

ABSTRACTS

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2. LBP

Leg pain classification

BMC Musculoskelet Disord. 2016 May 23;17(1):226. doi: 10.1186/s12891-016-1074-z.

Classification of patients with low back-related leg pain: a systematic review.

Stynes S¹, Konstantinou K², Dunn KM².

Author information

Abstract

BACKGROUND:

The identification of clinically relevant subgroups of low back pain (LBP) is considered the number one LBP research priority in primary care. One subgroup of LBP patients are those with back related leg pain. Leg pain frequently accompanies LBP and is associated with increased levels of disability and higher health costs than simple low back pain. Distinguishing between different types of low back-related leg pain (LBLP) is important for clinical management and research applications, but there is currently no clear agreement on how to define and identify LBLP due to nerve root involvement. The aim of this systematic review was to identify, describe and appraise papers that classify or subgroup populations with LBLP, and summarise how leg pain due to nerve root involvement is described and diagnosed in the various systems.

METHODS:

The search strategy involved nine electronic databases including Medline and Embase, reference lists of eligible studies and relevant reviews. Selected papers were appraised independently by two reviewers using a standardised scoring tool.

RESULTS:

Of 13,358 initial potential eligible citations, 50 relevant papers were identified that reported on 22 classification systems. Papers were grouped according to purpose and criteria of the classification systems. Five themes emerged: (i) clinical features (ii) pathoanatomy (iii) treatment-based approach (iv) screening tools and prediction rules and (v) pain mechanisms. Three of the twenty two systems focused specifically on LBLP populations. Systems that scored highest following quality appraisal were ones where authors generally included statistical methods to develop their classifications, and supporting work had been published on the systems' validity, reliability and generalisability. There was lack of consistency in how LBLP due to nerve root involvement was described and diagnosed within the systems.

CONCLUSION:

Numerous classification systems exist that include patients with leg pain, a minority of them focus specifically on distinguishing between different presentations of leg pain. Further work is needed to identify clinically meaningful subgroups of LBLP patients, ideally based on large primary care cohort populations and using recommended methods for classification system development.

KEYWORDS: Back pain; Classification; Diagnosis; Leg pain; Nerve root involvement; Sciatica
PMID: 27215590

3. DISC

MRI and disc calcification

Eur Radiol. 2016 Jun 3.

Does the high-intensity zone (HIZ) of lumbar Intervertebral discs always represent an annular fissure?

Shan Z¹, Chen H¹, Liu J¹, Ren H¹, Zhang X¹, Zhao F².

Author information

Abstract

OBJECTIVES:

The aim of this study was to examine high-intensity zone (HIZ) characteristics on both T1- and T2-weighted sagittal magnetic resonance (MR) images, and to reveal their exact nature.

MATERIALS:

Seventy-three patients with low back pain and HIZs (identified on T2-weighted images) were included. Patients, aged 25-80 years (mean 51), were divided into two groups: the 'single-HIZ' group exhibited HIZs only on T2-weighted images, while the 'dual-HIZ' group exhibited HIZs on both T2-weighted and T1-weighted images. Tissue corresponding to the HIZ was harvested from surgery for analysis.

RESULTS:

Eighty-two discs were studied, from 39 patients with single HIZs, 30 with dual HIZs, and four with both in the posterior annulus. HIZ volume, volume ratio, and signal intensity on T2-weighted images from the dual-HIZ group were significantly greater. Surgery was able to successfully restore patients' ability in both groups, while conservative treatments were less effective for patients with dual HIZs. Histology revealed outer annular fissures invaded by granulation tissue in the single-HIZ group. In dual-HIZ discs, Von Kossa staining and CT scans showed more calcified or ossified lesions (94.1 vs. 0 %, $P < 0.001$), and chemical analysis showed significantly higher calcium content.

CONCLUSIONS:

HIZs on both T2- and T1-weighted images represent calcified tissue, possibly from a vertebral endplate. A new concept of dual HIZ should be defined.

KEY POINTS:

- Conventional definition of an HIZ refers to T2-weighted images only.
- Dual HIZs have greater HIZ volume, volume ratio, and signal intensity.
- HIZs on both T2- and T1-weighted images represent calcified tissue.
- Conservative treatments are less likely to be effective for patients with dual HIZs.

KEYWORDS: Annular fissure; Calcification; Intervertebral disc; MRI; Spine

PMID: 27260341

5. SURGERY

Variation in spine surgeries

Spine (Phila Pa 1976). 2016 Jun;41(11):978-86. doi: 10.1097/BRS.0000000000001396.

Differences in the Surgical Treatment of Lower Back Pain Among Spine Surgeons in the United States.

Lubelski D¹, Williams SK, O'Rourke C, Obuchowski NA, Wang JC, Steinmetz MP, Melillo AJ, Benzel EC, Modic MT, Quencer R, Mroz TE.

Author information

Abstract

STUDY DESIGN:

Electronic survey.

OBJECTIVE:

To identify the surgical treatment patterns for low back pain (LBP), among U.S. spine surgeons. Specifically determine (1) differences in surgical treatment responses based on various demographic variables; (2) probability of disagreement based on surgeon subgroups.

SUMMARY OF BACKGROUND DATA:

Multiple surgical and nonsurgical treatments exist for LBP. Without strong evidence or clear guidelines for the indications and optimal treatments, there is substantial variability in surgical treatments used.

METHODS:

A total of 445 U.S. spine surgeons completed a survey of clinical and radiographic case scenarios on patients with mechanical LBP, no leg pain, and concordant discograms. Surgical treatment options included no surgery, anterior lumbar interbody fusion (ALIF), posterolateral fusion with pedicle screws, transforaminal/posterior lumbar interbody fusion (TLIF/PLIF), etc. Statistical significance was set at 0.01 to account for multiple comparisons.

RESULTS:

There was substantial clinical equipoise (~75% disagreement) among surgeons on the approach to treat patients with LBP. Disagreement was highest in the southwest and lowest in the Midwest (82% vs. 69%, respectively); there was significantly lower disagreement among those in academic practices versus those in private/hybrid practices (56% vs. 79%, respectively). Those in academic practices had approximately four times greater odds of choosing no surgery as compared to those in hybrid and private practices, who were more likely to choose ALIF or PLIF/TLIF. Those with fellowship training had approximately two times greater odds of selecting no surgery and four times greater odds of selecting ALIF as compared to those without fellowship training who were more likely to select TLIF/PLIF.

CONCLUSION:

Significant differences exist among U.S. spine surgeons in the treatment of LBP. These differences stem from geographical location of the practice, specialty, practice type, and fellowship training. Recognizing the substantial variability underlies the importance of additional studies aimed at identifying the proper indications and most cost-effective treatments for LBP.

7. PELVIC ORGANS/WOMAN'S HEALTH

Massage helps post cesarean pain

August 2016 Volume 24, Pages 92–98

Massage as adjuvant therapy in the management of post-cesarean pain and anxiety: A randomized clinical trial

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DOI: <http://dx.doi.org/10.1016/j.ctcp.2016.05.014>

The present study was conducted to determine the effect of massage on post-cesarean pain and anxiety.

Methods

The present single-blind clinical trial was conducted on 156 primiparous women undergone elective cesarean section. The participants were randomly divided into three groups, including a hand and foot massage group, a foot massage group and a control group (n = 52 per group). The patients' intensity of pain, vital signs and anxiety level were measured before, immediately after and 90 min after the massage.

Results

A significant reduction was observed in the intensity of pain immediately and 90 min after massage ($P < 0.001$). Moreover, changes in some of the physiological parameters, including blood pressure and respiration rate, were significant after massage ($P < 0.001$); however, this change was not significant for pulse rate. A significant reduction was also observed in the level of anxiety ($P < 0.001$) and a significant increase in the frequency of breastfeeding ($P < 0.001$) after massage.

Conclusion

As an effective nursing intervention presenting no side-effects, hand and foot massage can be helpful in the management of postoperative pain and stress.

Keywords: Massage, Pain, Cesarean section, Anxiety

Lower birth weight with IBS

Neurogastroenterol Motil. 2016 May 18. doi: 10.1111/nmo.12849.

Irritable bowel syndrome and the perinatal period: lower birth weight increases the risk.

Raslau D¹, Herrick LM^{2,3}, Locke GR², Schleck CD⁴, Zinsmeister AR⁴, Almazar A², Talley NJ^{2,5}, Saito YA².

Author information

Abstract

BACKGROUND:

Early life events have been found to be associated with irritable bowel syndrome (IBS) suggesting a role in development of functional disorders. The study aim was to identify potential perinatal risk factors for adult IBS.

METHODS:

Utilizing a population-based nested case-control design, cases who met modified Rome III criteria for IBS and age- and-gender matched controls were identified using responses from prior mailed surveys to a random sample of Olmsted County residents. Medical records of eligible respondents were reviewed for perinatal events of interest. The association of early life events with subsequent case status was assessed using conditional logistic regression.

KEY RESULTS:

Of 3 417 respondents, 513 were born in Olmsted County and 108 met criteria for IBS. Due to missing records, 89 pairs were included in the final analyses. Logistic regression revealed only birth weight as a predictor of IBS. Lower birth weight increased the odds for IBS (OR = 1.54 [95% CI = (1.12, 2.08), p = 0.008]). Median birth weight was 3.35 kg (range: 1.96-5.24) and 3.57 kg (range: 2.18-4.59) for cases and controls, respectively. Maternal age, delivery method, and antibiotic exposure were not associated with IBS status but this study was only powered to detect large odds ratios.

CONCLUSIONS AND INFERENCES:

Lower birth weight was observed as a risk factor for IBS. It is not clear if in utero developmental delays directly lead to IBS or if low birth weight is a prospective marker for subsequent early life problems leading to IBS.

KEYWORDS: birth; birth weight; infancy; irritable bowel syndrome; risk factors

8. VISCERA

IBS and cytokines

Global cytokine profiles and association with clinical characteristics in patients with irritable bowel syndrome

The American Journal of Gastroenterology, 06/08/2016 Bennet SMP, et al.

In this study, the researchers aimed to evaluate the association of global cytokine profiles with clinical characteristics in patients with irritable bowel syndrome (IBS). As per this study, global cytokine profiles did not discriminate IBS patients from healthy subjects, but cytokine profiles were more varied among IBS patients than among healthy subjects, and a small subgroup of patients with enhanced immune activity was identified. Also, association of inflammatory cytokines with some clinical symptoms suggests that immune activation may be of importance in a subset of IBS patients.

Methods

- The authors analyzed serum from 144 IBS patients and 42 healthy subjects for cytokine levels of interleukin (IL)-5, IL-6, IL-8, IL-10, IL-12p70, IL-13, IL-17A, interferon (IFN)- γ , and tumor necrosis factor (TNF) by MSD MULTI-ARRAY.
- In total, 109 IBS and 36 healthy sigmoid colon biopsies were analyzed for mRNA expression of IL-8, IL-10, TNF, and FOXP3 by quantitative reverse transcription PCR.
- Multivariate discrimination analysis evaluated global cytokine profiles.
- They also assessed rectal sensitivity, oroanal transit time, and psychological and gastrointestinal symptom severity.

Results

- Global cytokine profiles of IBS patients and healthy subjects overlapped, but cytokine levels varied more in IBS patients.
- Serum levels of IL-6 and IL-8 tended to be increased and levels of IFN- γ tended to be decreased in IBS patients.
- Mucosal mRNA expression of IL-10 and FOXP3 tended to be decreased in IBS patients.
- Within both the full study cohort and IBS patients alone, serum level of TNF was associated with looser stool pattern, while subjects with more widespread somatic symptoms had increased serum levels of IL-6.
- Although neither IBS bowel habit subgroups nor patients with possible post-infectious IBS were associated with distinct cytokine profiles, a small cluster of IBS patients with comparatively elevated immune markers was identified.

Link between constipation and Parkinson's disease

Parkinsonism Relat Disord. 2016 May 19. pii: S1353-8020(16)30168-7. doi: 10.1016/j.parkreldis.2016.05.016.

Constipation and risk of Parkinson's disease: A Danish population-based cohort study.

Svensson E¹, Henderson VW², Borghammer P³, Horváth-Puhó E⁴, Sørensen HT⁴.
Author information

Abstract

OBJECTIVES:

To examine long-term associations between constipation and Parkinson's disease (PD) in men and women, we conducted a population-based cohort study using prospectively collected registry data on hospital contacts for constipation and PD, stratified by follow-up time and sex.

METHODS:

We linked Danish registries to construct a cohort of all patients in Denmark with an outpatient hospital diagnosis of constipation 1995-2012 and a matched general population comparison cohort. Using Cox regression, we computed hazard ratios (HRs) for PD and corresponding 95% confidence intervals (CIs), adjusting for potential confounders, stratified by sex and follow-up time.

RESULTS:

The 31,905 patients with constipation had a higher risk of PD than 159,092 comparison cohort members (adjusted (a) HR = 3.03, 95% CI 2.50-3.66), which was sustained to 11-15 years follow-up (aHR = 3.65, 95% CI 1.67-7.95). Increased risk was apparent in both sexes but stronger in men [aHR = 3.52 (2.67-4.64)] than women [aHR = 2.64 (95% CI 2.02-3.44)].

CONCLUSION:

In this large population-based cohort study, constipation was associated with sustained increased risk of a PD diagnosis, and the relative risk was higher for men than for women.

KEYWORDS: Constipation; Non-motor symptom; Parkinson's disease; Risk factor
PMID: 27234704

HA's and menopause

Cephalalgia. 2016 Jun 2. pii: 0333102416653234.

Changes in migraine before and after menopause in Japanese climacteric women.

Makita K¹, Inagaki M², Kitamura S³, Tatsuoka Y⁴.

Author information

Abstract

INTRODUCTION:

We conducted a questionnaire survey of Japanese women with migraine who presented at neurology and gynecology headache clinics to assess how the frequency and severity of migraine in pre-, peri-, and postmenopausal women changed as compared with what they experienced in their 20s and 30s.

METHODS:

The study group comprised 171 women with migraine (mean age 48.5) at the time of the survey. They were requested to fill out a self-administered questionnaire.

RESULTS:

(1) The current frequency and severity of migraine were claimed to be higher than that in their 20s and 30s. (2) More than 50% of postmenopausal women responded that migraines were currently less frequent than in their 20s and 30s. (3) The largest proportion of postmenopausal women responded that migraine was currently less severe than during any other period.

CONCLUSIONS:

Our survey demonstrated that there are trends toward fewer migraine attacks and milder symptoms in postmenopausal Japanese women.

KEYWORDS: Migraine; climacteric women; estrogen; menopause

PMID: 27257303

Fish intake and preterm births

Public Health Nutr. 2016 Jul;19(10):1795-803. doi: 10.1017/S136898001500316X. Epub 2015 Dec 2.

Periconceptional seafood intake and pregnancy complications.

Mohanty AF¹, Siscovick DS¹, Williams MA², Thompson ML³, Burbacher TM⁴, Enquobahrie DA¹.

Author information

Abstract

OBJECTIVE:

To investigate associations of maternal periconceptional shellfish, lean fish and fatty fish intake with risk of pregnancy complications.

DESIGN:

In this prospective cohort study, we collected information on intake of seafood subtypes using FFQ. We categorized seafood intake into frequencies of 1 servings/week. We ascertained gestational hypertension, pre-eclampsia, gestational diabetes and preterm birth diagnoses from medical records. Using generalized linear models with a log link, the Poisson family and robust standard errors, we estimated risk ratios and 95 % confidence intervals across seafood intake categories.

SETTING:

The Omega study, a study of risk factors for pregnancy complications among women recruited from prenatal clinics in Washington State, USA, 1996-2008.

SUBJECTS:

The current study included 3279 participants from the Omega study.

RESULTS:

Median (interquartile range) shellfish, lean fish and fatty fish intake was 0.3 (0-0.9), 0.5 (0-1.0) and 0.5 (0.1-1.0) servings/week, respectively. Lean fish intake of >1 servings/week (v. <0.2 servings/month) was associated with a 1.55-fold higher risk of preterm birth (95 % CI 1.04, 2.30) and was not associated with the other pregnancy complications. Higher intake of seafood (total or other subtypes) was not associated with pregnancy complications (separately or combined).

CONCLUSIONS:

Higher intake of lean fish, but not fatty fish or shellfish, was associated with a higher risk of preterm birth; these findings may have significance for preterm birth prevention. Studies of mechanisms and potential contributing factors (including seafood preparation and nutrient/contaminant content) are warranted.

KEYWORDS: Lean fish; Pregnancy; Pregnancy complication; Preterm birth; Seafood intake

Probiotics and urogenital infection

J Midwifery Womens Health. 2016 May;61(3):339-55. doi: 10.1111/jmwh.12472.

Probiotics for Treatment and Prevention of Urogenital Infections in Women: A Systematic Review.

Hanson L, VandeVusse L, Jermé M, Abad CL, Safdar N.

Abstract

INTRODUCTION:

Probiotics are a complementary and integrative therapy useful in the treatment and prevention of urogenital infections in women. This study extends the work of researchers who systematically investigated the scientific literature on probiotics to prevent or treat urogenital infections.

METHODS:

A systematic review was conducted to determine the efficacy of probiotics for prevention and/or treatment of urogenital infections in adult women from January 1, 2008, through June 30, 2015. We searched in CINAHL, MEDLINE, Cochrane Central Register of Controlled Trials, Web of Science, Dissertations and Theses, and Alt-HealthWatch. After removing duplicates and studies that did not meet inclusion criteria, 20 studies were reviewed. All included at least one species of Lactobacillus probiotic as an intervention for treatment or prevention of urogenital infections. Data extracted included samples, settings, study designs, intervention types, reported outcomes, follow-up periods, and results. We evaluated all randomized controlled trials for risk of bias and made quality appraisals on all studies.

RESULTS:

Fourteen of the studies focused on bacterial vaginosis (BV), 3 on urinary tract infections (UTIs), 2 on vulvovaginal candidiasis, and one on human papillomavirus (HPV) as identified on Papanicolaou test. Studies were heterogeneous in terms of design, intervention, and outcomes. Four studies were of good quality, 9 of fair, and 7 poor. Probiotic interventions were effective for treatment and prevention of BV, prevention of recurrences of candidiasis and UTIs, and clearing HPV lesions. No study reported significant adverse events related to the probiotic intervention.

DISCUSSION:

The quality of the studies in this systematic review varied. Although clinical practice recommendations were limited by the strength of evidence, probiotic interventions were effective in treatment and prevention of urogenital infections as alternatives or co-treatments. More good quality research is needed to strengthen the body of evidence needed for application by clinicians.

KEYWORDS: infections; probiotics; systematic review; urogenital; women's health
PMID: 27218592

Sleep and IBS

Aliment Pharmacol Ther. 2016 May 30. doi: 10.1111/apt.13677.

Effects of disturbed sleep on gastrointestinal and somatic pain symptoms in irritable bowel syndrome.

Patel A¹, Hasak S¹, Cassell B¹, Ciorba MA¹, Vivio EE¹, Kumar M¹, Gyawali CP¹, Sayuk GS^{1,2,3}.
Author information

Abstract

BACKGROUND:

Sleep disturbances are common, and perhaps are even more prevalent in irritable bowel syndrome (IBS).

AIMS:

To determine the effect of measured sleep on IBS symptoms the following day, IBS-specific quality of life (IBS-QOL) and non-GI pain symptoms.

METHODS:

IBS patients' sleep patterns were compared to healthy individuals via wrist-mounted actigraphy over 7 days. Daily bowel pain logs (severity, distress; 10-point Likert) stool pattern (Bristol scale) and supporting symptoms (e.g. bloating, urgency; 5-point Likert) were kept. Validated measures, including the GI Symptom Rating Scale-IBS, Visceral Sensitivity Index, Pittsburgh Sleep Quality Index and the IBS-Quality of Life were collected. Mediation analysis explored the relationship between sleep, mood and bowel symptoms.

RESULTS:

Fifty subjects (38.6 ± 1.0 years old, 44 female; 24 IBS and 26 healthy controls) completed sleep monitoring. IBS patients slept more hours per day (7.7 ± 0.2 vs. 7.1 ± 0.1, P = 0.008), but felt less well-rested. IBS patients demonstrated more waking episodes during sleep (waking episodes; 12.1 vs. 9.3, P < 0.001). Waking episodes predicted worse abdominal pain (P ≤ 0.01) and GI distress (P < 0.001), but not bowel pattern or accessory IBS symptoms (P > 0.3 for each). Waking episodes negatively correlated with general- and IBS-specific QOL in IBS (r = -0.58 and -0.52, P < 0.001 for each). Disturbed sleep effects on abdominal pain were partially explained by mood as an intermediate.

CONCLUSIONS:

Sleep disturbances are more common in irritable bowel syndrome, and correlate with IBS-related pain, distress and poorer irritable bowel syndrome-related quality of life. Disturbed sleep effects extend beyond the bowel, leading to worse mood and greater somatic pain in patients with the irritable bowel syndrome.

10 A. CERVICAL SPINE**Size of C spine canal**

Eur Spine J. 2016 May 26.

Narrow cervical canal in 1211 asymptomatic healthy subjects: the relationship with spinal cord compression on MRI.

Nakashima H¹, Yukawa Y², Suda K³, Yamagata M⁴, Ueta T⁵, Kato F².

Author information

Abstract

PURPOSE:

Narrow cervical canal (NCC) has been a suspected risk factor for later development of cervical myelopathy. However, few studies have evaluated the prevalence in asymptomatic subjects. The purpose of this study was to investigate the prevalence of NCC in a large cohort of asymptomatic volunteers.

METHODS:

This study was a cross-sectional study of 1211 asymptomatic volunteers. Approximately 100 men and 100 women representing each decade of life from the 20s to the 70s were included in this study. Cervical canal anteroposterior diameters at C5 midvertebral level on X-rays, and the prevalence of spinal cord compression (SCC) and increased signal intensity (ISI) changes on MRI were evaluated. Receiver operating characteristic analysis was performed to determine the cut-off value of the severity of canal stenosis resulting in SCC.

RESULTS:

NCC (<14 mm) was observed in 123 (10.2 %) subjects. SCC and ISI were found in 64 (5.3 %) and 28 (2.3 %) subjects, respectively. The prevalence of NCC was significantly higher in females and older subjects, but the occurrence of severe NCC (<12 mm) did not increase with age. The canal size in subjects with SCC or ISI was significantly smaller than in those without SCC ($p < 0.0001$). The cut-off values of cervical canal stenosis resulting in SCC were 14.8 and 13.9 mm in males and females, respectively.

CONCLUSIONS:

The prevalence of NCC was considerably lower among asymptomatic healthy volunteers; the cervical canal diameter in subjects with SCC or ISI was significantly smaller than in asymptomatic subjects; NCC is a risk factor for SCC.

KEYWORDS:

Asymptomatic; Cervical canal stenosis; Degenerative cervical myelopathy; MRI; Narrow cervical canal

PMID: 27230783

Chronic neck pain and PT

Clin Rehabil. 2016 May 31. pii: 0269215516651979.

Group-based multimodal exercises integrated with cognitive-behavioural therapy improve disability, pain and quality of life of subjects with chronic neck pain: A randomized controlled trial with one-year follow-up.

Monticone M¹, Ambrosini E², Rocca B³, Cazzaniga D³, Liquori V³, Pedrocchi A⁴, Vernon H⁵.
Author information

Abstract

OBJECTIVE:

To evaluate the effect of a group-based multidisciplinary rehabilitation programme on disability, pain and quality of life in subjects with chronic neck pain.

DESIGN:

Randomized controlled trial.

SETTING:

Specialized rehabilitation centre.

SUBJECTS:

A total of 170 patients (mean age of 53 years (13); 121 females).

INTERVENTIONS:

The multidisciplinary group underwent a multidisciplinary rehabilitation programme combining multimodal exercises with psychologist-lead cognitive-behavioural therapy sessions. The general exercise group underwent general physiotherapy. Both groups followed group-based programmes once a week for ten weeks. Additionally, the multidisciplinary group met with the psychologist once a week for a 60-minute session.

MAIN MEASURES:

The Neck Disability Index (primary outcome), the Tampa Scale for Kinesiophobia, the Pain Catastrophizing Scale, a pain numerical rating scale and the Short-Form Health Survey. The participants were evaluated before, after training and after 12 months.

RESULTS:

A linear mixed model for repeated measures was used for each outcome measure. Significant effects (p-value <0.001) were found over time and between groups for all outcome measures. After training, significant improvements were found for both groups for all outcome measures except kinesiophobia and catastrophizing, which did not change in the control group; however, the improvements were significantly greater for the multidisciplinary group. At 12-month follow-up a clinically meaningful between-group difference of 12.4 Neck Disability Index points was found for disability.

CONCLUSIONS:

A group-based multidisciplinary rehabilitation programme including cognitive-behavioural therapy was superior to group-based general physiotherapy in improving disability, pain and quality of life of subjects with chronic neck pain. The effects lasted for at least one year.

13. CRANIUM/TMJ

TMJ and Headaches

J Oral Rehabil. 2016 May 18. doi: 10.1111/joor.12410.

Headaches and myofascial temporomandibular disorders: overlapping entities, separate managements?

Conti PC^{1,2}, Costa YM^{2,3}, Gonçalves DA⁴, Svensson P^{5,6,7}.

Author information

Abstract

There are relevant clinical overlaps between some of the painful temporomandibular disorders (TMD) and headache conditions that may hamper the diagnostic process and treatment.

A non-systematic search for studies on the relationship between TMD and headaches was carried out in the following databases: PubMed, Cochrane Library and Embase. Important pain mechanisms contributing to the close association and complex relationship between TMD and headache disorders are as follows: processes of peripheral and central sensitisation which take place in similar anatomical areas, the possible impairment of the descending modulatory pain pathways and the processes of referred pain. In addition, the clinical examination does not always provide distinguishing information to differentiate between headaches and TMD. So, considering the pathophysiology and the clinical presentation of some types of headache and myofascial TMD, such overlap can be considered not only a matter of comorbid relationship, but rather a question of disorders where the distinction lines are sometimes hard to identify. These concerns are certainly reflected in the current classification systems of both TMD and headache where the clinical consequences of diagnosis such as headache attributed to or associated with TMD are uncertain. There are several similarities in terms of therapeutic strategies used to manage myofascial TMD and headaches.

Considering all these possible levels of interaction, we reinforce the recommendation for multidisciplinary approaches, by a team of oro-facial pain specialists and a neurologist (headache specialist), to attain the most precise differential diagnosis and initiate the best and most efficient treatment.

KEYWORDS: headache disorders; myofascial pain syndromes; pain management; physiopathology; temporomandibular joint disorders; tension-type headache

Sleep apnea and diabetes

The relationship between obstructive sleep apnoea and intra epidermal nerve fiber density, PARP activation and foot ulceration in patients with type 2 diabetes

Journal of Diabetes and its Complications, 06/03/2016

Altaf QA, et al. – Obstructive sleep apnoea (OSA) is associated with increased nitrosative stress, endothelial dysfunction, and peripheral neuropathy in patients with type 2 diabetes. The authors hypothesized that OSA is associated with Poly ADP ribose polymerase (PARP) activation, lower intra epidermal nerve fibre density (IENFD), and diabetic foot ulceration (DFU). OSA is associated with lower IENFD, PARP activation and DFU in patients with Type 2 diabetes. The finding suggest that OSA is associated with small fiber neuropathy. PARP activation is a potential mechanisms linking OSA to DPN and endothelial dysfunction in patients with Type 2 diabetes. Whether OSA treatment will have a favorable impact on these parameters and DFU requires interventional studies.

Methods

- A cross-sectional study of adults with type 2 diabetes recruited from a secondary care hospital in the UK.
- OSA was assessed by multi-channel home-based cardio-respiratory device (Alice PDX, Philips Respironics).
- DPN was assessed using the Michigan Neuropathy Screening Instrument (MNSI).
- IENFD and % PAR stained nuclei were assessed using immunohistochemistry staining on skin biopsies.
- DFU was assessed based on MNSI.

Results

- Skin biopsies and DFU data were available from 52 and 234 patients respectively.
- OSA was associated with lower IENFD (12.75±1.93 vs. 10.55±1.62 vs. 9.42±1.16 fibres/mm of epidermis for no OSA, mild OSA and moderate to severe OSA respectively, p<0.001).
- Following adjustment, mild (B=-2.19, p=0.002) and moderate to severe OSA (B=-3.45, p<0.001) were independently associated with IENFD.
- The apnoea hypopnea index (AHI) was associated with IENFD following adjustment (B=-2.45, p<0.001).
- AHI was associated with percentage of PAR stained nuclei following adjustment (B=13.67, p=0.025).
- DFU prevalence was greater in patients with OSA (7.1% vs. 28.1% vs. 26.2% for patients with no OSA, mild OSA and moderate to severe OSA respectively, p=0.001).
- Following adjustment, OSA was associated with DFU (OR 3.34, 95%CI 1.19-9.38, p=0.022).

14. HEADACHES

Manifestations

Headache. 2016 Jun 3. doi: 10.1111/head.12842.

A Cross-Sectional Clinic-Based Study in Patients With Side-Locked Unilateral Headache and Facial Pain.

Prakash S¹, Rathore C¹, Makwana P¹, Dave A¹.

Author information

Abstract

OBJECTIVE:

To undertake the epidemiological evaluation of the patients presenting with side-locked headache and facial pain in a tertiary neurology outpatient clinic.

BACKGROUND:

Side-locked unilateral headache and facial pain include a large number of primary and secondary headaches and cranial neuropathies. A diagnostic approach for the patients presenting with strictly unilateral headaches is important as many of these headache disorders respond to a highly selective drug. Epidemiological data may guide us to formulate a proper approach for such patients. However, the literature is sparse on strictly unilateral headache and facial pain.

METHODS:

We prospectively recruited 307 consecutive adult patients (>18 years) with side-locked headache and facial pain presenting to a neurology outpatient clinic between July 2014 and December 2015. All patients were subjected to MRI brain and other investigations to find out the different secondary causes. The diagnosis was carried out by at least two headache specialists together. All patients were classified according to the International Classification of Headache Disorder-third edition (ICHD-3 β).

RESULTS:

The mean age at the time of examination was 42.4 ± 13.6 years (range 18-80 years). Forty-eight percent of patients were male. Strictly unilateral headaches accounted for 19.2% of the total headaches seen in the clinic. Headaches were classified as primary in 58%, secondary in 18%, and cranial neuropathies and other facial pain in 16% patients. Five percent of patients could not be classified. Three percent of patients were classified as per the Appendix section of ICHD-3 β . The prevalence of secondary headaches and painful cranial neuropathies increased with age. A total of 36 different diagnoses were made. Only two diseases (migraine and cluster headache) had a prevalence of more than 10%. The prevalence of 13 diseases varied between 6 and 9%. The prevalence of other 14 groups was $\leq 1\%$. Migraine was the most common diagnosis (15%). Cervicogenic headache was the most common secondary headache. Classical trigeminal neuralgias and persistent idiopathic facial pain were two most common diagnoses in the painful cranial neuropathies and other facial pain groups. Sixty-one percent fulfilled the definition of chronic daily headaches, and hemicrania continua and cervicogenic headache were the two most common diagnoses in this group.

CONCLUSIONS:

A large number of primary and secondary headaches and cranial neuropathies may present as side-locked headache and facial pain syndromes. Therefore, a sound knowledge of diagnostic approach is required for the optimal management of side locked headaches and facial pain.

Muscle soreness

J Headache Pain. 2016 Dec;17(1):57. doi: 10.1186/s10194-016-0648-3. Epub 2016 May 27.

Headache: an important factor associated with muscle soreness/pain at the two-year follow-up point among patients with major depressive disorder.

Hung CI^{1,2}, Liu CY^{1,2}, Yang CH³, Wang SJ^{4,5}.

Author information

Abstract

BACKGROUND:

No study has compared the associations of headache, anxiety, and depression at baseline with muscle soreness or pain (MS/P) at baseline and at the two-year follow-up point among outpatients with major depressive disorder (MDD). This study aimed to investigate the above issue.

METHODS:

This study enrolled 155 outpatients with MDD at baseline, and 131 attended a two-year follow-up appointment. At baseline, migraine was diagnosed based on the International Classification of Headache Disorders, 2(nd) edition. MDD and anxiety disorders were diagnosed using the Structured Clinical Interview for DSM-IV-TR. The visual analog scale was used to evaluate the intensities of headache and MS/P in the neck, shoulder, back, upper limbs, and lower limbs. Depression and anxiety were evaluated using the Hospital Anxiety and Depression Scale. Multiple linear regressions were used to compare the associations of these factors with MS/P.

RESULTS:

Compared with anxiety disorders, migraine was more strongly associated with MS/P in all areas at baseline and in the upper and lower limbs at follow-up. Headache intensity at baseline was the factor most strongly associated with MS/P in all areas at baseline and follow-up after controlling for depression and anxiety. Headache intensity at baseline predicted MS/P at baseline and follow-up.

CONCLUSIONS:

Migraine and headache intensity are important factors related to MS/P at baseline and follow-up among patients with MDD. Integrating depression and headache treatment might be indicated to improve MS/P.

KEYWORDS: Anxiety; Depression; Migraine; Muscle soreness; Pain

19. GLENOHUMERAL/SHOULDER**Shoulder function**

June 2016 Volume 23, Pages 9–16

Tactile acuity, body schema integrity and physical performance of the shoulder: A cross-sectional study

Ingunn Botnmark Steve Tumilty Ramakrishnan Mani

- Reference values of shoulder tactile acuity have been reported.
- Non-dominant shoulder has better tactile acuity than the dominant shoulder.
- Tactile acuity of anterior, lateral, and posterior shoulder regions is similar.
- Better tactile acuity correlates with better performance in the stability task.
- Better body schema integrity correlates with better performance in the stability task.

Abstract

Background

Normative two-point discrimination thresholds (TPDTs) have been reported for different body regions and the relationships between TPDT and body schema integrity and physical performances are previously shown. However, such relationships with shoulder physical performance have not been investigated.

Objectives

To quantify TPDT of the shoulders in healthy individuals and investigate whether TPDT and body schema integrity are related to physical performances and to identify the relationship between TPDT and body schema integrity.

Design

Cross-sectional study.

Results

Means (SD) of TPDTs of the dominant shoulder (DS) and non-dominant shoulder (NDS) were 44.8 (13.1) mm and 39.3 (9.5) mm respectively. TPDT scores were significantly negatively correlated with closed kinetic chain upper extremity stability test (CKCUEST) scores ($r = -0.385$, $p = .036$) and left/right judgement task (LRJT) response times (DS: $\rho = -0.449$, $p = .013$ and NDS: $\rho = -0.388$, $p = .034$). No significant correlations were found between TPDT and scores on functional throwing performance index (FTPI) and LRJT accuracy. However, positive moderate correlations were observed between LRJT and CKCUEST scores.

Conclusions

TPDTs for ND and NDS in a cohort of adults have been documented. Tactile acuity and body schema integrity scores were correlated with superior performance in the upper limb stability task, indicating the potential role of tactile acuity and motor imagery training on maximizing physical performance.

Bracing for shoulder exercises

Instruction and feedback for conscious contraction of the abdominal muscles increases the scapular muscles activation during shoulder exercises

Angie Stephanie Vega Toro, PT, M.Sc Ann M.J. Cools, PT, PhD Anamaria Siriani de Oliveira, PT, PhD (Professor)

Highlights

- Abdominal muscles' contraction increases activation of the serratus anterior muscle
- Abdominals' contraction influenced trapezius EMG only in dynamic exercises
- Inferior Glide and Isometric Low Row are recommended to serratus anterior strengthening

Abstract

Purpose

The study aimed to investigate the effect of the instruction for conscious contraction of the abdominal muscles on the scapulothoracic muscles activation during shoulder exercises.

Design

Repeated measures design in a single group, pre-post instruction.

Methods

Sixty healthy male and female subjects (mean age 23.5 ± 3 years) volunteered for this study. Two isometric and three dynamic exercises for the scapulothoracic muscles, focusing on the serratus anterior muscle were assessed before and after familiarization training, standardized verbal, and tactile feedback applied to encourage abdominal muscle contraction. Repeated measures ANOVA and Bonferroni post-hoc test were used to compare normalized EMG amplitudes.

Results

Instruction increased EMG amplitude only for serratus anterior muscle during isometric exercises (Inferior Glide and Isometric Low Row). Conscious contraction of the abdominal muscles resulted in significant increase ($p < .05$) in the serratus anterior, upper, middle and lower trapezius EMG amplitude, during dynamic exercises (Wall Slide, Wall Press, and Knee Push-Up).

Conclusion

Conscious contraction of the abdominal muscle increased the activation of the serratus anterior and the three parts of the trapezius during dynamic shoulder exercises with moderate to minimal levels of EMG activation. In the other hand, abdominal muscles contraction was effective to increase the activation of the serratus anterior during isometric exercises but did not increase the trapezius activation. So, Inferior Glide and Isometric Low Row performed along with encouraged abdominal muscle contraction are compatible to initial phases of the serratus anterior strengthening with low levels of upper trapezius muscle activation.

20 A. ROTATOR CUFF**Scapula based rehab****Effectiveness of scapula-focused approaches in patients with rotator cuff related shoulder pain: a systematic review and meta-analysis**

Julie Bury, PT, BSc, Morgan West, PT, MSc, Gema Chamorro-Moriana, PT, PhD, Chris Littlewood, PT, PhD

Highlights

- SFA confer small effects on pain that are not regarded as clinically worthwhile
- SFA confer significant effects on disability in the short term
- Initial effects of SFA on disability are no longer apparent by three months
- There are significant methodological limitations in this body of evidence
- Further research is likely to significantly impact on current understanding

Abstract**Background**

Rotator cuff related shoulder pain (RCSP) is common with a range of conservative treatments currently offered. Evidence supporting superiority of one approach over another is lacking. Scapula focused approaches (SFA) are frequently prescribed and warrant investigation.

Objective

To evaluate the effectiveness of SFA in RCSP.

Design

Systematic review of randomised controlled trials.

Methods

An electronic search including MEDLINE, PEDro, ENFISPO to January 2016 was supplemented by hand searching. Randomised controlled trials were included; appraised using the PEDro scale and synthesised via meta-analysis or narratively, where appropriate.

Results

Four studies (n = 190) reported on pain and three studies (n = 122) reported on disability. Regarding pain, there was statistical but not clinically significant benefit of SFA versus generalised approaches (mean difference (VAS) 0.714; 95% CI 0.402 to 1.026) in the short term (<6 weeks); regarding disability, there was significant benefit of SFA versus generalised approaches (mean difference 14.0; 95% CI 11.2 to 16.8) in the short term (<6 weeks). One study (n = 22) reported disability at 3 months, which was not statistically significant. Evidence is conflicting from four studies relating to the effect of SFA on scapula position/movement.

Conclusion

SFA for RCSP confers benefit over generalised approaches up to six weeks but this benefit is not apparent by 3 months. Early changes in pain are not clinically significant. With regards to scapula position/movement, the evidence is conflicting. These preliminary conclusions should be treated with significant caution due to limitations of the evidence base.

21. ADHESIVE CAPSULITIS

Natural resolution

BMC Musculoskelet Disord. 2016 May 26;17(1):232. doi: 10.1186/s12891-016-1081-0.

Adhesive capsulitis of the shoulder, treatment with corticosteroid, corticosteroid with distension or treatment-as-usual; a randomised controlled trial in primary care.

Sharma SP¹, Bærheim A², Moe-Nilssen R³, Kvåle A^{3,4}.

Author information

Abstract

BACKGROUND:

Optimal management for adhesive shoulder capsulitis (frozen shoulder) is currently unclear. We intended to explore whether treatment by intra-articular injections with corticosteroid and distension is more effective than treating with corticosteroids alone or treatment-as-usual in a primary care setting in Norway.

METHODS:

In this prospective randomised intention to treat parallel study, 106 patients were block randomised to three groups; 36 (analysed 35) receiving steroid injection and Lidocaine (IS), 34 receiving steroid and additional saline as distension (ISD) and 36 had treatment-as-usual (TAU). Intervention groups received four injections within 8 weeks, assessed on 1st visit, at the 4th and 8th week. Outcomes were Shoulder Pain and Disability Index (SPADI), Numerical pain rating scale (NPRS) and passive range of motion (PROM). Postal assessment was repeated after 1 year for SPADI. Patients in the IS and ISD groups were "blinded" for intervention received and the assessor was "blinded" to group allocation.

RESULTS:

At baseline there were no differences between groups in outcome measures. There were no statistical significant differences between the intervention groups in SPADI, NPRS and PROM at baseline, at short-term (4-and 8 weeks) or long-term (12 months). There were statistically significant differences ($p < 0.01$) in change scores at short-term for SPADI when comparing the IS and TAU groups (-20.8; CI-28.9 to -12.7), and the ISD and TAU groups (-21.7; CI-29.4 to -14.0), respectively for NPRS (-2.0; CI-2.8 to -1.1 and -2.2; CI-3.0 to -1.4), and for PROM, but not at long-term for SPADI ($p > 0.05$). Effect size (ES) at 8 weeks was large between both injection groups and TAU (ES 1.2). At 12 months ES was reduced to 0.3 and 0.4 respectively. Transitory side effects as flushing and after-pain were reported by 14 % in intervention groups.

CONCLUSION:

This intention to treat RCT in primary care indicates that four injections with corticosteroid with or without distension, given with increasing intervals during 8 weeks, were better than treatment-as-usual in treatment of adhesive shoulder capsulitis. However, in the long run no difference was found between any of the groups, indicating that natural healing takes place independent of treatment or not.

TRIAL REGISTRATION: ClinicalTrials.gov, <https://clinicaltrials.gov/identifier:NCT01570985>.

KEYWORDS: Adhesive capsulitis; Corticosteroid; Distension; Frozen shoulder

22 A. IMPINGEMENT**Pec minor in impingement**

June 2016 Volume 23, Pages 33–39

Scapulothoracic muscle activity during elevation exercises measured with surface and fine wire EMG: A comparative study between patients with subacromial impingement syndrome and healthy controls

Birgit Castelein Barbara Cagnie Thierry Parlevliet Ann Cools

- Significantly higher Pm activity was found in patients with SIS during elevation.
- No differences were found for other scapulothoracic muscles in patients with SIS.
- This study supports the idea of a possible role of Pm in patients with SIS.

Abstract

Background

The quality of the scapular movement depends on the coordinated activity of the surrounding scapulothoracic muscles. Besides the well-known changes in Trapezius and Serratus Anterior (SA) activity in patients with subacromial impingement syndrome (SIS), no studies exist that have investigated the activity of the smaller less superficial muscles that attach on the scapula (Pectoralis Minor (Pm), the Levator Scapulae (LS) and the Rhomboid Major (RM)) in a population with SIS, despite the hypothesized importance of these muscles in shoulder function.

Objectives

To investigate if patients with shoulder impingement syndrome (SIS) show differences in deeper and superficial lying scapulothoracic muscle activity in comparison with a healthy control group during arm elevation tasks.

Study design

Controlled laboratory study.

Methods

Activity of the deeper lying (LS, Pm and RM) and superficial lying scapulothoracic muscles (Trapezius and SA) was investigated with fine-wire and surface electromyography (EMG) in 17 subjects with SIS and 20 healthy subjects while performing 3 elevation tasks: scaption, wall slide and elevation with external rotation. Possible differences between the groups were studied with a linear mixed model (factor “group” and “exercise”).

Results

For the Pm only, a significant main effect for “Group” was found: during the elevation exercises, the Pm was significantly more active in the SIS group in comparison with the healthy controls.

Conclusion

Patients with SIS show significantly higher Pm activity during elevation tasks in comparison with healthy controls. This study supports the idea of a possible role of the Pm in SIS.

ACH distance

June 2016 Volume 23, Pages 1–8

Relationship between extrinsic factors and the acromio-humeral distance

Tanya Anne Mackenzie Lee Herrington Lenard Funk Ian Horsley Ann Cools

Highlights

- Pectoralis minor length had a moderate relationship with AHD.
- Shoulder rotation ranges had a weak relationship with AHD.
- Shoulder activity levels had a moderate relationship with AHD.
- Existence and strength of relationship was population specific.
- Relationships only accounted for small variances in AHD.

Abstract

Background

Maintenance of the subacromial space is important in impingement syndromes. Research exploring the correlation between biomechanical factors and the subacromial space would be beneficial.

Objectives

To establish if relationship exists between the independent variables of scapular rotation, shoulder internal rotation, shoulder external rotation, total arc of shoulder rotation, pectoralis minor length, thoracic curve, and shoulder activity level with the dependant variables: AHD in neutral, AHD in 60° arm abduction, and percentage reduction in AHD.

Design

Controlled laboratory study.

Method

Data from 72 male control shoulders (24.28 years STD 6.81 years) and 186 elite sportsmen's shoulders (25.19 STD 5.17 years) were included in the analysis. The independent variables were quantified and real time ultrasound was used to measure the dependant variable acromio-humeral distance.

Results

Shoulder internal rotation and pectoralis minor length, explained 8% and 6% respectively of variance in acromio-humeral distance in neutral. Pectoralis minor length accounted for 4% of variance in 60° arm abduction. Total arc of rotation, shoulder external rotation range, and shoulder activity levels explained 9%, 15%, and 16%–29% of variance respectively in percentage reduction in acromio-humeral distance during arm abduction to 60°.

Conclusion

Pectoralis minor length, shoulder rotation ranges, total arc of shoulder rotation, and shoulder activity levels were found to have weak to moderate relationships with acromio-humeral distance. Existence and strength of relationship was population specific and dependent on arm position. Relationships only accounted for small variances in AHD indicating that in addition to these factors there are other factors involved in determining AHD.

27. HIP**Chronic hip pain**

J Orthop Sports Phys Ther. 2016 Jun;46(6):452-61. doi: 10.2519/jospt.2016.6279. Epub 2016 Apr 26.

Movement-Pattern Training to Improve Function in People With Chronic Hip Joint Pain: A Feasibility Randomized Clinical Trial.

Harris-Hayes M, Czuppon S, Van Dillen LR, Steger-May K, Sahrman S, Schootman M, Salsich GB, Clohisy JC, Mueller MJ.

Abstract

Study Design Feasibility randomized clinical trial.

Background Rehabilitation may be an appropriate treatment strategy for patients with chronic hip joint pain; however, the evidence related to the effectiveness of rehabilitation is limited.

Objectives To assess feasibility of performing a randomized clinical trial to investigate the effectiveness of movement-pattern training (MPT) to improve function in people with chronic hip joint pain.

Methods Thirty-five patients with chronic hip joint pain were randomized into a treatment (MPT) group or a control (wait-list) group. The MPT program included 6 one-hour supervised sessions and incorporated (1) task-specific training for basic functional tasks and symptom-provoking tasks, and (2) strengthening of hip musculature. The wait-list group received no treatment. Primary outcomes for feasibility were patient retention and adherence. Secondary outcomes to assess treatment effects were patient-reported function (Hip disability and Osteoarthritis Outcome Score), lower extremity kinematics, and hip muscle strength.

Results Retention rates did not differ between the MPT (89%) and wait-list groups (94%, $P = 1.0$). Sixteen of the 18 patients (89%) in the MPT group attended at least 80% of the treatment sessions. For the home exercise program, 89% of patients reported performing their home program at least once per day. Secondary outcomes support the rationale for conduct of a superiority randomized clinical trial.

Conclusion Based on retention and adherence rates, a larger randomized clinical trial appears feasible and warranted to assess treatment effects more precisely. Data from this feasibility study will inform our future clinical trial. Level of Evidence Therapy, level 2b-. J Orthop Sports Phys Ther 2016;46(6):452-461. Epub 26 Apr 2016. doi:10.2519/jospt.2016.6279.

KEYWORDS: femoroacetabular impingement; hip dysplasia; kinematics; movement system; strength

PMID:27117727

29. OA

Exercise and PT helps

BMC Musculoskelet Disord. 2016 May 27;17(1):236. doi: 10.1186/s12891-016-1088-6.

Significant improvements in pain after a six-week physiotherapist-led exercise and education intervention, in patients with osteoarthritis awaiting arthroplasty, in South Africa: a randomised controlled trial.

Saw MM¹, Kruger-Jakins T², Edries N³, Parker R⁴.

Author information

Abstract

BACKGROUND:

A major challenge facing those with late stage osteoarthritis is delayed surgery due to waiting lists. In South Africa patients wait years for a hip/knee arthroplasty. Affected patients require effective management to address their pain, especially while awaiting surgery. Existing literature is mostly available from high income countries exploring effects of interventions during short waiting periods. Research is warranted in low income countries where long waiting periods are common. This study explored the effects of a six-week physiotherapist-led exercise and education intervention on pain in this population.

METHODS:

A randomised controlled trial was performed at two public hospitals in South Africa. Ethical approval and informed consent was obtained. 74 participants from arthroplasty waiting lists were randomly allocated to an intervention (n = 35) or control group (n = 39). The intervention included six physiotherapist-led group-based sessions (two hours/week of education, exercise and relaxation). The control group received usual care. Data collection was conducted by blinded physiotherapists at baseline, week six, 12 and month six. The primary outcome was pain, measured by the Brief Pain Inventory. Additionally, participants completed an open-ended questionnaire at month six, to gain insight regarding the intervention. Analysis was by intention to treat using two-way analysis of variance and post-hoc Tukey comparisons. Answers to subjective questions were analysed according to common themes that emerged.

RESULTS:

The intervention group had significant improvements compared with the control group with moderate to large effect sizes (ES) on pain severity [week 6: p < 0.01, ES = 0.94, 95 % CI (0.45,1.41), month 6: p = 0.02, ES = 0.74, 95 % CI (0.26,1.2)] and moderate to large effects on pain interference [week 6: p < 0.01, ES = 1.2, 95 % CI (0.70,1.69), week 12: p = 0.04, ES = 0.68, 95 % CI (0.20,1.14), month 6: p < 0.01, ES = 0.98, 95 % CI (0.49,1.45)]. 53 % of participants reported that the intervention improved their pain.

CONCLUSIONS:

The intervention resulted in sustained significant improvements in pain severity and interference in patients with hip/knee osteoarthritis, awaiting arthroplasty compared with a control group. Additionally, participants' individual feedback supported observed significant improvements in pain. Such an intervention appears to be effective in managing pain in this population and should be incorporated into practice for appropriate patients. Further research is being conducted to explore long term and postoperative outcomes.

CLINICAL TRIAL REGISTRATION:

Pan African Clinical Trial Registry, PACTR201409000885765 , PACTR201507001186115 .

31. KNEE**Impairment based classification system****Validation of the movement system impairment-based classification in patients with knee pain**

Mehrnaz Kajbafvala, PT (PhD Candidate) Ismail Ebrahimi-Takamjani, PT, PhD, Mahyar Salavati, PT, PhD, Ahmad Saeedi, PhD, Zinat Ashnagar, PT (PhD Candidate), Mohammad Reza Pourahmadi, PT (PhD Candidate), Mohammad Jafar Shaterzadeh-Yazdi, PT, PhD, Ali Amiri, PT, PhD

Highlights

- Four factors related to MSI categories PLG, TFHypo and TFR were extracted.
- Recognizing 4 factors assigned evidences for the validity of the 3 MSI categories.
- Two new subscales of TFR category (TLR and FAdd/MR) were identified.
- A valid classification can be used to identify homogenous subgroups of knee problems.

Abstract**Background**

Categorizing patients with knee pain problems based on pathoanatomical sources has not proved to be the most effective method for directing physical therapy interventions. Movement system impairment (MSI) classification system may be an alternative in the assessment, diagnosis, and management of patients with knee pain. No previous study has been conducted to validate the proposed system in these patients.

Objective

To assess construct validity of the MSI classification system in patients with knee pain.

Design A cross-sectional methodological study.

Setting Rasul Akram Hospital.

Participants One hundred eighty subjects with knee pain aged 18-65 years.

Methods

The MSI classification recognizes seven categories of knee pain problems based on the findings from the symptoms and signs assessment. Three physical therapists examined subjects with knee pain. A principal component analysis (PCA) was used to derive proposed categories. Eigenvalues and a scree plot were also used to determine the factor retention.

Results

Four factors related to three proposed categories were extracted from the PCA. Two factors were related to tibiofemoral rotation (TFR) category. The other two factors were related to proposed categories patellar lateral glide (PLG) and tibiofemoral hypomobility (TFHypo).

Conclusion

The results provided evidence for the construct validity of three (TFR, PLG, and TFHypo) of the seven categories proposed by MSI classification. In addition TFR was subcategorized into two groups which were named as tibial lateral rotation (TLR) and femoral adduction/medial rotation (FAdd/MR) in the present study.

Sports knee injury rate

Am J Sports Med. 2016 Jun;44(6):1565-72. doi: 10.1177/0363546516630927. Epub 2016 Mar 3.

Sex Differences in the Incidence of Anterior Cruciate Ligament, Medial Collateral Ligament, and Meniscal Injuries in Collegiate and High School Sports: 2009-2010 Through 2013-2014.

Stanley LE1, Kerr ZY2, Dompier TP3, Padua DA4.
Author information

Abstract

BACKGROUND:

Previous research has noted sex-based differences in anterior cruciate ligament (ACL) injury rates in young athletes, while little is known about medial collateral ligament (MCL) and meniscal injury rates in this population. The objective of this study was to compare injury rates for traumatic knee injuries (ie, ACL, MCL, and meniscal injuries) in collegiate and high school (HS) varsity student-athletes across multiple sports.

HYPOTHESIS:

Knee injury rates vary by sex and across different sports and levels of competition.

STUDY DESIGN:

Descriptive epidemiology study.

METHODS:

Injury and athlete-exposure data were utilized from the National Athletic Treatment, Injury and Outcomes Network (NATION) and National Collegiate Athletic Association (NCAA) Injury Surveillance Program (ISP) during the 2009-2010 to 2013-2014 academic years. Analyses focused on ACL, MCL, and meniscal injuries. Injury rates and injury rate ratios (IRRs) with 95% CIs were calculated for basketball, ice hockey, lacrosse, soccer, and baseball/softball.

RESULTS:

The ACL injury rate was higher for female than male athletes at the collegiate (IRR, 2.49; 95% CI, 1.81-3.41) and HS (IRR, 2.30; 95% CI, 1.67-3.18) levels. At the collegiate level, the highest ACL IRR comparing female to male athletes was reported in softball/baseball (IRR, 6.61; 95% CI, 1.48-29.55). At the HS level, the highest ACL IRR was reported in basketball (IRR, 3.68; 95% CI, 1.91-7.10). The MCL injury rate was higher for female than male athletes at the HS level (IRR, 2.11; 95% CI, 1.25-3.56) but lower for female than male athletes at the collegiate level (IRR, 0.73; 95% CI, 0.59-0.92). The meniscal injury rate was lower for female than male athletes at the HS level (IRR, 0.47; 95% CI, 0.31-0.71), while no differences by sex were seen at the collegiate level (IRR, 1.35; 95% CI, 0.90-2.02).

CONCLUSION:

Knee injury rates varied by sex across 5 different sports in the HS and collegiate settings. Female athletes sustained ACL injuries at a higher rate than male athletes at both the HS and collegiate levels in these 5 sports; however, there was not a distinct sex disparity in MCL and meniscal injuries. Future studies should examine the rates of concomitant and recurrent injuries to inform injury prevention and rehabilitation programs.

32 A. KNEE/ACL**Function and ACL**

J Orthop Sports Phys Ther. 2016 Jun;46(6):477-82. doi: 10.2519/jospt.2016.6374. Epub 2016 Apr 26.

The Association Between Knee Confidence and Muscle Power, Hop Performance, and Postural Orientation in People With Anterior Cruciate Ligament Injury.

Ageberg E, Roos EM.

Abstract

Study Design Cross-sectional.

Background The association between muscle function and lack of knee confidence in people with anterior cruciate ligament (ACL) injury has not been well investigated. Such knowledge would help in the design of training programs for this population.

Objective To investigate associations between self-reported knee confidence and muscle function in patients with ACL injury.

Methods Cross-sectional data from 54 patients (mean age, 30 years; range, 20-39 years; 28% women) with ACL injury, treated with training and reconstructive surgery (n = 36) or training only (n = 18), were assessed 3 ± 1 years after injury. Univariate and multivariable ordinal regression analyses were conducted to test the association between the patient's knee confidence (question 3 from the Knee injury and Osteoarthritis Outcome Score as the dependent variable) and performance on tests of muscle power, hop performance, and postural orientation (test for substitution patterns score) as independent variables (absolute value on the injured leg, and limb symmetry index [LSI; injured leg/uninjured leg × 100] or absolute difference between the injured and uninjured legs).

Results Sixteen patients reported no trouble with lack of knee confidence, 24 mild trouble, 10 moderate trouble, and 4 severe or extreme trouble. Univariate analyses revealed significant associations between worse knee confidence and lower (worse) LSIs for knee extension power, vertical jump, and side hop, and worse test for substitution patterns scores. In the multivariable analysis, worse vertical jump LSI (P = .043) and worse side hop LSI (P = .012) significantly accounted for 25% of the variation in perceived knee confidence.

Conclusion Between-leg differences during demanding tasks are associated with knee confidence in individuals with ACL injury. J Orthop Sports Phys Ther 2016;46(6):477-482. Epub 26 Apr 2016. doi:10.2519/jospt.2016.6374.

KEYWORDS: knee injury; performance-based measures; quality of life; self-reported outcomes

Rate of ACL 68.6% per 1,000

Am J Sports Med. 2016 Jun;44(6):1502-7. doi: 10.1177/0363546516629944. Epub 2016 Feb 26.

Incidence of Anterior Cruciate Ligament Tears and Reconstruction: A 21-Year Population-Based Study.

Sanders TL¹, Maradit Kremers H², Bryan AJ³, Larson DR⁴, Dahm DL³, Levy BA³, Stuart MJ³, Krych AJ³.

Author information

Abstract

BACKGROUND:

The incidence of isolated anterior cruciate ligament (ACL) tears in the general population is not well defined.

PURPOSE/HYPOTHESIS:

The purpose of this study was to define the population-based incidence of ACL tears, describe trends in ACL injuries over time, and evaluate changes in the rate of surgical management. The hypothesis was that the incidence of ACL injury and the rate of subsequent ACL reconstruction increase over time.

STUDY DESIGN:

Cohort study; Level of evidence, 3.

METHODS:

The study population included 1841 individuals who were diagnosed with new-onset, isolated ACL tears (without concomitant ligament injury that required surgery) between January 1, 1990, and December 31, 2010. The complete medical records were reviewed to confirm diagnosis and to extract injury and treatment details. Age- and sex-specific incidence rates were calculated and adjusted to the 2010 US population. Poisson regression analyses were performed to examine incidence trends by age, sex, and calendar period.

RESULTS:

The overall age- and sex-adjusted annual incidence of ACL tears was 68.6 per 100,000 person-years. Incidence was significantly higher in male patients than in females (81.7 vs 55.3 per 100,000, $P < .001$). The incidence of isolated ACL tears decreased significantly over time in males ($P < .001$) but remained relatively stable in females. Age-specific patterns differed in male and female patients, with a peak in incidence (241.0 per 100,000) between 19 and 25 years in males and a peak in incidence (227.6 per 100,000) between 14 and 18 years in females. The rate of ACL reconstruction increased significantly over time in all age groups ($P < .001$).

CONCLUSION:

With an annual incidence of 68.6 per 100,000 person-years, isolated ACL tears remain a common orthopaedic injury. Differences in age-specific incidence trends in male and female patients may potentially reflect differences in sports participation patterns through the high school and college years. The significant increase in the rate of ACL reconstruction over time may reflect changing surgical indications or an increasing desire among patients to return to high levels of activity after ACL injury.

KEYWORDS: ACL reconstruction; ACL tear; epidemiology; incidence

ACL injuries in alpine skiers

Am J Sports Med. 2016 Jun;44(6):1508-14. doi: 10.1177/0363546516632332. Epub 2016 Mar 8.

Risk of Noncontact Anterior Cruciate Ligament Injuries Is Not Associated With Slope and Concavity of the Tibial Plateau in Recreational Alpine Skiers: A Magnetic Resonance Imaging-Based Case-Control Study of 121 Patients.

Blanke F¹, Kiapour AM², Haenle M³, Fischer J⁴, Majewski M⁵, Vogt S³, Camathias C⁶.
Author information

Abstract

BACKGROUND:

Anatomic features of the tibial plateau (ie, posterior slope and medial concavity) have been associated with an increased risk of anterior cruciate ligament (ACL) injuries. However, it remains unclear whether these findings translate to ACL injuries sustained during recreational alpine skiing.

PURPOSE:

To investigate the association in recreational alpine skiers between prominent morphological features of the tibial plateau (slope and concavity) and the risk of sustaining an ACL injury during a noncontact incident.

STUDY DESIGN:

Case-control study; Level of evidence, 3.

METHODS:

Magnetic resonance imaging data of 121 recreational alpine skiers (74 female, 47 male) after a noncontact knee injury were used for this study. Of these patients, 80 (71% female [n = 57]) had a complete unilateral ACL tear (rupture group), and 41 (41% female [n = 17]) had no indications of an ACL injury (intact group). Two blinded independent examiners measured the slopes of the tibial plateau in the sagittal and coronal planes along with the maximum depth of the medial tibial plateau. Measurements were compared between sexes and between groups using t tests. Logistic regression was used to assess the associations between quantified anatomic indices and the risk of ACL injuries.

RESULTS:

Within 121 study patients, female skiers had greater odds of an ACL tear compared with male skiers (odds ratio, 3.5; 95% CI, 1.6-7.8; $P < .001$). Female skiers were more likely to have a greater lateral tibial slope (LTS) ($P = .02$) and medial tibial slope (MTS) ($P = .02$) with a shallower medial tibial depth (MTD) ($P = .02$) compared with male skiers. No differences between sexes were observed in the coronal tibial slope (CTS) ($P = .97$). Male and female skiers as a combined group showed no associations between quantified anatomic indices and the risk of sustaining an ACL tear ($P > .10$). Likewise, no significant differences were observed between the intact versus rupture group in any of the quantified anatomic indices ($P > .10$). Similar findings were observed when the analyses were repeated on male and female skiers separately.

CONCLUSION:

Despite differences between sexes in knee anatomy and the injury risk, the sagittal and coronal slopes (LTS, MTS, CTS), as well as the concavity of the medial tibial plateau (MTD), were not associated with the risk of an ACL tear during a noncontact injury among recreational alpine skiers.

Deg. Changes after ACL

Am J Sports Med. 2016 Mar 10. pii: 0363546516631936.

Degenerative Changes in the Knee 2 Years After Anterior Cruciate Ligament Rupture and Related Risk Factors: A Prospective Observational Follow-up Study.

van Meer BL¹, Oei EH², Meuffels DE³, van Arkel ER⁴, Verhaar JA³, Bierma-Zeinstra SM³, Reijman M³.

Author information

Abstract

BACKGROUND: Anterior cruciate ligament (ACL) rupture is a well-known risk factor for development of knee osteoarthritis. Early identification of those patients at risk and early identification of the process of ACL rupture leading to osteoarthritis may aid in preventing the onset or progression of osteoarthritis.

PURPOSE: To identify early degenerative changes as assessed on magnetic resonance imaging (MRI) after 2-year follow-up in patients with a recent ACL rupture and to evaluate which determinants are related to these changes.

STUDY DESIGN: Cohort study; Level of evidence, 2.

METHODS: Included in this study were 154 adults aged between 18 and 45 years with acute ACL rupture diagnosed by physical examination and MRI, without previous knee trauma or surgery, and without osteoarthritic changes on radiographs. A total of 143 patients completed the 2-year follow-up, and the results in this study apply to these 143 patients. All patients were treated according to the Dutch guideline on ACL injury. Of the 143 patients, 50 patients were treated nonoperatively during the 2-year follow-up period. Main outcome was early degenerative changes assessed on MRI defined as progression of cartilage defects and osteophytes in tibiofemoral and patellofemoral compartments. Patient characteristics, activity level, functional instability, treatment type, and trauma-related variables were evaluated as determinants.

RESULTS: The median time between MRI at baseline and MRI at 2-year follow-up was 25.9 months (interquartile range, 24.7-26.9 months). Progression of cartilage defects in the medial and lateral tibiofemoral compartments was present in 12% and 27% of patients, and progression of osteophytes in tibiofemoral and patellofemoral compartments was present in 10% and 8% of patients, respectively. The following determinants were positively significantly associated with early degenerative changes: male sex (odds ratio [OR], 4.43; 95% CI, 1.43-13.66; P = .010), cartilage defect in the medial tibiofemoral compartment at baseline (OR, 3.66; 95% CI, 1.04-12.95; P = .044), presence of bone marrow lesions in the medial tibiofemoral compartment 1 year after trauma (OR, 5.19; 95% CI, 1.56-17.25; P = .007), joint effusion 1 year after trauma (OR, 4.19; 95% CI, 1.05-16.72; P = .042), and presence of meniscal tears (OR, 6.37; 95% CI, 1.94-20.88; P = .002). When the patients were categorized into 3 treatment groups (nonoperative, reconstruction <6 months after ACL rupture, and reconstruction ≥6 months after ACL rupture), there was no significant relationship between the treatment options and the development of early degenerative changes.

CONCLUSION: Two years after ACL rupture, early degenerative changes were assessed on MRI. Concomitant medial cartilage defect and meniscal injury, male sex, persistent bone marrow lesions in the medial tibiofemoral compartment, and joint effusion are risk factors for degenerative changes.

33. MENISCUS[Return to play](#)

Knee Surg Sports Traumatol Arthrosc. 2016 Jun;24(6):1997-2001. doi: 10.1007/s00167-014-3285-x. Epub 2014 Sep 27.

Return to play after all-inside meniscal repair in competitive football players: a minimum 5-year follow-up.

Alvarez-Diaz P^{1,2,3,4}, Alentorn-Geli E⁵, Llobet F^{6,7}, Granados N⁶, Steinbacher G⁶, Cugat R^{6,8,9}.
Author information

Abstract

PURPOSE:

The purpose of this study was to report the mid-to-long-term return to sports after all-inside meniscal repair in competitive football players.

METHODS:

All football players undergoing all-inside meniscal repair with a minimum Tegner activity score of 9 and minimum follow-up of 5 years were eligible for inclusion. Patients were excluded if: (a) they had ipsilateral or contralateral: meniscectomy, posterior cruciate ligament tear, multi-ligament knee injuries, osteotomies, or meniscal transplant (b) they had meniscal tears in the anterior horn, and (c) they had bucket-handle tears. All patients included were contacted by phone and asked for current sport status or Tegner score. Preoperative Tegner scores were collected from the medical charts.

RESULTS:

All patients (n = 29) were men with a median (range) age of 27 (18-37) years and a follow-up of 6 (5-8) years. All meniscal injuries were complete and longitudinal tears. The median preinjury Tegner activity score was 9 (range 9-10). Two patients required revision arthroscopy (6.7 %) with partial meniscectomy before being able to return to competitive football due to suture failure. Twenty-six patients (89.6 %) returned to the same level of competition after recovering from surgery. At the last follow-up, 13 patients (45 %) were able to continue playing football at any level, and 8 (28 %) of them were able to return to the same pre-injury competitive level. The main reasons for the decreased level of activity (from competitive to recreational) or to give up football were job-related or changes in their personal life situation, but were not related to knee or meniscal disorders. Fourteen patients underwent meniscal repair alone, whereas 15 patients had an associated ACL reconstruction procedure. There were no significant differences in the collected variables between both subgroups.

CONCLUSIONS:

All-inside meniscal repair allows for excellent results with regard to return-to-play rates in competitive football. However, only half of the patients are still playing football in the mid-to-long-term follow-up, although reasons to give up football are not related to knee or meniscal disorders.

LEVEL OF EVIDENCE: Case series, Level-IV.

KEYWORDS: Football; Meniscal repair; Meniscal tear; Return to sports

34. PATELLA

Exercise and PF pain

BMC Musculoskelet Disord. 2016 Jun 2;17(1):242. doi: 10.1186/s12891-016-1103-y.

Efficacy of live feedback to improve objectively monitored compliance to prescribed, home-based, exercise therapy-dosage in 15 to 19 year old adolescents with patellofemoral pain- a study protocol of a randomized controlled superiority trial (The XRCISE-AS-INSTRUCTed-1 trial).

Riel H^{1,2}, Matthews M³, Vicenzino B³, Bandholm T⁴, Thorborg K⁵, Rathleff MS^{6,7,8}.
Author information

Abstract

BACKGROUND:

Patellofemoral pain is one of the most frequent knee conditions among adolescents with a prevalence of 7 %. Evidence-based treatment consists of patient education combined with hip and quadriceps strengthening. Recent evidence suggests that a large proportion of adolescents does not follow their exercise prescription, performing too few repetitions or too fast below the prescribed time under tension. Live feedback, such as a metronome or exercise games, has previously shown promising results in improving the quality of exercises. The aim of this study is to investigate if live feedback from a sensor (BandCizer™) and an iPad will improve the ability of adolescents with PFP to perform exercises as prescribed.

METHODS:

This study is a randomized, controlled, participant-blinded, superiority trial with a 2-group parallel design. Forty 15 to 19 year old adolescents with patellofemoral pain will be randomized to receive either live visual and auditory feedback on time under tension or no feedback on time under tension during a 6-week intervention period. Adolescents will be instructed to perform three elastic band exercises. Feedback will be provided by BandCizer™ and an iPad. The adolescents perform the exercises twice a week unsupervised and once a week during a supervised group training session. The primary outcome will be the mean deviation of the prescribed time under tension per repetition in seconds during the course of the intervention.

DISCUSSION:

Low compliance is a major problem among adolescents with patellofemoral pain. Providing the adolescents with real time feedback on time under tension from a sensor and an iPad could potentially help the adolescents perform the exercises as prescribed. This may increase the total exercise dosage they receive during treatment which may help improve patient outcomes.

TRIAL REGISTRATION: Registered at ClinicalTrials.gov (identifier: [NCT02674841](https://clinicaltrials.gov/ct2/show/study/NCT02674841)) on February 4(th) 2016.

KEYWORDS: Adolescents; Compliance; Exercise; Feedback; Patellofemoral pain; Time under tension

PMID: 27250984

37. OSTEOARTHRITIS/KNEE**High dietary fat intake increases OA progression****Dietary fat and progression of knee osteoarthritis dietary fat intake and radiographic progression of knee osteoarthritis: Data from the osteoarthritis initiative**

Arthritis Care & Research , 06/07/2016

ABSTRACT

Objectives: Few studies have investigated the role of dietary factors on knee osteoarthritis (OA) progression. We examined the prospective association of dietary fat intake with radiographic progression of knee OA.

Methods: In the Osteoarthritis Initiative, 2092 participants with radiographic knee OA and having baseline dietary data were followed at yearly intervals up to 48 months. Dietary intakes of fatty acids were assessed with the Block Brief Food Frequency Questionnaire. To evaluate radiographic progression of knee OA, we used quantitative joint space width (JSW) between the medial femur and tibia of the knee based on fixed-flexion posterior-anterior radiographs. Linear mixed models for repeated measures were used to test the association between dietary fat and JSW loss over time.

Results: We observed significant positive relationships of total fat and saturated fatty acids (SFA) intakes with JSW loss. With increasing quartiles of total fat intake, the JSW decreases over 48 months were 0.26mm, 0.27mm, 0.31mm and 0.35 mm respectively (P trend=0.02). Similar association was observed between SFA intake and JSW loss. In contrast, higher intakes of mono- and poly-unsaturated fatty acids (MUFA, PUFA), and higher ratio of PUFA to SFA were associated with a reduced JSW loss.

Conclusion: High intakes of total fat and SFA may be associated with increased structural knee OA progression, while MUFA and PUFA may reduce radiographic progression. Replication of these novel findings in other prospective studies are needed to confirm if reduction in SFA intake and increase in unsaturated fat intake lead to delayed knee OA progression. This article is protected by copyright. All rights reserved.

Synovitis in OA knee

Osteoarthritis Cartilage. 2016 Jun 1. pii: S1063-4584(16)30111-X. doi: 10.1016/j.joca.2016.05.021.

Evolution of synovitis in osteoarthritic knees and its association with clinical features.

de Lange-Brokaar BJ¹, Ioan-Facsinay A², Yusuf E², Kroon HM³, Zuurmond AM⁴, Stojanovic-Susulic V⁵, Nelissen RG⁶, Bloem JL³, Kloppenburg M⁷.

Author information

Abstract

OBJECTIVE:

To investigate the course of synovitis on contrast-enhanced MRI in osteoarthritic knees over 2 years, and its association with pain and cartilage deterioration.

DESIGN:

Consecutive patients (n=39, mean age 61 years, 79% woman, median (range) BMI 29 (24-48) kg/mm²) with clinical OA were included. Baseline and follow-up contrast-enhanced MR images (3T) were scored paired in chronological order for synovitis (semi-quantitatively at 11 sites (range 0-22)), cartilage deterioration and bone marrow lesions (BML) (semi-quantitatively according to KOSS). Changes in sum scores were calculated. Cartilage deterioration was defined as change of ≥ 2 above the smallest detectable change (SDC). Pain was assessed by standardized questionnaires. ANCOVA and linear regression models were used to investigate association between synovitis change and cartilage deterioration and between synovitis change or cartilage deterioration and change in pain.

RESULTS:

The total synovitis score did not change over 2 years (mean change 0.2 (SD 3.2), although changes in individual patients were observed. Cartilage deterioration was observed in 51% of patients. Synovitis change score was lower in patients without compared to patients with cartilage deterioration, taking BML change in account (mean difference -2.1(-4.1- -0.1)). Change in synovitis was not associated with change in pain, whereas cartilage deterioration was associated with change in ICOAP constant pain in adjusted models (B (95%CI) 2.8 (0.4-5.3)).

CONCLUSIONS:

In individual patients synovitis fluctuates during disease course. Synovitis change was not associated with change in pain. Increase in synovitis is associated with cartilage deterioration, suggesting a role for synovitis as a target for disease-modifying treatment.

KEYWORDS: BML; MRI; cartilage; osteoarthritis; progression; synovitis
PMID: 27262546

Weight bearing changes

Knee. 2016 May 27. pii: S0968-0160(16)00081-8. doi: 10.1016/j.knee.2016.02.019.

Relationships between the center of pressure and the movements of the ankle and knee joints during the stance phase in patients with severe medial knee osteoarthritis.

Fukaya T¹, Mutsuzaki H², Okubo T³, Mori K³, Wadano Y².

Author information

Abstract

BACKGROUND:

The knee joint movement during the stance phase is affected by altered ankle movement and the center of pressure (COP). However the relationships between changes in the center of pressure (COP) and the altered kinematics and kinetics of the ankle and knee joints in patients with osteoarthritis (OA) of the knee are not well understood. The purpose of this study was to determine the relationships between changes in the COP and the altered kinematic and kinetic variables in ankle and knee joints during the stance phase in patients with medial knee OA.

METHODS:

Fourteen patients with knee OA (21 knees) and healthy subjects were assessed by gait analysis using an eight-camera motion analysis system to record forward and lateral shifts in the COP and the angle and net internal moments of the knee and ankle joint. Spearman rank-correlation coefficients were used to determine the relationship between these results.

RESULTS:

In knees with medial OA, lateral shifts in the COP were correlated with knee flexion angle. Lateral shifts in the COP were correlated with the second peak of the knee extensor moment and correlated with the knee abductor moment.

CONCLUSIONS:

In patients with medial knee OA, lateral shifts in the COP were negatively correlated with the kinematic and kinetic variables in the sagittal plane of the knee joints. Controlling such lateral shifts in the COP may thus be an effective intervention for mechanical loads on the knee during the stance phase in patients with knee OA.

KEYWORDS: Ankle; Center of pressure; Correlation; Knee; Moment

PMID:27242284

Elderly impact

Osteoarthritis as a cause of locomotive syndrome: Its influence on functional mobility and activities of daily living

Clinical Reviews in Bone and Mineral Metabolism , 05/31/2016Ishijima M, et al.

Recent epidemiological studies uncovered that the one-fourth of elderly individuals who require special assistance or nursing care have locomotive disorders in Japan. Osteoarthritis of the knee (knee OA) and hip (hip OA), and osteoporosis and spinal canal stenosis due to spondylosis are three major locomotive disorders that cause elderly individuals require special assistance or nursing care. In this review, the authors focus on the effects of knee and hip OA on the lives of elderly individuals and the recent advantages in clinical research on the pathophysiology and management of these diseases.

39 B. SHOES**Minimalist running shoes**

Am J Sports Med. 2016 Jun;44(6):1439-46. doi: 10.1177/0363546516630926. Epub 2016 Mar 7.

Minimalist Running Shoes and Injury Risk Among United States Army Soldiers.

Grier T¹, Canham-Chervak M², Bushman T², Anderson M², North W³, Jones BH².

Author information

Abstract

BACKGROUND:

Minimalist running shoes (MRS) are lightweight, are extremely flexible, and have little to no cushioning. It has been thought that MRS will enhance running performance and decrease injury risk.

PURPOSE:

To compare physical characteristics, fitness performance, and injury risks associated with soldiers wearing MRS and those wearing traditional running shoes (TRS).

STUDY DESIGN:

Case series; Level of evidence, 4.

METHODS:

Participants were men in a United States Army brigade (N = 1332). Physical characteristics and Army Physical Fitness Test data were obtained by survey. Fitness performance testing was administered at the brigade, and the types of footwear worn were identified by visual inspection. Shoe types were categorized into 2 groups: TRS (stability, cushioning, and motion control) and MRS. Injuries from the previous 12 months were obtained from the Defense Medical Surveillance System. A t test was used to determine mean differences between personal characteristics, training, and fitness performance metrics by shoe type. Hazard ratios and 95% CIs were calculated to determine injury risk by shoe type, controlling for other risk factors.

RESULTS:

A majority of soldiers wore cushioning shoes (57%), followed by stability shoes (24%), MRS (17%), and motion control shoes (2%). Soldiers wearing MRS were slightly younger than those wearing TRS (P < .01); performed more push-ups, sit-ups, and pull-ups (P < .01); and ran faster during the 2-mile run (P = .01). When other risk factors were controlled, there was no difference in injury risk for running shoe type between soldiers wearing MRS compared with TRS.

CONCLUSIONS:

Soldiers who chose to wear MRS were younger and had higher physical performance scores compared with soldiers wearing TRS. When these differences are controlled, use of MRS does not appear to be associated with higher or lower injury risk in this population.

KEYWORDS: exercise; footwear; performance; shod

40. ANKLE SPRAINS AND INSTABILITY**Vertical drop**

Phys Ther. 2016 Feb 18.

Coordination and Symmetry Patterns During the Drop Vertical Jump in People With Chronic Ankle Instability and Lateral Ankle Sprain Copers.

Doherty C¹, Bleakley C², Hertel J³, Caulfield B⁴, Ryan J⁵, Sweeney K⁶, Patterson MR⁷, Delahunt E⁸.

Author information

Abstract

BACKGROUND:

The drop vertical jump (DVJ) task has previously been used to identify movement patterns associated with a number of injury types. However, no current research exists evaluating people with chronic ankle instability (CAI) compared with people coping with lateral ankle sprain (LAS) (referred to as "LAS copers") during this task.

OBJECTIVE:

The aim of this study was to identify the coping movement and motor control patterns of LAS copers in comparison with individuals with CAI during the DVJ task.

DESIGN:

This was a case-control study.

METHODS:

Seventy individuals were recruited at convenience within 2-weeks of sustaining a first-time acute LAS injury. One year following recruitment, these individuals were stratified into 2 groups: 28 with CAI and 42 LAS copers. They attended the testing laboratory to complete a DVJ task. Three-dimensional kinematic and sagittal-plane kinetic profiles were plotted for the lower extremity joints of both limbs for the drop jump phase (phase 1) and drop landing phase (phase 2) of the DVJ. The rate of impact modulation relative to body weight during both phases of the DVJ also was determined.

RESULTS:

Compared with LAS copers, participants with CAI displayed significant increases in hip flexion on their "involved" limb during phase 1 of the DVJ (23° vs 18°) and bilaterally during phase 2 (15° vs 10°). These movement patterns coincided with altered moment-of-force patterns at the hip on the "uninvolved" limb.

LIMITATIONS:

It is unknown whether these movement and motor control patterns preceded or occurred as a result of the initial LAS injury.

CONCLUSIONS:

Participants with CAI displayed hip-centered changes in movement and motor control patterns during a DVJ task compared with LAS copers. The findings of this study may give an indication of the coping mechanism underlying outcome following initial LAS injury.

Postural changes

Effect of cognitive task on postural control of the patients with chronic ankle instability during single and double leg standing

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Physical Therapy Department, School of Rehabilitation, Tehran University of Medical Sciences, Tehran, Iran

Summary

Objective

The aim of this study was to investigate the effect of a cognitive task on standing postural control of the injured and non-injured leg of athletes with chronic ankle instability.

Methods

Postural stability was measured by center of pressure parameters while chronic ankle instability patients ($n = 8$) randomly performed single and double leg standing in isolation or concurrently with a digit-backward cognitive task.

Results

After performing a concurrent cognitive task, anteroposterior sway significantly decreased in injured leg ($P < 0.05$) and area significantly decreased in both injured and non-injured legs ($P < 0.05$). There was no significant difference in all center of pressure parameters between injured and non-injured legs.

Conclusion

The findings confirm the effect of a concurrent digit-backwards memory task on single leg standing balance in chronic ankle instability patients but the response to cognitive loading was not significantly different between the injured and non-injured legs.

Diaphragmatic changes in ankle instability

Med Sci Sports Exerc. 2016 May 26.

Diaphragm Contractility in Individuals with Chronic Ankle Instability.

Terada M¹, Kosik KB, McCann RS, Gribble PA.
Author information

Abstract

INTRODUCTION/PURPOSE:

Previous investigations have identified impaired trunk and postural stability in individuals with chronic ankle instability (CAI). The diaphragm muscle contributes to trunk and postural stability by modulating the intra-abdominal pressure. A potential mechanism that could help to explain trunk and postural stability deficits may be related to altered diaphragm function due to supraspinal sensorimotor changes with CAI. The purpose of this study was to examine the diaphragm contractility in individuals with CAI and healthy controls.

METHODS:

Twenty-seven participants with self-reported CAI and 28 healthy control participants volunteered. A portable ultrasound unit was used to visualize and measure the right and left hemi-diaphragm thickness at the end of resting inspiration and expiration in supine while breathing quietly. The diaphragm movement was imaged and recorded on B-mode ultrasonography. The degree of diaphragm contractility was calculated from the mean of three images from the end of resting inspiration and expiration. Independent t-tests were utilized to compare the degree of diaphragm thickness of right and left sides between the CAI and control groups.

RESULTS:

The CAI group had a smaller degree of left hemi-diaphragm contractility compared to the control group ($p=0.03$). There was no between-group difference in other diaphragm variables.

CONCLUSION:

Individuals with CAI appear to have altered diaphragm contractility, which may be an illustration of diaphragm dysfunction and central nervous system changes in CAI population. The association between CAI and altered diaphragm contractility provides clinicians a more comprehensive awareness of proximal impairments associated with CAI. Future investigation is needed to determine if altered contractility of the diaphragm contributes to functional impairments, activity limitations, and participant restrictions commonly observed in patients with CAI.

PMID: 27232242

42. PLANTAR SURFACE**Exercise and PF**

June 2016 Volume 23, Pages 76–82

Effect of stretching with and without muscle strengthening exercises for the foot and hip in patients with plantar fasciitis: A randomized controlled single-blind clinical trial

Danilo H. Kamonseki Geiseane A. Gonçalves Liu C. Yi Império Lombardi Júnior

Highlights

- Daily stretching exercises are effective at improving pain and function.
- Stretching with strengthening did not achieve better results than stretching alone.
- The three treatment groups had high drop-out rate.
- Natural progression cannot be inferred because of the lack of non-treatment group.

Abstract

Objective

To compare the effect of stretching with and without muscle strengthening of the foot alone or foot and hip on pain and function in patients with plantar fasciitis.

Design

Single blind randomized controlled trial.

Method

Eighty-three patients with plantar fasciitis were allocated to one of three treatment options for an eight-week period: Foot Exercise Group (FEG – extrinsic and intrinsic foot muscles), Foot and Hip Exercise Group (FHEG – abductor and lateral rotator muscles) and Stretching Alone Exercise Group (SAEG). Main measures: A visual analog scale for pain, the Foot and Ankle Outcome Score and the Star Excursion Balance Test. All evaluations were performed before treatment and after the last treatment session.

Results

Improvements were found in all groups regarding the visual analog scale, the pain, activities of daily living, sports and recreation, quality of life ($p < 0.001$) and other symptoms ($p < 0.01$) subscales of the Foot and Ankle Outcome Score as well as posterolateral movement, posteromedial movement and composite score ($p < 0.001$) on the Star Excursion Balance Test. No time-group interactions were found for any of the variables ($p > 0.05$).

Conclusions

All three exercise protocols analyzed led to improvements at eight-week follow-up in pain, function and dynamic lower limb stability in patients with plantar fasciitis.

45 A. MANUAL THERAPY LUMBAR & GENERAL

Maitland oscillations

June 2016 Volume 23, Pages 83–89

An investigation into the effects of applying a lumbar Maitland mobilisation at different frequencies on sympathetic nervous system activity levels in the lower limb

Victoria Piekarz Jo Perry

Highlights

- Maitland lumbar PA mobilisation at 2 Hz creates sympathoexcitatory responses of 12%.
- An atypical frequency mobilisation at 3 Hz results in responses in the order of 20%.
- Effects at 3 Hz are at least comparable to effects of a standard 2 Hz intervention.
- Further research into high frequency manual therapy interventions is recommended.

Abstract

Background

Oscillatory Maitland mobilisations are commonly used in the management of lower back pain with research suggesting that mobilisations at 2 Hz may excite the sympathetic nervous system (SNS) more than sustained pressure glides or 0.5 Hz oscillatory mobilisations.

Objectives

Investigate the effects of increasing the oscillation frequency greater than 2 Hz.

Design

A double-blind, placebo-controlled, independent group experimental design.

Method

Sixty healthy male volunteers were randomly allocated to one of four groups; a control group (no contact), placebo group (sustained static pressure to L4 vertebra), and two intervention groups receiving a centrally applied postero-anterior mobilisation applied at either 2 Hz or 3 Hz for three 1-min periods. SNS activity was recorded by a blinded data collector by continuous skin conductance (SC) activity levels in the feet using a Biopac MP35 electrodermal amplifier. Participants were blinded to their group allocation which was further validated by a post-experiment questionnaire ($p > 0.05$).

Results

The magnitude of sympathoexcitatory response was greatest for the 3 Hz mobilisation (20%) compared with the 2 Hz mobilisation (12%), placebo (−1%) and control conditions (3%). Only the 3 Hz group demonstrated statistical significance when compared to placebo intervention ($p = 0.002$), and the control group ($p = 0.02$).

Conclusion

SC changes reflect those of previous studies using lumbar mobilisations at 2 Hz, however the 3 Hz group was found to have a greater magnitude of effect worthy of consideration within research and clinical settings. These findings provide preliminary evidence to support the use of 3 Hz oscillatory mobilisations to affect a greater magnitude of SNS activity than those previously reported (0.5, 1.5 and 2 Hz).

Adverse events

The reporting of adverse events following spinal manipulation in randomized clinical trials – a systematic review

Lindsay M Gorrell, BChiroSc, MChiroprac, MRes Roger M Engel, DO, DC, PhD Benjamin Brown, BChiroSc, MChiroprac, PhD Reidar P Lystad, MChiroprac, PhD

Background context - Spinal manipulative therapy (SMT) is commonly used to treat spinal disorders. While clinical practice guidelines recommend the use of SMT in the treatment of neck and back disorders, concerns exist about the nature and incidence of adverse events associated with the intervention. Although comprehensive reporting of adverse events in clinical trials could allow for accurate incidence estimates through meta-analysis, it is not clear the extent to which randomized clinical trials (RCTs) that involve SMT are currently reporting adverse events.

Purpose - To describe the extent of adverse events reporting in published RCTs involving SMT, and to determine whether the quality of reporting has improved since publication of the 2010 CONSORT statement.

Study design - Systematic literature review.

Methods - The Physiotherapy Evidence Database (PEDro) and Cochrane Central Register of Controlled Trials (CENTRAL) were searched for RCTs involving SMT. Domains of interest included: classifications of adverse events; completeness of adverse events reporting; nomenclature used to describe the events; methodological quality of the study and details of the publishing journal. Data were analyzed using descriptive statistics. Frequencies and proportions of trials reporting on each of the specified domains above were calculated. Differences in proportions between pre- and post-CONSORT trials were calculated with 95% confidence intervals using standard methods, and statistical comparisons were analyzed using tests for equality of proportions with continuity correction. There was no funding obtained for this study. The authors declare no conflict of interest.

Results - 7,398 records were identified in the electronic searches, of which 368 articles were eligible for inclusion in this review. Adverse events were reported in 140 (38.0%) articles. There was a significant increase in the reporting of adverse events post-CONSORT ($p = 0.001$). There were 2 major adverse events reported (0.3%). Only 22 articles (15.7%) reported on adverse events in the abstract. There were no differences in reporting of adverse events post-CONSORT for any of the chosen parameters.

Conclusions - Although there has been an increase in reporting adverse events since the introduction of the 2010 CONSORT guidelines, SMT.

Ethics - Ethics clearance was not required, spinal manipulative therapy, manipulation, spinal, literature review, randomized controlled trials
the current level should be seen as inadequate and unacceptable. We recommend that authors adhere to the CONSORT statement when reporting adverse events associated with RCTs that for this research.

Tinnitus

June 2016 Volume 23, Pages 106–113

**Cervicogenic somatosensory tinnitus: An indication for manual therapy plus education?
Part 2: A pilot study**

Rob A.B. Oostendorp Iem Bakker Hans Elvers Emilia Mikolajewska Sarah Michiels Willem De Hertogh Han Samwel

Highlights

- Evaluation of somatosensory tinnitus should be a regular feature in tinnitus patients.
- Manual therapists have a role in the management of patients with somatosensory tinnitus.
- Additional evidence is needed to verify the effectiveness of manual therapy.
- Verification of manual therapy with tinnitus education is needed.

Abstract

Objectives

The aim of this study was to evaluate the efficacy of Manual Therapy Utrecht (MTU) plus education in patients with cervicogenic somatosensory tinnitus (CeT).

Study design

Pretest–posttest design.

Method

Five hundred and six patients were referred or referred themselves. A subgroup of patients was identified with CeT, and within this a subgroup with tinnitus sensitization (TS). Two CeT groups were created based on the presence or absence of TS. Both groups underwent manual therapy combined with tinnitus education. Tinnitus intensity (VAS-tin 0–100 mm) was the primary outcome measure. Number of treatments and adverse effects were the secondary outcome measures.

Results

A total of 122 patients with CeT (24.1%) were included (average age 53.3 years [± 9.8], female 38.5% and duration of tinnitus 7.3 years [± 8.9]). Patients were divided into two groups: 55 patients (45.1%) with TS (CeT + TS group) and 67 patients (54.9%) without TS (CeT – TS group). Pretest to posttest differences on the VAS-tin were statistically significant within both groups (CeT – TS group: difference VAS-tin 5.9 [$p = 0.01$]; CeT + TS group: difference VAS-tin 18.2 [$p = 0.00$]), and between the groups in favor of the CeT + TS group (difference VAS-tin 12.3 [$p = 0.01$]). Pretest to posttest differences were clinically significant for the CeT + TS group (difference VAS-tin 18.2 [MCIC = ≥ 10 mm VAS-tin]) and between the groups (difference VAS-tin 12.3 in favor of the CeT + TS group). The average number of treatment sessions was 9.6 (± 2.6) for the CeT – TS group and 10.3 (± 2.5) for the CeT + TS group, a non-significant difference. There were no adverse effects in either group.

Conclusions

Despite its limitations, this study provides valuable information on both the characteristics of patients with CeT and TS in a Dutch primary care manual therapy practice and on the potential effectiveness of MTU combined with tinnitus education for the subgroup of CeT + TS patients.

45 D. MANUAL THERAPY EXTREMITIES**MT subacromial impingement**

Lasers Med Sci. 2016 May 25.

Short-term effects of high-intensity laser therapy, manual therapy, and Kinesio taping in patients with subacromial impingement syndrome.

Pekyavas NO¹, Baltaci G².
Author information

Abstract

Subacromial impingement syndrome (SAIS) is a major contributing factor of shoulder pain; and treatment approaches (Kinesio® taping [KT], Exercise [EX], manual therapy [MT], and high-intensity laser therapy [HILT]) have been developed to treat the pain. The key objective of this study was to compare the effects of KT, MT, and HILT on the pain, the range of motion (ROM), and the functioning in patients with SAIS. Seventy patients with SAIS were randomly divided into four groups based on the treatment(s) each group received [EX (n = 15), KT + EX (n = 20), MT + KT + EX (n = 16), and MT + KT + HILT + EX (n = 19)]. All the patients were assessed before and at the end of the treatment (15th day). The main outcome assessments included the evaluation of severity of pain by visual analogue scale (VAS) and shoulder flexion, abduction, and external rotation ROM measurements by a universal goniometry. Shoulder pain and disability index (SPADI) was used to measure pain and disability associated with shoulder pathology. Statistically significant differences were found in the treatment results of all parameters in MT + KT + EX and HILT + MT + KT + EX groups ($p < 0.05$). When the means of ROM and SPADI results of three groups were compared, statistically significant differences were found between all the groups ($p < 0.05$). These differences were significant especially between the groups MT + KT + EX and KT + EX ($p < 0.05$) and HILT + MT + KT + EX and KT + EX ($p < 0.05$).

HILT and MT were found to be more effective in minimizing pain and disability and increasing ROM in patients with SAIS. Further studies with follow-up periods are required to determine the advantages of these treatments conclusively.

KEYWORDS: Laser; Manual therapy; Shoulder; Taping
PMID: 27220527

48 A. STM**HA and muscle soreness**

J Headache Pain. 2016 Dec;17(1):57. doi: 10.1186/s10194-016-0648-3. Epub 2016 May 27.

Headache: an important factor associated with muscle soreness/pain at the two-year follow-up point among patients with major depressive disorder.

Hung CI^{1,2}, Liu CY^{1,2}, Yang CH³, Wang SJ^{4,5}.

Author information

Abstract

BACKGROUND:

No study has compared the associations of headache, anxiety, and depression at baseline with muscle soreness or pain (MS/P) at baseline and at the two-year follow-up point among outpatients with major depressive disorder (MDD). This study aimed to investigate the above issue.

METHODS:

This study enrolled 155 outpatients with MDD at baseline, and 131 attended a two-year follow-up appointment. At baseline, migraine was diagnosed based on the International Classification of Headache Disorders, 2(nd) edition. MDD and anxiety disorders were diagnosed using the Structured Clinical Interview for DSM-IV-TR. The visual analog scale was used to evaluate the intensities of headache and MS/P in the neck, shoulder, back, upper limbs, and lower limbs. Depression and anxiety were evaluated using the Hospital Anxiety and Depression Scale. Multiple linear regressions were used to compare the associations of these factors with MS/P.

RESULTS:

Compared with anxiety disorders, migraine was more strongly associated with MS/P in all areas at baseline and in the upper and lower limbs at follow-up. Headache intensity at baseline was the factor most strongly associated with MS/P in all areas at baseline and follow-up after controlling for depression and anxiety. Headache intensity at baseline predicted MS/P at baseline and follow-up.

CONCLUSIONS:

Migraine and headache intensity are important factors related to MS/P at baseline and follow-up among patients with MDD. Integrating depression and headache treatment might be indicated to improve MS/P.

KEYWORDS: Anxiety; Depression; Migraine; Muscle soreness; Pain

48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE**Effectiveness of acupuncture for MS disorders**

J Orthop Sports Phys Ther. 2016 Jun;46(6):409-29. doi: 10.2519/jospt.2016.6270. Epub 2016 Apr 26.

Effectiveness of Acupuncture Therapies to Manage Musculoskeletal Disorders of the Extremities: A Systematic Review.

Cox J, Varatharajan S, Côté P, Optima Collaboration.

Abstract

Study Design Systematic review. **Background** Little is known about the effectiveness of acupuncture therapies for musculoskeletal disorders. **Objective** To assess the effectiveness and safety of acupuncture therapies for musculoskeletal disorders of the extremities. **Methods** We searched MEDLINE, Embase, CINAHL, PsycINFO, and Cochrane Central Register of Controlled Trials from 1990 to 2015 for randomized controlled trials, cohort studies, and case-control studies. Eligible studies were appraised with Scottish Intercollegiate Guidelines Network criteria. A best-evidence synthesis was performed to synthesize results from included studies with a low risk of bias. A sensitivity analysis was conducted to determine the impact of excluding studies with a high risk of bias. **Results** The search revealed 5180 articles; 15 were included (10 with a low risk of bias, 5 with a high risk of bias). The studies with a low risk of bias suggested that (1) traditional needle acupuncture was superior to oral steroids (1 RCT, n = 77) and may be superior to vitamin B1/B6 supplements (1 RCT, n = 64) for carpal tunnel syndrome (CTS), and was superior to exercise for Achilles tendinopathy (1 RCT, n = 64). Traditional needle acupuncture did not provide important benefit over placebo for upper extremity pain (1 RCT, n = 128), or no intervention for patellofemoral pain (1 RCT, n = 75), and was inconclusive for shoulder pain (2 RCTs, n = 849), suggesting no important benefit; (2) electroacupuncture may be superior to placebo for shoulder injuries (1 RCT, n = 130) and may not be superior to night splinting for persistent CTS (1 RCT, n = 78); and (3) dry needling may be superior to placebo for plantar fasciitis (1 RCT, n = 84). Sensitivity analysis suggests that including studies with a high risk of bias might have impacted the evidence synthesis in support of managing shoulder pain with traditional needle acupuncture, and that would suggest traditional needle acupuncture may be effective for lateral epicondylitis and piriformis syndrome. **Conclusion** Evidence for the effectiveness of acupuncture for musculoskeletal disorders of the extremities was inconsistent. Traditional needle acupuncture may be beneficial for CTS and Achilles tendinopathy, but not for nonspecific upper extremity pain and patellofemoral syndrome. Electroacupuncture may be effective for shoulder injuries and may show similar effectiveness to that of night wrist splinting for CTS. The effectiveness of dry needling for plantar fasciitis is equivocal. **Level of Evidence** Therapy, 1a-. J Orthop Sports Phys Ther 2016;46(6):409-429. Epub 26 Apr 2016. doi:10.2519/jospt.2016.6270.

KEYWORDS: acupuncture therapy; dry needling; electroacupuncture; lower extremity; upper extremity

PMID: 27117725

Twitch response**The association between dry needling-induced twitch response and change in pain and muscle function in patients with low back pain: A quasi-experimental study**

Physiotherapy, 05/31/2016 Koppenhaver SL, et al.

The aim of this study is to assess the association between dry needling–induced twitch response and change in pain, disability, nociceptive sensitivity, and lumbar multifidus muscle function, in patients with low back pain (LBP). The twitch response during dry needling might be clinically relevant, but should not be considered necessary for successful treatment.

Methods

- Quasi–experimental study.
- Department of Defense academic institution.
- Sixty–six patients with mechanical LBP (38 men, 28 women, age: 41.3 [9.2] years).
- Dry needling treatment to the lumbar multifidus muscles between L3–L5 bilaterally.
- Examination procedures included numeric pain rating, the Modified Oswestry Disability Index, pressure algometry, and real–time ultrasound imaging assessment of lumbar multifidus muscle function before and after dry needling treatment.
- Pain pressure threshold (PPT) was used to measure nociceptive sensitivity.
- The percent change in muscle thickness from rest to contraction was calculated to represent muscle function.
- Participants were dichotomized and compared based on whether or not they experienced at least one twitch response on the most painful side and spinal level during dry needling.

Results

- Participants experiencing local twitch response during dry needling exhibited greater immediate improvement in lumbar multifidus muscle function than participants who did not experience a twitch (thickness change with twitch: 12.4 [5.7]%, thickness change without twitch: 5.7 [10.5]%, mean difference adjusted for baseline value, 95%CI: 4.4 [1.2, 7.5]%).
- However, this difference was not present after 1–week, and there were no between–groups differences in disability, pain intensity, or nociceptive sensitivity.

48 C. MUSCLES**Hamstring reinjury**

Am J Sports Med. 2016 May 16. pii: 0363546516646086.

Hamstring Reinjuries Occur at the Same Location and Early After Return to Sport: A Descriptive Study of MRI-Confirmed Reinjuries.

Wangenstein A1, Tol JL2, Witvrouw E3, Van Linschoten R4, Almusa E4, Hamilton B5, Bahr R6.

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

Despite relatively high reinjury rates after acute hamstring injuries, there is a lack of detailed knowledge about where and when hamstring reinjuries occur, and studies including imaging-confirmed reinjuries are scarce.

PURPOSE:

To investigate the location, radiological severity, and timing of reinjuries on magnetic resonance imaging (MRI) compared with the index injury.

STUDY DESIGN:

Case series; Level of evidence, 4.

METHODS:

A MRI scan was obtained ≤ 5 days after an acute hamstring index injury in 180 athletes, and time to return to sport (RTS) was registered. Athletes with an MRI-confirmed reinjury in the same leg ≤ 365 days after RTS were included. Categorical grading and standardized MRI parameters of the index injury and reinjury were scored by a single radiologist (with excellent intraobserver reliability). To determine the location of the reinjury, axial and coronal views of the index injury and reinjury were directly compared on proton density-weighted fat-suppressed images.

RESULTS:

In the 19 athletes included with reinjury, 79% of these reinjuries occurred in the same location within the muscle as the index injury. The median time to RTS after the index injury was 19 days (range, 5-37 days; interquartile range [IQR], 15 days). The median time between the index injury and reinjury was 60 days (range, 20-316 days; IQR, 131 days) and the median time between RTS after the index injury and the reinjury was 24 days (range, 4-311 days; IQR, 140 days). More than 50% of reinjuries occurred within 25 days (4 weeks) after RTS from the index injury and 50% occurred within 50 days after the index injury. All reinjuries with more severe radiological grading occurred in the same location as the index injury.

CONCLUSION:

The majority of the hamstring reinjuries occurred in the same location as the index injury, early after RTS and with a radiologically greater extent, suggesting incomplete biological and/or functional healing of the index injury. Specific exercise programs focusing on reinjury prevention initiated after RTS from the index injury are highly recommended.

KEYWORDS: hamstring injury; location; magnetic resonance imaging; reinjury; return to sport

53. CORE**Motor control in LBP**

June 2016 Volume 23, Pages 98–105

Ultrasound measurement of deep and superficial abdominal muscles thickness during standing postural tasks in participants with and without chronic low back pain

Fatemeh Ehsani Amir Massoud Arab Shapour Jaberzadeh Mahyar Salavati

Highlights

- Increasing motor control impairment in patient with LBP during standing tasks.
- More activity of superficial than deep abdominal muscles during standing tasks in the patients.
- Using standing test conditions for discrimination of individuals with LBP.
- No recommendation for standing tasks in early stage of the patients training.
- Using unstable surface during progressive training protocol in the patients.

Abstract

Background

Activity of deep abdominal muscles increases the lumbar stability. Majority of previous studies indicated abdominal muscle activity dysfunction during static activity in patients with low back pain (LBP). However, the number of studies that evaluated deep abdominal muscle activity in dynamic standing activities in patients is limited, while this assessment provides better understanding of pain behavior during these activities.

Objective

Investigation of superficial and deep abdominal muscles activity in participants with chronic LBP as compared to healthy individuals during standing tasks.

Design

Case control study.

Methods

Ultrasound imaging was used to measure the thickness of transverse abdominis (TrA), internal oblique (IO) and external oblique (EO) muscles in female participants with (N = 45) and without chronic LBP (CLBP) (N = 45) during tests. The Biodex Balance System was used to provide standing tasks. The thickness of each muscle in a standing task was normalized to actual thickness at rest in the supine lying position to estimate its activity.

Results

The results indicate increases in thickness of all muscles in both groups during dynamic as compared to static standing tasks ($P < 0.05$, $ES > 0.5$). Lower percentages of thickness change for TrA muscle and higher for EO muscle were found in the patients as compared to healthy individuals during all tests ($P < 0.05$, $ES > 1.28$).

Conclusions

Higher activity of superficial than deep abdominal muscles in patients as compared to healthy individuals during standing tasks indicates motor control dysfunction in patients with CLBP. Standing tasks can discriminate the individuals with and without LBP and can be progressively used in training.

C spine

Does increased superficial neck flexor activity in the craniocervical flexion test reflect reduced deep flexor activity in people with neck pain?

Gwendolen Jull Deborah Falla

Highlights

- •Analysis of cervical flexor muscle activity in the craniocervical flexion test
- •Higher superficial flexor activity correlates with lesser deep flexor activity
- •Evaluation of the deeper flexors may rely on superficial flexor evaluation

Abstract**Background**

The craniocervical flexion test assesses the deep cervical flexor muscles (longus capitis, longus colli). Ideally, electromyography (EMG) studies measure activity in both deep and superficial (sternocleidomastoid, anterior scalene) flexors during the test, but most studies confine recordings to superficial muscle activity as the technique to record the deep muscles is invasive. Higher activity of the superficial flexors has been interpreted as an indicator of reduced deep flexor activity in people with neck pain but how close the inverse relationship is during this test is unknown.

Methods

EMG was recorded from the sternocleidomastoid, anterior scalene and deep cervical flexor muscles to quantify their relationship during the craniocervical flexion test, from 32 women (age: 38.0 ± 11.6 yrs) with a history of chronic non-specific neck pain. The range of craniocervical flexion at each of the five test stages was also measured.

Results

A moderate negative correlation was identified ($r=-0.45$; $P<0.01$) between the average normalized EMG amplitude of the deep cervical flexors and sternocleidomastoid across all stages of the craniocervical flexion test. There was a moderate although weaker and non-significant negative correlation between deep cervical flexors and anterior scalene activity ($r=-0.34$; $P=0.053$).

Conclusions

The results affirm the interpretation that higher levels of activity of the superficial flexor muscles are an indicator of reduced deep cervical flexor activity in the craniocervical flexion test. Further studies of neuromuscular and movement strategies used by people with neck pain to compensate for poorer activation of the deep cervical flexors will inform best clinical assessment.

Pilates helps LBP

Clin Rehabil. 2016 Jun 3. pii: 0269215516651978.

Results of a Pilates exercise program in patients with chronic non-specific low back pain: A randomized controlled trial.

Valenza MC¹, Rodríguez-Torres J², Cabrera-Martos I², Díaz-Pelegri A², Aguilar-Ferrández ME², Castellote-Caballero Y².

Author information

Abstract

OBJECTIVE:

To investigate the effects of a Pilates exercise program on disability, pain, lumbar mobility, flexibility and balance in patients with chronic non-specific low back pain.

DESIGN:

Randomized controlled trial.

SETTING:

University laboratory.

PARTICIPANTS:

A total of 54 patients with chronic non-specific low back pain.

INTERVENTION:

Patients were randomly allocated to an experimental group (n=27) included in a Pilates exercise program or to a control group (n=27) receiving information in a form of a leaflet.

MAIN OUTCOME MEASURES:

Disability (Roland-Morris Disability Questionnaire and Oswestry Disability Index), current, average and pain at it least and at its worst (Visual Analogue Scales), lumbar mobility (modified Shober test), flexibility (finger-to-floor test) and balance (single limb stance test) were measured at baseline and after the intervention.

RESULTS:

A between-group analysis showed significant differences in the intervention group compared to the control group for both disability scores, the Rolland-Morris questionnaire (mean change±standard deviation of 5.31±3.37 and 2.40±6.78 respectively and between-groups mean difference of 3.2 ± 4.12, p=0.003) and the Oswestry Disability Index (p<0.001), current pain (p=0.002) and pain at it least (p=0.033), flexibility (0.032) and balance (0.043).

CONCLUSIONS:

An 8-week Pilates exercise program is effective in improving disability, pain, flexibility and balance in patients with chronic non-specific low back pain.

56. ATHLETICS

Sleep and performance

J Sports Sci. 2016 May 13:1-7.

Sleep of professional athletes: Underexploited potential to improve health and performance.

Tuomilehto H1,2, Vuorinen VP3, Penttilä E4,5, Kivimäki M6, Vuorenmaa M7, Venojärvi M7, Airaksinen O8, Pihlajamäki J2,9.

Author information

Abstract

Sleep disorders have become increasingly prevalent affecting health and working ability.

Restorative sleep may be considered important for athletes' successful recovery and performance. However, some athletes seem to experience major problems in sleeping. Thus far, there is limited scientific information about their sleep.

This study aimed to evaluate the quality of sleep and the prevalence of sleep disorders as well as the impact of a structured sleep counselling protocol in professional athletes. A total of 107 professional ice hockey players participated in the study. \

The exploratory observational 1-year follow-up study consisted of questionnaire-based sleep assessment followed by general sleep counselling and, when needed, polysomnography and an individual treatment plan.

One in every four players was found to have a significant problem in sleeping. All athletes considered sleep essential for their health and three in every four players considered that counselling would improve their performance. Counselling and individual treatment were found to improve significantly the quality of sleep with the mean alteration of 0.6 (95% CI 0.2-1.0, $P = 0.004$) in a scale from 0 to 10. Our results support that sleep problems are common in professional athletes. However, systematic examination, counselling and individual treatment planning can improve the quality of their sleep.

KEYWORDS: Sleep; athletes; examination; problems; treatment

Sports Psychology

Sports Med. 2016 May 30.

Effects of Psychological and Psychosocial Interventions on Sport Performance: A Meta-Analysis.

Brown DJ^{1,2}, Fletcher D³.
Author information

Abstract

BACKGROUND:

Psychologists are increasingly supporting the quest for performance enhancement in sport and there is a need to evaluate the evidence base underpinning their work.

OBJECTIVES:

To synthesize the most rigorous available research that has evaluated psychological, social, and psychosocial interventions with sport performers on variables relating to their athletic performance, and to address some of the perplexing issues in the sport psychology intervention literature (e.g., do interventions have a lasting effect on sport performance?).

METHODS:

Randomized controlled trials were identified through electronic databases, hand-searching volumes of pertinent journals, scrutinizing reference lists of previous reviews, and contacting experts in the evaluation of interventions in this field. Included studies were required to evaluate the effects of psychological, social, or psychosocial interventions on sport performance in athletes when compared to a no-treatment or placebo-controlled treatment comparison group. A random effects meta-analysis calculating the standardized mean difference (Hedges' *g*), meta-regressions, and trim and fill analyses were conducted. Data were analyzed at post-test and follow-up (ranging from 1 to 4 weeks after the intervention finished) assessments.

RESULTS:

Psychological and psychosocial interventions were shown to enhance sport performance at post-test ($k = 35$, $n = 997$, Hedges' $g = 0.57$, 95 % CI = 0.22-0.92) and follow-up assessments ($k = 8$, $n = 189$, Hedges' $g = 1.16$, 95 % CI = 0.25-2.08); no social interventions were included or evaluated. Larger effects were found for psychosocial interventions and there was some evidence that effects were greatest in coach-delivered interventions and in samples with a greater proportion of male participants.

CONCLUSIONS:

Psychological and psychosocial interventions have a moderate positive effect on sport performance, and this effect may last at least a month following the end of the intervention. Future research would benefit from following guidelines for intervention reporting.

PMID: 27241124

Impact of high heel shoes

Eur Spine J. 2016 May 20.

Influence of high-heeled shoes on the sagittal balance of the spine and the whole body.

Weitkunat T¹, Buck FM², Jentzsch T³, Simmen HP¹, Werner CM¹, Osterhoff G⁴.

Author information

Abstract

PURPOSE:

Wearing high heels is associated with chronic pain of the neck, lower back and knees. The mechanisms behind this have not been fully understood. The purpose of this study was to investigate the influence of high-heeled shoes on the sagittal balance of the spine and the whole body in non-habitual wearers of high heels.

METHODS:

Lateral standing whole body low-dose radiographs were obtained from 23 female participants (age 29 ± 6 years) with and without high heels and radiological parameters describing the sagittal balance were quantified. These were analyzed for differences between both conditions in the total sample and in subgroups.

RESULTS:

Standing in high heels was associated with an increased femoral obliquity angle [difference (Δ) $3.0^\circ \pm 1.7^\circ$, $p < 0.0001$], and increased knee (Δ $2.4^\circ \pm 2.9^\circ$, $p = 0.0009$) and ankle flexion (Δ $38.7^\circ \pm 3.4^\circ$, $p < 0.0001$). The differences in C7 and meatus vertical axis, cervical and lumbar lordosis, thoracic kyphosis, spino-sacral angle, pelvic tilt, sacral slope, and spinal tilt were not significant. Individuals adapting with less-than-average knee flexion responded to high heels by an additional increase in cervical lordosis (Δ $5.8^\circ \pm 10.7^\circ$ vs. $1.8^\circ \pm 5.3^\circ$).

CONCLUSIONS:

In all participants, wearing high heels led to increased flexion of the knees and to more ankle flexion. While some participants responded to high heels primarily through the lower extremities, others used increased cervical lordosis to adapt to the shift of the body's center of gravity. This could explain the different patterns of pain in the neck, lower back and knees seen in individuals wearing high heels frequently.

KEYWORDS: Cervical lordosis; High heels; Knee flexion; Lumbar lordosis; Sagittal balance; Thoracic kyphosis
PMID: 27206516

57. GAIT**Hip tests and gait analysis**

J Manipulative Physiol Ther. 2016 May 26. pii: S0161-4754(16)30074-4. doi: 10.1016/j.jmpt.2016.04.007.

A Biomechanical Investigation of Selected Lumbopelvic Hip Tests: Implications for the Examination of Walking.

Bailey RW¹, Richards J², Selfe J².
Author information

Abstract

OBJECTIVES:

The purpose of this study was to compare lumbopelvic hip ranges of motion during the Trendelenburg, Single Leg Squat, and Corkscrew Tests to walking and to describe the 3-dimensional lumbopelvic hip motion during the tests. This may help clinicians to select appropriate tests when examining gait.

METHODS:

An optoelectronic movement analysis tracking system was used to assess the lumbopelvic hip region of 14 healthy participants while performing Trendelenburg, Single Leg Squat, and Corkscrew Tests and walking. The lumbopelvic hip 3-dimensional ranges of movement for the clinical tests were compared with walking using a repeated-measures analysis of variance with pairwise comparisons.

RESULTS:

No significant differences were found between the pelvic obliquity during the Trendelenburg Test and walking (Trendelenburg Test: L, $11.3^\circ \pm 4.8^\circ$, R, $10.8^\circ \pm 5.0^\circ$ vs walk: L, $8.3^\circ \pm 4.8^\circ$, R $8.3^\circ \pm 5.1^\circ$, L, $P = .143$, R, $P = .068$). Significant differences were found between the hip sagittal plane range of movement during the Single Leg Squat and walking (Single Leg Squat: L, $44.2^\circ \pm 13.7^\circ$, R, $41.7^\circ \pm 10.9^\circ$ vs walk: $38.6^\circ \pm 7.0^\circ$, R $37.8^\circ \pm 5.1^\circ$, $P < .05$), the hip coronal plane range of movement (Single Leg Squat: L, $9.1^\circ \pm 5.8^\circ$, R, $9.0^\circ \pm 4.6^\circ$ vs walk: L, $9.4^\circ \pm 2.3^\circ$, R $9.5^\circ \pm 2.0^\circ$, $P < .05$), and the hip coronal plane range of movement during the Corkscrew Test and walking (Corkscrew: L, $5.7^\circ \pm 3.3^\circ$, R, $5.7^\circ \pm 3.2^\circ$ vs walk: L, $9.4^\circ \pm 2.3^\circ$, R $9.5^\circ \pm 2.0^\circ$, $P < .05$).

CONCLUSIONS:

The results of the present study showed that, in young asymptomatic participants with no known lumbopelvic hip pathology, the pelvic obliquity during the Trendelenburg Test and walking is similar. During the Single Leg Squat, the hip moved more in the sagittal plane and less in the coronal plane when compared with walking. There was more movement in the hip transverse plane movement during the Corkscrew Test than during walking. These results suggest that for the Trendelenburg Test to be interpreted as normal, the pelvis should achieve at least 10° of pelvic obliquity; during the Single Leg Squat, the hip should move through 43° in the sagittal plane and under 10° in the coronal plane; and for the Corkscrew Test to be interpreted as normal, the hip should move through 6° of rotation and the trunk through 27° of rotation.

KEYWORDS: Articular; Biomechanical Phenomena; Lumbopelvic Hip; Range of Motion
PMID: 27238226

59. PAIN**Pain locations in the brain**

Pain. 2016 Jun;157(6):1279-86. doi: 10.1097/j.pain.0000000000000517.

Brain activations during pain: a neuroimaging meta-analysis of patients with pain and healthy controls.

Jensen KB¹, Regenbogen C, Ohse MC, Frasnelli J, Freiherr J, Lundström JN.
Author information

Abstract

In response to recent publications from pain neuroimaging experiments, there has been a debate about the existence of a primary pain region in the brain. Yet, there are few meta-analyses providing assessments of the minimum cerebral denominators of pain. Here, we used a statistical meta-analysis method, called activation likelihood estimation, to define (1) core brain regions activated by pain per se, irrelevant of pain modality, paradigm, or participants and (2) activation likelihood estimation commonalities and differences between patients with chronic pain and healthy individuals. A subtraction analysis of 138 independent data sets revealed that the minimum denominator for activation across pain modalities and paradigms included the right insula, secondary sensory cortex, and right anterior cingulate cortex (ACC). Common activations for healthy subjects and patients with pain alike included the thalamus, ACC, insula, and cerebellum. A comparative analysis revealed that healthy individuals were more likely to activate the cingulum, thalamus, and insula. Our results point toward the central role of the insular cortex and ACC in pain processing, irrelevant of modality, body part, or clinical experience; thus, furthering the importance of ACC and insular activation as key regions for the human experience of pain.

PMID:26871535

61. FIBROMYALGIA**CFS changes in muscles**

J Intern Med. 2010 Apr;267(4):394-401. doi: 10.1111/j.1365-2796.2009.02160.x.

Abnormalities in pH handling by peripheral muscle and potential regulation by the autonomic nervous system in chronic fatigue syndrome.

Jones DE1, Hollingsworth KG, Taylor R, Blamire AM, Newton JL.

Author information**Abstract****OBJECTIVES:**

To examine muscle acid handling following exercise in chronic fatigue syndrome (CFS/ME) and the relationship with autonomic dysfunction.

DESIGN:

Observational study.

SETTING:

Regional fatigue service. **SUBJECTS & INTERVENTIONS:** Chronic fatigue syndrome (n = 16) and age and sex matched normal controls (n = 8) underwent phosphorus magnetic resonance spectroscopy (MRS) to evaluate pH handling during exercise. Subjects performed plantar flexion at fixed 35% load maximum voluntary contraction. Heart rate variability was performed during 10 min supine rest using digital photoplethysmography as a measure of autonomic function.

RESULTS:

Compared to normal controls, the CFS/ME group had significant suppression of proton efflux both immediately postexercise (CFS: 1.1 +/- 0.5 mmol L(-1) min(-1) vs. normal: 3.6 +/- 1.5 mmol L(-1) min(-1), P < 0.001) and maximally (CFS: 2.7 +/- 3.4 mmol L(-1) min(-1) vs. control: 3.8 +/- 1.6 mmol L(-1) min(-1), P < 0.05). Furthermore, the time taken to reach maximum proton efflux was significantly prolonged in patients (CFS: 25.6 +/- 36.1 s vs. normal: 3.8 +/- 5.2 s, P < 0.05). In controls the rate of maximum proton efflux showed a strong inverse correlation with nadir muscle pH following exercise (r(2) = 0.6; P < 0.01). In CFS patients, in contrast, this significant normal relationship was lost (r(2) = 0.003; P = ns). In normal individuals, the maximum proton efflux following exercise were closely correlated with total heart rate variability (r(2) = 0.7; P = 0.007) this relationship was lost in CFS/ME patients (r(2) < 0.001; P = ns).

CONCLUSION:

Patients with CFS/ME have abnormalities in recovery of intramuscular pH following standardised exercise degree of which is related to autonomic dysfunction. This study identifies a novel biological abnormality in patients with CFS/ME which is potentially open to modification.

Motor alterations in CFS

PLoS One. 2015 Apr 2;10(4):e0122982. doi: 10.1371/journal.pone.0122982. eCollection 2015.

Abnormalities of AMPK activation and glucose uptake in cultured skeletal muscle cells from individuals with chronic fatigue syndrome.

Brown AE1, Jones DE2, Walker M2, Newton JL3.

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

Post exertional muscle fatigue is a key feature in Chronic Fatigue Syndrome (CFS). Abnormalities of skeletal muscle function have been identified in some but not all patients with CFS. To try to limit potential confounders that might contribute to this clinical heterogeneity, we developed a novel in vitro system that allows comparison of AMP kinase (AMPK) activation and metabolic responses to exercise in cultured skeletal muscle cells from CFS patients and control subjects.

METHODS:

Skeletal muscle cell cultures were established from 10 subjects with CFS and 7 age-matched controls, subjected to electrical pulse stimulation (EPS) for up to 24h and examined for changes associated with exercise.

RESULTS:

In the basal state, CFS cultures showed increased myogenin expression but decreased IL6 secretion during differentiation compared with control cultures. Control cultures subjected to 16 h EPS showed a significant increase in both AMPK phosphorylation and glucose uptake compared with unstimulated cells. In contrast, CFS cultures showed no increase in AMPK phosphorylation or glucose uptake after 16 h EPS. However, glucose uptake remained responsive to insulin in the CFS cells pointing to an exercise-related defect. IL6 secretion in response to EPS was significantly reduced in CFS compared with control cultures at all time points measured.

CONCLUSION:

EPS is an effective model for eliciting muscle contraction and the metabolic changes associated with exercise in cultured skeletal muscle cells. We found four main differences in cultured skeletal muscle cells from subjects with CFS; increased myogenin expression in the basal state, impaired activation of AMPK, impaired stimulation of glucose uptake and diminished release of IL6. The retention of these differences in cultured muscle cells from CFS subjects points to a genetic/epigenetic mechanism, and provides a system to identify novel therapeutic targets.

Muscle fiber changes in CFS

J Neurol Neurosurg Psychiatry. 1998 Mar;64(3):362-7.

Muscle fibre characteristics and lactate responses to exercise in chronic fatigue syndrome.

Lane RJ1, Barrett MC, Woodrow D, Moss J, Fletcher R, Archard LC.

Author information**Abstract****OBJECTIVES:**

To examine the proportions of type 1 and type 2 muscle fibres and the degree of muscle fibre atrophy and hypertrophy in patients with chronic fatigue syndrome in relation to lactate responses to exercise, and to determine to what extent any abnormalities found might be due to inactivity.

METHODS:

Quadriceps needle muscle biopsies were obtained from 105 patients with chronic fatigue syndrome and the proportions of type 1 and 2 fibres and fibre atrophy and hypertrophy factors were determined from histochemical preparations, using a semiautomated image analysis system. Forty one randomly selected biopsies were also examined by electron microscopy. Lactate responses to exercise were measured in the subanaerobic threshold exercise test (SATET).

RESULTS:

Inactivity would be expected to result in a shift to type 2 fibre predominance and fibre atrophy, but type 1 predominance (23%) was more common than type 2 predominance (3%), and fibre atrophy was found in only 10.4% of cases. Patients with increased lactate responses to exercise did have significantly fewer type 1 muscle fibres ($p < 0.043$ males, $p < 0.0003$ females), but there was no evidence that this group was less active than the patients with normal lactate responses. No significant ultrastructural abnormalities were found.

CONCLUSION:

Muscle histometry in patients with chronic fatigue syndrome generally did not show the changes expected as a result of inactivity. However, patients with abnormal lactate responses to exercise had a significantly lower proportion of mitochondria rich type 1 muscle fibres.

62 A. NUTRITION/VITAMINS**Dark Chocolate****Effects of dark chocolate on NOX-2-generated oxidative stress in patients with non-alcoholic steatohepatitis**

Alimentary Pharmacology and Therapeutics, 06/07/2016 Loffredo L, et al.

Authors' conduct a cross-sectional study, to analyse the effect of cocoa polyphenols on NADPH oxidase isoform 2 (NOX2) activation, oxidative stress and hepatocyte apoptosis in a population affected by NASH. They reveal that cocoa polyphenols exert an antioxidant activity via NOX2 down-regulation in NASH patients.

Methods

- The authors comparing 19 NASH and 19 controls, oxidative stress, as assessed by serum NOX2 activity and F2-isoprostanes, and hepatocyte apoptosis, as assessed by serum cyokeratin-18 (CK-18) levels, were measured.
- Furthermore, the 19 NASH patients were randomly allocated in a crossover design to 40 g/day of dark chocolate (>85% cocoa) or 40 g/day of milk chocolate (<35% cocoa), for 2 weeks.
- sNOX2-dp, serum isoprostanes and CK-18 were assessed at baseline and after 2 weeks of chocolate intake.

Results

- Compared to controls, NASH patients had higher sNOX2-dp, serum isoprostanes and CK-18 levels.
- In this study, a significant difference for treatments was found in subjects with respect to sNOX2-dp, serum isoprostanes and serum CK-18.
- The pairwise comparisons showed that, compared to baseline, after 14 days of dark chocolate intake, a significant reduction in sNOX2-dp serum isoprostanes and CK-18 M30 was found.
- No change was observed after milk chocolate ingestion.
- A simple linear regression analysis showed that Δ of sNOX2-dp was associated with Δ of serum isoprostanes.

Omega 3's and PTSD**Effects of omega-3 polyunsaturated fatty acids on psychophysiological symptoms of post-traumatic stress disorder in accident survivors: A randomized, double-blind, placebo-controlled trial**

Journal of Affective Disorders, 06/03/2016

Matsumura K, et al. – The researchers performed this randomized, double-blind, placebo-controlled trial of Japanese accident survivors to assess the impacts of omega-3 polyunsaturated fatty acids on psychophysiological symptoms of post-traumatic stress disorder. The inferences demonstrate that post-trauma supplementation of omega-3 PUFAs might be effective for the secondary prevention of psychophysiological symptoms of PTSD.

Methods

- A total of 83 participants received either omega-3 PUFAs (1,470 mg docosahexaenoic acid and 147 mg eicosapentaenoic acid per day) or placebo within 10 days of the accidental injury.
- After 12-week supplementation, participants performed script-driven imagery of their traumatic event during monitoring of their heart rate and skin conductance.

Results

- Analysis revealed that heart rate during both rest and script-driven imagery was significantly lower in the omega-3 group than the placebo group, whereas baseline heart rate was comparable between the two groups

Coffee helps cognitive disorders

Coffee intake and the incident risk of cognitive disorders: A dose-response meta-analysis of nine prospective cohort studies

Clinical Nutrition, 06/02/2016 Wu L, et al.

The authors aim to investigate the impact of coffee consumption in the developing of cognitive disorders. A “J-shaped” association was presented between coffee intake and incident cognitive disorders, with the lowest risk of incident cognitive disorders at a daily consumption level of 1–2 cups of coffee.

Methods

- Two databases (PubMed and Embase) were searched for evidence of cohort studies from inception to February 2016.
- The authors used a generic inverse-variance method with a random-effects model to pool the fully adjusted relative risks (RRs) and the corresponding 95% confidence intervals (CIs).
- In the dose-response analyses, a generalized least-squares trend estimation model was applied to computing the study-specific slopes.

Results

- Nine prospective cohort studies involving 34,282 participants were included in the study.
- The duration of follow-up years ranged from 1.3 to 28.
- Compared with <1 cup, daily drinking of 1-2 cups of coffee was inversely linked with the occurrence of cognitive disorders (i.e., Alzheimer’s disease, dementia, cognitive decline, and cognitive impairment), and the pooled RR (95% CI) was 0.82 (0.71, 0.94) with evidence of non-significant heterogeneity ($I^2=25%$).
- Non-significant differences were presented for the association between coffee consumption (>3 vs. <1 cup/d) and incident cognitive disorders.
- The dose-response analysis showed a “J-shaped” curve relationship of the risk of developing cognitive disorders with coffee consumption.

Soy and tumor suppressant.

Cancer. 2016 May 16. doi: 10.1002/ncr.29981.

Long-term soy consumption and tumor tissue MicroRNA and gene expression in triple-negative breast cancer.

Guo X¹, Cai Q¹, Bao P², Wu J¹, Wen W¹, Ye F³, Zheng W¹, Zheng Y², Shu XO¹.

Author information

Abstract**BACKGROUND:**

Soy food intake may have protective effects against the risk for breast cancer, including estrogen receptor (ER)-negative breast cancer. However, the underlying molecular mechanisms remain unclear.

METHODS:

To evaluate the association of soy intake with the expression of microRNAs (miRNAs) and genes in the tumor tissue of patients with triple-negative breast cancer (TNBC; ie, breast cancer lacking expression of ER, progesterone receptor, and human epidermal growth factor receptor 2), the expression of 800 miRNAs and 302 genes were measured with NanoString nCounter assays in formalin-fixed, paraffin-embedded tumor tissue from 272 TNBC patients. Soy intake during the 1-year period before the cancer diagnosis was assessed with a validated food-frequency questionnaire. The association of soy intake with the expression of miRNAs and genes was evaluated via linear regression analysis with adjustments for patient age and TNM stage.

RESULTS:

A total of 14 miRNAs and 24 genes were significantly associated with soy food intake ($P < .05$): Thirteen of the 14 miRNAs (92.9%) and 9 of the 24 genes (37.5%), including tumor suppressors miR-29a-3p and IGF1R, showed overexpression for those women with high soy intake, whereas the remaining miRNAs and genes, including oncogenes KRAS and FGFR4, showed underexpression. Furthermore, cell growth-related genes showed a predominantly underexpression pattern according to a comparison of tumor samples from women with high soy food intake and samples from women with lower soy food intake.

CONCLUSIONS:

This study suggests that long-term prediagnosis soy intake may lead to increased expression of tumor suppressors and decreased expression of oncogenes, especially cell growth-related genes, in breast tumor tissues. Cancer 2016. © 2016 American Cancer Society.

KEYWORDS: gene expression; microRNA (miRNA) expression; soy consumption; triple-negative breast cancer

PMID:27183356

63. PHARMACOLOGY**Pain med use**

Am J Ind Med. 2016 Jun 1. doi: 10.1002/ajim.22612.

Regular use of pain medication due to musculoskeletal disorders in the general working population: Cross-sectional study among 10,000 workers.

Sundstrup E¹, Jakobsen MD¹, Brandt M^{1,2}, Jay K¹, Ajslev JZ¹, Andersen LL^{1,2}.

Author information

Abstract

BACKGROUND:

We aimed to determine the association between work, health, and lifestyle with regular use of pain medication due to musculoskeletal disorders in the general working population.

METHODS:

Currently employed wage earners (N = 10,024) replied to questions about health, work, and lifestyle. The odds for regularly using medication for musculoskeletal disorders were modeled using logistic regression controlled for various confounders.

RESULTS:

Pain intensity increased the odds for using pain medication in a dose-response fashion. With seated work as reference, the odds for using pain medication were 1.26 (95%CI: 1.09-1.47) for workers engaged in standing or walking work that is not strenuous and 1.59 (95%CI: 1.39-1.82) for workers engaged in standing or walking work with lifting tasks or heavy and fast strenuous work.

CONCLUSIONS:

Workers with higher levels of physical activity at work are more likely to use pain medication on a regular basis for musculoskeletal disorders, even when adjusting for pain intensity, lifestyle, and influence at work. Am. J. Ind. Med. © 2016 Wiley Periodicals, Inc.

KEYWORDS: analgesics; back pain; hand-wrist pain; neck-shoulder pain

PMID: 27245746

Opioid use and joint replacement

Trends and predictors of opioid use after total knee and total hip arthroplasty

Pain, 06/02/2016Goesling J, et al.

It can be concluded that many patients taking opioids before surgery continue to use opioids after arthroplasty and some opioid-naïve patients remained on opioids; however, persistent opioid use was not associated with change in joint pain. Given the growing concerns about chronic opioid use, the reasons for persistent opioid use and perioperative prescribing of opioids deserve further study.