upper limb:lower limb 2.5:1 and surgical:non-surgical treatment 3:1. Mean age 47.5±13.7, no inter-gender difference. Antebrachial fracture (23%) and CTS (9%) were the most common primary conditions. Surgical treatment was associated with approval of the claim (OR 3.5, 95% CI 2.3-5.3, $p < 0.001$). Half of CTS patients had normal neurophysiology prior to surgery; among patients with unilateral symptoms 71.4% had normal neurophysiology.

CONCLUSIONS:

Female gender, surgical treatment and treatment to the upper limb were risk factors. Elective surgery accounted for a large number of post-treatment CRPS patients. In CTS patients developing CRPS a normal neurophysiological examination was common, it could be suspected these patients suffer from CRPS in early phase and not CTS. This article is protected by copyright. All rights reserved.

61. FIBROMYALGIA

Childhood adversities

The relationship between childhood adversities and fibromyalgia in the general population

Aleksi Varinen Elise Kosunen Kari Mattila Tuomas Koskela Markku Sumanen

DOI: <http://dx.doi.org/10.1016/j.jpsychores.2017.06.011>

Highlights

- Various adversities are linked to the onset of fibromyalgia. However, the association of childhood adversities and fibromyalgia is disputed.
- The study population is based on a large cohort, which is a sample of the working-age Finnish population.
- The use of self-reported adversities captures the emotional importance of childhood events.
- Findings of our study suggest that there are associations between childhood adversities and fibromyalgia, although they are relatively weak.

Abstract

Background

Fibromyalgia is a syndrome characterized by widespread pain and a variety of somatic symptoms. The international prevalence of fibromyalgia is 2–5%, but its current prevalence in Finland is unclear. Various adversities are linked to the onset of fibromyalgia. However, there is need for more data regarding the association between childhood physical abuse and fibromyalgia. Further, the association of childhood emotional stressors and fibromyalgia is disputed. The aim of the current study is to produce more information about that relationship using data from the Health and Social Support (HeSSup) Study.

Methods

HeSSup is a postal study consisting of a random sample of the Finnish population. The study setting is cross-sectional. Participants in the study were asked if they have been diagnosed with fibromyalgia. Those responding affirmatively were classified as fibromyalgia patients. Six childhood adversities were enquired, and the relationship between fibromyalgia and these events were analysed by cross tabulation and logistic regression.

Results

There were associations between examined adversities and fibromyalgia before and after adjustments for demographic features and depression (being afraid of a family member: odds ratio after adjustment 1.60, 95% CI 1.28–2.01; long-lasting financial difficulties 1.45, 1.18–1.77; serious conflicts in the family 1.40, 1.14–1.72; parental divorce 1.34, 1.05–1.72; serious or chronic illnesses in the family 1.27, 1.05–1.55; alcohol problems in the family 1.25, 1.02–1.53).

Conclusion

All six enquired adversities were associated with fibromyalgia after adjustments. These findings emphasize the importance of preventing adverse childhood experiences.

62 A. NUTRITION/VITAMINS**Vit D helps psychological symptoms**

Prog Neuropsychopharmacol Biol Psychiatry. 2017 Jun 19;79(Pt B):84-89. doi: 10.1016/j.pnpbp.2017.06.016.

Clinical trial of the effects of vitamin D supplementation on psychological symptoms and metabolic profiles in maintenance methadone treatment patients.

Ghaderi A¹, Banafshe HR², Motmaen M³, Rasouli-Azad M⁴, Bahmani F⁵, Asemi Z⁶.

BACKGROUND:

Vitamin D deficiency may be associated with some complications including nonspecific musculoskeletal pain and periodontal disease in maintenance methadone treatment (MMT) patients. This study was designed to determine the effect of vitamin D supplementation on psychological symptoms and metabolic profiles in MMT patients.

METHODS:

This randomized, double-blind, placebo-controlled, clinical trial was carried out among 68 MMT patients. Participants were randomly allocated to receive either 50,000IU vitamin D supplements (n=34) or placebo (n=34) every 2weeks for 12weeks. Fasting blood samples were taken at baseline and post-intervention to evaluate relevant variables.

RESULTS:

After the 12-week intervention, serum 25(OH) vitamin D levels significantly increased in the intervention group compared with the placebo group (+8.1±4.9 vs. -0.4±3.0, P<0.001). In addition, vitamin D supplementation significantly improved Pittsburgh Sleep Quality Index (-1.5±2.2 vs. -0.2±2.3, P=0.02) and Beck Depression Inventory (-4.8±7.3 vs. -1.5±6.1, P=0.04) compared with the placebo. Patients who received vitamin D supplements had significantly decreased fasting plasma glucose (-7.5±10.6 vs. +0.3±10.7mg/dL, P=0.004), serum insulin levels (-3.6±5.3 vs. -0.9±3.5 μIU/mL, P=0.01), homeostasis model of assessment-insulin resistance (-1.0±1.3 vs. -0.2±0.7, P=0.003), serum triglycerides (-9.6±30.8 vs. +15.6±30.2mg/dL, P=0.001), total- (-8.7±20.9 vs. +11.0±27.4mg/dL, P=0.001) and LDL-cholesterol (-11.1±17.9 vs. +5.9±27.5mg/dL, P=0.004) compared with the placebo. Additionally, vitamin D intake resulted in a significant decrease in serum high sensitivity C-reactive protein (-2.2±4.2 vs. +2.0±3.7mg/L, P<0.001), and significant increases plasma total antioxidant capacity (+26.2±99.8 vs. -86.3±127.5mmol/L, P<0.001) and glutathione levels (+292.3±172.4 vs. +48.9±208.9μmol/L, P<0.001) compared with the placebo. There was no significant effect of vitamin D supplementation on serum HDL-cholesterol, and other markers of insulin metabolism, inflammation and oxidative stress.

CONCLUSIONS:

Totally, taking 50,000IU vitamin D supplement every 2weeks for 12weeks in MMT patients had beneficial effects on psychological symptoms and few metabolic profiles.

Smokeless tobacco

Int J Cancer. 2017 Jul 15;141(2):264-270. doi: 10.1002/ijc.30736. Epub 2017 Apr 24.

A longitudinal study of smokeless tobacco use and mortality in the United States.

Timberlake DS¹, Nikitin D², Johnson NJ³, Altekruse SF⁴.

Abstract

Few studies in the United States have examined longitudinally the mortality risks associated with use of smokeless tobacco (SLT).

The sample of our study was composed of participants from the National Longitudinal Mortality Study who completed a single Tobacco Use Supplement to the Current Population Survey between the years 1985 and 2011. Using survival methods, SLT use at the baseline survey was examined as a predictor of all-cause mortality and cause-specific mortalities in models that excluded individuals who had ever smoked cigarettes, cigars or used pipes (final n = 349,282). The participants had median and maximum follow-up times of 8.8 and 26.3 years, respectively. Regression analyses indicated that compared to the never tobacco users, the current SLT users did not have elevated mortality risks from all cancers combined, the digestive system cancers and cerebrovascular disease. However, current SLT users had a higher mortality risk for coronary heart disease (CHD) [hazard ratio (HR) (95% CI) = 1.24 (1.05, 1.46)] relative to never tobacco users. In a separate model, the elevated risk for CHD mortality corresponded to the use of moist snuff [HR (95% CI) = 1.30 (1.03, 1.63)]. The associations with CHD mortality could be attributed to long-term nicotine exposure, other SLT constituents (e.g., metals) or the confounding effects of CHD risk factors not accounted for in our study.

The study's findings contribute to the ongoing dialogue on tobacco harm reduction and the US FDA's evaluation of Modified Risk Tobacco Product applications submitted by American SLT manufacturers.

Diet and health

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Diet quality is associated with reduced incidence of cancer and self-reported chronic disease: Observations from Alberta's Tomorrow Project.

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Abstract

The objective of this study was to assess diet quality using the Healthy Eating Index-2005 Canada (HEI-2005-Canada) and its association with risk of cancer and chronic disease in a sample of Alberta's Tomorrow Project (ATP) participants.

Food frequency questionnaires completed by 25,169 participants (38% men; mean age 50.3 (9.2)) enrolled between 2000 and 2008 were used to calculate HEI-2005-Canada scores. Data from a subset of participants (n=10,735) who reported no chronic disease at enrollment were used to investigate the association between HEI-2005-Canada score and development of self-reported chronic disease at follow-up (2008). Participants were divided into HEI-2005-Canada score quartiles. Cox proportional hazards models were used to estimate hazard ratios (HR) and 95% confidence intervals (CI) for cancer and chronic disease incidence. In this cohort, mean HEI-2005-Canada scores for men and women were 50.9 and 55.5 (maximum range 0-100), respectively. In men, higher HEI-2005-Canada score (Q4 vs. Q1) was associated with lower cancer risk (HR (95% CI) 0.63 (0.49-0.83)) over the course of follow-up (mean (SD)=10.4 (2.3) years); the same was not observed in women. In contrast, higher overall HEI-2005-Canada score (Q4 vs. Q1) was associated with lower risk of self-reported chronic disease (0.85 (0.75-0.97)) in both men and women over follow-up (4.2 (2.3) years).

In conclusion, in this cohort better diet quality was associated with a lower risk of cancer in men and lower risk of chronic disease in both sexes. Future studies with longer follow-up and repeated measures of diet may be helpful to elucidate sex-specific associations between dietary quality and disease outcomes.

Coffee improves life expectancy**Association of coffee consumption with total and cause-specific mortality among nonwhite populations**

Annals of Internal Medicine

Park SY, et al.

This study was conducted to assess the association between coffee consumption and risk of total and cause-specific mortality among nonwhite populations. Findings demonstrated that there was a link between higher consumption of coffee and lower risk of death in African Americans, Japanese Americans, Latinos, and whites.

Methods

- The MEC (Multiethnic Cohort), a prospective population-based cohort study, was performed between 1993 and 1996 in Hawaii and Los Angeles, California.
- For this study, 185 855 African Americans, Native Hawaiians, Japanese Americans, Latinos, and whites aged 45 to 75 years were recruited.
- Outcomes were total and cause-specific mortality between 1993 and 2012.
- A validated food-frequency questionnaire was used to assess coffee intake at baseline.

Results

- Findings reported that 58 397 participants died during 3 195 484 person-years of follow-up (average follow-up, 16.2 years).
- Researchers observed that compared with drinking no coffee, coffee consumption was associated with lower total mortality after adjustment for smoking and other potential confounders (1 cup per day: hazard ratio [HR], 0.88 [95% CI, 0.85 to 0.91]; 2 to 3 cups per day: HR, 0.82 [CI, 0.79 to 0.86]; ≥ 4 cups per day: HR, 0.82 [CI, 0.78 to 0.87]; P for trend < 0.001).
- They noted that trends were similar between caffeinated and decaffeinated coffee.
- Data suggested significant inverse associations in 4 ethnic groups; the association in Native Hawaiians did not reach statistical significance.
- Outcomes also indicated inverse associations in never-smokers, younger participants (<55 years), and those who had not previously reported a chronic disease.
- Additionally, data highlighted that among examined end points, inverse associations were observed for deaths due to heart disease, cancer, respiratory disease, stroke, diabetes, and kidney disease.

Artificial sweeteners

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Artificially sweetened beverages, sugar-sweetened beverages, plain water, and incident diabetes mellitus in postmenopausal women: the prospective Women's Health Initiative observational study.

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Background: Sugar-sweetened beverages (SSBs) have been associated with an increased risk of diabetes mellitus (DM), whereas the association with artificially sweetened beverages (ASBs) is unclear.

Objective: We aimed to evaluate the associations of ASB and SSB consumption with the risk of developing DM and the potential benefit of replacing SSBs with ASBs or water.

Design: The national Women's Health Initiative recruited a large prospective cohort of postmenopausal women between 1993 and 1998. ASB, SSB, and water consumption was measured by lifestyle questionnaires, and DM was self-reported.

Results: Of 64,850 women, 4675 developed diabetes over an average of 8.4 y of follow-up. ASBs and SSBs were both associated with an increased risk of DM with an HR of 1.21 (95% CI: 1.08, 1.36) comparing ASB consumption of ≥ 2 serving/d to never or < 3 serving/mo, and an HR of 1.43 (95% CI: 1.17, 1.75) comparing SSB consumption of ≥ 2 serving/d to < 1 serving/wk (1 serving = one 12-ounce can or 355 mL). Subgroup analysis found an increased risk of DM associated with ASBs only in the obese group. Modeling the substitution of SSBs with an equal amount of ASBs did not significantly reduce the risk of developing DM. However, statistically substituting 1 serving of ASBs with water was associated with a significant risk reduction of 5% (HR: 0.95; 95% CI: 0.91, 0.99), whereas substituting 1 serving of SSBs with water was associated with a risk reduction of 10% (HR: 0.90; 95% CI: 0.85, 0.95).

Conclusions: ASBs were associated with a 21% increased risk of developing DM, approximately half the magnitude of SSBs (associated with a 43% increased risk). Replacing ASBs and SSBs with water could potentially reduce the risk. However, caution should be taken in interpreting these results as causal because both residual confounding and reverse causation could explain these results.