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2. LBP

Depression and LBP

Spine J. 2017 Mar 3. pii: S1529-9430(17)30076-1. doi: 10.1016/j.spinee.2017.02.009.

Chronic low back pain and the risk of depression or anxiety symptoms: Insights from a longitudinal twin study.

Fernandez M¹, Colodro-Conde L², Hartvigsen J³, Ferreira ML⁴, Refshauge KM⁵, Pinheiro MB⁵, Ordoñana JR⁶, Ferreira PH⁵.

Author information

Abstract

BACKGROUND CONTEXT:

Pain is commonly associated with symptoms of depression or anxiety, although this relationship is considered bi-directional. There is limited knowledge regarding causal relationships.

PURPOSE:

To investigate whether chronic low back pain (LBP) increases the risk of depression or anxiety symptoms, after adjusting for shared familial factors.

STUDY DESIGN:

A longitudinal, genetically informative study design from the Murcia Twin Registry in Spain.

PATIENT SAMPLE:

Patient sample included 1269 adult twins with a mean age of 53 years.

OUTCOME MEASURES:

The outcome of depression or anxiety symptoms was evaluated with EuroQol (EQ-5D) questionnaire.

METHODS:

Using logistic regression analyses, twins were initially assessed as individuals in the total sample analysis, followed by a co-twin case-control, which partially [dizygotic twins (DZ)] and fully [monozygotic twins (MZ)] adjusts for shared familial factors. There was no external funding for this study and no conflict of interest is declared.

RESULTS:

There was a significant association between chronic LBP and the risk of depression or anxiety symptoms in the unadjusted total sample analysis - odds ratio (OR): 1.81 (95% Confidence Interval [CI]: 1.34 - 2.44). After adjusting for confounders, the association remained significant (OR: 1.43 (95% CI: 1.05 - 1.95), although adjusted co-twin case-control were non-significant in DZ (OR: 1.03, 95% CI: 0.50-2.13) and MZ twins (OR: 1.86, 95% CI: 0.63-5.51).

CONCLUSION:

The relationship between chronic LBP and the future development of depression or anxiety symptoms is not causal. The relationship is likely to be explained by confounding from shared familial factors, given the non-statistically significant associations in the co-twin case-control analyses.

Testing for outcomes STarT

Evaluation of the STarT Back Screening Tool for Prediction of Low Back Pain Intensity in an Outpatient Physical Therapy Setting

Authors: Irene Toh, MS¹, Hwei-Chi Chong, BSc¹, Jennifer Suet-Ching Liaw, MS¹, Yong-Hao Pua, PhD¹

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**0 **Issue:**0 **Pages:**1–23 **DOI:**10.2519/jospt.2017.7284

Study Design

Prospective cohort study.

Background

Optimal management of patients with low back pain (LBP) relies on accurate prognosis of future clinical outcomes. The STarT Back Screening Tool (SBT), a prognostic index developed and validated in the primary care setting, has three scoring measures: SBT overall, psychosocial, and categorical scores.

Objective

Our study aimed to compare the predictive validity of three SBT measures with future pain intensity in patients receiving physical therapy for LBP.

Methods

Two-hundred-seven patients with LBP receiving physical therapy completed the SBT at initial (baseline) evaluation and were evaluated 12 weeks later for their pain intensity. Multivariable proportional odds regression was used to evaluate the associations of the various SBT measures with pain intensity at follow-up.

Results

Adjusting for covariates, all SBT measures were positively and significantly associated with the odds of greater pain intensity at follow-up evaluation ($P < 0.01$). Adding SBT psychosocial scores to a covariates-only model improved its predictive accuracy (c-statistics increase, 0.03 [95% CI, 0.01 to 0.09]) whilst improvements in prediction were smaller or negligible with the SBT overall and categorical scores (c-statistics increase, 0.02 and 0.007, respectively). In mutually-adjusted analyses, SBT psychosocial scores added incremental predictive value over SBT overall scores in predicting future pain intensity ($P = 0.03$).

Conclusions

Among the 3 SBT measures, the SBT psychosocial subscale was a significant predictor of future pain intensity in patients with LBP, and it had comparable, if not better, prognostic significance compared with the SBT overall score. *J Orthop Sports Phys Ther*, Epub 3 Mar 2017.
*doi:*10.2519/jospt.2017.7284

7. PELVIC ORGANS/WOMAN'S HEALTH

C section and death

BMC Pregnancy Childbirth. 2017 Feb 27;17(1):74. doi: 10.1186/s12884-017-1255-2.

Trial of labour after caesarean section and the risk of neonatal and infant death: a nationwide cohort study.

O'Neill SM^{1,2}, Agerbo E³, Khashan AS^{4,5}, Kearney PM⁵, Henriksen TB⁶, Greene RA⁷, Kenny LC⁴.

Author information

Abstract

BACKGROUND:

Caesarean section (CS) rates are increasing worldwide and as a result repeat CS is common. The optimal mode of delivery in women with one previous CS is widely debated and the risks to the infant are understudied. The aim of the current study was to evaluate if women with a trial of labour after caesarean (TOLAC) had an increased odds of neonatal and infant death compared to women with an elective repeat CS (ERCS).

METHODS:

A population register-based cohort study was conducted in Denmark between 1982 and 2010. All women with two deliveries [in which the first was a CS, and the second was an uncomplicated, term delivery (n = 61,626)] were included in the study. Logistic regression models were used to report adjusted odds ratios (AOR) and 95% confidence intervals (CI) of the odds of death according to mode of delivery. The main outcome measures were neonatal death (early and late) and infant death.

RESULTS:

Women with a TOLAC had an increased odds of neonatal death (AOR 1.87, 95% CI 1.12 to 3.12) due to an increased risk of early neonatal death (AOR 2.06, 95% CI 1.19 to 3.56) and no effect on late neonatal death (AOR 0.97, 95% CI 0.22 to 4.32), or infant death (AOR 1.12, 95% CI 0.79 to 1.59) when compared to the reference group of women with an ERCS. There was evidence of a cohort effect as the increased odds of neonatal death (AOR 3.89, 95% CI 1.33 to 11.39) was most significant in the earlier years (1982-1991) and gradually disappeared (AOR 1.01, 95% CI 0.44 to 2.31) in the later years (2002-2010).

CONCLUSIONS:

Although an increased risk of neonatal death was found in women with a TOLAC, there was evidence of a cohort effect, which showed this increased odds disappearing over time. Advances in modern healthcare including improved monitoring and earlier detection of underlying pregnancy complications may explain the findings.

Uterus prolapses and constipation

Int Urogynecol J. 2017 Mar 6. doi: 10.1007/s00192-017-3288-5.

Clinical impact of bowel symptoms in women with pelvic floor disorders.

Vasconcelos Neto JA¹, Vasconcelos CT², Regadas SM², Bezerra LR², Lustosa KA², Karbage SA².

Author information

Abstract

INTRODUCTION AND HYPOTHESIS:

The aim of this study was to evaluate the correlations between the POP-Q Bp point and the perineal body (Pb) and genital hiatus (Gh) measurements and constipation, anal incontinence, severity of symptoms and quality of life.

METHODS:

The patients were distributed into two groups according to the posterior vaginal wall Bp point: one group with $Bp \leq -1$ (without posterior vaginal wall prolapse, control group) and the other group with $Bp \geq 0$ (with posterior vaginal wall prolapse, case group). Demographic data, defecatory dysfunction and SF-36 scores were compared between the groups. Correlations between severity of posterior prolapse (Bp, Gh, Pb and Gh + Pb) and severity of bowel symptoms were also calculated.

RESULTS:

A total of 613 women were evaluated, of whom 174 were included, 69 (39.7%) in the control group and 105 (60.3%) in the case group. The groups were similar in terms of anal incontinence, fecal urgency and/or constipation. There was no correlation between the severity of constipation and anal incontinence according to the Wexner score, and the severity of posterior vaginal wall prolapse measured in terms of point Bp. There were, however, statistically significant differences in Pb, Gh and Gh + Pb between the groups. The Pb and Gh + Pb measurements were positively correlated with symptoms of constipation, as well as with the scores of some SF-36 domains, but were not correlated with anal incontinence.

CONCLUSIONS:

These results suggest that the severity of posterior vaginal wall prolapse is not correlated with constipation or anal incontinence, but Pb and Gh + Pb measurements are correlated with constipation and SF-36 scores

8. VISCERA

UC testing

Aliment Pharmacol Ther. 2017 Feb 26. doi: 10.1111/apt.14004.

The potential of volatile organic compounds for the detection of active disease in patients with ulcerative colitis.

Smolinska A¹, Bodelier AG^{2,3}, Dallinga JW¹, Masclee AA², Jonkers DM², van Schooten FJ¹, Pierik MJ².

Author information

Abstract

BACKGROUND:

To optimise treatment of ulcerative colitis (UC), patients need repeated assessment of mucosal inflammation. Current non-invasive biomarkers and clinical activity indices do not accurately reflect disease activity in all patients and cannot discriminate UC from non-UC colitis. Volatile organic compounds (VOCs) in exhaled air could be predictive of active disease or remission in Crohn's disease.

AIM:

To investigate whether VOCs are able to differentiate between active UC, UC in remission and non-UC colitis.

METHODS:

UC patients participated in a 1-year study. Clinical activity index, blood, faecal and breath samples were collected at each out-patient visit. Patients with clear defined active faecal calprotectin >250 µg/g and inactive disease (Simple Clinical Colitis Activity Index <3, C-reactive protein <5 mg/L and faecal calprotectin <100 µg/g) were included for cross-sectional analysis. Non-UC colitis was confirmed by stool culture or radiological evaluation. Breath samples were analysed by gas chromatography time-of-flight mass spectrometry and kernel-based method to identify discriminating VOCs.

RESULTS:

In total, 72 UC (132 breath samples; 62 active; 70 remission) and 22 non-UC-colitis patients (22 samples) were included. Eleven VOCs predicted active vs. inactive UC in an independent internal validation set with 92% sensitivity and 77% specificity (AUC 0.94). Non-UC colitis patients could be clearly separated from active and inactive UC patients with principal component analysis.

CONCLUSIONS:

Volatile organic compounds can accurately distinguish active disease from remission in UC and profiles in UC are clearly different from profiles in non-UC colitis patients. VOCs have demonstrated potential as new non-invasive biomarker to monitor inflammation in UC.

Peds with Celiac's

Celiac disease is associated with childhood psychiatric disorders: A population-based study

The Journal of Pediatrics, 03/08/2017

Butwicka A, et al.

This population-based study was conducted to determine the association between psychiatric disorders and celiac disease in children. Results showed that children with celiac disease are at increased risk for most psychiatric disorders, apparently owing to the biological and/or psychological effects of celiac disease.

Methods

- This study included 10 903 children (aged <18 years) with celiac disease and 12 710 of their siblings.
- The clinicians evaluate the risk of childhood psychiatric disorders (any psychiatric disorder, psychotic disorder, mood disorder, anxiety disorder, eating disorder, psychoactive substance misuse, behavioral disorder, attention-deficit hyperactivity disorder [ADHD], autism spectrum disorder [ASD], and intellectual disability).
- With the aid of Cox regression, HRs of future psychiatric disorders in children with celiac disease and their siblings was estimated.
- The association between previous diagnosis of a psychiatric disorder and current celiac disease was assessed using logistic regression.

Results

- Compared with the general population, children with celiac disease had a 1.4-fold greater risk of future psychiatric disorders.
- Childhood celiac disease was identified as a risk factor for mood disorders, anxiety disorders, eating disorders, behavioral disorders, ADHD, ASD, and intellectual disability.
- In addition, a previous diagnosis of a mood, eating, or behavioral disorder was more common before the diagnosis of celiac disease.
- In contrast, siblings of celiac disease probands were at no increased risk of any of the investigated psychiatric disorders.

GI symptoms

Neurogastroenterol Motil. 2017 Mar 3. doi: 10.1111/nmo.13041.

Multiple functional gastrointestinal disorders linked to gastroesophageal reflux and somatization: A population-based study.

Choung RS¹, Locke GR 3rd¹, Schleck CD², Zinsmeister AR², Talley NJ³.

Author information

Abstract

BACKGROUND:

It is unknown why functional gastrointestinal disorders (FGIDs) overlap and limited information exists on risk factors for those with overlap. Our aim was to estimate the prevalence of combinations of FGIDs including reflux (FGIDs-gastroesophageal reflux [GER]), and evaluate potential risk factors for people with multiple disorders in a representative US community.

METHODS:

A population-based study was conducted by mailing a valid GI symptom questionnaire to an age- and gender-stratified random sample of residents of Olmsted County, MN. Rome III definitions were used to identify people with FGIDs, and GER was defined by weekly or more frequent heartburn or acid regurgitation. The prevalence of people meeting multiple symptom complexes was estimated. Moreover, potential risk factors for people with multiple disorders were evaluated.

KEY RESULTS:

A total of 3548 people provided data for each of the necessary symptom questions (mean age: 61±16 years, 54% female). Among these 3548 subjects, 2009 (57%) had no FGIDs-GER, 906 (26%) had a pure FGID-GER, 372 (10%) had 2 FGIDs-GER, and 261 (7%) had 3 or more FGIDs-GER. Somatization as assessed by a higher Somatic Symptom Checklist score (OR=3.3, 95% CI [2.7,4.1]) was associated with an increased odds for those with 3 or more FGIDs-GER compared to subjects with a pure FGID-GER adjusting for age and gender.

CONCLUSIONS AND INFERENCES:

Symptom complex overlap is common rather than rare in the community. GER is an integral symptom complex associated with both upper and lower FGIDs. Somatization is a strong risk factor for multiple FGIDs.

10 A. CERVICAL SPINE**Neck pain changes gait****People With Chronic Neck Pain Walk With a Stiffer Spine**

Authors: Deborah Falla, PT, PhD¹, Leonardo Gizzi, PhD, MSc², Hesam Parsa, PhD, MSc³, Angela Dieterich, PT, PhD³, Frank Petzke, MD³

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:**0 **Issue:**0 **Pages:**1–33 **DOI:**10.2519/jospt.2017.6768

Study Design

Case-control.

Background

People with chronic neck pain present a number of sensorimotor and biomechanical alterations, yet little is known about the influence of neck pain on gait and motions of the spine during gait.

Objective

To evaluate the spine kinematics and gait characteristics in people with non-specific chronic neck pain.

Methods

People with chronic non-specific neck pain and age and gender matched asymptomatic controls walked on a treadmill at three different speeds (self-selected, 3km/h, 5km/h) either with their head in a neutral position or rotated 30°. Tridimensional motion capture was employed to quantify body kinematics. Neck and trunk rotations were derived from the difference between the transverse plane component of the head and thorax and thorax and pelvis angles to provide an indication of neck and trunk rotation during gait.

Results

Overall, the patient group showed shorter stride length compared to the control group ($P < 0.0001$). Moreover, the patients with neck pain showed smaller trunk rotations ($P < 0.0001$), regardless of the condition or speed. The difference in the amount of trunk rotation between groups became larger for the conditions of walking with the head rotated.

Conclusion

These results show that people with chronic neck pain walk with reduced trunk rotation, especially when challenged by walking with their head positioned in rotation. Reduced rotation of the trunk during gait may have long term consequences on spinal health. *J Orthop Sports Phys Ther*, Epub 3 Feb 2017. doi:10.2519/jospt.2017.6768

Keyword: chronic pain, gait, movement variability, thorax-pelvis transverse rotations

12 B. CERVICAL SURGERIES**Upper cervical for OA**

Spine (Phila Pa 1976). 2017 Mar;42(5):E294-E303. doi: 10.1097/BRS.0000000000001783.

Outcomes Following Arthrodesis for Atlanto-Axial Osteoarthritis.

Kang DG1, Lehman RA Jr, Wagner SC, Peters C, Riew KD.

Author information

Abstract

STUDY DESIGN:

Retrospective analysis.

OBJECTIVE:

We set out to evaluate the radiographic and patient-reported outcomes following C1-C2 arthrodesis for atlantoaxial osteoarthritis (AAOA) using modern instrumentation and techniques.

SUMMARY OF BACKGROUND DATA:

Few studies have evaluated outcomes following C1-C2 arthrodesis for AAOA using modern surgical fixation techniques.

METHODS:

Retrospective analysis of all patients following C1-C2 arthrodesis with recalcitrant AAOA from a single center, single surgeon from 2002 to 2012. Preoperative, immediate and final follow-up postoperative radiographic images were evaluated. Patient-reported outcomes scores were assessed preoperative, 1-year, and final postoperative follow-up.

RESULTS:

We found a total of 14 patients (13 female, 1 male) with average follow-up of 2.96 ± 2.26 years and mean age at surgery of 71.8 ± 9.3 years old. The most common construct was posterior C1-C2 bilateral screw-rod construct (SRC) (n=9), and there were 3 patients with transarticular screw (TAS) constructs, and 2 patients with hybrid fixation (unilateral SRC and contralateral TAS). Mean change from baseline to final follow-up for Numeric Pain Rating Scale (NRS) was -4.7 ± 2.1 , and Neck Disability Index (NDI) was -21.0 ± 13.6 , with 11 (78.6%) patients demonstrated a substantial clinical benefit (change in NDI ≥ 10). There were no differences from baseline to all follow-up time points for SF-12 Physical and Mental Component Scores. All patients had evidence of solid C1-C2 arthrodesis and stable fixation at final follow-up, with no significant change in subaxial sagittal alignment. There were no perioperative or postoperative complications.

CONCLUSION:

We report one of the largest series evaluating patient-reported outcomes in patients following arthrodesis for AAOA using modern C1-C2 fixation techniques. Our study found C1-C2 arthrodesis for AAOA to be safe and effective, with a significant improvement in patient-reported pain and neck disability and most patients reporting substantial clinical benefit.

13. CRANIUM/TMJ

Craniotomy and jaw pain

Acta Neurochir (Wien). 2017 Mar 7. doi: 10.1007/s00701-017-3137-9.

Post-operative orofacial pain, temporomandibular dysfunction and trigeminal sensitivity after recent pterional craniotomy: preliminary study.

Brazoloto TM¹, de Siqueira SR², Rocha-Filho PA^{3,4}, Figueiredo EG², Teixeira MJ², de Siqueira JT².

Author information

Abstract

BACKGROUND:

Surgical trauma at the temporalis muscle is a potential cause of post-craniotomy headache and temporomandibular disorders (TMD). The aim of this study was to evaluate the prevalence of pain, masticatory dysfunction and trigeminal somatosensory abnormalities in patients who acquired aneurysms following pterional craniotomy.

METHODS:

Fifteen patients were evaluated before and after the surgical procedure by a trained dentist. The evaluation consisted of the (1) research diagnostic criteria for TMD, (2) a standardized orofacial pain questionnaire and (3) a systematic protocol for quantitative sensory testing (QST) for the trigeminal nerve.

RESULTS:

After pterional craniotomy, 80% of the subjects, 12 patients, developed orofacial pain triggered by mandibular function. The pain intensity was measured by using the visual analog scale (VAS), and the mean pain intensity was 3.7. The prevalence of masticatory dysfunction was 86.7%, and there was a significant reduction of the maximum mouth opening. The sensory evaluation showed tactile and thermal hypoesthesia in the area of pterional access in all patients.

CONCLUSIONS:

There was a high frequency of temporomandibular dysfunction, postoperative orofacial pain and trigeminal sensory abnormalities. These findings can help to understand several abnormalities that can contribute to postoperative headache or orofacial pain complaints after pterional surgeries.

Muscle jaw pain

J Headache Pain. 2017 Dec;18(1):30. doi: 10.1186/s10194-017-0737-y. Epub 2017 Feb 27.

Increased levels of intramuscular cytokines in patients with jaw muscle pain.

Louca Jounger S^{1,2}, Christidis N^{3,4}, Svensson P^{3,4,5}, List T^{4,6}, Ernberg M^{3,4}.

Author information

Abstract

BACKGROUND:

The aim of this study was to investigate cytokine levels in the masseter muscle, their response to experimental tooth-clenching and their relation to pain, fatigue and psychological distress in patients with temporomandibular disorders (TMD) myalgia.

METHODS:

Forty women, 20 with TMD myalgia (Diagnostic Criteria for TMD) and 20 age-matched healthy controls participated. Intramuscular microdialysis was performed to sample masseter muscle cytokines. After 140 min (baseline), a 20-minute tooth-clenching task was performed (50% of maximal voluntary contraction force). Pain (Numeric rating scale 0-10) and fatigue (Borg's Ratings of Perceived Exertion 6-20) were assessed throughout microdialysis, while pressure-pain thresholds (PPT) were assessed before and after microdialysis. Perceived stress (PSS-10) and Trait Anxiety (STAI) were assessed before microdialysis.

RESULTS:

The levels of IL-6, IL-7, IL-8 and IL-13 were higher in patients than controls (Mann Whitney U-test; $P < 0.05$) during the entire microdialysis. IL-6, IL-8 and IL-13 changed during microdialysis in both groups (Friedman; $P < 0.05$), while IL-1 β , IL-7 and GM-CSF changed only in patients ($P < 0.01$). IL-6 and IL-8 increased in response to tooth-clenching in both groups (Wilcoxon test; $P < 0.05$), while IL-7, IL-13 and TNF increased only in patients ($P < 0.05$). Patients had higher pain and fatigue than controls before and after tooth-clenching ($P < 0.001$), and lower PPTs before and after microdialysis ($P < 0.05$). There were no correlations between cytokine levels, pain or fatigue. Also, there were no differences in stress or anxiety levels between groups.

CONCLUSIONS:

In conclusion, the masseter levels of IL-6, IL-7, IL-8 and IL-13 were elevated in patients with TMD myalgia and increased in response to tooth-clenching. Tooth-clenching increased jaw muscle pain and fatigue, but without correlations to cytokine levels. This implies that subclinical muscle inflammation may be involved in TMD myalgia pathophysiology, but that there is no direct cause-relation between inflammation and pain.

Post craniotomy TMJ

Acta Neurochir (Wien). 2017 Mar 7. doi: 10.1007/s00701-017-3137-9

Post-operative orofacial pain, temporomandibular dysfunction and trigeminal sensitivity after recent pterional craniotomy: preliminary study.

Brazoloto TM¹, de Siqueira SR², Rocha-Filho PA^{3,4}, Figueiredo EG², Teixeira MJ², de Siqueira JT².

Author information

Abstract

BACKGROUND:

Surgical trauma at the temporalis muscle is a potential cause of post-craniotomy headache and temporomandibular disorders (TMD). The aim of this study was to evaluate the prevalence of pain, masticatory dysfunction and trigeminal somatosensory abnormalities in patients who acquired aneurysms following pterional craniotomy.

METHODS:

Fifteen patients were evaluated before and after the surgical procedure by a trained dentist. The evaluation consisted of the (1) research diagnostic criteria for TMD, (2) a standardized orofacial pain questionnaire and (3) a systematic protocol for quantitative sensory testing (QST) for the trigeminal nerve.

RESULTS:

After pterional craniotomy, 80% of the subjects, 12 patients, developed orofacial pain triggered by mandibular function. The pain intensity was measured by using the visual analog scale (VAS), and the mean pain intensity was 3.7. The prevalence of masticatory dysfunction was 86.7%, and there was a significant reduction of the maximum mouth opening. The sensory evaluation showed tactile and thermal hypoesthesia in the area of pterional access in all patients.

CONCLUSIONS:

There was a high frequency of temporomandibular dysfunction, postoperative orofacial pain and trigeminal sensory abnormalities. These findings can help to understand several abnormalities that can contribute to postoperative headache or orofacial pain complaints after pterional surgeries.

14. HEADACHES**Asthma potential**

Clin Respir J. 2017 Mar 7. doi: 10.1111/crj.12623.

Association of migraine with asthma risk: A retrospective population-based cohort study.

Peng YH^{1,2,3}, Chen KF^{4,5}, Liao WC^{6,7}, Hsia TC^{3,7}, Chen HJ^{6,8}, Yin MC^{1,9}, Ho WC¹.

Author information

Abstract

BACKGROUND:

Both migraine and asthma are common health problems in the general population. However, the association between these two disorders is yet to be fully explored.

OBJECTIVE:

We examined whether adult patients with migraine are at a higher risk of asthma development.

METHODS:

We used data retrieved from the National Health Insurance Research Database in Taiwan to conduct this nationwide population-based cohort study. We identified 6647 patients aged 20-60 years who were newly diagnosed with migraine between 2000 and 2005 for the migraine group and identified 26 588 patients without migraine for the nonmigraine group. Both groups were followed up until the end of 2011 to examine the incidence of asthma. Cox proportional hazards regression analysis was used to measure the hazard ratio (HR) of asthma in the migraine group compared with the nonmigraine group.

RESULTS:

The HR of asthma development was 1.37 (95% confidence interval = 1.21-1.56) for the migraine group compared with the nonmigraine group after adjustment for age, sex, occupational status, insurance premium, urbanization, comorbidities, and annual outpatient department visits. Further stratified analysis revealed that this risk was also significantly higher for both sexes and in the 40-60-year age group. The main limitation of this study was that some relevant data were unavailable, such as pain medication prescriptions and family history of migraine and asthma.

CONCLUSION:

Adult patients with migraine are at a higher future risk of asthma development. This article is protected by copyright. All rights reserved.

Emotional basis

Acta Neurol Scand. 2017 Mar 5. doi: 10.1111/ane.12751.

Neuroticism, depression and pain perception in migraine and tension-type headache.

Ashina S^{1,2}, Bendtsen L², Buse DC³, Lyngberg AC⁴, Lipton RB³, Jensen R².

Author information

Abstract

OBJECTIVES:

People with migraine and tension-type headache (TTH) have psychiatric comorbidities. We aimed to test differences in mental health constructs by type and frequency of primary headache and associated pain sensitivity.

MATERIALS AND METHODS:

Data on headache features, neuroticism (Eysenck Personality Questionnaire) and depression (Major Depression Inventory) were obtained from 547 individuals classified into chronic (≥ 15) or episodic (< 15 headache days/month) and into pure migraine ($n=43$), pure tension type headache (TTH, $n=97$), migraine and TTH ($n=83$) and no headache diagnosis (controls, $n=324$) groups. A pericranial total tenderness score (TTS) and pressure pain thresholds (PPTs) were measured. Differences in mental health constructs were examined by headache frequency and type using generalized linear mixed models adjusting for sociodemographic covariates.

RESULTS:

Depression scores were highest among people with chronic headache, lower in those with episodic headache, and lowest in controls. The chronic and episodic headache groups had higher neuroticism scores than controls. Mental health construct scores were highest for the migraine and TTH group and lowest in the control group. TTS and cephalic PPTs were correlated with neuroticism and depression and were higher in the chronic headache group compared to the no headache group even when adjusted for neuroticism and depression.

CONCLUSIONS:

Neuroticism and depression scores are associated with headache frequency (chronic vs episodic) and are highest for migraine and TTH followed by pure TTH then migraine. Mental health constructs were correlated with but did not influence differences in TTS and PPTs between headache groups.

16. CONCUSSIONS

Screening

Br J Sports Med. 2017 Mar 7. pii: bjsports-2016-097441. doi: 10.1136/bjsports-2016-097441.

What are the critical elements of sideline screening that can be used to establish the diagnosis of concussion? A systematic review.

Patricios J^{1,2}, Fuller GW³, Ellenbogen R⁴, Herring S^{4,5,6}, Kutcher JS⁷, Loosemore M⁸, Makdissi M^{9,10}, McCrea M¹¹, Putukian M¹², Schneider KJ¹³.

Author information

Abstract

BACKGROUND:

Sideline detection is the first and most significant step in recognising a potential concussion and removing an athlete from harm. This systematic review aims to evaluate the critical elements aiding sideline recognition of potential concussions including screening tools, technologies and integrated assessment protocols.

DATA SOURCES:

Bibliographic databases, grey literature repositories and relevant websites were searched from 1 January 2000 to 30 September 2016. A total of 3562 articles were identified.

STUDY SELECTION:

Original research studies evaluating a sideline tool, technology or protocol for sports-related concussion were eligible, of which 27 studies were included.

DATA EXTRACTION:

A standardised form was used to record information. The QUADAS-2 and Newcastle-Ottawa tools were used to rate risk of bias. Strength of evidence was assessed using the Grades of Recommendation, Assessment, Development and Evaluation Working Group system.

DATA SYNTHESIS:

Studies assessing symptoms, the King-Devick test and multimodal assessments reported high sensitivity and specificity. Evaluations of balance and cognitive tests described lower sensitivity but higher specificity. However, these studies were at high risk of bias and the overall strength of evidence examining sideline screening tools was very low. A strong body of evidence demonstrated that head impact sensors did not provide useful sideline concussion information. Low-strength evidence suggested a multimodal, multitime-based concussion evaluation process incorporating video review was important in the recognition of significant head impact events and delayed onset concussion.

CONCLUSION:

In the absence of definitive evidence confirming the diagnostic accuracy of sideline screening tests, consensus-derived multimodal assessment tools, such as the Sports Concussion Assessment Tool, are recommended. Sideline video review may improve recognition and removal from play of athletes who have sustained significant head impact events. Current evidence does not support the use of impact sensor systems for real-time concussion identification.

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Vestibular and athletes

Clin J Sport Med. 2017 Mar;27(2):133-138. doi: 10.1097/JSM.0000000000000324.

Sex Differences in Vestibular/Ocular and Neurocognitive Outcomes After Sport-Related Concussion.

Sufrinko AM¹, Mucha A, Covassin T, Marchetti G, Elbin RJ, Collins MW, Kontos AP.

Author information

Abstract

OBJECTIVE:

To examine sex differences in vestibular and oculomotor symptoms and impairment in athletes with sport-related concussion (SRC). The secondary purpose was to replicate previously reported sex differences in total concussion symptoms, and performance on neurocognitive and balance testing.

DESIGN:

Prospective cross-sectional study of consecutively enrolled clinic patients within 21 days of a SRC.

SETTING:

Specialty Concussion Clinic.

PARTICIPANTS:

Included male (n = 36) and female (n = 28) athletes ages 9 to 18 years.

INTERVENTIONS:

Vestibular symptoms and impairment was measured with the Vestibular/Ocular Motor Screening (VOMS). Participants completed the Immediate Post-concussion Assessment and Cognitive Test (ImPACT), Post-concussion Symptom Scale (PCSS), and Balance Error Scoring System (BESS).

MAIN OUTCOMES MEASURES:

Sex differences on clinical measures.

RESULTS:

Females had higher PCSS scores (P = 0.01) and greater VOMS vestibular ocular reflex (VOR) score (P = 0.01) compared with males. There were no sex differences on BESS or ImPACT. Total PCSS scores together with female sex accounted for 45% of the variance in VOR scores.

CONCLUSIONS:

Findings suggest higher VOR scores after SRC in female compared with male athletes. Findings did not extend to other components of the VOMS tool suggesting that sex differences may be specific to certain types of vestibular impairment after SRC. Additional research on the clinical significance of the current findings is needed.

19. GLENOHUMERAL/SHOULDER

Pilates helps shoulder pain

The effects of Clinical Pilates exercises on patients with shoulder pain: A randomized clinical trial

Journal of Bodywork & Movement Therapies , 03/10/2017

Atilgan E, et al.

Author's motive behind this study was to find out the effect of Clinical Pilates exercises on patients with shoulder pain. For patients experiencing shoulder pain, Clinical Pilates exercise is an efficient technique, as it helps reduce pain and disability among them.

Methods

- The authors selected 33 patients as study subjects, experiencing shoulder pain continuously for at least 4 weeks.
- They randomly divided the patients into 2 groups, namely Clinical Pilates exercise (n=17) group, and conventional exercise (n=16) group.
- They treated the patients for 5 days a week, the total treatment being carried out for 10 days.
- Using Visual Analogue Scale (VAS) and Shoulder Pain and Disability Index (SPADI), the assessment of pain and disability amongst the patients were done at the baseline and at the end of the treatment sessions.

Results

- While the conventional exercise group showed a significant improvement only in the SPADI total score ($p < 0.05$), the clinical Pilates exercise group demonstrated a significant improvement in all scores used for assessment ($p < 0.05$).
- Between the two groups, a comparison of scores for the VAS, SPADI-Pain, and SPADI-Total revealed a significant improvement in the Clinical Pilates exercise group ($p < 0.05$).

CT Manip for shoulder pain

Examination of the Validity of a Clinical Prediction Rule to Identify Patients With Shoulder Pain Likely to Benefit From Cervicothoracic Manipulation

Authors: Paul E. Mintken, PT, DPT, OCS, FAAOMPT^{1,2}, Amy W. McDevitt, PT, DPT, OCS, FAAOMPT^{1,3}, Lori A. Michener, PT, ATC, PhD, SCS, FAPTA⁴, Robert E. Boyles, PT, DSc, OCS, FAAOMPT⁵, Amber R. Beardslee, PT, DPT⁶, Scott A. Burns, PT, DPT, OCS, FAAOMPT^{7,8}, Matthew D. Haberl, PT, ATC, DPT, OCS, FAAOMPT⁹, Lauren A. Binder, PT, DPT, OCS¹⁰, Joshua A. Cleland, PT, PhD¹¹

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**0 **Issue:**0 **Pages:**1–25 **DOI:**10.2519/jospt.2017.7100

Study Design

Secondary analysis of a randomized controlled trial.

Background

Prognostic variables identifying patients with shoulder pain who are likely to respond to cervicothoracic (CT) manipulation have been reported, however they have yet to be validated.

Objective To examine the validity of previously reported prognostic variables in predicting which patients with shoulder pain will respond to cervicothoracic manipulation.

Methods

Participants (n=140) with a report of shoulder pain were randomly assigned to receive either 2 sessions of range of motion (ROM) exercises plus 6 sessions of stretching and strengthening exercises (Ex group), or 2 sessions of CT manipulation and ROM exercises followed by 6 sessions of stretching and strengthening exercise (MT+Ex group). Outcomes of disability (Shoulder Pain and Disability Index) and pain (Numeric Pain Rating Scale) were collected at baseline, 1-week, 4-weeks and 6-months. Time, treatment group and status of predictor variables, and 2-way and 3-way interactions were analyzed using linear mixed-model with repeated measures.

Results

There were no significant 3-way interactions for either disability (p=0.27) or pain scores (p=0.70) for time, group, and predictor status for any of the predictor variables.

Conclusion

The results of the current study did not validate the previously identified prognostic variables, therefore we cannot support using these in clinical practice. Further “updating” of the existing prediction rule may be warranted and could potentially result in new prognostic variables and improved generalizability. Limitations of the study include that mean duration of symptoms was greater than 2 years, and loss to follow-up at 6 months was 19%.

Level of Evidence Prognosis, Level 1b. Trial prospectively registered March 30, 2012 at www.clinicaltrials.gov (NCT01571674) *J Orthop Sports Phys Ther*, Epub 3 Mar 2017. doi:10.2519/jospt.2017.7100

Keyword: clinical prediction rule validation, prospective cohort, shoulder pain

34. PATELLA**Shoe wear and PF pain****Footwear characteristics are related to running mechanics in runners with patellofemoral pain**

Jean-Francois Esculier Blaise Dubois Laurent J. Bouyer Bradford J. McFadyen Jean-Sébastien Roy

DOI: <http://dx.doi.org/10.1016/j.gaitpost.2017.03.010>

Highlights

- Footwear characteristics are associated with running mechanics in runners with PFP.
- Higher MI score was moderately correlated with lower foot inclination and PFJ force.
- Lower shoe mass was indicative of higher step rate and lower peak PFJ force.
- Greater flexibility was indicative of lower foot inclination angle.
- No significant correlations were found between footwear characteristics and VLR.

Abstract

Running footwear is known to influence step rate, foot inclination at foot strike, average vertical loading rate (VLR) and peak patellofemoral joint (PFJ) force. However, the association between the level of minimalism of running shoes and running mechanics, especially with regards to these relevant variables for runners with patellofemoral pain (PFP), has yet to be investigated. The objective of this study was to explore the relationship between the level of minimalism of running shoes and habitual running kinematics and kinetics in runners with PFP. Running shoes of 69 runners with PFP (46 females, 23 males, 30.7 ± 6.4 years) were evaluated using the Minimalist Index (MI). Kinematic and kinetic data were collected during running on an instrumented treadmill. Principal component and correlation analyses were performed between the MI and its subscales and step rate, foot inclination at foot strike, average VLR, peak PFJ force and peak Achilles tendon force. Higher MI scores were moderately correlated with lower foot inclination ($r = -0.410$, $P < 0.001$) and lower peak PFJ force ($r = -0.412$, $P < 0.001$). Moderate correlations also showed that lower shoe mass is indicative of greater step rate ($\rho = 0.531$, $P < 0.001$) and lower peak PFJ force ($\rho = -0.481$, $P < 0.001$). Greater shoe flexibility was moderately associated with lower foot inclination ($\rho = -0.447$, $P < 0.001$).

Results suggest that greater levels of minimalism are associated with lower inclination angle and lower peak PFJ force in runners with PFP. Thus, this population may potentially benefit from changes in running mechanics associated with the use of shoes with a higher level of minimalism.

PF pain and hip flexibility

Clin J Sport Med. 2017 Mar;27(2):97-103. doi: 10.1097/JSM.0000000000000307.

Individuals With Patellofemoral Pain Have Less Hip Flexibility Than Controls Regardless of Treatment Outcome.

Hamstra-Wright KL¹, Earl-Boehm J, Bolgla L, Emery C, Ferber R.

Author information

Abstract

OBJECTIVE:

To examine differences in hip flexibility before and after a 6-week muscle strengthening program between those with patellofemoral pain (PFP) and healthy controls.

DESIGN:

Single-blind, multicentered, randomized controlled trial.

SETTING:

Four clinical research laboratories.

SUBJECTS:

Physically active individuals (199 PFP and 38 controls).

INTERVENTIONS:

Patellofemoral pain and control subjects were randomized into either a hip-focused or a knee-focused muscle strengthening treatment program.

MAIN OUTCOME MEASURES:

Pain-visual analog scale (centimeter), function-Anterior Knee Pain Scale (points), flexibility-passive goniometry (degrees): hip adduction (HADD), hip external rotation (HER), hip internal rotation (HIR), total hip rotation (HROT), hip extension (HEXT) were measured before and after the muscle strengthening treatment program.

RESULTS:

Subjects with patellofemoral pain who successfully completed the treatment program (n = 153) had 65%, 25%, 18%, and 12% less HADD, HER, HROT, and HIR ranges of motion (ROMs), respectively, than controls (P < 0.05). Patellofemoral pain subjects who did not successfully complete the program (n = 41) had 134%, 31%, 22%, and 13% less HADD, HER, HROT, and HIR ROMs, respectively, than controls (P < 0.05). All subjects increased their HIR, HROT, and HEXT ROMs pretest to posttest (P < 0.05), but by less than 2 degree.

CONCLUSIONS:

Individuals with PFP had less hip flexibility than controls regardless of treatment outcome or time. After the 6-week muscle strengthening program, and regardless of treatment success, PFP and control subjects experienced a small but clinically insignificant improvement in hip flexibility.

CLINICAL RELEVANCE:

Hip ROM should be considered as a targeted area of focus in a rehabilitation program for physically active individuals with PFP.

37. OSTEOARTHRITIS/KNEE**OA following dislocation**

Knee Surg Sports Traumatol Arthrosc. 2017 Mar 9. doi: 10.1007/s00167-017-4443-8.

High prevalence of knee osteoarthritis at a minimum 10-year follow-up after knee dislocation surgery.

Moatshe G^{1,2,3}, Dornan GJ⁴, Ludvigsen T⁵, Løken S⁵, LaPrade RF^{4,6}, Engebretsen L^{7,8}.

Author information

Abstract

PURPOSE:

Long-term outcomes and the prevalence of osteoarthritis after surgical treatment of knee dislocations are lacking in the literature. The purpose of this study was to investigate the prevalence of knee osteoarthritis and knee function at a minimum of 10 years after knee dislocation surgery.

METHODS:

Sixty-five patients surgically treated for knee dislocations at a single level I trauma center between May 1996 and December 2004 were evaluated at a minimum of 10 years. Patients were evaluated with radiographs for knee osteoarthritis using the Kellgren-Lawrence (KL) grading system, Tegner activity score, Lysholm score, IKDC-2000, KOOS, subjective stability on physical examination, KT-1000 arthrometer, and single-leg hop tests. Osteoarthritis was defined as KL grades 2 or greater.

RESULTS:

The median follow-up time was 12.7 years (range 10.0-18.8 years), and the median age was 46.9 years (range 26.8-76.1 years). Radiographic osteoarthritis was present in 42% (23, 14, and 5% in KL grades II, III, and IV, respectively) of the patients in the operated knee compared to 6% in the uninjured knee. Knee function was generally improved with a median Tegner activity score of 4 (range 1-8), an average Lysholm score of 84 ± 17 , and an average IKDC-2000 score of 73 ± 19 .

CONCLUSION:

Twenty-seven patients (42%) developed OA 10 years after surgical treatment of knee dislocations. Patients reported improved knee function and minimal-to-moderate pain. Age at surgery was a predictor of development of OA, with more patients >30 years at the time of surgery developing OA. Meniscal and cartilage injuries at time of surgery were not associated with development of OA. Patients being treated for knee dislocation should be counselled about the increased long-term risk of post-traumatic OA.

Vit D helps

Knee effusion-synovitis volume measurement and effects of vitamin D supplementation in patients with knee osteoarthritis

Osteoarthritis and Cartilage , 03/06/2017

Wang X, et al.

Aim of this study was to establish a measure of knee joint effusion–synovitis volume and to examine the effect of vitamin D supplementation on effusion–synovitis in patients with knee osteoarthritis (OA) and low vitamin D levels over 24 months. It has been validated that the effusion–synovitis volume measurement could be a promising outcome measure in OA trials with a high reproducibility. Vitamin D supplementation could retard the progression of effusion–synovitis, suggesting it can potentially enhance outcomes in people with an inflammatory knee osteoarthritis phenotype.

Methods

- Clinicians enrolled symptomatic knee OA patients with a low 25–(OH)D level (12.5–60 nmol/l) for a multi–centre, randomised, placebo–controlled and double–blind trial.
- Subjects (age 63±7 years, 208 females) were assigned to either 50,000IU monthly vitamin D3 (n=209) or placebo (n=204) for 24 months.
- They assessed knee effusion–synovitis volume in suprapatellar pouch and central portion on MRI using OsiriX software.
- They applied the intra–class correlation coefficients (ICCs) to test both inter– and intra–rater reliabilities.
- They applied the least significant change criterion (LSC) to characterize the increase/decrease in effusion–synovitis volume. Knee effusion–synovitis score (0–3) was also assessed.

Results

- The evidence showed that the reproducibilities of effusion–synovitis volume measurement were high with ICCs ranging from 0.93–0.99.
- It was found, over 24 months, total effusion–synovitis volume remained stable in the vitamin D group but increased significantly in the placebo with a significant between–group difference (–1.94 ml, 95% CI: –3.54, –0.33).
- The data demonstrated that this impact was evident in those with baseline effusion–synovitis and with suprapatellar effusion–synovitis.
- The outcomes revealed that the proportion with an increase in effusion–synovitis volume was lower in the vitamin D group than placebo (RR: 0.87, 95%CI: 0.77, 0.97).

More pain with medial and lateral OA

Coexisting lateral tibiofemoral osteoarthritis is associated with worse knee pain in patients with mild medial osteoarthritis

Osteoarthritis and Cartilage , 03/06/2017

Iijima H, et al.

The objective of this study was to evaluate the clinical impact of coexisting lateral osteoarthritis (OA) in knees with mild medial OA. It was revealed that knees with concomitant lateral and mild medial OA might be symptomatic compared to those without lateral OA. These data might help to characterize a clinically distinct subgroup based upon a simple radiographic finding in mild knee osteoarthritis.

Methods

- Researchers applied anteroposterior knee radiography to evaluate the presence of lateral OA, using grading systems from the Osteoarthritis Research Society International (OARSI) atlas and the K/L classification in patients with Kellgren/Lawrence (K/L) grade 2 OA in the medial compartment (n = 100; age: 56–89 years; 80.0% female).
- They assessed the Japanese Knee Osteoarthritis Measure (JKOM), knee range of motion (ROM), and performance–based functional measures (10 m walk, and the timed up and go and 5–repetition chair stand maneuvers).
- They correlated the outcomes between patients with and without lateral OA applying an analysis of covariance (ANCOVA) or nonparametric rank ANCOVA.
- Moreover, they conducted ordinal logistic regression analysis, with responses on individual JKOM pain questionnaires as the outcomes and lateral OA as the predictor.

Results

- The results of this study suggested that knees with coexisting lateral OA had a significantly worse score of JKOM pain question compared with those without, after adjusting for covariates.
- It was noted that the presence of lateral OA was significantly associated with knee pain while ascending/descending stairs and standing.
- These outcomes were consistent between different definitions of the K/L and OARSI grading systems.
- It was illustrated that the knee ROM and performance–based functional measures were not significantly different between patients with and without lateral OA.

Water walking helps

Effects of high intensity resistance aquatic training on body composition and walking speed in women with mild knee osteoarthritis: A 4-month RCT with 12-month follow-up

Osteoarthritis and Cartilage , 03/06/2017

Waller B, et al.

This study was undertaken to evaluate the impacts of 4-months' intensive aquatic resistance training on body composition and walking speed in post-menopausal women with mild knee osteoarthritis, immediately after intervention and after 12-months follow-up. The data demonstrated that high intensity aquatic resistance training decreases fat mass and enhances walking speed in post-menopausal women with mild knee osteoarthritis (OA). Remarkably, only improvements in walking speed were maintained at 12-months' follow-up, higher levels of LTPA were associated with fat mass loss.

Methods

- Analysts conducted a randomised clinical trial to assign 87 volunteer postmenopausal women into two study arms.
- The intervention group (n=43) participated in 48 supervised intensive aquatic resistance training sessions over 4-months while the control group (n=44) maintained normal physical activity.
- In this study, 84 participants continued into the 12-months' follow-up period.
- They assessed body composition with dual-energy X-ray absorptiometry.
- They analyzed walking speed over 2km and the knee injury and osteoarthritis outcome score (KOOS).
- They noticed LTPA with self-reported diaries.

Results

- In context of the findings, after the 4-month intervention there was a significant decrease (p=0.002) in fat mass (mean change: -1.17kg; 95% CI: -2.00 to -0.43) and increase (p=0.002) in walking speed (0.052m/sec; 95% CI: 0.018 to 0.086) in favour of the intervention group.
- It was found that body composition returned to baseline after 12-months': In contrast, increased walking speed was maintained (0.046m/sec (95% CI 0.006 to 0.086, p=0.032).
- They did not find alteration in lean mass or KOOS. Daily LTPA over the 16-months had a significant effect (p=0.007) on fat mass loss ($f^2 = 0.05$) but no effect on walking speed.

39 B. SHOES**Shoe wear and knee pain****Associations between changes in knee pain location and clinical symptoms in people with medial knee osteoarthritis using footwear for self-management: An exploratory study**

Osteoarthritis and Cartilage , 03/10/201

7Van Ginckel A, et al.

This study was carried out to assess whether change in pain location is associated with clinically-relevant improvements in walking pain severity and physical dysfunction in people with medial tibiofemoral osteoarthritis (OA) using footwear for self-management. This exploratory study suggested that subjects either establishing into, or changing from, diffuse pain patterns were less likely to experience improvement in pain and/or function when self-managing with footwear, suggesting pain location change relates to symptom severity.

Methods

- For this analysis, a sub-set of 91 subjects pooled from both arms of a 6-month randomised controlled trial of footwear for knee OA.
- Thereafter, the Photographic Knee Pain Map was self-administered to generate changes in the number of painful zones ('unchanged', 'increased', 'decreased') and anatomical patterns of pain ('unchanged', 'no longer diffuse', 'becoming diffuse', 'other pattern changes').
- They determined enhancement in symptoms according to the minimum clinically important differences in pain severity on a numeric rating scale, and function with the Western Ontario and McMaster Universities Osteoarthritis Index.
- Thereafter, fisher's exact tests examined differences in symptom improvement across categories of pain location change and odds Ratios (OR, 95% CI) were calculated (adjusted for treatment allocation).

Results

- The obtained results indicate that seventy-four percent (n=67) of participants reported a change in pain location, and 46–50% (n=42–45) reported clinically relevant improvements in pain and function respectively.
- They found that significantly fewer subjects 'becoming diffuse' reported improved pain (n=0, 0%) when compared to the other pattern change categories (p=0.012).
- The results displayed that subjects with 'no longer diffuse' (OR (95% CI)=0.3 (0.1–0.9) or 'becoming diffuse' (OR (95% CI)=0.0 (0.0–0.4) pain patterns had significantly lower odds of improved function than those with 'other pattern changes'.

PF pain and minimalist shoes**Footwear characteristics are related to running mechanics in runners with patellofemoral pain**

Jean-Francois Esculier Blaise Dubois Laurent J. Bouyer Bradford J. McFadyen Jean-Sébastien Roy

DOI: <http://dx.doi.org/10.1016/j.gaitpost.2017.03.010>

Highlights

- Footwear characteristics are associated with running mechanics in runners with PFP.
- Higher MI score was moderately correlated with lower foot inclination and PFJ force.
- Lower shoe mass was indicative of higher step rate and lower peak PFJ force.
- Greater flexibility was indicative of lower foot inclination angle.
- No significant correlations were found between footwear characteristics and VLR.

Abstract

Running footwear is known to influence step rate, foot inclination at foot strike, average vertical loading rate (VLR) and peak patellofemoral joint (PFJ) force. However, the association between the level of minimalism of running shoes and running mechanics, especially with regards to these relevant variables for runners with patellofemoral pain (PFP), has yet to be investigated. The objective of this study was to explore the relationship between the level of minimalism of running shoes and habitual running kinematics and kinetics in runners with PFP. Running shoes of 69 runners with PFP (46 females, 23 males, 30.7 ± 6.4 years) were evaluated using the Minimalist Index (MI). Kinematic and kinetic data were collected during running on an instrumented treadmill. Principal component and correlation analyses were performed between the MI and its subscales and step rate, foot inclination at foot strike, average VLR, peak PFJ force and peak Achilles tendon force. Higher MI scores were moderately correlated with lower foot inclination ($r = -0.410$, $P < 0.001$) and lower peak PFJ force ($r = -0.412$, $P < 0.001$). Moderate correlations also showed that lower shoe mass is indicative of greater step rate ($\rho = 0.531$, $P < 0.001$) and lower peak PFJ force ($\rho = -0.481$, $P < 0.001$). Greater shoe flexibility was moderately associated with lower foot inclination ($\rho = -0.447$, $P < 0.001$). Results suggest that greater levels of minimalism are associated with lower inclination angle and lower peak PFJ force in runners with PFP. Thus, this population may potentially benefit from changes in running mechanics associated with the use of shoes with a higher level of minimalism.

40. ANKLE SPRAINS AND INSTABILITY**Rehab and instability**

Clin J Sport Med. 2017 Mar;27(2):145-152. doi: 10.1097/JSM.0000000000000321.

Current Trends in the Management of Lateral Ankle Sprain in the United States.

Feger MA¹, Glaviano NR, Donovan L, Hart JM, Saliba SA, Park JS, Hertel J.

Author information

Abstract

OBJECTIVE:

To characterize trends in the acute management (within 30 days) after lateral ankle sprain (LAS) in the United States.

DESIGN:

Descriptive epidemiology study.

PATIENTS:

Of note, 825 718 ankle sprain patients were identified; 96.2% were patients with LAS. Seven percent had an associated fracture and were excluded from the remaining analysis.

SETTING:

Primary and tertiary care settings.

INTERVENTIONS:

We queried a database of national health insurance records for 2007 to 2011 by ICD-9 codes for patients with LAS while excluding medial and syndesmotic sprains and any LAS with an associated foot or ankle fracture.

MAIN OUTCOME MEASURES:

The percentage of patients to receive specific diagnostic imaging, orthopedic devices, or physical therapy treatments within 30 days of the LAS diagnosis and the associated costs.

RESULTS:

Over two-thirds of patients with LAS without an associated fracture received radiographs, 9% received an ankle brace, 8.1% received a walking boot, 6.5% were splinted, and 4.8% were prescribed crutches. Only 6.8% received physical therapy within 30 days of their LAS diagnosis, 94.1% of which performed therapeutic exercise, 52.3% received manual therapy, and 50.2% received modalities. The annual cost associated with physician visits, diagnostic imaging, orthopedic devices, and physical therapy was 152 million USD, 81.5% was from physician evaluations, 7.9% from physical therapy, 7.2% from diagnostic imaging, and 3.4% from orthopedic devices.

CONCLUSIONS:

Most patients with LAS do not receive supervised rehabilitation. The small proportion of patients with LAS to receive physical therapy get rehabilitation prescribed in accordance with clinical practice guidelines. The majority (>80%) of the LAS financial burden is associated with physician evaluations.

Changes in postural control

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

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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

Keyword: arthrokinematics, balance/postural stability, crepitus, lateral ankle sprain, vibroarthrography

42. PLANTAR SURFACE**HA helps**

Knee Surg Sports Traumatol Arthrosc. 2017 Mar 2. doi: 10.1007/s00167-017-4467-0.

Short-term efficacy and safety of hyaluronic acid injection for plantar fasciopathy.

Kumai T¹, Samoto N², Hasegawa A³, Noguchi H⁴, Shiranita A⁵, Shiraishi M⁶, Ikeda S⁷, Sugimoto K², Tanaka Y², Takakura Y².

Author information

Abstract

PURPOSE:

Plantar fasciopathy is the most common cause of plantar heel pain and is considered to be a type of enthesopathy. The short-term efficacy, safety, and dose-response relationship of high-molecular-weight hyaluronic acid (HA) was investigated in patients with plantar fasciopathy.

METHODS:

In this multicenter, prospective, randomized, double-blind, placebo-controlled trial, 168 patients with persistent pain from plantar fasciopathy for more than 12 weeks were randomly assigned to receive 2.5 mL of 1% HA (H-HA), 0.8 mL of 1% HA (L-HA), or 2.5 mL of 0.01% HA (control group) once a week for 5 weeks. The primary endpoint was improvement in visual analogue scale (VAS) score for pain from baseline to week 5.

RESULTS:

The VAS scores (least squares mean \pm standard error) in each group decreased gradually after the start of treatment, a change of -3.3 ± 0.3 cm for the H-HA group, -2.6 ± 0.3 cm for the L-HA group, and -2.4 ± 0.3 cm for the control group, with the H-HA group improving significantly more than the control group ($P = 0.029$). No serious adverse events were reported. There was no difference between the groups in the incidence rates of adverse drug reactions.

CONCLUSION:

The administration of five injections of high-molecular-weight HA is an effective treatment with no serious adverse drug reactions and is a conservative treatment option for plantar fasciopathy. This treatment contributed to alleviation of pain in patients with plantar fasciopathy and improvement in their activities of daily living.

45 A. MANUAL THERAPY LUMBAR & GENERAL**Spinal manip and acupuncture**

J Manipulative Physiol Ther. 2017 Mar 1. pii: S0161-4754(16)30077-X. doi: 10.1016/j.jmpt.2017.01.002.

Integrative Acupuncture and Spinal Manipulative Therapy Versus Either Alone for Low Back Pain: A Randomized Controlled Trial Feasibility Study.

Kizhakkeveettil A¹, Rose KA², Kadar GE², Hurwitz EL³.

Author information

Abstract

OBJECTIVES:

The objective of this study was to assess the feasibility of conducting a large-scale randomized controlled trial (RCT) examining whether an integrative care model combining spinal manipulative therapy (SMT) and acupuncture can lead to better outcomes for low back pain (LBP) than either therapy alone.

METHODS:

This study was conducted at a complementary and alternative medicine university health center. Participants with acute or chronic LBP were randomized to (1) acupuncture, (2) SMT, or (3) integrative acupuncture and SMT groups. Treatments were provided over 60 days by licensed doctors of chiropractic and acupuncturists. Acupuncture treatments consisted of needling of acupoints combined with electrotherapy, moxibustion, cupping, and Tui Na. SMT used specific contact points on vertebral processes, along with soft tissue therapy and physiotherapy. Primary outcome measures were the Roland-Morris LBP Disability Questionnaire and 0 to 10 Numeric Rating Scale for LBP.

RESULTS:

Participants in all 3 groups experienced clinically meaningful improvements in the primary outcome measures; however, no between-group differences in outcomes were apparent.

CONCLUSIONS:

This study indicated that it is feasible to conduct an RCT to compare the effectiveness of integrative acupuncture and SMT for LBP to either therapy alone. Future studies should include a larger sample to increase the power for detecting clinically meaningful differences between groups.

45 C. MANUAL THERAPY THORACIC**Manip for shoulder pain – CPR****Examination of the Validity of a Clinical Prediction Rule to Identify Patients With Shoulder Pain Likely to Benefit From Cervicothoracic Manipulation**

Authors: Paul E. Mintken, PT, DPT, OCS, FAAOMPT^{1,2}, Amy W. McDevitt, PT, DPT, OCS, FAAOMPT^{1,3}, Lori A. Michener, PT, ATC, PhD, SCS, FAPTA⁴, Robert E. Boyles, PT, DSc, OCS, FAAOMPT⁵, Amber R. Beardslee, PT, DPT⁶, Scott A. Burns, PT, DPT, OCS, FAAOMPT^{7,8}, Matthew D. Haberl, PT, ATC, DPT, OCS, FAAOMPT⁹, Lauren A. Binder, PT, DPT, OCS¹⁰, Joshua A. Cleland, PT, PhD¹¹

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**0 **Issue:**0 **Pages:**1–25 **DOI:**10.2519/jospt.2017.7100

Study Design Secondary analysis of a randomized controlled trial.

Background Prognostic variables identifying patients with shoulder pain who are likely to respond to cervicothoracic (CT) manipulation have been reported, however they have yet to be validated.

Objective To examine the validity of previously reported prognostic variables in predicting which patients with shoulder pain will respond to cervicothoracic manipulation.

Methods

Participants (n=140) with a report of shoulder pain were randomly assigned to receive either 2 sessions of range of motion (ROM) exercises plus 6 sessions of stretching and strengthening exercises (Ex group), or 2 sessions of CT manipulation and ROM exercises followed by 6 sessions of stretching and strengthening exercise (MT+Ex group). Outcomes of disability (Shoulder Pain and Disability Index) and pain (Numeric Pain Rating Scale) were collected at baseline, 1-week, 4-weeks and 6-months. Time, treatment group and status of predictor variables, and 2-way and 3-way interactions were analyzed using linear mixed-model with repeated measures.

Results

There were no significant 3-way interactions for either disability (p=0.27) or pain scores (p=0.70) for time, group, and predictor status for any of the predictor variables.

Conclusion

The results of the current study did not validate the previously identified prognostic variables, therefore we cannot support using these in clinical practice. Further “updating” of the existing prediction rule may be warranted and could potentially result in new prognostic variables and improved generalizability. Limitations of the study include that mean duration of symptoms was greater than 2 years, and loss to follow-up at 6 months was 19%.

Level of Evidence Prognosis, Level 1b. Trial prospectively registered March 30, 2012 at www.clinicaltrials.gov (NCT01571674) *J Orthop Sports Phys Ther*, Epub 3 Mar 2017.
*doi:*10.2519/jospt.2017.7100

47. STRETCHING/MUSCLES**Hamstring tears and return to play**

Br J Sports Med. 2017 Feb 28. pii: bjsports-2016-097131. doi: 10.1136/bjsports-2016-097131.

Return to play criteria after hamstring muscle injury in professional football: a Delphi consensus study.

Zambaldi M^{1,2}, Beasley I³, Rushton A².

Author information

Abstract

BACKGROUND:

Hamstring muscle injury (HMI) is the most common injury in professional football and has a high re-injury rate. Despite this, there are no validated criteria to support return to play (RTP) decisions.

AIM:

To use the Delphi method to reach expert consensus on RTP criteria after HMI in professional football.

METHODS:

All professional football clubs in England (n=92) were invited to participate in a 3-round Delphi study. Round 1 requested a list of criteria used for RTP decisions after HMI. Responses were independently collated by 2 researchers under univocal definitions of RTP criteria. In round 2 participants rated their agreement for each RTP criterion on a 1-5 Likert Scale. In round 3 participants re-rated the criteria that had reached consensus in round 2. Descriptive statistics and Kendall's coefficient of concordance enabled interpretation of consensus.

RESULTS:

Participation rate was limited at 21.7% (n=20), while retention rate was high throughout the 3 rounds (90.0%, 85.0%, 90.0%). Round 1 identified 108 entries with varying definitions that were collated into a list of 14 RTP criteria. Rounds 2 and 3 identified 13 and 12 criteria reaching consensus, respectively. Five domains of RTP assessment were identified: functional performance, strength, flexibility, pain and player's confidence. The highest-rated criteria were in the functional performance domain, with particular importance given to sprint ability.

CONCLUSION:

This study defined a list of consensually agreed RTP criteria for HMI in professional football. Further work is now required to determine the validity of the identified criteria.

52. EXERCISE**Blood flow restriction**

Br J Sports Med. 2017 Mar 4. pii: bjsports-2016-097071. doi: 10.1136/bjsports-2016-097071.

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

Hughes L¹, Paton B², Rosenblatt B³, Gissane C⁴, Patterson SD⁴.

Author information

Abstract

BACKGROUND AND OBJECTIVE:

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

DESIGN:

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

DATA SOURCES:

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

ELIGIBILITY:

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

RESULTS:

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

CONCLUSION:

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

53. CORE**LBP helps****Effect of Movement Control and stabilization Exercises in People with Extension Related Non -Specific Low Back Pain- A pilot Study**

Sara Salamat, MSc Saeed Talebian, PhD Hosein Bagheri, PhD Nader Maroufi, PhD Mohammad Jafar Shaterzadeh, PhD Gitta Kalbasi, Msc Kieran O'Sullivan, PhD

DOI: <http://dx.doi.org/10.1016/j.jbmt.2017.02.005>

Abstract**Background**

Exercise is considered an effective treatment strategy for non-specific chronic low back pain (NSCLBP).

In spite of the wide use of exercise protocols, it is not clear what type of exercise is more effective in decreasing pain, disability and normalizing muscle activation patterns in people with chronic low back pain.

Objectives

To assess the effects of two exercise protocols (stabilization vs movement control) on pain and disability scores and the flexion relaxation ratio (FRR) of lumbar multifidus (LM) and iliocostalis lumbarum pars thoracic (ICLT) in people with extension related non-specific chronic low back pain.

Study design

Pilot randomized control trial.

Methods

32 subjects with active extension pattern chronic low back pain (stabilization group=16, movement control group=16) participated in this study. Treatment groups received 4 weeks of exercise therapy. Outcomes were based on pain score (Numeric rating Scale-NRS), disability (Oswestry Disability Index- ODI) and FRR of the LM and ICLT.

Results

Four people dropped out of the study in each group for reasons unrelated to the protocols of the study. Pain and disability reduced in both groups, with no significant difference between the groups. The FRR of LM did not change in either treatment group after treatment. However, the FRR of ICLT was significantly increased after treatment in the movement control group.

Conclusion

Both movement control and stabilization exercises reduced pain and disability in the short-term among people with extension pattern NSCLBP, with no difference in effectiveness between the groups. However, movement control exercises were more effective in normalizing back muscle activation patterns than stabilization exercises.

54. POSTURE**Biomechanical model**

2017 Feb 27. doi: 10.1002/jbmr.3113.

Spinal Loading Patterns from Biomechanical Modeling Explain the High Incidence of Vertebral Fractures in the Thoracolumbar Region.

Bruno AG^{1,2}, Burkhart K^{1,2}, Allaire B², Anderson DE^{2,3}, Bouxsein ML^{1,2,3}.

Author information

Abstract

Vertebral fractures occur most frequently in the mid-thoracic and thoracolumbar regions of the spine, yet the reasons for this site-specific occurrence are not known.

Our working hypothesis is that the locations of vertebral fracture may be explained by the pattern of spine loading, such that during daily activities the mid-thoracic and thoracolumbar regions experience preferentially higher mechanical loading compared to other spine regions. To test this hypothesis, we used a female musculoskeletal model of the full thoracolumbar spine and rib cage to estimate the variation in vertebral compressive loads and associated factor-of-risk (load-to-strength ratio) throughout the spine for 119 activities of daily living, while also parametrically varying spine curvature (high, average, low, and zero thoracic kyphosis models). We found that nearly all activities produced loading peaks in the thoracolumbar and lower lumbar regions of the spine, but that the highest factor-of-risk values generally occurred in the thoracolumbar region of the spine because these vertebrae had lower compressive strength than vertebrae in the lumbar spine. The peaks in compressive loading and factor-of-risk in the thoracolumbar region were accentuated by increasing thoracic kyphosis. Activation of the multifidus muscle fascicles selectively in the thoracolumbar region appeared to be the main contributor to the relatively high vertebral compressive loading in the thoracolumbar spine.

In summary, using advanced musculoskeletal modeling to estimate vertebral loading throughout the spine, this study provides a biomechanical mechanism for the higher incidence of fractures in thoracolumbar vertebrae compared to other spinal regions. This article is protected by copyright. All rights reserved.

56. ATHLETICS**Sleep in athletes**

J Sleep Res. 2017 Mar 8. doi: 10.1111/jsr.12509.

Self-reported sleep quantity, quality and sleep hygiene in elite athletes.

Knufinke M¹, Nieuwenhuys A¹, Geurts SA¹, Coenen AM², Kompier MA¹.

Author information

Abstract

Sleep is essential for recovery and performance in elite athletes.

While actigraphy-based studies revealed suboptimal sleep in athletes, information on their subjective experience of sleep is scarce. Relatively unexplored is also the extent to which athletes' sleep is adversely affected by environmental conditions and daytime behaviours, that is sleep hygiene. This study aimed to provide insight in sleep quantity, quality and its putative association with sleep hygiene. Participants were 98 elite (youth) athletes competing at the highest (inter-)national level. Sleep quantity, quality and sleep hygiene were assessed once covering a 1-month period by using established (sub)clinical questionnaires, and repeatedly during 7 consecutive days. Sleep quality was generally healthy, although 41% of all athletes could be classified as 'poor sleeper', and 12% were identified as having a sleep disorder. Daily self-monitoring revealed sleep durations of $8:11 \pm 0:45$ h, but elevated wake after sleep onset of 13 ± 19 min. Sleep quality, feeling refreshed, and morning vigor were moderate at best. Regarding sleep hygiene, general measures revealed irregular sleep-wake patterns, psychological strain and activating pre-sleep behaviours. At the daily level, blue-light exposure and late-evening consumption of heavy meals were frequently reported. General sleep hygiene revealed significant associations with sleep quality ($0.45 < r > 0.50$; $P < 0.001$).

Results indicate that there is ample room for optimization, specifically in onset latency and in wake after sleep onset. Subtle improvements in sleep seem possible, and optimizing sleep hygiene, such as regular sleep-wake patterns and reducing psychological strain, may facilitate this sleep upgrading process.

Depression in athletes

Br J Sports Med. 2017 Mar 2. pii: bjsports-2016-096455. doi: 10.1136/bjsports-2016-096455.

Depressive symptoms in high-performance athletes and non-athletes: a comparative meta-analysis.

Gorczyński PF¹, Coyle M², Gibson K².

Author information

Abstract

OBJECTIVE:

To assess whether a difference exists in the prevalence of mild or more severe depressive symptoms between high-performance athletes and non-athletes.

DESIGN:

Comparative OR meta-analysis.

DATA SOURCES:

We searched PsycINFO, PubMed, MEDLINE, CINAHL, SPORTDiscus and Google Scholar, as well as the reference lists of reviews of mental health issues in high-performance athletes.

ELIGIBILITY:

We included studies that compared high-performance athletes and non-athletes, included a validated measure of depressive symptoms and included the prevalence of individuals who indicated at least mild depressive symptoms.

RESULTS:

Five articles reporting data from 1545 high-performance athletes and 1811 non-athletes were examined. A comparative OR meta-analysis found high-performance athletes were no more likely than non-athletes to report mild or more severe depressive symptoms (OR=1.15, 95% CI=0.954 to 1.383, p=0.145). Male high-performance athletes (n=940) were no more likely than male non-athletes (n=605) to report mild or more severe depressive symptoms (OR=1.17, 95% CI=0.839 to 1.616, p=0.362). For females, high-performance athletes (n=948) were no more likely than non-athletes (n=605) to report mild or more severe depressive symptoms (OR=1.11, 95% CI=0.846 to 1.442, p=0.464). Overall, male high-performance athletes (n=874) were 52% less likely to report mild or more severe depressive symptoms than female high-performance athletes (n=705) (OR=0.48, 95% CI=0.369 to 0.621, p<0.001).

SUMMARY/CONCLUSIONS:

High-performance athletes were just as likely as non-athletes to report depressive symptoms. Researchers need to move beyond self-report measures of depressive symptoms and examine the prevalence of clinically diagnosed depressive disorders in athletes.

57. GAIT**Shoulder and gait analysis****The sensitivity of shoulder muscle and joint force predictions to changes in joint kinematics: A Monte-Carlo analysis**

Wen Wu Peter Vee Sin Lee David C. Acklandm

DOI: <http://dx.doi.org/10.1016/j.gaitpost.2017.02.027> May 2017 Volume 54, Pages 87–92**Abstract**

Kinematics of the shoulder girdle obtained from non-invasive measurement systems such as video motion analysis, accelerometers and magnetic tracking sensors has been shown to be adversely affected by instrumentation measurement errors and skin motion artefact.

The degree to which musculoskeletal model calculations of shoulder muscle and joint loading are influenced by variations in joint kinematics is currently not well understood. A three-dimensional musculoskeletal model of the upper limb was used to evaluate the sensitivity of shoulder muscle and joint force. Monte-Carlo analyses were performed by randomly perturbing scapular and humeral joint coordinates during abduction and flexion. Muscle and joint force calculations were generally most sensitive to changes in the kinematics of the humerus in elevation and of the scapula in medial-lateral rotation, and were least sensitive to changes in humerus plane of elevation and scapula protraction-retraction. Overall model sensitivity was greater during abduction than flexion, and the influence of specific kinematics perturbations varied from muscle to muscle. In general, muscles that generated greater force, such as the middle deltoid and subscapularis, were more sensitive to changes in shoulder kinematics.

This study suggests that musculoskeletal model sensitivity to changes in kinematics is task-specific, and varies depending on the plane of motion. Calculations of shoulder muscle and joint function depend on reliable humeral and scapula motion data, particularly that of humeral elevation and scapula medial-lateral rotation. The findings in this study have implications for the use of kinematic data in musculoskeletal model development and simulations.

Neck pain changes gait

People With Chronic Neck Pain Walk With a Stiffer Spine

Authors: Deborah Falla, PT, PhD¹, Leonardo Gizzi, PhD, MSc², Hesam Parsa, PhD, MSc³, Angela Dieterich, PT, PhD³, Frank Petzke, MD³

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:0 Issue:0 Pages:**1–33 **DOI:**10.2519/jospt.2017.6768

Study Design

Case-control.

Background

People with chronic neck pain present a number of sensorimotor and biomechanical alterations, yet little is known about the influence of neck pain on gait and motions of the spine during gait.

Objective

To evaluate the spine kinematics and gait characteristics in people with non-specific chronic neck pain.

Methods

People with chronic non-specific neck pain and age and gender matched asymptomatic controls walked on a treadmill at three different speeds (self-selected, 3km/h, 5km/h) either with their head in a neutral position or rotated 30°. Tridimensional motion capture was employed to quantify body kinematics. Neck and trunk rotations were derived from the difference between the transverse plane component of the head and thorax and thorax and pelvis angles to provide an indication of neck and trunk rotation during gait.

Results

Overall, the patient group showed shorter stride length compared to the control group ($P < 0.0001$). Moreover, the patients with neck pain showed smaller trunk rotations ($P < 0.0001$), regardless of the condition or speed. The difference in the amount of trunk rotation between groups became larger for the conditions of walking with the head rotated.

Conclusion

These results show that people with chronic neck pain walk with reduced trunk rotation, especially when challenged by walking with their head positioned in rotation. Reduced rotation of the trunk during gait may have long term consequences on spinal health. *J Orthop Sports Phys Ther*, Epub 3 Feb 2017. doi:10.2519/jospt.2017.6768

Keyword: chronic pain, gait, movement variability, thorax-pelvis transverse rotations

59. PAIN**Rumination on pain words**

Eur J Pain. 2017 Mar 8. doi: 10.1002/ejp.1020.

Rumination induces a pattern of attention characterized by increased vigilance followed by avoidance of affective pain words.

Brookes ML¹, Sharpe L¹, Dear BF².

Author information

Abstract

BACKGROUND:

This study examined the effects of rumination on attentional processes in relation to an acute experimental pain task. In keeping with recent theory and research, it was hypothesized that we would identify a pattern of attentional bias characterized by enhanced initial vigilance followed by avoidance of pain-related stimuli.

METHOD:

Undergraduate students were randomized to a rumination condition, which received threat-inducing information about the cold pressor task, or a distraction condition. Using the dot probe task, attentional biases to sensory and affective pain words were assessed at two presentation intervals (500 and 1250 ms).

RESULTS:

Those in the rumination condition did not show differences in attentional biases compared to the control group, however, they did respond more quickly to pain congruent trials compared to neutral/neutral trials when affective pain words were presented for 500 ms. In addition, those in the rumination group responded more slowly in congruent trials to neutral/neutral trials than affective/neutral trials indicating avoidance at 1250 ms. Although those in the rumination condition exhibited higher levels of distress and reported higher levels of pain when they withdrew their hands from the cold pressor task, the congruency biases did not predict these results.

CONCLUSION:

These results suggest that experimentally manipulating rumination changes attentional processes consistent with the vigilance-avoidance hypothesis.

SIGNIFICANCE:

The rumination manipulation led to increased worry about pain and induced to an attentional pattern of vigilance-avoidance for affective pain words. The induction also led to more distress and pain. Rumination and worry appear to increase unhelpful patterns of attention and could be an appropriate focus of intervention.

Brain changes

Pain. 2017 Feb 16. doi: 10.1097/j.pain.0000000000000881. [

Pain interference and physical function demonstrate poor longitudinal association in people living with pain: A PROMIS investigation.

Karayannis NV¹, Sturgeon JA, Chih-Kao M, Cooley C, Mackey SC.

Author information

Abstract

A primary goal in managing pain is to reduce pain and increase physical function (PF). This goal is also tied to continuing payment for treatment services in many practice guidelines. Pain interference (PI) is often used as a proxy for measurement and reporting of PF in these guidelines.

A common assumption is that reductions in PI will translate into improvement in PF over time. This assumption needs to be tested in a clinical environment. Consequently, we used the patient reported outcomes measurement information system (PROMIS) to describe the topology of the longitudinal relationship between PI in relation to PF. Longitudinal data of 389 people with chronic pain seeking healthcare demonstrated that PI partially explained the variance in PF at baseline ($r = -0.50$) and over 90 days of care ($r = -0.65$). The relationship between pain intensity and PF was not significant when PI was included as a mediator. A parallel process latent growth curve model analysis showed a weak, unidirectional relationship ($\beta = 0.18$) between average PF scores and changes in PI over the course of 90 days of care, and no relationship between average PI scores and changes in PF across time. Although PI and PF appear moderately related when measured concurrently, they do not cluster closely together across time.

The differential pathways between these two domains suggest that therapies which target both the consequences of pain on relevant aspects of persons' lives, and capability to perform physical activities are likely required for restoration of a vital life.

ER catastrophizing

Pain Manag Nurs. 2017 Mar 1. pii: S1524-9042(16)30238-7. doi: 10.1016/j.pmn.2016.12.001.

Pain Catastrophizing, rather than Vital Signs, Associated with Pain Intensity in Patients Presenting to the Emergency Department for Pain.

Block PR¹, Thorn BE², Kapoor S³, White J⁴.

Author information

Abstract

This study examined the relationships of self-reported pain intensity with vital signs, pain catastrophizing, and state anxiety in patients presenting to the emergency department (ED) for acute pain, exacerbations of chronic pain, or acute pain with concurrent chronic (combined) pain, comparing the pattern of relationships among these three pain groups.

One hundred fifty-eight patients presenting to the ED for pain were recruited. Vital signs and self-reported pain intensity were obtained at triage, then participants completed self-report measures of pain catastrophizing, state anxiety, and demographic information. No significant associations were found between vital signs and pain intensity at triage in any of the pain groups. Pain catastrophizing was significantly associated with self-reported pain intensity in the acute pain group ($r = .34, p < .05$) and combined pain group ($r = .30, p < .05$), and state anxiety was significantly associated with self-reported pain intensity in with the acute pain group ($r = .27, p < .05$). When pain catastrophizing and state anxiety were used in a stepwise multiple regression analysis to predict self-reported pain intensity in the acute pain group, only pain catastrophizing emerged as a unique predictor ($\beta = .405, p < .01$). Consistent with previous research, vital signs were not associated with self-reported pain intensity in patients presenting to the ED for pain, including those with chronic pain.

Given the significant association of pain catastrophizing and pain intensity among patients presenting to the ED for acute pain, brief measurement of pain catastrophizing may inform pain treatment in the ED.

61. FIBROMYALGIA

Placebo

Lower placebo responses after long-term exposure to fibromyalgia pain

The Journal of Pain, 03/08/2017

Kosek E, et al.

In this study, the clinicians hypothesized that long-term exposure to fibromyalgia syndrome (FM) pain would negatively affect placebo responses. The outcomes indicate the significance of early FM interventions, as endogenous pain regulation may still be harnessed at that early time. Likewise, when interpreting results, placebo-controlled trials should take FM duration into consideration.

Methods

- For this study, the clinicians examined the placebo-group (n=37, mean age 45 years) from a 12-week, randomized, double-blind, placebo-controlled trial investigating the effects of milnacipran or placebo.
- According to the Patient Global Impression of Change (PGIC) scale, they classified 22 patients as placebo non-responders and 15 as responders.
- The initial outcome was the change in pressure pain sensitivity from baseline to post-treatment.
- In this study, the secondary outcomes included ratings of clinical pain (VAS), FM impact (FIQ) and pain drawing.

Results

- Longer FM duration was associated with smaller reductions in pressure pain sensitivity ($r=0.689$, $p=.004$) among placebo responders, but not among non-responders ($r=-0.348$, $p=.112$).
- The clinicians exhibit that FM duration influences endogenous pain regulation, as pain levels and placebo-induced analgesia was negatively affected.

62 A. NUTRITION/VITAMINS

Mortality

Association between dietary factors and mortality from heart disease, stroke, and type 2 diabetes in the United States

JAMA, 03/08/2017

Micha R, et al.

This study was performed to examine associations of intake of 10 specific dietary factors with mortality due to heart disease, stroke, and type 2 diabetes (cardiometabolic mortality) among US adults. Researchers found that dietary factors are associated with a substantial proportion of deaths from heart disease, stroke, and type 2 diabetes. These results should help to identify priorities, guide public health planning, and inform strategies to alter dietary habits and improve health. **Methods** A comparative risk assessment model incorporated data and corresponding uncertainty on population demographics and dietary habits from National Health and Nutrition Examination Surveys (1999–2002: n=8,104; 2009–2012: n=8,516); estimated associations of diet and disease from meta-analyses of prospective studies and clinical trials with validity analyses to assess potential bias; and estimated disease-specific national mortality from the National Center for Health Statistics. Consumption of 10 foods/nutrients associated with cardiometabolic diseases were compared, including fruits, vegetables, nuts/seeds, whole grains, unprocessed red meats, processed meats, sugar-sweetened beverages (SSBs), polyunsaturated fats, seafood omega-3 fats, and sodium. Main outcomes and measures included estimated absolute and percentage mortality due to heart disease, stroke, and type 2 diabetes in 2012. Disease-specific and demographic-specific (age, sex, race, and education) mortality and trends between 2002 and 2012 were also evaluated.

Results In 2012, 702,308 cardiometabolic deaths occurred in US adults, including 506,100 from heart disease (371,266 coronary heart disease, 35,019 hypertensive heart disease, and 99,815 other cardiovascular disease), 128,294 from stroke (16,125 ischemic, 32,591 hemorrhagic, and 79,578 other), and 67,914 from type 2 diabetes. Of these, an estimated 318,656 (95% uncertainty interval [UI], 306,064–329,755; 45.4%) cardiometabolic deaths per year were associated with suboptimal intakes—48.6% (95% UI, 46.2%–50.9%) of cardiometabolic deaths in men and 41.8% (95% UI, 39.3%–44.2%) in women; 64.2% (95% UI, 60.6%–67.9%) at younger ages (25–34 years) and 35.7% (95% UI, 33.1%–38.1%) at older ages (≥ 75 years); 53.1% (95% UI, 51.6%–54.8%) among blacks, 50.0% (95% UI, 48.2%–51.8%) among Hispanics, and 42.8% (95% UI, 40.9%–44.5%) among whites; and 46.8% (95% UI, 44.9%–48.7%) among lower-, 45.7% (95% UI, 44.2%–47.4%) among medium-, and 39.1% (95% UI, 37.2%–41.2%) among higher-educated individuals. The largest numbers of estimated diet-related cardiometabolic deaths were related to high sodium (66,508 deaths in 2012; 9.5% of all cardiometabolic deaths), low nuts/seeds (59,374; 8.5%), high processed meats (57,766; 8.2%), low seafood omega-3 fats (54,626; 7.8%), low vegetables (53,410; 7.6%), low fruits (52,547; 7.5%), and high SSBs (51,694; 7.4%). Between 2002 and 2012, population-adjusted US cardiometabolic deaths per year decreased by 26.5%. The greatest decline was associated with insufficient polyunsaturated fats (?20.8% relative change [95% UI, -18.5% to -22.8%]), nuts/seeds (-18.0% [95% UI, -14.6% to -21.0%]), and excess SSBs (-14.5% [95% UI, -12.0% to -16.9%]). The greatest increase was associated with unprocessed red meats (+14.4% [95% UI, 9.1%–19.5%]).

Mediterranean diet decreases risk of breast CA

Int J Cancer. 2017 Mar 5. doi: 10.1002/ijc.30654. [

Mediterranean diet adherence and risk of postmenopausal breast cancer: results of a cohort study and meta-analysis.

van den Brandt PA^{1,2}, Schulpen M¹.

Author information

Abstract

The Mediterranean Diet (MD) has been associated with reduced mortality and risk of cardiovascular diseases, but there is only limited evidence on cancer.

We investigated the relationship between adherence to MD and risk of postmenopausal breast cancer (and estrogen/progesterone receptor subtypes, ER/PR). In the Netherlands Cohort Study, 62,573 women aged 55-69 years provided information on dietary and lifestyle habits in 1986. Follow-up for cancer incidence until 2007 (20.3 years) consisted of record linkages with the Netherlands Cancer Registry and the Dutch Pathology Registry PALGA. Adherence to MD was estimated through the alternate Mediterranean Diet Score excluding alcohol. Multivariate case-cohort analyses were based on 2,321 incident breast cancer cases and 1,665 subcohort members with complete data on diet and potential confounders. We also conducted meta-analyses of our results with those of other published cohort studies. We found a statistically significant inverse association between MD adherence and risk of ER negative (ER-) breast cancer, with a hazard ratio of 0.60 (95% Confidence Interval, 0.39-0.93) for high versus low MD adherence ($p_{\text{trend}} = 0.032$). MD adherence showed only nonsignificant weak inverse associations with ER positive (ER+) or total breast cancer risk. In meta-analyses, summary HRs for high versus low MD adherence were 0.94 for total postmenopausal breast cancer, 0.98 for ER+, 0.73 for ER- and 0.77 for ER - PR- breast cancer.

Our findings support an inverse association between MD adherence and, particularly, receptor negative breast cancer. This may have important implications for prevention because of the poorer prognosis of these breast cancer subtypes.

Food preferences

Appetite. 2017 Feb 21. pii: S0195-6663(17)30231-3. doi: 10.1016/j.appet.2017.02.019

Practices and preferences: Exploring the relationships between food-related parenting practices and child food preferences for high fat and/or sugar foods, fruits, and vegetables.

Vollmer RL¹, Baietto J².

Author information

Abstract

The purpose of this study was to determine the relationship between food-related parenting practices and child fruit, vegetable, and high fat/sugar food preferences.

Parents (n = 148) of children (3-7 years old) completed the Comprehensive Feeding Practices Questionnaire (CFPQ), the Preschool Adapted Food Liking Scale (PALS), and answered demographic questions. Separate linear regressions were conducted to test relationships between the different food categories on PALS (fruits, vegetables, and high fat/sugar foods) and each food-related parenting practice using race, ethnicity, and income level as covariates. It was found that when a parent allows a child to control eating, it was negatively associated with a child's preference for fruit ($\beta = -0.15$, $p = 0.032$) and parent encouragement of child involvement in meal preparation was positively related to child preference for vegetables ($\beta = 0.14$, $p = 0.048$).

Children preferred high fat and sugar foods more if parents used food to regulate child emotions ($\beta = 0.24$, $p = 0.007$), used food as a reward ($\beta = 0.32$, $p < 0.001$), pressured the child to eat more food ($\beta = 0.16$, $p = 0.045$), and restricted unhealthy food ($\beta = 0.20$, $p = 0.024$). Conversely, children preferred high fat and sugar foods less if parents made healthy food available in the home ($\beta = -0.13$, $p = 0.05$), modeled healthy eating in front of the child ($\beta = -0.21$, $p = 0.021$), and if parents explained why healthy foods should be consumed ($\beta = -0.24$, $p = 0.011$). Although it cannot be determined if the parent is influencing the child or vice versa, this study provides some evidence that coercive feeding practices are detrimental to a child's food preferences.

Chocolate and stroke

Chocolate consumption and risk of stroke among men and women: A large population-based, prospective cohort study

Atherosclerosis, 03/06/2017

Dong JY, et al.

Here, the clinicians intend to inquire the prospective correlations between chocolate consumption and risk of stroke among men and women in a large population-based cohort. The outcomes illustrated a significant inverse correlation between chocolate consumption and risk of developing stroke in women. Nevertheless, residual confounding could not be excluded as an alternative explanation for the findings.

Methods

- A total of 38,182 men and 46,415 women aged 44–76 years, and free of cardiovascular disease, diabetes, and cancer at baseline in 1995 and 1998, were followed up until the end of 2009 and 2010, respectively.
- They observed data on chocolate consumption for each participant using a self-administrated food frequency questionnaire that included 138 food and beverage items.
- They applied cox proportional hazards regression models to evaluate hazard ratios (HRs) of stroke in relation to chocolate consumption.

Results

- They distinguished 3558 incident strokes cases (2146 cerebral infarctions and 1396 hemorrhagic strokes) during a median follow-up of 12.9 years,.
- They demonstrated that after adjustment for age, body mass index, life styles, dietary intakes, and other risk factors, chocolate consumption was correlated with a significant lower risk of stroke in women (HR = 0.84; 95% CI, 0.71–0.99).
- Nevertheless, it was considered that the correlation in men was not significant (HR = 0.94; 95% CI, 0.80–1.10).
- Lastly, the correlation did not vary by stroke subtypes in either men or women.

Vit D and effusion

Osteoarthritis Cartilage. 2017 Mar 5. pii: S1063-4584(17)30885-3. doi: 10.1016/j.joca.2017.02.804.

Knee effusion-synovitis volume measurement and effects of vitamin D supplementation in patients with knee osteoarthritis.

Wang X¹, Cicuttini F², Jin X¹, Wluka AE², Han W³, Zhu Z¹, Blizzard L¹, Antony B¹, Winzenberg T¹, Jones G¹, Ding C⁴.

Author information

Abstract

OBJECTIVE:

To develop a measure of knee joint effusion-synovitis volume and to examine the effect of vitamin D supplementation on effusion-synovitis in patients with knee osteoarthritis (OA) and low vitamin D levels over 24 months.

METHOD:

Symptomatic knee OA patients with a low 25-(OH)D level (12.5-60 nmol/l) were recruited for a multi-centre, randomised, placebo-controlled and double-blind trial. Participants (age 63±7 years, 208 females) were allocated to either 50,000IU monthly vitamin D₃ (n=209) or placebo (n=204) for 24 months. Knee effusion-synovitis volume in suprapatellar pouch and central portion was measured on MRI using OsiriX software. The intra-class correlation coefficients (ICCs) were used to test both inter- and intra-rater reliabilities. The least significant change criterion (LSC) was used to define the increase/decrease in effusion-synovitis volume. Knee effusion-synovitis score (0-3) was also assessed.

RESULT:

The reproducibilities of effusion-synovitis volume measurement were high with ICCs ranging from 0.93-0.99. Over 24 months, total effusion-synovitis volume remained stable in the vitamin D group but increased significantly in the placebo with a significant between-group difference (-1.94 ml, 95% CI: -3.54, -0.33). This effect was evident in those with baseline effusion-synovitis and with suprapatellar effusion-synovitis. The proportion with an increase in effusion-synovitis volume was lower in the vitamin D group than placebo (RR: 0.87, 95%CI: 0.77, 0.97).

CONCLUSION:

The effusion-synovitis volume measurement could be a promising outcome measure in OA trials with a high reproducibility. Vitamin D supplementation could retard the progression of effusion-synovitis, suggesting it can potentially improve outcomes in people with an inflammatory knee OA phenotype.

Butter and cheese

Am J Clin Nutr. 2017 Mar 1. pii: ajcn150300. doi: 10.3945/ajcn.116.150300.

Comparison of the impact of SFAs from cheese and butter on cardiometabolic risk factors: a randomized controlled trial.

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Author information

Abstract

Background: Controversies persist concerning the association between intake of dietary saturated fatty acids (SFAs) and cardiovascular disease risk.

Objective: We compared the impact of consuming equal amounts of SFAs from cheese and butter on cardiometabolic risk factors.

Design: In a multicenter, crossover, randomized controlled trial, 92 men and women with abdominal obesity and relatively low HDL-cholesterol concentrations were assigned to sequences of 5 predetermined isoenergetic diets of 4 wk each separated by 4-wk washouts: 2 diets rich in SFAs (12.4-12.6% of calories) from either cheese or butter; a monounsaturated fatty acid (MUFA)-rich diet (SFAs: 5.8%, MUFAs: 19.6%); a polyunsaturated fatty acid (PUFA)-rich diet (SFAs: 5.8%, PUFAs: 11.5%); and a low-fat, high-carbohydrate diet (fat: 25%, SFAs: 5.8%)

.Results: Serum HDL-cholesterol concentrations were similar after the cheese and butter diets but were significantly higher than after the carbohydrate diet (+3.8% and +4.7%, respectively; $P < 0.05$ for both). LDL-cholesterol concentrations after the cheese diet were lower than after the butter diet (-3.3%, $P < 0.05$) but were higher than after the carbohydrate (+2.6%), MUFA (+5.3%), and PUFA (+12.3%) diets ($P < 0.05$ for all). LDL-cholesterol concentrations after the butter diet also increased significantly (from +6.1% to +16.2%, $P < 0.05$) compared with the carbohydrate, MUFA, and PUFA diets. The LDL-cholesterol response to treatment was significantly modified by baseline values (P -interaction = 0.02), with the increase in LDL cholesterol being significantly greater with butter than with cheese only among individuals with high baseline LDL-cholesterol concentrations. There was no significant difference between all diets on inflammation markers, blood pressure, and insulin-glucose homeostasis.

Conclusions: The results of our study suggest that the consumption of SFAs from cheese and butter has similar effects on HDL cholesterol but differentially modifies LDL-cholesterol concentrations compared with the effects of carbohydrates, MUFAs, and PUFAs, particularly in individuals with high LDL cholesterol. In contrast, SFAs from either cheese or butter have no significant effects on several other nonlipid cardiometabolic risk factors. This trial was registered at clinicaltrials.gov as [NCT02106208](https://clinicaltrials.gov/ct2/show/study/NCT02106208).

Caffeine and hypertension

Eur J Nutr. 2017 Mar 1. doi: 10.1007/s00394-017-1412-4.

Coffee, tea, caffeine, and risk of hypertension: The Singapore Chinese Health Study.

Chei CL¹, Loh JK², Soh A³, Yuan JM^{4,5}, Koh WP^{6,7}.

Author information

Abstract

PURPOSE:

The relationship between coffee and tea, and risk of hypertension remains controversial in Western populations. We investigated these associations in an Asian population.

METHODS:

The Singapore Chinese Health Study is a population-based prospective cohort that recruited 63,257 Chinese aged 45-74 years and residing in Singapore from 1993 to 1998. Information on consumption of coffee, tea, and other lifestyle factors was collected at baseline, and self-reported physician-diagnosed hypertension was assessed during two follow-up interviews (1999-2004, 2006-2010).

RESULTS:

We identified 13,658 cases of incident hypertension after average 9.5 years. Compared to those who drank one cup of coffee/day, the hazard ratios (HR) and 95% confidence intervals (CI) were 0.87 (0.83-0.91) for <weekly drinkers and 0.93 (0.86-1.00) for ≥ 3 cups/day drinkers. Compared to <weekly drinkers, daily drinkers of black or green tea had slight increase in risk, but these risk estimates were attenuated and became non-significant after adjustment for caffeine. After adjusting for coffee, there was a stepwise dose-response relationship between caffeine intake and hypertension risk; compared to the lowest intake (<50 mg/day), those in the highest intake (≥ 300 mg/day) had a 16% increase in risk; HR 1.16, 95% CI 1.04-1.31 (p trend = 0.02).

CONCLUSIONS:

Drinking coffee <1 cup/week or ≥ 3 cups/day had lower risk than drinking one cup/day. Caffeine may account for increased risk in daily tea drinkers and in those who drank one cup of coffee/day. The inverse U-shaped association with coffee suggests that at higher doses, other ingredients in coffee may offset the effect of caffeine and confer benefit on blood pressure.

Blueberries helps mental processing

✓**Blueberry concentrate improves brain function in older people**

University of Exeter Medical School, 03/08/2017

Drinking concentrated blueberry juice improves brain function in older people, according to research by the University of Exeter.

In the study, healthy people aged 65–77 who drank concentrated blueberry juice every day showed improvements in cognitive function, blood flow to the brain and activation of the brain while carrying out cognitive tests. There was also evidence suggesting improvement in working memory.

Blueberries are rich in flavonoids, which possess antioxidant and anti-inflammatory properties.

Dr Joanna Bowtell, head of Sport and Health Sciences at the University of Exeter, said: “Our cognitive function tends to decline as we get older, but previous research has shown that cognitive function is better preserved in healthy older adults with a diet rich in plant-based foods.

“In this study we have shown that with just 12 weeks of consuming 30ml of concentrated blueberry juice every day, brain blood flow, brain activation and some aspects of working memory were improved in this group of healthy older adults.”

Of the 26 healthy adults in the study, 12 were given concentrated blueberry juice – providing the equivalent of 230g of blueberries – once a day, while 14 received a placebo.

Before and after the 12-week period, participants took a range of cognitive tests while an MRI scanner monitored their brain function and resting brain blood flow was measured. Compared to the placebo group, those who took the blueberry supplement showed significant increases in brain activity in brain areas related to the tests.

The study excluded anyone who said they consumed more than five portions of fruit and vegetables per day, and all participants were told to stick to their normal diet throughout.

Previous research has shown that risk of dementia is reduced by higher fruit and vegetable intake, and cognitive function is better preserved in healthy older adults with a diet rich in plant-based foods. Flavonoids, which are abundant in plants, are likely to be an important component in causing these effects.

The new paper, “Enhanced task-related brain activation and resting perfusion in healthy older adults after chronic blueberry supplementation”, was published in the journal *Applied Physiology, Nutrition and Metabolism*.

The research was carried out in association with the University of the West of England, and the concentrated blueberry juice (BlueberryActive) and some funding for the study was provided by CherryActive Ltd, which produces cherry, beetroot and blueberry products in concentrate and capsule form.

Vit D helps knee OA

Knee effusion-synovitis volume measurement and effects of vitamin D supplementation in patients with knee osteoarthritis

Osteoarthritis and Cartilage , 03/06/2017

Wang X, et al.

Aim of this study was to establish a measure of knee joint effusion-synovitis volume and to examine the effect of vitamin D supplementation on effusion-synovitis in patients with knee osteoarthritis (OA) and low vitamin D levels over 24 months. It has been validated that the effusion-synovitis volume measurement could be a promising outcome measure in OA trials with a high reproducibility. Vitamin D supplementation could retard the progression of effusion-synovitis, suggesting it can potentially enhance outcomes in people with an inflammatory knee osteoarthritis phenotype.

Methods

- Clinicians enrolled symptomatic knee OA patients with a low 25-(OH)D level (12.5–60 nmol/l) for a multi-centre, randomised, placebo-controlled and double-blind trial.
- Subjects (age 63±7 years, 208 females) were assigned to either 50,000IU monthly vitamin D3 (n=209) or placebo (n=204) for 24 months.
- They assessed knee effusion-synovitis volume in suprapatellar pouch and central portion on MRI using OsiriX software.
- They applied the intra-class correlation coefficients (ICCs) to test both inter- and intra-rater reliabilities.
- They applied the least significant change criterion (LSC) to characterize the increase/decrease in effusion-synovitis volume. Knee effusion-synovitis score (0–3) was also assessed.

Results

- The evidence showed that the reproducibilities of effusion-synovitis volume measurement were high with ICCs ranging from 0.93–0.99.
- It was found, over 24 months, total effusion-synovitis volume remained stable in the vitamin D group but increased significantly in the placebo with a significant between-group difference (–1.94 ml, 95% CI: –3.54, –0.33).
- The data demonstrated that this impact was evident in those with baseline effusion-synovitis and with suprapatellar effusion-synovitis.
- The outcomes revealed that the proportion with an increase in effusion-synovitis volume was lower in the vitamin D group than placebo (RR: 0.87, 95%CI: 0.77, 0.97).