

2. LBP**Classification of radicular pain**

Spine J. 2017 May 5. pii: S1529-9430(17)30196-1. doi: 10.1016/j.spinee.2017.05.005.

Clinical classification criteria for radicular pain caused by lumbar disc herniation: the RAPIDH criteria (RADicular PaIn caused by Disc Herniation).

Genevay S¹, Courvoisier DS², Konstantinou K³, Kovacs FM⁴, Marty M⁵, Rainville J⁶, Norberg M⁷, Kaux JF⁸, Cha TD⁹, Katz JN¹⁰, Atlas SJ¹¹.

Author information

Abstract

CONTEXT:

Classification criteria are recommended for diseases that lack specific biomarkers in order to improve homogeneity in clinical research studies. Since imaging evidence of lumbar disc herniations (LDH) may not be associated with symptoms, clinical classification criteria based upon patient symptoms and physical examination findings are required.

PURPOSE:

This study aimed to produce clinical classification criteria to identify patients with radicular pain caused by LDH.

STUDY DESIGN:

Two stage process. Phase 1: Delphi process; Phase 2 cohort study.

PATIENT SAMPLE:

Outpatients recruited from spine clinics in 5 countries **OUTCOME MEASURES:** Items from history and physical examination **METHODS:** In Phase 1: Seventeen spine experts participated in a Delphi process to select symptoms and signs suggesting radicular pain caused by LDH. In Phase 2: Nineteen different clinical experts identified patients they confidently classified as presenting with: 1) Radicular pain caused by LDH, 2) neurogenic claudication (NC) caused by lumbar spinal stenosis (LSS), or 3) non-specific low back pain (NSLBP) with referred leg pain. Patients completed survey items and specialists documented examination signs. A score to predict radicular pain caused by LDH was developed based on the coefficients of the multivariate model. An unrestricted grant of less than 15000 USD was received from MSD: It was used to support the conception of the Delphi, data management and statistical analysis. No fees were allocated to participating spine specialists.

RESULTS:

Phase 1 generated a final list of 74 potential symptoms and signs. In phase 2, 209 patients with pain caused by LDH (89), neurogenic claudication (63), or NSLBP (57) were included. Items predicting radicular pain caused by LDH ($p < 0.05$) were: monoradicular leg pain distribution, patient-reported unilateral leg pain, positive straight leg raise test $< 60^\circ$ (or femoral stretch test), unilateral motor weakness and asymmetric ankle reflex. The score had an AUC of 0.91. An easy to use weighted set of criteria with similar psychometric characteristics is proposed (specificity 90.4%, sensitivity 70.6%).

CONCLUSION:

Classification criteria for identifying patients with radicular pain caused by LDH are proposed. Their use could improve the homogeneity of patients enrolled in clinical research studies.

7. PELVIC ORGANS/WOMAN'S HEALTH

Abdominal scarring following C section

BJOG. 2017 Apr 26. doi: 10.1111/1471-0528.14708.

Abdominal adhesions in gynaecologic surgery after caesarean section: a longitudinal population based register study.

Hesselman S1,2, Högberg U1, Råssjö EB2, Schytt E2, Löfgren M3, Jonsson M1.
Author information

Abstract

OBJECTIVE:

The aim of the study was to evaluate the association between abdominal adhesions at time of gynaecologic surgery and a history of caesarean delivery, and to investigate obstetric factors contributing to adhesion formation after caesarean section (CS).

DESIGN:

Longitudinal population based register study.

SETTING:

Sweden.

POPULATION:

Women undergoing benign hysterectomy and/or adnexal surgery in Sweden, 2000-2014, with a previous delivery during 1973-2013 (N=15,479).

METHODS:

Information about abdominal adhesions during gynaecological surgery, prior medical history, pregnancies and deliveries were retrieved from Swedish National Health and Quality registers.

MAIN OUTCOME MEASURES:

Adhesions.

RESULTS:

In women with previous CS, adhesions were present in 37%, compared with 10% of women with no previous CS (OR 5.18, 95% CI 4.70-5.71). Adhesions were more frequent with number of CS: 32% after one CS; 42% after two CS and 59% after three or more CS ($p < 0.001$). Regardless of number of CS, factors at CS such as age ≥ 35 years (aOR 1.28, 95% CI 1.05-1.55), BMI ≥ 30 (aOR 1.91, 95% CI 1.49-2.45) and postpartum infection (aOR 1.55, 95% CI 1.05-2.30) increased the risk of adhesions.

CONCLUSIONS:

Presence of adhesions in abdominal gynaecological surgery is associated with women's personal history of caesarean delivery. Numbers of CS was the important predictor of adhesions and advanced age, obesity and postpartum infection further increased the incidence. This article is protected by copyright. All rights reserved.

Drinking and Breast CA

Am J Epidemiol. 2017 May 9. doi: 10.1093/aje/kwx118.

Binge drinking modifies the association between lifetime alcohol intake and breast cancer risk in moderate drinkers.

White AJ, DeRoo LA, Weinberg CR, Sandler DP.

Abstract

The prevalence of binge drinking is rising in the United States. While alcohol is a breast cancer risk factor, less is known about the impact of episodic heavy drinking. Breast cancer-free women, ages 35-74, were enrolled in the Sister Study from 2003-2009 (n = 50,884). United States or Puerto Rico residents who had a sister with breast cancer were eligible. Multivariable Cox regression was used to estimate adjusted hazard ratios (HRs) and 95% confidence intervals (CIs) for breast cancer. 1,843 invasive breast cancers were diagnosed during follow-up (mean = 6.4 years). Increased breast cancer risk was observed for higher lifetime alcohol intake (≥ 230 drinks/year, HR = 1.35, 95% CI: 1.15, 1.58 versus < 60 drinks/year). Relative to low drinkers, HRs were increased for ever binge drinking (HR = 1.29, 95% CI: 1.15, 1.45) or blacking out (HR = 1.39, 95% CI: 1.17, 1.64). Compared to low drinkers who never binged, moderate drinkers who binged had a higher risk (HR = 1.25, 95% CI: 1.08, 1.44). There was evidence of effect modification between moderate lifetime drinking and bingeing (relative excess risk due to interaction (RERI) = 0.33, 95% CI: 0.10, 0.57).

Our findings support the established association between lifetime alcohol and breast cancer and provide evidence for an increased risk associated with heavy episodic drinking, especially among moderate lifetime drinkers.

Endometrial CA

J Acad Nutr Diet. 2016 Nov 30. pii: S2212-2672(16)31203-5. doi: 10.1016/j.jand.2016.09.036.

Association between Dietary Isoflavones in Soy and Legumes and Endometrial Cancer: A Systematic Review and Meta-Analysis.

Zhong XS, Ge J, Chen SW, Xiong YQ, Ma SJ, Chen Q.

Abstract**BACKGROUND:**

Epidemiologic studies have reported conflicting findings between soy- and legume-derived dietary isoflavones and risk of endometrial cancer.

OBJECTIVE:

The aim of the present meta-analysis was to quantitatively investigate the association between daily intake of soy- and legume-derived isoflavones and risk of endometrial cancer.

DESIGN:

A broad search was conducted in the following electronic databases: PubMed, EMBASE, Google Scholar, the Cochrane Library, the China Knowledge Resource Integrated Database, and the Chinese Biomedical Database based on combinations of the key words endometrial cancer, isoflavone, soy, and legume for epidemiologic studies that focused on relationships between dietary isoflavones and endometrial cancer risk. A fixed-effect or random-effect model was used to pool study-specific risk estimates.

RESULTS:

A total of 13 epidemiologic studies were included in the present meta-analysis, consisting of three prospective cohort studies and 10 population-based case-control studies. The final results indicated that higher dietary isoflavone levels from soy products and legumes were associated with a reduced risk of endometrial cancer (odds ratio [OR] 0.81, 95% CI 0.74 to 0.89). Low heterogeneous bias was observed ($I^2=11.7\%$; $P=0.327$). Subgroup analyses were conducted based on study design, source of dietary isoflavones, and study region. When restricted to study design, dietary isoflavones from soy and legumes played a role in prevention of endometrial cancer in case-control studies (OR 0.81, 95% CI 0.73 to 0.90). However, there did not appear to be an association between dietary isoflavones and endometrial cancer in cohort studies (OR 0.81, 95% CI 0.66 to 1.00). Significant associations were found between dietary isoflavones from soy products (OR 0.82, 95% CI 0.72 to 0.92) and legumes (OR 0.84, 95% CI 0.74 to 0.96) and endometrial cancer. Dietary isoflavones were associated with reduced incidence of endometrial cancer, both in Asian countries (OR 0.78, 95% CI 0.66 to 0.93) and non-Asian countries (OR 0.82, 95% CI 0.73 to 0.92).

CONCLUSIONS:

The findings suggest a weak inverse association between higher consumption of dietary isoflavones from soy products and legumes and endometrial cancer risk. However, there is still a need for large, prospective epidemiologic studies that provide a higher level of evidence to verify these findings.

Endometriosis and depression

Physical pain and emotion regulation as the main predictive factors of health-related quality of life in women living with endometriosis

Human Reproduction

Marki G, et al.

Sponsor

The purpose of this study is to find out at what extent are pain symptoms, psychological factors (anxiety, depression, and distress) and emotion regulation related to women's health in endometriosis. The outcome of this study suggests that physical pain symptoms and emotion regulation difficulties via psychological stress negatively affect the health-related quality of life (HRQoL) of women living with endometriosis.

Methods

- For this research, they designed a cross-sectional study.
- This study was conducted between October 2014 and October 2015 on 193 women living with endometriosis.
- The sample comprised of women with a medically confirmed diagnosis of endometriosis who received treatment at the participating clinic.
- All participants finished the Short Form Health Survey (SF-36), the Hospital Anxiety and Depression Scale, the Perceived Stress Scale and the Difficulties in Emotion Regulation Scale.
- Spearman's rank correlation was utilized to investigate the relationship between the measured factors, and structural equation modeling was utilized to test the proposed mediation models.

Results

- In this study, 46% was the reaction rate.
- In this review, 54.79% of the members given tension and 20.3% with depressive manifestations.
- Torment side effects, mental factors and challenges in feeling control were contrarily connected with HRQoL.
- Intervention models uncovered that physical agony, mental anxiety and troubles in feeling direction clarified 55% of the change in the general HRQoL, 41% of the variety in physical and 55% of the variety in mental HRQoL.
- As needs be, extreme physical agony ($\beta = -0.39$, $P < 0.001$) was straightforwardly, and troubles in feeling control ($\beta = -0.38$, $P < 0.001$) was by implication identified with crumbling in general HRQoL. Physical agony had a higher direct institutionalized impact ($\beta = -0.51$, $P < 0.001$) on physical HRQoL, and had no huge direct impact on mental HRQoL.
- Moreover, both physical agony ($\beta = -0.07$, $P < 0.001$) and troubles in feeling direction ($\beta = -0.46$, $P < 0.001$) had a huge aberrant impact on mental HRQoL.

8. VISCERA

Probiotics and depression

Probiotic Bifidobacterium Longum NCC3001 Reduces Depression Scores and Alters Brain Activity: A Pilot Study in Patients With Irritable Bowel Syndrome
MI Pinto-Sanchez et al. Gastroenterology. 2017 May 05. more

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- BACKGROUND & AIMS:** Probiotics can reduce symptoms of irritable bowel syndrome (IBS), but little is known about their effects on psychiatric comorbidities. We performed a prospective study to evaluate the effects of Bifidobacterium longum NCC3001 (BL) on anxiety and depression in patients with IBS.
- METHODS:** We performed a randomized, double-blind, placebo-controlled study of 44 adults with IBS and diarrhea or a mixed-stool pattern (based on Rome III criteria) and mild to moderate anxiety and/or depression (based on the Hospital Anxiety and Depression scale) at McMaster University in Canada, from March 2011 to May 2014. At the screening visit, clinical history and symptoms were assessed and blood samples were collected. Patients were then randomly assigned to groups and given daily BL (n=22) or placebo (n=22) for 6 weeks. At week 0, 6 and 10, we determined patients' levels of anxiety and depression, IBS symptoms, quality of life, and somatization using validated questionnaires. At week 0 and 6, stool, urine and blood samples were collected, and functional magnetic resonance imaging (fMRI) test was performed. We assessed brain activation patterns, fecal microbiota, urine metabolome profiles, serum markers of inflammation, neurotransmitters and neurotrophin levels.
- RESULTS:** At week 6, 14/22 patients in the BL group had reduction in depression scores of 2 points or more on the Hospital Anxiety and Depression scale, vs 7/22 patients in the placebo group (P=.04). BL had no significant effect on anxiety or IBS symptoms. Patients in the BL group had a mean increase in quality of life score compared with the placebo group. The fMRI analysis showed that BL reduced responses to negative emotional stimuli in multiple brain areas, including amygdala and fronto-limbic regions, compared with placebo. The groups had similar fecal microbiota profiles, serum markers of inflammation, and levels of neurotrophins and neurotransmitters, but the BL group had reduced urine levels of methylamines and aromatic amino acids metabolites. At week 10, depression scores were reduced in patients given BL vs placebo.
- CONCLUSION:** In a placebo-controlled trial, we found that the probiotic BL reduces depression but not anxiety scores and increases quality of life in patients with IBS. These improvements were associated with changes in brain activation patterns that indicate that this probiotic reduces limbic reactivity.

IBS and HA's

Eur J Pain. 2017 May 16. doi: 10.1002/ejp.1056.

Migraine prevalence in inflammatory bowel disease patients: A tertiary-care centre cross-sectional study.

Moisset X^{1,2}, Bommelaer G^{3,4}, Boube M^{3,4}, Ouchchane L^{5,6}, Goutte M^{3,4}, Dapoigny M^{3,4}, Dallel R^{1,7}, Guttman A^{5,6}, Clavelou P^{1,2}, Buisson A^{3,4}.

Author information

Abstract

BACKGROUND:

Inflammatory bowel diseases (IBD) are systemic, chronic inflammatory conditions that predominately affect the gastrointestinal tract and can induce abdominal pain. Besides, many IBD patients complain about headaches in daily practice. The objective was to assess the prevalence of headaches, including migraines and pain with neuropathic characteristics (NC), in IBD patients compared to historical controls from the general population.

METHODS:

Overall, 203 consecutive tertiary-care centre patients completed validated self-administered questionnaires and benefitted from a clinical evaluation performed by an IBD physician at the same time.

RESULTS:

In our cohort, 75% of the patients experienced pain in the previous 3 months. Migraine prevalence was two-fold higher in IBD patients compared to the general population (41% vs. 21.3%, $p < 0.001$). Migraine was associated with a younger age, female gender and higher depression scores. Although migraine impact was very important for 30% of the patients (61/203), specific acute therapeutics were prescribed in only 22% of cases (18/83). Chronic pain with NC was more frequent than in the general population (11.3% vs. 6.9%, $p = 0.012$) and was strongly associated with the presence of extra-intestinal manifestations ($p < 0.001$). Abdominal pain concerned 19% of the patients during the previous week and was, as expected, associated with disease activity.

CONCLUSIONS:

Migraine prevalence is strongly increased in IBD patients followed in tertiary care. A systematic screening for migraine should be done by IBD physicians in daily practice to provide adequate therapeutics. Further studies are needed to confirm whether migraine should be classified as IBD extra-intestinal manifestations.

SIGNIFICANCE:

Migraine prevalence was two-fold higher in IBD patients compared to the general population, was generally poorly treated and a systematic screening for migraine should be done by IBD physicians in daily practice to provide adequate therapeutics.

10 A. CERVICAL SPINE**Chronic pain**

Int J Rehabil Res. 2017 Apr 25. doi: 10.1097/MRR.0000000000000230.

Acceptance in chronic neck pain: associations with disability and fear avoidance beliefs.

Thompson DP¹, Woby SR.
Author information

Abstract

Chronic neck pain can result in significant levels of disability. Physiotherapy treatments often aim to modify cognitive factors and this approach benefits some, but not all, patients. Research from other pain conditions suggests that acceptance may be related to disability; however, it is unclear whether these associations exist in patients with neck pain. Moreover, it is unclear to what extent other cognitive factors are related to acceptance. Feasibly, if these factors are related, existing treatments may already be indirectly modifying acceptance. The aim of this study was therefore to establish the associations between acceptance and disability, and between acceptance and other cognitive factors. Cross-sectional data were collected from 149 patients and regression analyses were carried out. In the first analysis, disability was the dependent variable and the proportion of variance explained by two acceptance subscales (activities engagement and pain willingness) was calculated. In the second analyses, the acceptance subscales were the dependent variables. Measures of pain-related fear, catastrophizing and pain vigilance and awareness were entered as explanatory variables and the proportion of variance explained was calculated. In the first analysis, acceptance explained 18% of variance in disability ($P < 0.001$). In the second analysis, cognitive factors explained 7% ($P < 0.05$) of variance in activities engagement and 58% ($P < 0.001$) of pain willingness.

On this basis, treatments that enhance acceptance may reduce disability. Moreover, as cognitive factors were strongly related to pain willingness, but not activity engagement, alternative treatments may be required to maximize acceptance. Further studies are warranted to assess acceptance-based treatments in patients with neck pain.

12 A. WHIPLASH

Law suites

BMC Musculoskelet Disord. 2017 May 2;18(1):177. doi: 10.1186/s12891-017-1535-z.

Predictors of seeking financial compensation following motor vehicle trauma: inception cohort with moderate to severe musculoskeletal injuries.

Murgatroyd D¹, Harris IA², Chen JS³, Adie S⁴, Mittal R⁵, Cameron ID⁶.
Author information

Abstract

BACKGROUND:

Compensation related factors have been repeatedly associated with poor recovery following orthopaedic trauma. There is limited research into the factors associated with seeking financial compensation. Further understanding of these factors could facilitate injury recovery by purposeful compensation scheme design. The aim of this study was to investigate the predictors of seeking financial compensation, namely making a claim and seeking legal representation, following motor vehicle related orthopaedic trauma. The study was conducted in New South Wales (NSW), Australia, in motor vehicle crash and workers' compensation schemes.

METHODS:

Participants were patients admitted with upper or lower extremity fractures following a motor vehicle crash to two trauma hospitals. Data were collected at baseline within two weeks of injury. Participants were followed up at six months. Analysis involved: descriptive statistics for baseline characteristics; comparison of compensable and non-compensable participants with Analysis of Variance (ANOVA) and chi-squared tests; and logistic regression for predictor models.

RESULTS:

The cohort consisted of 452 participants with a mean age 40 years; 75% male; 74% working pre-injury; 30% in excellent pre-injury health; 56% sustained serious injuries with an Injury Severity Score (ISS) 9-15; 61% had a low-middle range household income; and 35% self-reported at fault in the crash. There was no significant difference in pre-injury/baseline health between compensable and non-compensable participants. Follow up data was available for 301 (67%) participants. The significant predictor of claiming compensation in the adjusted analysis was higher body mass index (BMI) (overweight Odds Ratio [OR] 3.05, 95% Confidence Interval [CI] 1.63-5.68; obese OR 1.63, 95% CI 0.83-3.20). Participants less likely to claim were: involved in a motorcycle crash (OR 0.47, 95% CI 0.28-0.82); socioeconomically less disadvantaged (OR 0.37, 95% CI 0.17-0.82) or least disadvantaged (OR 0.39, 95% CI 0.17-0.90); at risk for short term harm (injury) due to alcohol consumption (OR 0.56, 95% CI 0.32-0.97); and with fair-poor pre-injury health (OR 0.30, 95% CI 0.09-0.94). The predictors for seeking legal representation were speaking a language other than English at home (OR 2.80, 95% CI 1.2-6.52) and lower household income (OR 3.63, 95% CI 1.22-10.72). Participants less likely to seek legal representation were least socioeconomically disadvantaged (OR 0.15, 95% CI 0.04-0.50).

CONCLUSIONS:

Seeking financial compensation was associated with a higher pre-injury BMI rather than injury-related factors. Seeking legal representation was solely related to socio-economic factors.

Pain perception

Physiother Theory Pract. 2017 Apr 11:1-10. doi: 10.1080/09593985.2017.1307890.

Is self-efficacy and catastrophizing in pain-related disability mediated by control over pain and ability to decrease pain in whiplash-associated disorders?

Söderlund A¹, Sandborgh M¹, Johansson AC¹.
Author information

Abstract

Pain perception is influenced by several cognitive and behavioral factors of which some identified as mediators are important in pain management. We studied the mediating role of control over pain and ability to decrease pain in relation to functional self-efficacy, catastrophizing, and pain-related disability in patients with Whiplash-Associated Disorders, (WAD). Further, if the possible mediating impact differs over time from acute to three and 12 months after an accident, cross-sectional and prospective design was used, and 123 patients with WAD were included. Regression analyses were conducted to examine the mediating effect. The results showed that control over pain and ability to decrease pain were not mediators between self-efficacy, catastrophizing, and disability. Self-efficacy had a larger direct effect on pain-related disability compared to catastrophizing. Thus, healthcare staff should give priority to increase patients' self-efficacy, decrease catastrophic thinking, and have least focus on control over pain or ability to decrease pain.

Injustice

Eur J Pain. 2017 May 11. doi: 10.1002/ejp.1023.

Expectancies mediate the relationship between perceived injustice and return to work following whiplash injury: A 1-year prospective study.

Carriere JS¹, Thibault P¹, Adams H², Milioto M³, Ditto B¹, Sullivan MJL².
Author information

Abstract**BACKGROUND:**

Emerging evidence suggests that perceived injustice is a risk factor for work disability in individuals with whiplash injury. At present, however, little is known about the processes by which perceived injustice impacts on return to work. The purpose of this study was to examine whether expectancies mediated the relationship between perceived injustice and return to work in patients with whiplash injury.

METHOD:

One hundred and fifty-two individuals (81 men, 71 women) with a primary diagnosis of whiplash injury completed self-report measures of pain intensity, perceived injustice and return-to-work expectancies following admission to a rehabilitation programme. Work status was assessed 1 year after discharge.

RESULTS:

Consistent with previous research, high scores on a measure of perceived injustice were associated with prolonged work disability. Results indicated that high perceptions of injustice were associated with low return-to-work expectancies. Causal mediation analyses revealed that expectancies fully mediated the relationship between perceived injustice and return to work.

CONCLUSION:

The findings suggest that intervention techniques designed to target expectancies could improve return-to-work outcomes in patients with whiplash injury. Discussion addresses the processes by which expectancies might impact on return-to-work outcomes and the manner in which negative return-to-work expectancies might be modified through intervention.

SIGNIFICANCE:

The study confirms that expectancies are the mechanism through which perceived injustice impacts return to work following whiplash injury. The findings suggest that interventions designed to specifically target return-to-work expectancies might improve rehabilitation outcomes in patients with whiplash injury.

13. CRANIUM/TMJ

TMJ motions

J Oral Rehabil. 2017 May 12. doi: 10.1111/joor.12521.

Real-time three-dimensional jaw tracking in temporomandibular disorders.

da Cunha DV^{1,2}, Degan VV², Vedovello Filho M², Bellomo DP Jr¹, Silva MR³, Furtado DA⁴, Andrade AO¹, Milagre ST¹, Pereira AA¹.

Author information

Abstract

When a dysfunction occurs in any component of the stomatognathic system, temporomandibular disorders (TMD) may originate.

The aim of this study was to compare the deviations, displacement, and the execution speed of mandibular movements among asymptomatic participants and those with TMD. Convenience sampling was used; forty participants diagnosed by clinical evaluation following the Research Diagnostic Criteria for Temporomandibular Disorders were divided into three groups: Arthropathy (GART, 10 participants, 40% men), Myopathy (GMYO, 10 participants, 30% men), and the Control Group (CG, 20 asymptomatic-participants, 25% men). Participants were asked to perform the movements of free maximal mouth opening and closing, right and left lateral excursions, and protrusion with sliding teeth contacts. The mandibular trajectory was recorded using opto-electronic devices tracking reflective markers placed in front of the "soft tissue pogonion point". The movements were analyzed on the following axis: x-medial-lateral, y - vertical, z - antero-posterior. Significant differences were found in CGxGART - OCY (unassisted maximal mouth opening and closing projection on y-axis), CGxGMYO - OCX (unassisted maximal mouth opening and closing projection on x-axis), and in the measures OLDX (Opening lateral deviation on x-axis), CLDX (Closing lateral deviation on x-axis) and in the measures of speed for both. In regards to GARTxGMYO a significant difference was found in PLDX (Protrusion lateral deviation on x-axis) "Conover-Iman Test of Multiple Comparisons Using Rank Sums" using Bonferroni correction ($p < 0.05$).

In conclusion, the total opening movements in individuals with TMD tended to have higher deviation than in those asymptomatic individuals and a reduction in the speed of movements. This article is protected by copyright. All rights reserved

14. HEADACHES**Extracranial HA's**

Curr Opin Neurol. 2017 Jun;30(3):263-271. doi: 10.1097/WCO.0000000000000437.

Extracranial origin of headache.

Burstein R¹, Blake P, Schain A, Perry C.

Author information

Abstract

PURPOSE OF REVIEW:

To summarize recent clinical and preclinical studies on extracranial pathophysiologies in migraine. It challenges the opinion-based notion that the headache phase of migraine occurs without input from peripheral nociceptors or is caused solely by activation of intracranial nociceptors supplying dural and cerebral vasculature.

RECENT FINDINGS:

Data that support a scenario by which migraine can originate extracranially include the perception of imploding headache that hurts outside the cranium, the existence of a network of sensory fibers that bifurcate from parent axons of intracranial meningeal nociceptors and reach extracranial tissues such as periosteum and pericranial muscles by crossing the calvarial bones through the sutures, the discovery of proinflammatory genes that are upregulated and anti-inflammatory genes that are down regulated in extracranial tissue of chronic migraine patients, and evidence that administration of OnabotulinumtoxinA to peripheral tissues outside the calvaria reduces frequency of migraine headache.

SUMMARY:

These findings seeks to shift clinical practice from prophylactically treating chronic migraine solely with medications that reduce neuronal excitability to treating irritated nociceptors or affected tissues. The findings also seeks to shift current research from focusing solely on central nervous system alterations and activation of meningeal nociceptors as a prerequisite for studying migraine.

16. CONCUSSIONS**Athletic concussions and HA's**

Clin J Sport Med. 2017 May;27(3):266-270. doi: 10.1097/JSM.0000000000000346.

Is Migraine Headache Associated With Concussion in Athletes? A Case-Control Study.

Eckner JT1, Seifert T, Pescovitz A, Zeiger M, Kutcher JS.

Author information

Abstract

OBJECTIVE:

The purpose of this study was to investigate the association between migraine headache and concussion in athletes.

DESIGN:

Case-control observational study.

SETTING:

A university-associated combined sports neurology and orthopedic sports medicine clinic.

PARTICIPANTS:

A total of 221 male (n = 140) and female (n = 81) athletes aged 12 to 24 years, including 115 concussion cases (52%) and 106 orthopedic controls (48%), were included in this study.

INTERVENTIONS:

Participants completed a one-page questionnaire that recorded their age, sex, reason for visit (concussion vs any other injury), concussion history, and self/immediate family member migraine headache history.

MAIN OUTCOME MEASURES:

The odds of having a previous history of migraine headache were compared in the concussion group versus orthopedic controls.

RESULTS:

Controlling for between-group differences in age and sex, there was a significant positive association between concussion group status and history of migraine headache [adjusted odds ratio (OR), 1.90; 95% confidence interval (CI), 1.03-3.50. P = 0.039]. However, when including a previous concussion history in the statistical model, this relationship failed to reach significance [adjusted OR, 1.68; 95% CI, 0.89-3.16. P = 0.107].

CONCLUSIONS:

These results suggest that there is an association between migraine headache and concussion in athletes, but the cause-effect nature of this relationship cannot be determined. Migraine headache should be considered a modifying factor when caring for concussed athletes.

Concussions and LE injuries

Sports Med. 2017 May;47(5):1003-1010. doi: 10.1007/s40279-016-0607-9.

Concussion May Increase the Risk of Subsequent Lower Extremity Musculoskeletal Injury in Collegiate Athletes.

Herman DC¹, Jones D², Harrison A³, Moser M^{4,5}, Tillman S², Farmer K^{4,5}, Pass A⁶, Clugston JR^{5,7}, Hernandez J⁸, Chmielewski TL^{9,10}.

Author information

Abstract**BACKGROUND:**

Laboratory-based studies on neuromuscular control after concussion and epidemiological studies suggest that concussion may increase the risk of subsequent musculoskeletal injury.

OBJECTIVE:

The purpose of this study was to determine if athletes have an increased risk of lower extremity musculoskeletal injury after return to play from a concussion.

METHODS:

Injury data were collected from 2006 to 2013 for men's football and for women's basketball, soccer and lacrosse at a National Collegiate Athletic Association Division I university. Ninety cases of in-season concussion in 73 athletes (52 male, 21 female) with return to play at least 30 days prior to the end of the season were identified. A period of up to 90 days of in-season competition following return to play was reviewed for time-loss injury. The same period was studied in up to two control athletes who had no concussion within the prior year and were matched for sport, starting status and position.

RESULTS:

Lower extremity musculoskeletal injuries occurred at a higher rate in the concussed athletes (45/90 or 50 %) than in the non-concussed athletes (30/148 or 20 %; $P < 0.01$). The odds of sustaining a musculoskeletal injury were 3.39 times higher in the concussed athletes (95 % confidence interval 1.90-6.05; $P < 0.01$). Overall, the number of days lost because of injury was similar between concussed and non-concussed athletes (median 9 versus 15; $P = 0.41$).

CONCLUSIONS:

The results of this study demonstrate a relationship between concussion and an increased risk of lower extremity musculoskeletal injury after return to play, and may have implications for current medical practice standards regarding evaluation and management of concussion injuries.

Youth concussions

JAMA Pediatr. 2017 May 8. doi: 10.1001/jamapediatrics.2017.0592.

Establishing Baseline Normative Values for the Child Sport Concussion Assessment Tool.

Brooks MA¹, Snedden TR², Mixis B³, Hetzel S⁴, McGuine TA¹.

Author information**Abstract****IMPORTANCE:**

The Child Sport Concussion Assessment Tool (SCAT3) is a postconcussion sideline assessment tool measuring symptoms, cognition, and balance in preadolescent children. Minimal normative baseline data exist to aid decision making in clinical and athletic settings.

OBJECTIVE:

To collect normative baseline data for the Child SCAT3 in a large cohort of young athletes.

DESIGN, SETTING, AND PARTICIPANTS:

A cross-sectional study was conducted from May 31 to August 12, 2014, at various sporting events (basketball, soccer, baseball, and swimming) in Central Wisconsin among children 5 to 13 years of age who were English-speaking and did not report a lower leg injury within the past 2 months or a concussion within the past month. Data were analyzed between October 8, 2014, and September 12, 2016.

MAIN OUTCOMES AND MEASURES:

All Child SCAT3 components were assessed: child and parent report of symptom number and severity, cognition (Standardized Assessment of Concussion-child version [SAC-C]), and balance (modified Balance Error Scoring System [mBESS] and tandem gait). Summary statistics, mean differences, and effect sizes were calculated for each test component.

RESULTS:

Participants included 478 children (234 girls and 241 boys; mean [SD] age, 9.9 [1.9] years) and their parents. Age had the largest effect on all Child SCAT3 components, with children 5 to 7 years of age reporting higher mean (SD) symptom severity scores compared with those 11 to 13 years of age (18.2 [10.0] vs 11.3 [9.0]; mean difference, 6.86 [95% CI, 4.22-9.50]; effect size, 0.74) and performing more poorly on the total SAC-C (mean [SD] score, 19.5 [5.1] vs 26.1 [2.1]; mean difference, -6.59 [95% CI, -7.49 to -5.68]; effect size, -2.1), mBESS (mean [SD] score, 1.67 [1.8] vs 0.76 [1.2]; mean difference, 0.91 [95% CI, 0.53-1.29]; effect size, 0.68), and tandem gait (mean [SD] time, 22.2 [8.3] vs 14.0 [3.7] seconds; mean difference, 8.23 seconds [95% CI, 6.63-9.82]; effect size, 1.55). Sex had a small effect on the mean (SD) number and severity of symptoms reported by the child (severity: boys, 15.1 [9.8] vs girls, 11.8 [9.2]; mean difference, 3.31 [95% CI, 1.60-5.02]; effect size, 0.35), mean (SD) number and severity of symptoms reported by the parent (severity: boys, 11.1 [7.7] vs girls, 9.4 [8.1]; mean difference, 1.63 [95% CI, 0.21-3.05]; effect size, 0.21), mean (SD) total SAC-C score (boys, 23.9 [3.9] vs girls, 24.9 [3.5]; mean difference, -0.92 [95% CI, -1.61 to -0.23]; effect size, -0.25), and mean (SD) mBESS score (boys, 1.21 [1.5] vs girls, 0.71 [1.0]; mean difference, 0.50 [95% CI, 0.27-0.74]; effect size, 0.38).

CONCLUSIONS AND RELEVANCE:

Child SCAT3 baseline normative symptom, cognitive, and balance scores were different, with a large main effect for age and a small effect for sex. These findings may assist health care professionals with interpretation of Child SCAT3 scores for young athletes with a concussion in athletic and clinical settings.

Migraine and concussions

Clin J Sport Med. 2017 May;27(3):266-270. doi: 10.1097/JSM.0000000000000346.

Is Migraine Headache Associated With Concussion in Athletes? A Case-Control Study.

Eckner JT¹, Seifert T, Pescovitz A, Zeiger M, Kutcher JS.

Author information

Abstract

OBJECTIVE:

The purpose of this study was to investigate the association between migraine headache and concussion in athletes.

DESIGN:

Case-control observational study.

SETTING:

A university-associated combined sports neurology and orthopedic sports medicine clinic.

PARTICIPANTS:

A total of 221 male (n = 140) and female (n = 81) athletes aged 12 to 24 years, including 115 concussion cases (52%) and 106 orthopedic controls (48%), were included in this study.

INTERVENTIONS:

Participants completed a one-page questionnaire that recorded their age, sex, reason for visit (concussion vs any other injury), concussion history, and self/immediate family member migraine headache history.

MAIN OUTCOME MEASURES:

The odds of having a previous history of migraine headache were compared in the concussion group versus orthopedic controls.

RESULTS:

Controlling for between-group differences in age and sex, there was a significant positive association between concussion group status and history of migraine headache [adjusted odds ratio (OR), 1.90; 95% confidence interval (CI), 1.03-3.50. P = 0.039]. However, when including a previous concussion history in the statistical model, this relationship failed to reach significance [adjusted OR, 1.68; 95% CI, 0.89-3.16. P = 0.107].

CONCLUSIONS:

These results suggest that there is an association between migraine headache and concussion in athletes, but the cause-effect nature of this relationship cannot be determined. Migraine headache should be considered a modifying factor when caring for concussed athletes.

19. GLENOHUMERAL/SHOULDER**Mirror therapy helps shoulder pain and ROM**

Arch Phys Med Rehabil. 2017 May 5. pii: S0003-9993(17)30301-5. doi: 10.1016/j.apmr.2017.03.031.

Immediate effects of mirror therapy in patients with shoulder pain and decreased range of motion.

Louw A¹, Puentedura EJ², Reese D³, Parker P⁴, Miller T⁴, Mintken P⁵.
Author information

Abstract

OBJECTIVE:

To determine the effects of a brief single component of the graded motor imagery (GMI) sequence (mirror therapy) on active range of motion (AROM), pain, fear-avoidance and pain catastrophization in patients with shoulder pain.

DESIGN:

Single-blind case series SETTING: Three outpatient physical therapy clinics PARTICIPANTS: Patients with shoulder pain and limited AROM.

INTERVENTIONS:

Patients moved their unaffected shoulder through comfortable AROM in front of a mirror so that it appeared that they were moving their affected shoulder.

MAIN OUTCOME MEASURE(S):

We measured pain, pain catastrophization, fear-avoidance and AROM in 69 consecutive patients with shoulder pain and limited AROM before and immediately after mirror therapy.

RESULTS:

There were significant differences in self-reported pain ($p=.014$), Pain Catastrophization ($p<.001$), and the Tampa Scale of Kinesiophobia ($p=.012$) immediately after mirror therapy, although the means did not meet or exceed the minimal detectable change (MDC) for each outcome measure. There was a significant increase (mean = 14.5°) in affected shoulder flexion AROM immediately post-mirror therapy ($p<0.001$), which exceeded the MDC of 8 degrees.

CONCLUSIONS:

A brief mirror therapy intervention can result in statistically significant improvements in pain, pain catastrophization, fear-avoidance and shoulder flexion AROM in patients presenting with shoulder pain with limited AROM. The immediate changes may allow a quicker transition to multimodal treatment, including manual therapy and exercise in these patients. Further studies, including randomized controlled trials, are needed to investigate these findings and determine longer term effects.

21. ADHESIVE CAPSULITIS**Management of**

Clin Rehabil. 2017 May;31(5):686-695. doi: 10.1177/0269215516687613. Epub 2017 Jan 13.

Activity- vs. structural-oriented treatment approach for frozen shoulder: a randomized controlled trial.

Horst R¹, Maicki T^{2,3}, Trąbka R^{2,3}, Albrecht S⁴, Schmidt K⁵, Mętel S⁶, von Piekartz H⁷.

Author information

Abstract

OBJECTIVE:

To compare the short- and long-term effects of a structural-oriented (conventional) with an activity-oriented physiotherapeutic treatment in patients with frozen shoulder.

DESIGN:

Double-blinded, randomized, experimental study.

SETTING:

Outpatient clinic.

SUBJECTS:

We included patients diagnosed with a limited range of motion and pain in the shoulder region, who had received a prescription for physiotherapy treatment, without additional symptoms of dizziness, a case history of headaches, pain and/or limited range of motion in the cervical spine and/or temporomandibular joint.

INTERVENTIONS:

The study group received treatment during the performance of activities. The comparison group was treated with manual therapy and proprioceptive neuromuscular facilitation (conventional therapy). Both groups received 10 days of therapy, 30 minutes each day.

MAIN MEASURES:

Range of motion, muscle function tests, McGill pain questionnaire and modified Upper Extremity Motor Activity Log were measured at baseline, after two weeks of intervention and after a three-month follow-up period without therapy.

RESULTS:

A total of 66 patients were randomized into two groups: The activity-oriented group (n = 33, mean = 44 years, SD = 16 years) including 20 male (61%) and the structural-oriented group (n = 33, mean = 47 years, SD = 17 years) including 21 male (64%). The activity-oriented group revealed significantly greater improvements in the performance of daily life activities and functional and structural tests compared with the group treated with conventional therapy after 10 days of therapy and at the three-month follow-up (p < 0.05).

CONCLUSIONS:

Therapy based on performing activities seems to be more effective for pain reduction and the ability to perform daily life activities than conventional treatment methods.

22 B. INSTABILITY**Bankart**

Int Orthop. 2017 May 11. doi: 10.1007/s00264-017-3491-5.

Results of arthroscopic Bankart repair with Hill-Sachs remplissage for anterior shoulder instability.

Bonnevalle N^{1,2}, Azoulay V³, Faraud A³, Elia F³, Swider P⁴, Mansat P³.

Author information

Abstract**PURPOSE:**

The aim of this study was to evaluate mid-term outcomes of Bankart repair with Hill-Sachs remplissage (BHSR) and to highlight prognostic factors of failure.

METHODS:

Thirty-four patients operated on for anterior shoulder instability with BHSR were enrolled in a prospective non-randomised study. Clinical and radiographic evaluation was performed at 1.5, three, six months and yearly thereafter. Outcome measures included Rowe and Walch-Duplay score.

RESULTS:

At mean follow-up of 35 months (24-63), the Rowe and Walch-Duplay scores reached respectively 92.7 and 88.2 points. The mean deficit in external rotation was 6° in ER1 and 1° in ER2 ($p = 0.4$, $p = 0.9$ respectively). Five patients (14.7%) had a recurrence of instability and three others had a persistent anterior apprehension. In the failure group, the Hill-Sachs lesion was deeper (26% vs 19% of the humeral diameter; $p = 0.04$) and range of motion at 1.5 months postoperatively was greater. Age at surgery, pre-operative instability severity index score (ISIS), hyperlaxity, type and level of sport, amount of glenoid bone loss had no correlation with failure rate.

CONCLUSIONS:

The rate of failure at mid-term follow-up of BHSR was higher than commonly reported. The premature recovery of range of motion seems to be a clinical sign of failure at follow-up. Moreover, in case of deep Hill-Sachs lesion (>20%) an alternative procedure should be considered.

LEVEL OF EVIDENCE:

Level IV.

25. WRIST AND HAND**Scaphoid motions**

Clin Radiol. 2017 May 7. pii: S0009-9260(17)30155-1. doi: 10.1016/j.crad.2017.04.005.

Kinematic analysis of the scaphoid using gated four-dimensional CT.

Mat Jais IS¹, Tay SC².

[Author information](#)

Abstract**AIM:**

To investigate the kinematics of the scaphoid while the wrist was in radioulnar motion using gated four-dimensional computed tomography (4DCT) imaging.

MATERIALS AND METHODS:

Six cadaveric wrist specimens were scanned in the following order of capsulotomy and ligament sectioning: (1) ligaments intact, (2) capsulotomy, (3) scapholunate ligament division, and lastly, (4) lunotriquetral ligament division. A three-dimensional model was then reconstructed to analyse the translation and angular displacements of the scaphoid.

RESULTS:

The magnitude of displacement was found to increase with each consecutive ligament sectioning. Translation along the y-axis was statistically significant, with the scaphoid shifting up to 1.39 mm from its original position after complete sectioning of the ligaments while the wrist was deviating radially. Angular displacement about all three axes was statistically significant, with the highest occurring in the flexion-extension plane when the scaphoid flexed by 9.1° from its original position after total sectioning of the ligaments.

CONCLUSION:

The present study showed that changes in the kinematics of the scaphoid can be detected using 4DCT, thus demonstrating its feasibility in the diagnosis of dynamic carpal instability, which only presents during motion.

30 B. LABRUM**Arthroscopic**

Arthroscopy. 2017 May 10. pii: S0749-8063(17)30255-4. doi: 10.1016/j.arthro.2017.03.011.

Return to Sport and Clinical Outcomes After Hip Arthroscopic Labral Repair in Young Amateur Athletes: Minimum 2-Year Follow-Up.

Mohan R¹, Johnson NR¹, Hevesi M¹, Gibbs CM¹, Levy BA¹, Krych AJ².

[Author information](#)

Abstract**PURPOSE:**

To determine the rate of return of young amateur athletes to sport after hip arthroscopy, their clinical outcomes, and pathologic risk factors for worse outcomes 2 years after surgery.

METHODS:

This study included all patients between age 13 and 23 who participated in a sport prior to surgery with intent to return who underwent hip arthroscopy after failure of comprehensive nonoperative management for whom 2-year outcome scores were available. Outcomes collected retrospectively included modified Harris Hip Score (mHHS) and the Hip Outcome Scores (HOS) subscales for activities of daily living (ADL) and sport (HOS Sport). In addition, sport played, return to sport rates, and Tegner Scores were measured preinjury and postoperatively. Descriptive statistics were used to present demographic data. A priori analysis was used to determine the sample size needed to show minimal clinically important differences for mHHS, HOS ADL, and HOS Sport.

RESULTS:

The study population included 50 patients with a mean age of 17.8 years. Athletes returned to sport at a rate of 92% (46/50). At a mean follow-up of 34 months, the mean mHHS, HOS ADL, and HOS Sport outcome scores were 85, 91, and 80 for the entire study group; 87, 92, and 84 for the group that returned to sport; and 67, 82, and 41 for the group that did not return to sport, respectively. Median preinjury and postoperative Tegner levels were 8 and 7, respectively. Labral takedown and reattachment was associated with lower HOS ADL ($P = .01$) and HOS Sport scores ($P = .02$).

CONCLUSIONS:

Athletes returned to sport at a high rate (92%; 46/50) after hip arthroscopy and perform activities at near preinjury levels. In this group of athletes, arthroscopic labral repair with chondrolabral preservation, which reflected less severe chondrolabral pathology, performed better than labral repair with takedown and reattachment.

31. KNEE

Anterior pain and surgery

Bone Joint J. 2017 May;99-B(5):632-639. doi: 10.1302/0301-620X.99B5.BJJ-2016-0695.R2.

Anterior knee pain and evidence of osteoarthritis of the patellofemoral joint should not be considered contraindications to mobile-bearing unicompartmental knee arthroplasty: a 15-year follow-up.

Hamilton TW¹, Pandit HG², Maurer DG¹, Ostlere SJ³, Jenkins C⁴, Mellon SJ¹, Dodd CAF⁴, Murray DW⁵.

Author information

Abstract

AIMS:

It is not clear whether anterior knee pain and osteoarthritis (OA) of the patellofemoral joint (PFJ) are contraindications to medial unicompartmental knee arthroplasty (UKA). Our aim was to investigate the long-term outcome of a consecutive series of patients, some of whom had anterior knee pain and PFJ OA managed with UKA.

PATIENTS AND METHODS:

We assessed the ten-year functional outcomes and 15-year implant survival of 805 knees (677 patients) following medial mobile-bearing UKA. The intra-operative status of the PFJ was documented and, with the exception of bone loss with grooving to the lateral side, neither the clinical or radiological state of the PFJ nor the presence of anterior knee pain were considered a contraindication. The impact of radiographic findings and anterior knee pain was studied in a subgroup of 100 knees (91 patients).

RESULTS:

There was no relationship between functional outcomes, at a mean of ten years, or 15-year implant survival, and pre-operative anterior knee pain, or the presence or degree of cartilage loss documented intra-operatively at the medial patella or trochlea, or radiographic evidence of OA in the medial side of the PFJ. In 6% of cases there was full thickness cartilage loss on the lateral side of the patella. In these cases, the overall ten-year function and 15-year survival was similar to those without cartilage loss; however they had slightly more difficulty with descending stairs. Radiographic signs of OA seen in the lateral part of the PFJ were not associated with a definite compromise in functional outcome or implant survival.

CONCLUSION:

Severe damage to the lateral side of the PFJ with bone loss and grooving remains a contraindication to mobile-bearing UKA. Less severe damage to the lateral side of the PFJ and damage to the medial side, however severe, does not compromise the overall function or survival, so should not be considered to be a contraindication. However, if a patient does have full thickness cartilage loss on the lateral side of the PFJ they may have a slight compromise in their ability to descend stairs. Pre-operative anterior knee pain also does not compromise the functional outcome or survival and should not be considered to be a contraindication. Cite this article: *Bone Joint J* 2017;99-B:632-9.

33. MENISCUS

Meniscectomy vs placebo

Arthroscopic partial meniscectomy versus placebo surgery for a degenerative meniscus tear: A 2-year follow-up of the randomised controlled trial

Annals of Rheumatic Diseases

Sihvonen R, et al.

This study was carried out to evaluate whether arthroscopic partial meniscectomy (APM) is superior to placebo surgery in the treatment of patients with degenerative tear of the medial meniscus. As per the data, in this 2-year follow-up of patients without knee osteoarthritis but with symptoms of a degenerative medial meniscus tear, the outcomes after APM were no better than those after placebo surgery. No data could be observed to support the prevailing ideas that patients with presence of mechanical symptoms or certain meniscus tear characteristics or those who have failed initial conservative treatment are more likely to benefit from arthroscopic partial meniscectomy.

Methods

- Analysts designed multicentre, randomised, participant-blinded and outcome assessor-blinded, placebo-surgery controlled trial.
- 146 adults, aged 35–65 years, with knee symptoms consistent with degenerative medial meniscus tear and no knee osteoarthritis were assigned randomly to APM or placebo surgery.
- In this study, the preliminary outcome was the between-group difference in the change from baseline in the Western Ontario Meniscal Evaluation Tool (WOMET) and Lysholm knee scores and knee pain after exercise at 24 months after surgery.
- Secondary outcomes included the frequency of unblinding of the treatment-group allocation, participants' satisfaction, impression of change, return to normal activities, the incidence of serious adverse events and the presence of meniscal symptoms in clinical examination.
- Two subgroup analyses, evaluating the outcome on those with mechanical symptoms and those with unstable meniscus tears, were also carried out.

Results

- In the intention-to-treat analysis, no significant between-group differences were observed in the mean changes from baseline to 24 months in WOMET score: 27.3 in the APM group as compared with 31.6 in the placebo-surgery group (between-group difference, -4.3; 95% CI, -11.3 to 2.6); Lysholm knee score: 23.1 and 26.3, respectively (-3.2; -8.9 to 2.4) or knee pain after exercise, 3.5 and 3.9, respectively (-0.4; -1.3 to 0.5).
- No statistically significant differences were found between the two groups in any of the secondary outcomes or within the analysed subgroups

34. PATELLA**Prevalence of OA**

Br J Sports Med. 2017 Apr 29. pii: bjsports-2017-097515. doi: 10.1136/bjsports-2017-097515.

The prevalence of radiographic and MRI-defined patellofemoral osteoarthritis and structural pathology: a systematic review and meta-analysis.

Hart HF¹, Stefanik JJ², Wyndow N³, Machotka Z¹, Crossley KM¹.

Author information

Abstract**BACKGROUND:**

Patellofemoral osteoarthritis (PF OA) is more prevalent than previously thought and contributes to patient's suffering from knee OA. Synthesis of prevalence data can provide estimates of the burden of PF OA.

OBJECTIVE:

This study aims to conduct a systematic review and meta-analysis on the prevalence of PF OA and structural damage based on radiography and MRI studies in different populations.

METHODS:

We searched six electronic databases and reference lists of relevant cross-sectional and observational studies reporting the prevalence of PF OA. Two independent reviewers appraised methodological quality. Where possible, data were pooled using the following categories: radiography and MRI studies.

RESULTS:

Eighty-five studies that reported the prevalence of patellofemoral OA and structural damage were included in this systematic review. Meta-analysis revealed a high prevalence of radiographic PF OA in knee pain or symptomatic knee OA (43%), radiographic knee OA or at risk of developing OA (48%) and radiographic and symptomatic knee OA (57%) cohorts. The MRI-defined structural PF damage in knee pain or symptomatic population was 32% and 52% based on bone marrow lesion and cartilage defect, respectively.

CONCLUSION:

One half of people with knee pain or radiographic OA have patellofemoral involvement. Prevalence of MRI findings was high in symptomatic and asymptomatic population. These pooled data and the variability found can provide evidence for future research addressing risk factors and treatments for PF OA.

Instability

Sports Med Arthrosc. 2017 Jun;25(2):72-77. doi: 10.1097/JSA.000000000000149.

Nonoperative Treatment of Patellar Instability.

Dixit S¹, Deu RS.

Author information

Abstract

The treatment of patellar instability is challenging and typically begins with nonoperative methods. Clinical decisions are made on an individual basis and may vary according to a number of factors. First-time patellar dislocations most commonly occur during sports participation. Initial evaluation, including patient history, physical examination, and appropriate imaging, determines care. Although nonoperative treatment consists primarily of regressive immobilization and physical therapy, there is little evidence to support particular protocols for either. Factors that may contraindicate nonoperative treatment include osteochondral lesions and recurrent instability. In these cases, surgery is considered. Reported recurrence rates after nonoperative treatment of acute patellar dislocation are 15% to 44%. Well-designed studies are needed to determine not only the outcomes of nonoperative versus surgical treatment of patellar instability but also the risk factors that may predict poor outcomes in either group.

37. OSTEOARTHRITIS/KNEE**Ankle problems makes worse**

Osteoarthritis Cartilage. 2017 May 12. pii: S1063-4584(17)30984-6. doi: 10.1016/j.joca.2017.05.002.

Longitudinal association between foot and ankle symptoms and worsening of symptomatic radiographic knee osteoarthritis: data from the osteoarthritis initiative.

Paterson KL¹, Kasza J², Hunter DJ³, Hinman RS⁴, Menz HB⁵, Peat G⁶, Bennell KL⁴.

Author information**Abstract****OBJECTIVE:**

To assess whether foot and/or ankle symptoms are associated with an increased risk of worsening of knee pain and radiographic change in people with knee osteoarthritis (OA).

METHODS:

The presence and laterality of foot/ankle symptoms were recorded at baseline in 1368 participants from the Osteoarthritis Initiative with symptomatic radiographic knee OA. Knee pain severity (measured using the Western Ontario and McMaster Universities Osteoarthritis Index pain subscale) and minimum medial tibiofemoral joint space (minJSW) width measured on x-ray were assessed yearly over the subsequent four years. Associations between foot/ankle symptoms and worsening of (i) knee pain, and (ii) both knee pain and minJSW (i.e. symptomatic radiographic knee OA) were assessed using logistic regression.

RESULTS:

Foot/ankle symptoms in either foot/ankle significantly increased the odds of knee pain worsening (adjusted OR 1.54, 95% CI 1.25 to 1.91). Laterality analysis showed ipsilateral (adjusted OR 1.50, 95% CI 1.07 to 2.10), contralateral (adjusted OR 1.44, 95% CI 1.02 to 2.06) and bilateral foot/ankle symptoms (adjusted OR 1.61, 95% CI 1.22 to 2.13) were all associated with knee pain worsening in the follow up period. There was no association between foot/ankle symptoms and worsening of symptomatic radiographic knee OA.

CONCLUSION:

The presence of foot/ankle symptoms in people with symptomatic radiographic knee OA was associated with increased risk of knee pain worsening, but not worsening of symptomatic radiographic knee OA, over the subsequent four years. Future studies should investigate whether treatment of foot/ankle symptoms reduces the risk of knee pain worsening in people with knee OA.

Response to exercise

Clin J Pain. 2017 May;33(5):395-404. doi: 10.1097/AJP.0000000000000418.

Exercise-induced Hypoalgesia in People With Knee Osteoarthritis With Normal and Abnormal Conditioned Pain Modulation.

Fingleton C¹, Smart KM, Doody CM.
Author information

Abstract**OBJECTIVES:**

Normal efficiency of exercise-induced hypoalgesia (EIH) has been demonstrated in people with knee osteoarthritis (OA), while recent evidence suggests that EIH may be associated with features of pain sensitization such as abnormal conditioned pain modulation (CPM). The aim of this study was to investigate whether people with knee OA with abnormal CPM have dysfunctional EIH compared with those with normal CPM and pain-free controls.

METHODS:

Forty peoples with knee OA were subdivided into groups with abnormal and normal CPM, as determined by a decrease/increase in pressure pain thresholds (PPTs) following the cold pressor test. Abnormal CPM (n=19), normal CPM (n=21), and control participants (n=20) underwent PPT testing before, during, and after aerobic and isometric exercise protocols. Between-group differences were analyzed using repeated-measures analysis of variance and within-group differences were analyzed using Wilcoxon signed-rank tests.

RESULTS:

Significant differences were demonstrated between groups for changes in PPTs post-aerobic ($F_{2,55}=4.860$; $P=0.011$) and isometric ($F_{2,57}=4.727$; $P=0.013$) exercise, with significant decreases in PPTs demonstrated during and post-exercise in the abnormal CPM group ($P<0.05$), and significant increases in PPTs shown during and post-exercise in the normal CPM and control groups ($P<0.05$).

CONCLUSIONS:

Results are suggestive of dysfunctional EIH in response to aerobic and isometric exercise in knee OA patients with abnormal CPM, and normal function of EIH in knee OA patients with an efficient CPM response. Identification of people with knee OA with inefficient endogenous pain modulation may allow for a more individualized and graded approach to exercises in these individuals

Gait and unstable footwear**Effects of unstable footwear on gait characteristic: A systematic review**

Maede Farzadi Zahra Nemati Maryam Jalali Roghaye Sheikhy Doulagh Mohammdd Kamali

DOI: <http://dx.doi.org/10.1016/j.foot.2017.04.005>

Highlights

- A review of the biomechanical effects of Unstable shoe to make decision for good clinical practice.
- A discussion on most confounding factors in biomechanical effects of shoes.
- Recommendations based on our review in directing future homogenous studies.

Abstract**Background**

In the recent years several designs of unstable footwear have been developed in the forms of shoes, sandals and boots. There are marketing claims related to the positive effects of these shoes on the training of lower limb muscles and improving gait. Many studies have been performed on the effects of unstable footwear on muscle activity, balance, posture, energy expenditure, lower extremity disorders, and biomechanical changes. It seems that the analysis of the kinetics and kinematics could better represent the body movements.

Objective

To systematically review available evidence on the use of unstable footwear on kinetic and kinematic parameters to make specific recommendation for practice and future studies.

Method

A computer-based search was undertaken through PubMed, Cochrane Library, Embase, PEDro, Web of Science and Google Scholar from 2005-2015. The included studies were appraised using McMaster Critical Review Form for Quantitative Studies.

Result

Ten studies (quasi-experimental design) were included.

Conclusion

Considering kinetic and kinematic interaction of variables in chosen studies revealed that confounding factors may have high impact on biomechanical findings of unstable footwear. Then, more homogeneous studies, considering these factors, should be implemented in future studies to make the best clinical practice.

40. ANKLE SPRAINS AND INSTABILITY

Postural changes

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

43. HALLUX VALGUS

Taping creates problem with gait

Foot Ankle Int. 2017 May;38(5):532-540. doi: 10.1177/1071100716683347. Epub 2016 Dec 20.

Effects of Corrective Taping on Balance and Gait in Patients With Hallux Valgus.

Gur G¹, Ozkal O¹, Dilek B², Aksoy S³, Bek N¹, Yakut Y⁴.
Author information

Abstract**BACKGROUND:**

Taping is an effective temporary therapy for improving hallux valgus (HV) in adults. Although HV has been demonstrated to impair postural balance, there is a lack of information about how corrective taping affects balance and gait patterns in adults with HV deformity.

METHODS:

Eighteen middle-aged female patients (average age, 53.5 years) with HV were included. Corrective tape was applied to correct HV angulation. A series of balance and gait stability tests were performed before applying tape and 1 hour after the tape was applied with a Balance Master computerized posturography device. The study involved the following tests: modified clinical test of sensory interaction and balance (mCTSIB), unilateral stance (US), limit of stability (LoS), step up/over (SUO), and walk across (WA) tests.

RESULTS:

No significant difference was found between the no-tape and taped condition in the static balance mCTSIB and US tests ($P > .05$). The taping intervention resulted in significant improvement in the dynamic balance measures for the LoS test's backward reaction time and left maximum excursion ($P < .05$), a significantly higher impact index bilaterally in the SUO assessment ($P < .05$), and an increase in step width mean and variability in the WA test ($P < .05$).

CONCLUSIONS:

Taping for correcting HV angulation had negative acute effects on dynamic balance in the SUO and WA tests and positive effects in the LoS test.

CLINICAL RELEVANCE:

Corrective taping, although a form of conservative treatment for hallux valgus, has been insufficiently studied in terms of effects on balance. Our results show that taping, as an acute effect, may impair balance in middle-aged adults when walking or ascending and descending stairs.

44. RHUMATOID ARTHRITIS

Complications for children with Ehlers-Danlos syndrome

Rheumatology (Oxford). 2017 Apr 18. doi: 10.1093/rheumatology/kex148.

The natural history of children with joint hypermobility syndrome and Ehlers-Danlos hypermobility type: a longitudinal cohort study.

Scheper MC^{1,2}, Nicholson LL^{3,4}, Adams RD⁵, Tofts L^{3,6,7}, Pacey V^{8,9}.

Author information

Abstract

OBJECTIVES.:

The objective of the manuscript was to describe the natural history of complaints and disability in children diagnosed with joint hypermobility syndrome (JHS)/Ehlers-Danlos-hypermobility type (EDS-HT) and to identify the constructs that underlie functional decline.

METHODS.:

One hundred and one JHS/EDS-HT children were observed over 3 years and assessed at three time points on the following: functional impairments, quality of life, connective tissue laxity, muscle function, postural control and musculoskeletal and multi-systemic complaints. Cluster analysis was performed to identify subgroups in severity. Clinical profiles were determined for these subgroups, and differences were assessed by multivariate analysis of covariance. Mixed linear regression models were used to determine the subsequent trajectories. Finally, an exploratory factor analysis was used to uncover the underlying constructs of functional impairment.

RESULTS.:

Three clusters of children were identified in terms of functional impairment: mild, moderately and severely affected. Functional impairment at baseline was predictive of worsening trajectories in terms of reduced walking distance and decreased quality of life ($P \leq 0.05$) over 3 years. Multiple interactions between the secondary outcomes were observed, with four underlying constructs identified. All four constructs (multi-systemic effects, pain, fatigue and loss of postural control) contributed significantly to disability ($P \leq 0.046$).

CONCLUSION.:

Children diagnosed with JHS/EDS-HT who have a high incidence of multi-systemic complaints (particularly, orthostatic intolerance, urinary incontinence and diarrhoea) and poor postural control in addition to high levels of pain and fatigue at baseline are most likely to have a deteriorating trajectory of functional impairment and, accordingly, warrant clinical prioritization.

Fat infiltration

Arthritis Care Res (Hoboken). 2017 May 8. doi: 10.1002/acr.23278.

Skeletal muscle fat and its association with physical function in rheumatoid arthritis.

Khoja SS¹, Moore CG², Goodpaster BH³, Delitto A¹, Piva SR¹.

Author information

Abstract

OBJECTIVE:

To characterize skeletal muscle fat (SMF), intermuscular adipose tissue (IMAT) and subcutaneous adipose tissue (SAT) in individuals with rheumatoid arthritis (RA), and assess the associations between these fat depots and physical function and physical activity.

METHODS:

Cross-sectional analysis from an RA cohort. SMF, IMAT and SAT were measured using computed tomography imaging of the mid-thigh cross-sectional region. Physical function was measured with the Health Assessment Questionnaire (HAQ) and a battery of performance-based tests that included quadriceps muscle strength, gait speed, repeated chair-stands, stair ascend, and single leg-stance. Physical activity was assessed using an activity monitor. Associations between SMF, IMAT and SAT, and physical function and activity were assessed by multiple linear regression models adjusted for potential confounders such as age, gender, body mass index, muscle area, and strength.

RESULTS:

Sixty subjects with RA (82% female, age 59 ± 10 years, BMI: 31.79 ± 7.16) were included. In the adjusted models, lower SMF was associated with greater gait speed, single leg stance, quadriceps strength, and physical activity, and less disability ($R^2 \Delta$ range .06-.25, $p < .05$); whereas IMAT did not associate with physical function or activity; and SAT was negatively associated with disability (HAQ) ($R^2 \Delta = .13$ $p < 0.05$) and weakly but positively associated with muscle strength. ($R^2 \Delta = .023$, $p < 0.05$).

CONCLUSIONS:

Fat infiltration within the muscle seems to independently contribute to low physical function and activity in contrast to IMAT or SAT accumulation. Longitudinal studies are necessary to confirm the impact of SMF on disability and promoting health in persons with RA. This article is protected by copyright. All rights reserved.

Impact of the Pop

Joint Bone Spine. 2017 Apr 26. pii: S1297-319X(17)30083-0. doi: 10.1016/j.jbspin.2017.04.006.

Beliefs in the Population about Cracking Sounds Produced during Spinal Manipulation.

Demoulin C¹, Baeri D², Toussaint G², Cagnie B³, Beernaert A³, Kaux JF⁴, Vanderthommen M⁴.
Author information

Abstract

OBJECTIVES:

To examine beliefs about cracking sounds heard during high-velocity low-amplitude (HVLA) thrust spinal manipulation in individuals with and without personal experience of this technique.

METHODS:

We included 100 individuals. Among them, 60 had no history of spinal manipulation, including 40 who were asymptomatic with or without a past history of spinal pain and 20 who had nonspecific spinal pain. The remaining 40 patients had a history of spinal manipulation; among them, 20 were asymptomatic and 20 had spinal pain. Participants attended a one-on-one interview during which they completed a questionnaire about their history of spinal manipulation and their beliefs regarding sounds heard during spinal manipulation.

RESULTS:

Mean age was 43.5±15.4 years. The sounds were ascribed to vertebral repositioning by 49% of participants and to friction between two vertebrae by 23% of participants; only 9% of participants correctly ascribed the sound to the release of gas. The sound was mistakenly considered to indicate successful spinal manipulation by 40% of participants. No differences in beliefs were found between the groups with and without a history of spinal manipulation.

CONCLUSIONS:

Certain beliefs have documented adverse effects. This study showed a high prevalence of unfounded beliefs regarding spinal manipulation. These beliefs deserve greater attention from healthcare providers, particularly those who practice spinal manipulation.

46 A. UPPER LIMB NEUROMOBILIZATION

Temporal summation in spinal manipulation

Neuroscience. 2017 May 4;349:220-228. doi: 10.1016/j.neuroscience.2017.03.006. Epub 2017 Mar 11.

The mechanism of back pain relief by spinal manipulation relies on decreased temporal summation of pain.

Randoll C¹, Gagnon-Normandin V¹, Tessier J¹, Bois S¹, Rustamov N¹, O'Shaughnessy J², Descarreaux M³, Piché M⁴.

Author information

Abstract

The aim of the present study was to determine whether thoracic spinal manipulation (SM) decreases temporal summation of back pain.

The study comprised two controlled experiments including 16 and 15 healthy participants, respectively. Each study included six sessions during which painful or non-painful electrical stimulations were delivered in three conditions: (1) control (2) light mechanical stimulus (MS) or (3) SM. Electrical stimulation was applied on the thoracic spine (T4), in the area where SM and MS were performed. In Experiment 1, electrical stimulation consisted in a single 1-ms pulse while a single or repeated train of ten 1-ms pulses was used in Experiment 2. SM involved articular cavitation while MS was a calibrated force of 25N applied manually for 2s.

For the single pulse, changes in pain or tactile sensation in the SM or MS sessions compared with the CTL session were not significantly different (all $p's > 0.05$). In contrast, temporal summation of pain was decreased in the SM session compared with the CTL session for both the single and repeated train ($p's < 0.05$). Changes were not significant for the MS sessions (all $p's > 0.05$) and no effect was observed for the tactile sensation (all $p's > 0.1$).

These results indicate that SM produces specific inhibitory effects on temporal summation of back pain, consistent with the involvement of a spinal anti-nociceptive mechanism in clinical pain relief by SM. This provides the first mechanistic evidence of back pain relief by spinal manipulation

For cervical radiculopathy

J Back Musculoskelet Rehabil. 2017 Apr 14. doi: 10.3233/BMR-140191.

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

Kim DG¹, Chung SH², Jung HB³.

Author information

Abstract

BACKGROUND:

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

OBJECTIVE:

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

METHODS:

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

RESULTS:

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

CONCLUSIONS:

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

Management of tendinopathy

Br J Sports Med. 2017 May;51(9):743-748. doi: 10.1136/bjsports-2016-096154. Epub 2016 Nov 16.

Association of psychological variables and outcome in tendinopathy: a systematic review.

Mallows A¹, Debenham J², Walker T³, Littlewood C^{4,5}.

Author information

Abstract**OBJECTIVE:**

Fear, anxiety, depression, distress and catastrophisation are all factors known to affect pain and disability levels. To date, the association of such psychological factors has yet to be established in tendinopathy. Therefore, the purpose of this paper was to determine if psychological variables are associated with tendinopathy and whether any such variables may be associated with pain and disability outcomes in conservative management of tendinopathy.

DESIGN:

A systematic review was undertaken and included studies were appraised for risk of bias using the Newcastle-Ottawa Scale. Owing to heterogeneity of studies, a qualitative synthesis was undertaken.

DATA SOURCES:

An electronic search of MEDLINE, CINAHL, SPORTDiscus, PsycINFO, EMBASE and PsycARTICLES was undertaken from their inception to April 2016.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES:

Any study design that incorporated psychological measures and clinical outcomes using participants with tendinopathy.

RESULTS:

Ten articles describing nine studies and 1108 participants were included. Conflicting evidence exists regarding the association of anxiety, depression and lateral epicondylalgia (LE). Strong evidence suggests LE is not associated with kinesiophobia. Moderate evidence links catastrophisation and distress with LE. Moderate evidence suggests distress is not associated with rotator cuff tendinopathy, but kinesiophobia and catastrophisation are. Limited evidence suggests patellar tendinopathy is not associated with anxiety or depression and kinesiophobia may be linked with suboptimal outcomes in Achilles tendinopathy.

SUMMARY/CONCLUSIONS:

Tendinopathy requires an individualised approach to management. Clinicians should consider using validated screening tools for the presence of psychological variables as a part of their holistic management.

MFR and LBP

Spine (Phila Pa 1976). 2017 May 1;42(9):627-634. doi: 10.1097/BRS.0000000000001897.

Effects of Myofascial Release in Nonspecific Chronic Low Back Pain: A Randomized Clinical Trial.

Arguisuelas MD¹, Lisón JF, Sánchez-Zuriaga D, Martínez-Hurtado I, Doménech-Fernández J.
Author information

Abstract

STUDY DESIGN:

Double-blind, randomized parallel sham-controlled trial with concealed allocation and intention-to-treat analysis.

OBJECTIVE:

To investigate the effects of an isolate myofascial release (MFR) protocol on pain, disability, and fear-avoidance beliefs in patients with chronic low back pain (CLBP).

SUMMARY OF BACKGROUND DATA:

MFR is a form of manual medicine widely used by physiotherapists in the management of different musculoskeletal pathologies. Up to this moment, no previous studies have reported the effects of an isolated MFR treatment in patients with CLBP.

METHODS:

Fifty-four participants, with nonspecific CLBP, were randomized to MFR group (n=27) receiving four sessions of myofascial treatment, each lasting 40 minutes, and to control group (n=27) receiving a sham MFR. Variables studied were pain measured by means Short Form McGill Pain Questionnaire (SF-MPQ) and visual analog scale (VAS), disability measured with Roland Morris Questionnaire, and fear-avoidance beliefs measured with Fear-Avoidance Beliefs Questionnaire.

RESULTS:

Subjects receiving MFR displayed significant improvements in pain (SF-MPQ) (mean difference -7.8; 95% confidence interval [CI]: -14.5 to -1.1, P=0.023) and sensory SF-MPQ subscale (mean difference -6.1; 95% CI: -10.8 to -1.5, P=0.011) compared to the sham group, but no differences were found in VAS between groups. Disability and the Fear-Avoidance Beliefs Questionnaire score also displayed a significant decrease in the MFR group (P<0.05) as compared to sham MFR.

CONCLUSION:

MFR therapy produced a significant improvement in both pain and disability. Because the minimal clinically important differences in pain and disability are, however, included in the 95% CI, we cannot know whether this improvement is clinically relevant.

LEVEL OF EVIDENCE:

2.

48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE

History of research

Musculoskelet Sci Pract. 2017 Apr 18;30:1-9. doi: 10.1016/j.msksp.2017.04.009.

Evolution of the methodological quality of controlled clinical trials for myofascial trigger point treatments for the period 1978-2015: A systematic review.

Stoop R¹, Clijisen R², Leoni D³, Soldini E³, Castellini G⁴, Redaelli V⁵, Barbero M³.

Author information

Abstract**BACKGROUND:**

The methodological quality of controlled clinical trials (CCTs) of physiotherapeutic treatment modalities for myofascial trigger points (MTrP) has not been investigated yet.

OBJECTIVES:

To detect the methodological quality of CCTs for physiotherapy treatments of MTrPs and demonstrating the possible increase over time.

DESIGN:

Systematic review.

METHODS:

A systematic search was conducted in two databases, Physiotherapy Evidence Database (PEDro) and Medicine Medical Literature Analysis and Retrieval System online (MEDLINE), using the same keywords and selection procedure corresponding to pre-defined inclusion criteria. The methodological quality, assessed by the 11-item PEDro scale, served as outcome measure. The CCTs had to compare at least two interventions, where one intervention had to lay within the scope of physiotherapy. Participants had to be diagnosed with myofascial pain syndrome or trigger points (active or latent).

RESULTS:

A total of n = 230 studies was analysed. The cervico-thoracic region was the most frequently treated body part (n = 143). Electrophysical agent applications was the most frequent intervention. The average methodological quality reached 5.5 on the PEDro scale. A total of n = 6 studies scored the value of 9. The average PEDro score increased by 0.7 points per decade between 1978 and 2015.

CONCLUSIONS:

The average PEDro score of CCTs for MTrP treatments does not reach the cut-off of 6 proposed for moderate to high methodological quality. Nevertheless, a promising trend towards an increase of the average methodological quality of CCTs for MTrPs was recorded. More high-quality CCT studies with thorough research procedures are recommended to enhance methodological quality.

51. CFS/BET

Osteoporosis training

Arch Orthop Trauma Surg. 2017 May;137(5):617-624. doi: 10.1007/s00402-017-2669-z. Epub 2017 Mar 17.

Biomechanics of the osteoporotic spine, pain, and principles of training.

Schröder G¹, Knauerhase A², Willenberg HS², Kundt G³, Wendig D⁴, Schober HC⁴.
Author information

Abstract

INTRODUCTION:

A fracture is a clinical manifestation of osteoporosis and is one of the main causes of functional limitations and chronic pain in patients with osteoporosis. Muscle and coordination training are recommended to the patients as general measures. We inquired whether sling training is better than traditional physiotherapy in relieving pain and improving abilities of daily living.

METHODS:

Fifty patients with osteoporosis were divided into two groups. Group A performed conventional physiotherapy, while Group B performed sling training exercises. Data were collected before and after the intervention and after 3 months. The registered parameters were stamina, posture, and pain. Posture, torques, and the associated strength of spinal muscles were studied in a biomechanical model in order to estimate the forces acting on the spine. Furthermore, the factors that exerted a positive impact on the success of therapy were registered.

RESULTS:

Forty-four patients (88%) completed the study. Positive effects of the training were noted in both groups, but significantly better effects were observed in the group that performed sling training. A reduction of pain independent of the number of fractures, significantly reduced torques, and reduced muscle strength were registered.

CONCLUSIONS:

Specific training programs helped to increase muscle strength and straightening the back thereby reducing the force needed on a permanent basis and decreasing torque in the spine. Sling training was more effective in that than traditional physiotherapy

52. EXERCISE

Adherence to ex

Br J Sports Med. 2017 May;51(10):791-799. doi: 10.1136/bjsports-2016-096458. Epub 2017 Jan 13.

Interventions to increase adherence to therapeutic exercise in older adults with low back pain and/or hip/knee osteoarthritis: a systematic review and meta-analysis.

Nicolson PJA¹, Bennell KL¹, Dobson FL¹, Van Ginckel A¹, Holden MA², Hinman RS¹.
Author information

Abstract

OBJECTIVE:

To evaluate whether interventions aimed at increasing adherence to therapeutic exercise increase adherence greater than a contextually equivalent control among older adults with chronic low back pain and/or hip/knee osteoarthritis.

DESIGN:

A systematic review and meta-analysis.

DATA SOURCES:

Five databases (MEDLINE (PubMed), CINAHL, SportDISCUS (EBSCO), Embase (Ovid) and Cochrane Library) were searched until 1 August 2016.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES:

Randomised controlled trials that isolated the effects of interventions aiming to improve adherence to therapeutic exercise among adults ≥ 45 years of age with chronic low back pain and/or hip/knee osteoarthritis were included.

RESULTS:

Of 3899 studies identified, nine studies (1045 participants) were eligible. Four studies, evaluating strategies that aimed to increase motivation or using behavioural graded exercise, reported significantly better exercise adherence ($d=0.26-1.23$). In contrast, behavioural counselling, action coping plans and/or audio/video exercise cues did not improve adherence significantly. Meta-analysis using a random effects model with the two studies evaluating booster sessions with a physiotherapist for people with osteoarthritis revealed a small to medium significant pooled effect in favour of booster sessions (standardised mean difference (SMD) 0.39, 95% CI 0.05 to 0.72, $z=2.26$, $p=0.02$, $I^2=35\%$).

CONCLUSIONS:

Meta-analysis provides moderate-quality evidence that booster sessions with a physiotherapist assisted people with hip/knee osteoarthritis to better adhere to therapeutic exercise. Individual high-quality trials supported the use of motivational strategies in people with chronic low back pain and behavioural graded exercise in people with osteoarthritis to improve adherence to exercise.

Isometric ex analgesic effects

Clin J Sport Med. 2017 May;27(3):253-259. doi: 10.1097/JSM.0000000000000364.

Isometric Contractions Are More Analgesic Than Isotonic Contractions for Patellar Tendon Pain: An In-Season Randomized Clinical Trial.

Rio E¹, van Ark M, Docking S, Moseley GL, Kidgell D, Gaida JE, van den Akker-Scheek I, Zwerver J, Cook J.

Author information

Abstract

OBJECTIVE:

This study aimed to compare the immediate analgesic effects of 2 resistance programs in in-season athletes with patellar tendinopathy (PT). Resistance training is noninvasive, a principle stimulus for corticospinal and neuromuscular adaptation, and may be analgesic.

DESIGN:

Within-season randomized clinical trial. Data analysis was conducted blinded to group.

SETTING:

Subelite volleyball and basketball competitions.

PARTICIPANTS:

Twenty jumping athletes aged more than 16 years, participating in games/trainings 3 times per week with clinically diagnosed PT.

INTERVENTIONS:

Two quadriceps resistance protocols were compared; (1) isometric leg extension holds at 60 degrees knee flexion (80% of their maximal voluntary isometric contraction) or (2) isotonic leg extension (at 80% of their 8 repetition maximum) 4 times per week for 4 weeks. Time under load and rest between sets was matched between groups.

MAIN OUTCOME MEASURES:

(1) Pain (0-10 numerical rating score) during single leg decline squat (SLDS), measured preintervention and postintervention sessions. (2) VISA-P, a questionnaire about tendon pain and function, completed at baseline and after 4 weeks.

RESULTS:

Twenty athletes with PT (18 men, mean 22.5 ± 4.7 years) participated (isotonic n = 10, isometric n = 10). Baseline median SLDS pain was 5/10 for both groups (isotonic range 1-8, isometric range 2-8). Isometric contractions produced significantly greater immediate analgesia ($P < 0.002$). Week one analgesic response positively correlated with improvements in VISA-P at 4 weeks ($r = 0.64$).

CONCLUSIONS:

Both protocols appear efficacious for in-season athletes to reduce pain, however, isometric contractions demonstrated significantly greater immediate analgesia throughout the 4-week trial. Greater analgesia may increase the ability to load or perform.

54. POSTURE

Bone development and posture

Spine J. 2017 May 4. pii: S1529-9430(17)30181-X. doi: 10.1016/j.spinee.2017.04.024.

A shared biomechanical environment for bone and posture development in children.

Araújo FA¹, Martins A², Alegrete N³, Howe LD⁴, Lucas R⁵.

Author information

Abstract

BACKGROUND CONTEXT: In each specific habitual standing posture, gravitational forces determine the mechanical setting provided to skeletal structures. Bone quality and resistance to physical stress is highly determined by habitual mechanical stimulation. However, the relationship between bone properties and sagittal posture has never been studied in children. **PURPOSE:** To investigate the association between bone physical properties and sagittal standing postural patterns in 7-year-old children. We also analyzed the relationship between fat/fat-free mass and postural patterns.

STUDY DESIGN: Cross-sectional evaluation.

PATIENT SAMPLE: This study was performed in a sample of 1138 girls and 1260 boys at 7 years of age participating in the Generation XXI study, a population-based cohort of children followed since birth (2005/6) and recruited in Porto, Portugal.

OUTCOME MEASURES: Sagittal standing posture was measured through photographs of the sagittal right view of children in the standing position. Three angles were considered to quantify the magnitude of major curves of the spine and an overall balance measure (trunk, lumbar and sway angles). Postural patterns were identified using latent profile analysis in Mplus.

METHODS: Weight and height were measured. Total body less head fat/fat-free mass and bone properties were estimated from whole body dual energy X-ray absorptiometry scans. The associations of fat/fat-free mass and bone physical properties with postural patterns were jointly estimate in latent profile analysis using multinomial logistic regressions.

RESULTS: The identified patterns were labelled as Sway, Flat and "Neutral to Hyperlordotic" (in girls) and "Sway to Neutral", Flat and Hyperlordotic (in boys). In both genders, children in the Flat pattern showed the lowest body mass index and children with a rounded posture presented the highest: mean differences varying from -0.86kg/m^2 to 0.60kg/m^2 in girls and -0.70kg/m^2 to 0.62kg/m^2 in boys (vs. Sway/"Sway to Neutral"). Fat and fat-free mass were inversely associated with a Flat pattern and positively associated with a rounded posture: odds ratio (OR) of 0.23 per SD fat and 0.70 per SD fat-free mass for the Flat and 1.85 (fat) and 1.43 (fat-free) for the Hyperlordotic in boys; with similar findings in girls. The same direction of relationships was observed between bone physical properties and postural patterns. A positive association between bone (especially bone mineral density) and a rounded posture was robust to adjustment for age, height, and body composition (girls: OR=1.79, $p=0.006$ fat-adjusted, OR=2.00, $p=0.014$ fat-free mass adjusted; boys: OR=2.02, $p=0.002$ fat-adjusted, OR=2.42, $p<0.001$ fat-free mass adjusted).

CONCLUSIONS: In this population-based pediatric setting, there was an inverse association between bone physical properties and a Flat posture. Bone and posture were more strongly positively linked in a rounded posture. Our results support that both bone properties and posture mature in a shared and interrelated mechanical environment, probably modulated by pattern-specific anthropometrics and body composition

FHP and changes in neck muscles

Braz J Phys Ther. 2017 Apr 19. pii: S1413-3555(17)30061-8. doi: 10.1016/j.bjpt.2017.04.003.

Comparison of cervical muscle thickness between asymptomatic women with and without forward head posture.

Bokae F¹, Rezasoltani A², Manshadi FD³, Naimi SS³, Baghban AA⁴, Azimi H⁵.

Author information

Abstract

BACKGROUND:

Forward head posture (FHP) is a forward positioning of the head relative to the trunk in the sagittal plane. This posture is one of the most prevalent poor postures in patients with head and neck pain. Rehabilitative Ultrasound Imaging (RUSI) is a reliable method to objectively evaluate muscle thickness and function.

OBJECTIVE:

To compare thickness of cervical muscles that control both head and neck posture between asymptomatic women with and without FHP.

METHODS:

Seventy asymptomatic women aged between 20 and 40 years, with and without FHP (35 in each group), participated in the study. The thickness of the cervical muscles (rectus capitis posterior - RCP, oblique capitis superior - OCS, semispinalis capitis - SSC, sternocleidomastoid - SCM, and longus coli - LCo) was measured using RUSI and the data was compared between the two groups.

RESULTS:

The comparison of cervical muscle thickness between women with and without FHP revealed significant difference only with regard to the muscle thickness of the SCM muscle (mean difference: 0.7mm, 95% confidence interval of the difference: 0.14, 1.26mm, p value: 0.014). The thickness of this muscle was greater in women with FHP.

CONCLUSION:

Tonic contraction of the SCM muscle can lead to greater thickness of this muscle in subjects with FHP.

56. ATHLETICS**Plyometrics and vertical jump**

Sports Med. 2017 May;47(5):975-986. doi: 10.1007/s40279-016-0634-6.

Effect of Plyometric Training on Vertical Jump Performance in Female Athletes: A Systematic Review and Meta-Analysis.

Stojanović E¹, Ristić V¹, McMaster DT^{2,3}, Milanović Z⁴.

Author information

Abstract

BACKGROUND:

Plyometric training is an effective method to prevent knee injuries in female athletes; however, the effects of plyometric training on jump performance in female athletes is unclear.

OBJECTIVE:

The aim of this systematic review and meta-analysis was to determine the effectiveness of plyometric training on vertical jump (VJ) performance of amateur, collegiate and elite female athletes.

METHODS:

Six electronic databases were searched (PubMed, MEDLINE, ERIC, Google Scholar, SCIndex and ScienceDirect). The included studies were coded for the following criteria: training status, training modality and type of outcome measures. The methodological quality of each study was assessed using the physiotherapy evidence database (PEDro) scale. The effects of plyometric training on VJ performance were based on the following standardised pre-post testing effect size (ES) thresholds: trivial (<0.20), small (0.21-0.60), moderate (0.61-1.20), large (1.21-2.00), very large (2.01-4.00) and extremely large (>4.00).

RESULTS:

A total of 16 studies met the inclusion criteria. The meta-analysis revealed that plyometric training had a most likely moderate effect on countermovement jump (CMJ) height performance (ES = 1.09; 95 % confidence interval [CI] 0.57-1.61; $I^2 = 75.60$ %). Plyometric training interventions of less than 10 weeks in duration had a most likely small effect on CMJ height performance (ES = 0.58; 95 % CI 0.25-0.91). In contrast, plyometric training durations greater than 10 weeks had a most likely large effect on CMJ height (ES = 1.87; 95 % CI 0.73-3.01). The effect of plyometric training on concentric-only squat jump (SJ) height was likely small (ES = 0.44; 95 % CI -0.09 to 0.97). Similar effects were observed on SJ height after 6 weeks of plyometric training in amateur (ES = 0.35) and young (ES = 0.49) athletes, respectively. The effect of plyometric training on CMJ height with the arm swing was likely large (ES = 1.31; 95 % CI -0.04 to 2.65). The largest plyometric training effects were observed in drop jump (DJ) height performance (ES = 3.59; 95 % CI -3.04 to 10.23). Most likely extremely large plyometric training effects on DJ height performance (ES = 7.07; 95 % CI 4.71-9.43) were observed following 12 weeks of plyometric training. In contrast, a possibly small positive training effect (ES = 0.30; 95 % CI -0.63 to 1.23) was observed following 6 weeks of plyometric training.

CONCLUSION:

Plyometric training is an effective form of training to improve VJ performance (e.g. CMJ, SJ and DJ) in female athletes. The benefits of plyometric training on VJ performance are greater for interventions of longer duration (≥ 10 weeks).

Hamstring ex helps

Sports Med. 2017 May;47(5):907-916. doi: 10.1007/s40279-016-0638-2.

Effect of Injury Prevention Programs that Include the Nordic Hamstring Exercise on Hamstring Injury Rates in Soccer Players: A Systematic Review and Meta-Analysis.

Al Attar WSA^{1,2,3}, Soomro N^{4,5}, Sinclair PJ⁴, Pappas E⁶, Sanders RH⁴.

Author information

Abstract

BACKGROUND:

Hamstring injuries are among the most common non-contact injuries in sports. The Nordic hamstring (NH) exercise has been shown to decrease risk by increasing eccentric hamstring strength.

OBJECTIVE:

The purpose of this systematic review and meta-analysis was to investigate the effectiveness of the injury prevention programs that included the NH exercise on reducing hamstring injury rates while factoring in athlete workload.

METHODS:

Two researchers independently searched for eligible studies using the following databases: the Cochrane Central Register of Controlled Trials via OvidSP, AMED (Allied and Complementary Medicine) via OvidSP, EMBASE, PubMed, MEDLINE, SPORTDiscus, Web of Science, CINAHL and AusSportMed, from inception to December 2015. The keyword domains used during the search were Nordic, hamstring, injury prevention programs, sports and variations of these keywords. The initial search resulted in 3242 articles which were filtered to five articles that met the inclusion criteria. The main inclusion criteria were randomized controlled trials or interventional studies on use of an injury prevention program that included the NH exercise while the primary outcome was hamstring injury rate. Extracted data were subjected to meta-analysis using a random effects model.

RESULTS:

The pooled results based on total injuries per 1000 h of exposure showed that programs that included the NH exercise had a statistically significant reduction in hamstring injury risk ratio [IRR] of 0.490 (95 % confidence interval [CI] 0.291-0.827, $p = 0.008$). Teams using injury prevention programs that included the NH exercise reduced hamstring injury rates up to 51 % in the long term compared with the teams that did not use any injury prevention measures.

CONCLUSIONS:

This systematic review and meta-analysis demonstrates that injury prevention programs that include NH exercises decrease the risk of hamstring injuries among soccer players. A protocol was registered in the International Prospective Register of Systematic Reviews, PROSPERO (CRD42015019912).

57. GAIT**Impact of hip and knee OA**

Arthritis Care Res (Hoboken). 2017 May 17. doi: 10.1002/acr.23250.

The Impact of Osteoarthritis on Difficulty Walking: A Population-Based Study.

King LK¹, Kendzerska T^{1,2,3}, Waugh EJ^{2,4}, Hawker GA^{1,2,3,5}.

Author information

Abstract

OBJECTIVE:

To assess the relationship of hip and knee osteoarthritis (OA) to walking difficulty.

METHODS:

A population cohort aged ≥ 55 years recruited from 1996-98 (n=28,451) completed a standardized questionnaire assessing demographics, health conditions, joint complaints and functional limitations, including difficulty walking in the past 3 months. Survey data were linked to health administrative databases; self-report and administrative data were used to identify health conditions. Hip/knee OA was defined as self-reported swelling, pain, or stiffness in a hip or knee lasting ≥ 6 weeks in the past 3 months without an inflammatory arthritis diagnosis. Using multivariable logistic regression, we examined the determinants of walking difficulty and constructed a clinical nomogram.

RESULTS:

18,490 cohort participants were eligible (mean age 68 years, 60% female). 25% reported difficulty walking. Difficulty walking was significantly and independently associated with older age, female sex, body mass index, and several health conditions; of the conditions examined, the likelihood of walking difficulty was greatest with hip and knee OA and increased with number of hips/knees joints affected. The predicted probability of difficulty walking for a 60-year-old middle-income, normal-weight woman was 5-10% with no health conditions, 10-20% with diabetes and CV disease, 40% with OA in two hips/knees, 60-70% with diabetes, CV disease and OA in two hips/knees, and 80% with diabetes, CV disease and OA in all hips/knees.

CONCLUSION:

In a population cohort, symptomatic hip/knee OA was the strongest contributor to walking difficulty. Given the importance of walking to engagement in physical activity for chronic disease management, greater attention to OA is warranted. This article is protected by copyright. All rights reserved.

PFP

Br J Sports Med. 2017 May 5. pii: bjsports-2016-096988. doi: 10.1136/bjsports-2016-096988.

Is combining gait retraining or an exercise programme with education better than education alone in treating runners with patellofemoral pain? A randomised clinical trial.

Esculier JF^{1,2,3}, Bouyer LJ^{1,2}, Dubois B^{1,3}, Fremont P¹, Moore L¹, McFadyen B^{1,2}, Roy JS^{1,2}.

Author information

Abstract

DESIGN:

Single-blind randomised clinical trial.

OBJECTIVE:

To compare the effects of three 8-week rehabilitation programmes on symptoms and functional limitations of runners with patellofemoral pain (PFP).

METHODS:

Sixty-nine runners with PFP were randomly assigned to one of three intervention groups: (1) education on symptoms management and training modifications (education); (2) exercise programme in addition to education (exercises); (3) gait retraining in addition to education (gait retraining). Symptoms and functional limitations were assessed at baseline (T₀), and after 4, 8 and 20 weeks (T₄, T₈ and T₂₀) using the Knee Outcome Survey of the Activities of Daily Living Scale (KOS-ADLS) and visual analogue scales (VASs) for usual pain, worst pain and pain during running. Lower limb kinematics and kinetics during running, and isometric strength were also evaluated at T₀ and T₈. The effects of rehabilitation programmes were assessed using two-way analysis of variance.

RESULTS:

No significant group × time interactions (p<0.447) were found for KOS-ADLS and VASs. All three groups showed similar improvements at T₄, T₈ and T₂₀ compared with T₀ (p<0.05). Only the exercises group increased knee extension strength following rehabilitation (group × time: p<0.001) and only the gait retraining group (group × time: p<0.001) increased step rate (+7.0%) and decreased average vertical loading rate (-25.4%).

CONCLUSION:

Even though gait retraining and exercises improved their targeted mechanisms, their addition to education did not provide additional benefits on symptoms and functional limitations.

Appropriate education on symptoms and management of training loads should be included as a primary component of treatment in runners with PFP.

58. RUNNING

Heel vs. foot flat forces

Gait Posture. 2017 Apr 28;56:54-59. doi: 10.1016/j.gaitpost.2017.04.037.

A comparison of the ground reaction force frequency content during rearfoot and non-rearfoot running patterns.

Gruber AH¹, Edwards WB², Hamill J³, Derrick TR⁴, Boyer KA³.

Author information

Abstract

Running with a non-rearfoot pattern has been claimed to reduce injury risk because the impact peak in the vertical ground reaction force (GRF) is visually absent in the time-domain compared with a rearfoot pattern.

However, running results in a rapid deceleration of the lower extremity segments immediately following initial contact with the ground, regardless of footfall pattern. Therefore, the frequency content of the GRF is expected to contain evidence of this collision. The purpose of the present study was to characterize the waveform components of the GRF generated during the impact phase by habitual rearfoot and habitual non-rearfoot pattern groups using the continuous wavelet transform. Twenty rearfoot and 20 non-rearfoot participants ran over-ground at a standardized speed with their habitual footfall pattern. The continuous wavelet transform was performed on the resultant GRF vector and the vertical GRF. GRF signals generated by the non-rearfoot pattern group during early stance had maximum signal power of 15.4 ± 9.1 Hz occurring at $23.1 \pm 6.3\%$ of stance, which is within the 10-20 Hz range previously associated with impact in rearfoot runners. Maximum signal power occurred earlier in the impact phase ($11.5 \pm 1.5\%$) and with a higher frequency (27.2 ± 3.9 Hz) in the rearfoot pattern group versus the non-rearfoot pattern group ($P < 0.05$).

While the impact force transient may not appear as a prominent feature within the time-domain GRF with a non-rearfoot pattern, the results indicate that both footfall patterns generate frequencies associated with the impact peak in the resultant and vertical GRF.

Hip and knee OA

The Association of Recreational and Competitive Running With Hip and Knee Osteoarthritis: A Systematic Review and Meta-Analysis

Authors: Eduard Alentorn-Geli, MD, MSc, PhD¹⁻⁴, Kristian Samuelsson, MD, MSc, PhD⁵, Volker Musahl, MD, PhD⁶, Cynthia L. Green, PhD⁷, Mohit Bhandari, MD, PhD⁸, Jón Karlsson, MD, PhD⁵

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:**0 **Issue:**0 **Pages:**1–36 **DOI:**10.2519/jospt.2017.7137

Study Design

Systematic review and meta-analysis.

Background

Running is a healthy and popular activity worldwide, but data regarding its association with osteoarthritis (OA) are conflicting.

Objectives

To evaluate the association of hip and knee OA with running and to explore the influence of running intensity on this association.

Methods

PubMed, EMBASE and Cochrane Library databases were used to identify studies investigating the occurrence of OA of the hip and/or knee among runners. Studies comparing this occurrence between runners and controls (sedentary, non-running individuals) were meta-analyzed. Runners were regarded as ‘competitive’ if they were reported as professionals/elite athletes, or participated in International competitions. Recreational runners were individuals running in a non-professional (amateur) manner. The prevalence and odds ratio (95% CI) for OA between runners (at competitive and recreational level) and controls were calculated. Subgroup analyses were conducted for OA location (hip or knee), gender and years of exposure to running (less or more than 15 years).

Results

Twenty-four studies (n=123,173 individuals) were included and 16 (n=112,192 individuals) were meta-analyzed. The overall prevalence (95% CI) of hip and knee OA was 13.3% (11.62-15.2) in competitive runners, 3.5% (3.38-3.63) in recreational runners and 10.23% (9.89-10.58) in controls. The odds ratio (95% CI) for hip and/or knee OA between recreational runners and controls was 0.66 (0.57-0.76). The odds ratio (95% CI) for hip and/or knee OA in competitive runners was higher than that in recreational runners (OR (95% CI) 1.34 (0.97-1.86) and 0.66 (0.57-0.76) respectively (controls as reference group); p=0.0001).

Conclusions

Recreational runners had a lower occurrence of OA compared with competitive runners and controls. These results indicated that a more sedentary lifestyle or long exposure to high-volume

and/or high-intensity running are both associated with hip and/or knee OA. However, it was not possible to determine whether these associations are causative or confounded by other risk factors, such as previous injury.

59. PAIN

Genetics of chronic pain

May 15, 2017 Volume 81, Issue 10, Supplement, Page S137

334. Expression Levels of XIST RNA Predict PTSD and Chronic Pain Outcomes in Women Experiencing Motor Vehicle Collision

Sarah Linnstaedt Samuel McLean

DOI: <http://dx.doi.org/10.1016/j.biopsych.2017.02.349>

Background

Women experiencing motor vehicle collision (MVC) are at substantially increased risk of both PTSD and chronic post-traumatic pain (CPTP). X chromosome inactivation is one candidate mechanism contributing to such differences, and the long non-coding RNA X-inactive specific transcript (XIST) is known to be a major regulator of XCI. We hypothesized that XIST levels would predict PTSD and CPTP in women experiencing MVC.

Methods

African American women age 18 to 65 presenting to the emergency department after MVC were enrolled, those who had total RNA sequencing data available (Illumina HiSeq, n=66) were included in this analysis. PTSD (IES-R) and CPTP (0-10 numeric rating scale) symptoms were assessed 6 weeks, 6 months, and 1 year after MVC. Repeated measures logistic regression, t-tests, and correlation analyses were used to evaluate relationships between transcripts and clinical outcomes.

Results

In repeated measures multivariate regression models adjusted for age, study site, and time following MVC, XIST expression levels predicted both PTSD ($p=1.9 \times 10^{-4}$) and CPTP severity ($p=0.0013$). For both outcomes, higher XIST RNA expression levels were associated with increased risk. In secondary analyses, 9/19 (47%) X chromosome genes previously shown to be tightly regulated by or escapees of XCI were correlated with XIST RNA expression levels ($p < 0.05$), nine significantly predicted PTSD, and six significantly predicted CPTP ($p < 0.05$).

Conclusions

These data suggest that XIST and related X-chromosome transcript levels predict PTSD and pain outcomes in women experiencing MVC. Further studies are needed to replicate these findings and examine potential mechanisms.

Pain control through transcranial magnetic stimulation

Eur J Pain. 2017 May 11. doi: 10.1002/ejp.1052.

Neurotransmitters behind pain relief with transcranial magnetic stimulation - positron emission tomography evidence for release of endogenous opioids.

Lamusuo S^{1,2,3}, Hirvonen J³, Lindholm P^{1,4}, Martikainen IK⁵, Hagelberg N⁶, Parkkola R^{3,7}, Taiminen T⁸, Hietala J^{3,8}, Helin S³, Virtanen A⁴, Pertovaara A⁹, Jääskeläinen SK⁴.

Author information

Abstract

BACKGROUND:

Repetitive transcranial magnetic stimulation (rTMS) at M1/S1 cortex has been shown to alleviate neuropathic pain.

OBJECTIVES:

To investigate the possible neurobiological correlates of cortical neurostimulation for the pain relief.

METHODS:

We studied the effects of M1/S1 rTMS on nociception, brain dopamine D2 and μ -opioid receptors using a randomized, sham-controlled, double-blinded crossover study design and 3D-positron emission tomography (PET). Ten healthy subjects underwent active and sham rTMS treatments to the right M1/S1 cortex with E-field navigated device. Dopamine D2 and μ -receptor availabilities were assessed with PET radiotracers [¹¹C]raclopride and [¹¹C]carfentanil after each rTMS treatment. Thermal quantitative sensory testing (QST), contact heat evoked potential (CHEP) and blink reflex (BR) recordings were performed between the PET scans.

RESULTS:

μ -Opioid receptor availability was lower after active than sham rTMS ($P \leq 0.0001$) suggested release of endogenous opioids in the right ventral striatum, medial orbitofrontal, prefrontal and anterior cingulate cortices, and left insula, superior temporal gyrus, dorsolateral prefrontal cortex and precentral gyrus. There were no differences in striatal dopamine D2 receptor availability between active and sham rTMS, consistent with lack of long-lasting measurable dopamine release. Active rTMS potentiated the dopamine-regulated habituation of the BR compared to sham ($P = 0.02$). Thermal QST and CHEP remained unchanged after active rTMS.

CONCLUSIONS:

rTMS given to M1/S1 activates the endogenous opioid system in a wide brain network associated with processing of pain and other salient stimuli. Direct enhancement of top-down opioid-mediated inhibition may partly explain the clinical analgesic effects of rTMS.

SIGNIFICANCE:

Neurobiological correlates of rTMS for the pain relief are unclear. rTMS on M1/S1 with ¹¹C-carfentanyl-PET activates endogenous opioids. Thermal and heat pain thresholds remain unchanged. rTMS induces top-down opioid-mediated inhibition but not change the sensory discrimination of painful stimuli.

Pain differences between men and women

PLoS One. 2017 Apr 25;12(4):e0175737. doi: 10.1371/journal.pone.0175737. eCollection 2017.

Chronic pain and sex-differences; women accept and move, while men feel blue.

Rovner GS^{1,2,3}, Sunnerhagen KS¹, Björkdahl A^{1,4}, Gerdle B⁵, Börsbo B^{6,7}, Johansson F⁸, Gillanders D⁹.

Author information

Abstract**PURPOSE:**

The aim of this study is to explore differences between male and female patients entering a rehabilitation program at a pain clinic in order to gain a greater understanding of different approaches to be used in rehabilitation.

METHOD:

1371 patients referred to a specialty pain rehabilitation clinic, completed sociodemographic and pain related questionnaires. They rated their pain acceptance (CPAQ-8), their kinesiophobia (TSK), the impact of pain in their life (MPI), anxiety and depression levels (HAD) and quality of life scales: the SF-36, LiSat-11, and the EQ-5D. Because of the large sample size of the study, the significance level was set at the $p \leq .01$.

RESULTS:

Analysis by t-test showed that when both sexes experience the same pain severity, women report significantly higher activity level, pain acceptance and social support while men report higher kinesiophobia, mood disturbances and lower activity level.

CONCLUSION:

Pain acceptance (CPAQ-8) and kinesiophobia (TSK) showed the clearest differences between men and women. Pain acceptance and kinesiophobia are behaviorally defined and have the potential to be changed.

Central sensitization

Pain Pract. 2017 Apr 27. doi: 10.1111/papr.12600.

Psychological distress and widespread pain contribute to the variance of the central sensitization inventory: A cross-sectional study in patients with chronic pain.

van Wilgen CP¹, Vuijk PJ², Kregel J³, Voogt L⁴, Meeus M^{5,6}, Descheemaker F⁷, Keizer D⁸, Nijs J^{1,9}.

Author information

Abstract**OBJECTIVES:**

Central sensitization (CS) implies increased sensitivity of the nervous system, resulting in increased pain sensitivity as well as widespread pain. Recently, the Central Sensitization Inventory (CSI) was developed to assess symptoms of CS and central sensitivity syndromes. The aim of this study was to examine the convergent validity of the CSI by comparing the outcome to psychosocial factors and clinical features of CS.

METHODS:

In a cross-sectional explorative study, patients with chronic pain completed multiple questionnaires, including the CSI, pain catastrophizing scale, SCL-90 for psychological distress, duration of pain, intensity of pain, widespread pain, and lateralization of pain. Based on bivariate correlations, relevant predictors of CS were selected and used to fit an exploratory structural equation model (SEM) of CS.

RESULTS:

In total 114 patients with chronic pain were included, 56.1% being women. The average pain duration was 88 months. The mean total score on the CSI was 36.09 (15.26). The CSI was strongly related to known contributing and related factors of CS. SEM analysis showed that both psychological distress and widespread pain contributed significantly to the variance in symptoms of CS in patients with chronic pain.

CONCLUSION:

In this study, the convergent validity of the CSI was measured with demonstration of a strong relationship between contributing factors and clinical features of CS. These findings of convergent validity, considering former studies of the CSI, underline the use of the questionnaire in the clinical practice. This article is protected by copyright. All rights reserved.

62 A. NUTRITION/VITAMINS

Fruits and diabetes

PLoS Med. 2017 Apr 11;14(4):e1002279. doi: 10.1371/journal.pmed.1002279. eCollection 2017 Apr.

Fresh fruit consumption in relation to incident diabetes and diabetic vascular complications: A 7-y prospective study of 0.5 million Chinese adults.

Du H^{1,2}, Li L^{3,4}, Bennett D², Guo Y⁴, Turnbull I², Yang L^{1,2}, Bragg F², Bian Z⁴, Chen Y^{1,2}, Chen J⁵, Millwood IY^{1,2}, Sansome S², Ma L⁶, Huang Y⁷, Zhang N⁸, Zheng X⁹, Sun Q¹⁰, Key TJ¹¹, Collins R², Peto R², Chen Z²; China Kadoorie Biobank study.

Author information

Abstract

BACKGROUND:

Despite the well-recognised health benefits of fresh fruit consumption, substantial uncertainties remain about its potential effects on incident diabetes and, among those with diabetes, on risks of death and major vascular complications.

METHODS AND FINDINGS:

Between June 2004 and July 2008, the nationwide China Kadoorie Biobank study recruited 0.5 million adults aged 30-79 (mean 51) y from ten diverse localities across China. During ~7 y of follow-up, 9,504 new diabetes cases were recorded among 482,591 participants without prevalent (previously diagnosed or screen-detected) diabetes at baseline, with an overall incidence rate of 2.8 per 1,000 person-years. Among 30,300 (5.9%) participants who had diabetes at baseline, 3,389 deaths occurred (overall mortality rate 16.5 per 1,000), along with 9,746 cases of macrovascular disease and 1,345 cases of microvascular disease. Cox regression yielded adjusted hazard ratios (HRs) associating each disease outcome with self-reported fresh fruit consumption, adjusting for potential confounders such as age, sex, region, socio-economic status, other lifestyle factors, body mass index, and family history of diabetes. Overall, 18.8% of participants reported consuming fresh fruit daily, and 6.4% never/rarely (non-consumers), with the proportion of non-consumers about three times higher in individuals with previously diagnosed diabetes (18.9%) than in those with screen-detected diabetes (6.7%) or no diabetes (6.0%). Among those without diabetes at baseline, higher fruit consumption was associated with significantly lower risk of developing diabetes (adjusted HR = 0.88 [95% CI 0.83-0.93] for daily versus non-consumers, $p < 0.001$, corresponding to a 0.2% difference in 5-y absolute risk), with a clear dose-response relationship. Among those with baseline diabetes, higher fruit consumption was associated with lower risks of all-cause mortality (adjusted HR = 0.83 [95% CI 0.74-0.93] per 100 g/d) and microvascular (0.72 [0.61-0.87]) and macrovascular (0.87 [0.82-0.93]) complications ($p < 0.001$), with similar HRs in individuals with previously diagnosed and screen-detected diabetes; estimated differences in 5-y absolute risk between daily and non-consumers were 1.9%, 1.1%, and 5.4%, respectively. The main limitation of this study was that, owing to its observational nature, we could not fully exclude the effects of residual confounding.

ABSTRACTS

CONCLUSION:

In this large epidemiological study in Chinese adults, higher fresh fruit consumption was associated with significantly lower risk of diabetes and, among diabetic individuals, lower risks of death and development of major vascular complications.