

ABSTRACTS

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**LUMBAR SPINE
LBP****Neurophysiological education**

BMC Musculoskelet Disord. 2015 Apr 10;16(1):83.

Short-term effect on pain and function of neurophysiological education and sensorimotor retraining compared to usual physiotherapy in patients with chronic or recurrent non-specific low back pain, a pilot randomized controlled trial.

Wälti P^{1,2}, Kool J^{3,4}, Luomajoki H⁵.

Author information

Abstract

BACKGROUND:ILNon-specific chronic low back pain (NSCLBP) is a major health problem. Identification of subgroups and appropriate treatment regimen was proposed as a key priority by the Cochrane Back Review Group. We developed a multimodal treatment (MMT) for patients with moderate to severe disability and medium risk of poor outcome. MMT includes a) neurophysiological education on the perception of pain to decrease self-limitation due to catastrophizing beliefs about the nature of NSCLBP, b) sensory training of the lower trunk because these patients predominantly show poor sensory acuity of the trunk, and c) motor training to regain definite movement control of the trunk. A pilot study was conducted to investigate the feasibility of MMT, prior to a larger RCT, with focus on patients' adherence and the evaluation of short-term effects on pain and disability of MMT when compared to usual physiotherapy.

METHOD:We conducted a randomised controlled trial (RCT) in a primary care physiotherapy centre in Switzerland. Outcome assessment was 12 weeks after baseline. Patients with NSCLBP, considerable disability (five or more points on the Roland and Morris Disability Questionnaire (RMDQ) and medium or high risk of poor outcome on the Keele Start Back Tool (KSBT) were randomly allocated to either MMT or usual physiotherapy treatment (UPT) by an independent research assistant. Treatment included up to 16 sessions over 8 to 12 weeks. Both groups were given additional home training of 10 to 30 minutes to be performed five times per week.

Adherence to treatment was evaluated in order to assess the feasibility of the treatment.

Assessments were conducted by an independent blinded person. The primary outcome was pain (NRS 0-10) and the secondary outcome was disability (RMDQ). Between-group effects with Student's t-test or the Mann-Whitney U test and the standardized mean difference of the primary outcome were calculated.

RESULTS:Twenty-eight patients (46% male, mean age 41.5 years (SD 10.6)) were randomized to MMT (n = 14) or UPT (n = 14). Patients' adherence to treatment was >80% in both groups. Pain reduction (NRS; [95%CI]) was 2.14 [1.0 to 3.5] in the MMT and 0.69 [-2.0 to 2.5.] in the UPT. The between-group difference was 1.45 [0.0 to 4.0] (p = 0.03), representing a moderate effect size of 0.66 [-0.1 to 1.5]. Reduction in disability on the RMDQ was 6.71 [4.2 to 9.3] in MMT and 4.69 [1.9 to 7.4] in UPT, with a non-significant between-group difference of 2.02 [-1.5 to 5.6] (p = 0.25). The required sample size for a RCT with six months follow-up was estimated at 170 patients.

CONCLUSIONS:MMT was found to be feasible and to significantly reduce pain in the short term when compared with UPT. A future RCT with a six-month follow-up would require approximately 170 patients.

TRIAL REGISTRATION:Current Controlled Trials ISRCTN66262199 . Registered 8 January 2014.

PMID: 25887550

Rotation limitations**Association between rotation-related impairments and activity type in people with and without low back pain**

Archives of Physical Medicine and Rehabilitation, 04/30/2015 Weyrauch SA, et al.

The aim of this study is to determine if people with low back pain (LBP) who regularly participated in a rotation-related activity displayed more rotation-related impairments than people without LBP who did and did not participate in the activity. LBP and BHC+RRS groups demonstrated a similar number of total rotation-related impairments and asymmetric rotation-related impairments, and these numbers were greater than those of the BHC-RRS group.

Methods

Secondary analysis of data from a case-control study.

Musculoskeletal analysis laboratory at an academic medical center.

A convenience sample of 55 participants with LBP who participated in a rotation-related sport, 26 back healthy controls who participated in a rotation-related sport (BHC+RRS) and 42 back healthy controls who did not participate in a rotation-related sport (BHC-RRS).

Participants were matched based on age, gender, and activity level.

The total number of rotation-related impairments and asymmetric rotation-related impairments identified during a standardized clinical examination.

Results

Compared to the BHC-RRS group, both the LBP and BHC+RRS groups displayed significantly more (1) rotation-related impairments (LBP: $p < .001$; BHC+RRS: $p = .015$) (2) asymmetric rotation-related impairments (LBP: $p = .006$; BHC+RRS: $p = .020$) and (3) rotation-related impairments with trunk movement tests (LBP: $p = .002$; BHC+RRS: $p < .001$).

The LBP group had significantly more rotation-related impairments with extremity movement tests than both of the back healthy groups (BHC+RRS: $p = .011$; BHC-RRS: $p < .001$).

Goal setting

Patient led goal setting in chronic low back pain- what goals are important to the patient and are they aligned to what we measure?

Patient Education and Counselling, 04/30/2015 Gardner T, et al.

Highlights

- This study examined goals important to patients in CLBP.
- Patient led goals were compared to current clinical and research outcome measures.
- The majority of goals did not correspond with current practice measures.
- Guidelines need to be reviewed to embed a more patient centred approach.

Abstract

Objective

To determine the extent of alignment between clinical outcome measures and patient-derived goals for the management of chronic low back pain (cLBP).

Method

A customised, patient-led goal setting intervention was implemented facilitated by a physiotherapist, in which participants identified problem areas and developed strategies to address them. Patient goals were compared to the most commonly used outcome measures in CLBP as well as research outcomes recommended by the IMMPACT consortium.

Results

From 20 participants, a total of 27 unique goals were identified, the most common goal related to physical activity (49%). Comparison of participant goals to the most common measures used by physiotherapists found none of the goals could be aligned. Comparison of goals and domains with IMPACCT outcome domains found 76% of the goals were aligned with physical functioning and 16% with emotional functioning.

Conclusion

This study has identified goals important to patients in cLBP, these were varied, and most did not correspond with current clinical measures.

Practice implications

Clinical outcome measures may not be providing accurate information about the success of treatments that are meaningful to the patient. Clinicians should consider a collaborative approach with cLBP patients to determine treatment interventions that are driven by patient preference

Prognostic factors

Chiropr Man Therap. 2015 Mar 23;23:13. doi: 10.1186/s12998-015-0054-y. eCollection 2015.

Clinical examination findings as prognostic factors in low back pain: a systematic review of the literature.

Hartvigsen L1, Kongsted A2, Hestbaek L2.

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

There is a strong tradition of performing a clinical examination of low back pain (LBP) patients and this is generally recommended in guidelines. However, establishing a pathoanatomic diagnosis does not seem possible in most LBP patients and clinical tests may potentially be more relevant as prognostic factors. The aim of this review of the literature was to systematically assess the association between low-tech clinical tests commonly used in adult patients with acute, recurrent or chronic LBP and short- and long-term outcome.

METHODS:

MEDLINE, Embase, and MANTIS were searched from inception to June 2012. Prospective clinical studies of adult patients with LBP with or without leg pain and/or signs of nerve root involvement or spinal stenosis, receiving non-surgical or no treatment, which investigated the association between low-tech clinical tests and outcome were included. Study selection, data extraction and appraisal of study quality were performed independently by two reviewers.

RESULTS:

A total of 5,332 citations were retrieved and screened for eligibility, 342 articles were assessed as full text and 49 met the inclusion criteria. Due to clinical and statistical heterogeneity, qualitative synthesis rather than meta-analysis was performed. Associations between clinical tests and outcomes were often inconsistent between studies. In more than one third of the tests, there was no evidence of the tests being associated with outcome. Only two clinical tests demonstrated a consistent association with at least one of the outcomes: centralization and non-organic signs.

CONCLUSIONS:

For most clinical tests in LBP there is not consistent evidence for an association with outcome. Centralization and non-organic signs are exceptions from that. None of the other clinical tests have been investigated in confirmatory studies and study quality is generally low. There is a need for hypothesis testing studies designed specifically to investigate the prognostic value of the clinical tests, and a need for standardization of the performance and interpretation of tests.

**DISC
INJECTIONS
SURGERY****Lumbar discectomy's increases risk of cervical**

QJM. 2015 Feb 5. pii: hcv035.

Association between lumbar discectomy and subsequent cervical discectomy.

Chiu CD1, Cho DY1, Lin CL2, Yang TY1, Kao CH3.

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

Lumbar discectomy (LD) is one of the most common spinal surgical procedures. However, the remote effect of the cervical spine has seldom been discussed. The comparative incidence of cervical discectomy with or without a previous LD is an essential feature in predicting this effect.

METHODS:

A cohort comparative study was conducted from the National Health Research Institute, Taiwan, over the period from 1996 to 2010. Patients who received LDs and patients who did not receive LDs in the same period were randomly selected to serve as samples for comparison. A total of 14 480 patients who did not undergo LD surgery and 3620 patients who received LDs were enrolled in this study. The incidence rates of discectomy-cervical in both groups were calculated from the follow-up period until the end of 2010. The baseline comorbidity history was determined for each patient. Comorbidities included fracture and osteoporosis.

RESULTS:

During the follow-up period, the overall incidence rate of CD was significantly higher in patients who were treated with LD than in those who were not (24.7 vs. 2.73 per 10 000 person years). The risk of CD in the LD-treated cohort was ~9-fold greater than that of the non-LD-treated cohort (HRs = 8.58, 95% CI = 5.38-13.7).

CONCLUSION:

Patients who have undergone LDs are at a greater risk of subsequent CDs, an increased risk that is evident in all patients regardless of demographics or the presence of fracture or osteoporosis.

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**PELVIC GIRDLE
PELVIC ORGANS****Pregnancy and depression/body image**

Arch Womens Ment Health. 2015 Apr 17.

The role of body image in prenatal and postpartum depression: a critical review of the literature.

Silveira ML¹, Ertel KA, Dole N, Chasan-Taber L.

Author information

Abstract

Maternal depression increases risk of adverse perinatal outcomes, and recent evidence suggests that body image may play an important role in depression.

This systematic review identifies studies of body image and perinatal depression with the goal of elucidating the complex role that body image plays in prenatal and postpartum depression, improving measurement, and informing next steps in research. We conducted a literature search of the PubMed database (1996-2014) for English language studies of (1) depression, (2) body image, and (3) pregnancy or postpartum. In total, 19 studies matched these criteria. Cross-sectional studies consistently found a positive association between body image dissatisfaction and perinatal depression. Prospective cohort studies found that body image dissatisfaction predicted incident prenatal and postpartum depression; findings were consistent across different aspects of body image and various pregnancy and postpartum time periods. Prospective studies that examined the reverse association found that depression influenced the onset of some aspects of body image dissatisfaction during pregnancy, but few evaluated the postpartum onset of body image dissatisfaction.

The majority of studies found that body image dissatisfaction is consistently but weakly associated with the onset of prenatal and postpartum depression. Findings were less consistent for the association between perinatal depression and subsequent body image dissatisfaction. While published studies provide a foundation for understanding these issues, methodologically rigorous studies that capture the perinatal variation in depression and body image via instruments validated in pregnant women, consistently adjust for important confounders, and include ethnically diverse populations will further elucidate this association.

PMID: 25895137

VISCERA

IBS and diet

Nutr J. 2015 Apr 14;14(1):36.

Diet in irritable bowel syndrome.

El-Salhy M^{1,2,3}, Gundersen D⁴.
Author information

Abstract

Irritable bowel syndrome (IBS) is a common chronic gastrointestinal disorder that is characterized by intermittent abdominal pain/discomfort, altered bowel habits and abdominal bloating/distension. This review aimed at presenting the recent developments concerning the role of diet in the pathophysiology and management of IBS. There is no convincing evidence that IBS patients suffer from food allergy/intolerance, and there is no evidence that gluten causes the debated new diagnosis of non-coeliac gluten sensitivity (NCGS). The component in wheat that triggers symptoms in NCGS appears to be the carbohydrates. Patients with NCGS appear to be IBS patients who are self-diagnosed and self-treated with a gluten-free diet. IBS symptoms are triggered by the consumption of the poorly absorbed fermentable oligo-, di-, monosaccharides and polyols (FODMAPs) and insoluble fibre. On reaching the distal small intestine and colon, FODMAPs and insoluble fibre increase the osmotic pressure in the large-intestine lumen and provide a substrate for bacterial fermentation, with consequent gas production, abdominal distension and abdominal pain or discomfort. Poor FODMAPs and insoluble fibres diet reduces the symptom and improve the quality of life in IBS patients. Moreover, it changes favourably the intestinal microbiota and restores the abnormalities in the gastrointestinal endocrine cells. Five gastrointestinal endocrine cell types that produce hormones regulating appetite and food intake are abnormal in IBS patients. Based on these hormonal abnormalities, one would expect that IBS patients to have increased food intake and body weight gain. However, the link between obesity and IBS is not fully studied. Individual dietary guidance for intake of poor FODMAPs and insoluble fibres diet in combination with probiotics intake and regular exercise is to be recommended for IBS patients.

PMID:25880820

IBS and reflux

Eur J Gastroenterol Hepatol. 2015 May;27(5):516-22. doi: 10.1097/MEG.0000000000000334.

Clinical, metabolic, and psychological characteristics in patients with gastroesophageal reflux disease overlap with irritable bowel syndrome.

Hsu CS1, Liu TT, Wen SH, Wang CC, Yi CH, Chen JH, Lei WY, Orr WC, Fabio P, Chen CL.

Author information

Abstract

OBJECTIVES:

Gastroesophageal reflux disease (GERD) and irritable bowel syndrome (IBS) are highly prevalent in the general population, with significant symptom overlap, whereas the interaction between both remains poorly understood. We aim to identify the clinical and psychological factors that contribute toward the overlap of GERD and IBS.

PATIENTS AND METHODS:

We carried out a case-control study among 806 GERD and 176 IBS patients from a health check-up cohort (n=2604). All participants were evaluated using the Reflux Disease Questionnaire score, the Pittsburgh Sleep Quality Index score, the Taiwanese Depression Questionnaire score, and the State-Trait Anxiety Inventory score. Endoscopic findings were classified according to the Los Angeles classification. IBS was diagnosed on the basis of Rome III criteria, and metabolic syndrome was defined by the National Cholesterol Education Program Adult Treatment Panel III definition.

RESULTS:

Among the study population, 727 individuals had GERD, 97 individuals had IBS, and 79 individuals had a diagnosis of both GERD and IBS (GERD-I). GERD-I patients had more severe GERD symptoms compared with patients with GERD or IBS alone (P<0.0001). Moreover, GERD-I patients had more frequent healthcare-seeking behavior, decreased quality of sleep, and higher depression scores than patients with GERD (P<0.0001) or IBS alone (P<0.05). In addition, GERD-I patients had lower blood pressure, waist-to-hip ratio, and higher serum high-density lipoprotein levels than those with GERD alone (P<0.05).

CONCLUSION:

GERD patients overlapping with IBS have different clinical and psychological profiles than those with GERD or IBS alone. Our study suggests that awareness of these symptom presentations will help optimize the treatment of these conditions.

Fecal Transplantation

Gastroenterology. 2015 Apr 6. pii: S0016-5085(15)00451-5. doi: 10.1053/j.gastro.2015.04.001.

Fecal Microbiota Transplantation Induces Remission in Patients with Active Ulcerative Colitis in a Randomized, Controlled Trial.

Moayyedi P1, Surette MG2, Kim PT3, Libertucci J2, Wolfe M2, Onischi C4, Armstrong D2, Marshall JK2, Kassam Z5, Reinisch W2, Lee CH4.

Abstract

BACKGROUND & AIMS:

Ulcerative colitis (UC) is difficult to treat and standard therapy does not always induce remission. Fecal microbial transplantation (FMT) is an alternative approach that induced remission in in small series of patients with active UC. We investigated its safety and efficacy in a placebo-controlled, randomized trial.

METHODS:

We performed a parallel study of patients with active UC without infectious diarrhea. Participants were examined by flexible sigmoidoscopy when the study began and then were randomly assigned to groups that received FMT (50 ml, via enema, from healthy anonymous donors; n=38) or placebo (50 ml water enema; n=37) once weekly for 6 weeks. Patients, clinicians, and investigators were blinded to the groups. The primary outcome was remission of UC, defined as a Mayo score ≤ 2 with an endoscopic Mayo score of 0, at week 7. Patients provided stool samples when the study began and during each week of FMT for microbiome analysis. The trial was stopped early for futility by the data monitoring and safety committee, but all patients already enrolled in the trial were allowed to complete the study.

RESULTS:

Seventy patients completed the trial (3 dropped out from the placebo group and 2 from the FMT group). Nine patients who received FMT (24%) and 2 who received placebo (5%) were in remission at 7 weeks (a statistically significant difference in risk of 17%; 95% confidence interval, 2%-33%). There was no significant difference in adverse events between groups. Seven of the 9 patients in remission after FMT received fecal material from a single donor. Three of the 4 patients with UC ≤ 1 year entered remission, compared to 6/34 of those with UC > 1 year (P=.04 Fisher's exact test). Stool from patients receiving FMT had greater microbial diversity, compared with baseline, than that of patients given the placebo (P=.02, Mann Whitney U test).

CONCLUSIONS:

FMT induces remission in a significantly greater percentage of patients with active UC than placebo, with no difference in adverse events. Fecal donor and time of UC appear to affect outcomes.

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KEYWORDS: IBD; colon; microbe; treatment

THORACIC SPINE**Disc morphology**

Eur Spine J. 2015 Apr 11.

CT morphometry of adult thoracic intervertebral discs.

Fletcher JG¹, Stringer MD, Briggs CA, Davies TM, Woodley SJ.
Author information

Abstract

PURPOSE:

Despite being commonly affected by degenerative disorders, there are few data on normal thoracic intervertebral disc dimensions. A morphometric analysis of adult thoracic intervertebral discs was, therefore, undertaken.

METHODS:

Archival computed tomography scans of 128 recently deceased individuals (70 males, 58 females, 20-79 years) with no known spinal pathology were analysed to determine thoracic disc morphometry and variations with disc level, sex and age. Reliability was assessed by intraclass correlation coefficients (ICCs).

RESULTS:

Anterior and posterior intervertebral disc heights and axial dimensions were significantly greater in men (anterior disc height 4.0 ± 1.4 vs 3.6 ± 1.3 mm; posterior disc height 3.6 ± 0.90 vs 3.4 ± 0.93 mm; $p < 0.01$). Disc heights and axial dimensions at T4-5 were similar or smaller than at T2-3, but thereafter increased caudally (mean anterior disc height T4-5 and T10-11, 2.7 ± 0.7 and 5.4 ± 1.2 mm, respectively, in men; 2.6 ± 0.8 and 5.1 ± 1.3 mm, respectively, in women; $p < 0.05$). Except at T2-3, anterior disc height decreased with advancing age and anteroposterior and transverse disc dimensions increased; posterior and middle disc heights and indices of disc shape showed no consistent statistically significant changes. Most parameters showed substantial to almost perfect agreement for intra- and inter-rater reliability.

CONCLUSIONS:

Thoracic disc morphometry varies significantly and consistently with disc level, sex and age. This study provides unique reference data on adult thoracic intervertebral disc morphometry, which may be useful when interpreting pathological changes and for future biomechanical and functional studies.

PMID:25862653

CERVICAL SPINE**Asymptomatic pathology**

Spine (Phila Pa 1976). 2015 Mar 15;40(6):392-8. doi: 10.1097/BRS.0000000000000775.

Abnormal findings on magnetic resonance images of the cervical spines in 1211 asymptomatic subjects.

Nakashima H1, Yukawa Y, Suda K, Yamagata M, Ueta T, Kato F.

Author information**Abstract****STUDY DESIGN:**

Cross-sectional study.

OBJECTIVE:

The purpose of this study was to determine the prevalence and distribution of abnormal findings on cervical spine magnetic resonance image (MRI).

SUMMARY OF BACKGROUND DATA:

Neurological symptoms and abnormal findings on MR images are keys to diagnose the spinal diseases. To determine the significance of MRI abnormalities, we must take into account the (1) frequency and (2) spectrum of structural abnormalities, which may be asymptomatic. However, no large-scale study has documented abnormal findings of the cervical spine on MR image in asymptomatic subjects.

METHODS:

MR images were analyzed for the anteroposterior spinal cord diameter, disc bulging diameter, and axial cross-sectional area of the spinal cord in 1211 healthy volunteers. The age of healthy volunteers prospectively enrolled in this study ranged from 20 to 70 years, with approximately 100 individuals per decade, per sex. These data were used to determine the spectrum and degree of disc bulging, spinal cord compression (SCC), and increased signal intensity changes in the spinal cord.

RESULTS:

Most subjects presented with disc bulging (87.6%), which significantly increased with age in terms of frequency, severity, and number of levels. Even most subjects in their 20s had bulging discs, with 73.3% and 78.0% of males and females, respectively. In contrast, few asymptomatic subjects were diagnosed with SCC (5.3%) or increased signal intensity (2.3%). These numbers increased with age, particularly after age 50 years. SCC mainly involved 1 level (58%) or 2 levels (38%), and predominantly occurred at C5-C6 (41%) and C6-C7 (27%).

CONCLUSION:

Disc bulging was frequently observed in asymptomatic subjects, even including those in their 20s. The number of patients with minor disc bulging increased from age 20 to 50 years. In contrast, the frequency of SCC and increased signal intensity increased after age 50 years, and this was accompanied by increased severity of disc bulging.

LEVEL OF EVIDENCE: 2.

Exercise for deep flexors

J Back Musculoskelet Rehabil. 2015 Mar 26.

The effect of different exercise programs on cervical flexor muscles dimensions in patients with chronic neck pain.

Javanshir K1, Amiri M2, Bandpei MA3, Penas CF4, Rezasoltani A5.

Author information

Abstract

OBJECTIVE:

The effect of different exercise programs on cervical flexor muscles dimensions in patients with chronic neck pain is yet to be demonstrated. The purpose of this study was to assess the effect of two exercise programs; craniocervical flexion (CCF) and cervical flexion (CF), on flexor muscles dimensions in patients with chronic neck pain.

METHODS:

Following ethical approval, 60 patients were randomly assigned into either a CCF group or a CF group. Patients in the CCF group were given CCF exercises and those in the CF group received CF exercises. All patients received interventions for a period of ten weeks. Pain intensity and functional disability were assessed using numerical pain rate scale and neck disability index, respectively. Dimensions of longus colli (LC) and sternocleidomastoid (SCM) muscles were measured using ultrasonography (US). All measurements were taken before and after interventions.

RESULTS:

Following intervention, the CCF group demonstrated a significant increase in LC muscle dimensions including cross sectional area, width and thickness compared with the CF group. A statistically significant increase was found on SCM thickness in the CF group. Following intervention, SCM thickness measurement in the CCF group showed no significant changes. Statistically significant decrease on pain intensity and disability were also found in both groups.

CONCLUSION:

Present findings demonstrated that craniocervical flexion program which specifically recruiting deep cervical flexor muscles increased LC muscle dimension significantly and CF program as an endurance training program increased SCM thickness.

KEYWORDS:

Exercise program; cross sectional area; flexor muscles; neck pain; ultrasonography

**UPPER C SPINE
WHIPLASH
CRANIUM/TMJ
HEADACHES****Central changes with aura**

Cephalalgia. 2015 Apr 29. pii: 0333102415584360.

Increased interictal visual network connectivity in patients with migraine with aura.

Tedeschi G¹, Russo A¹, Conte F², Corbo D³, Caiazzo G³, Giordano A⁴, Conforti R⁵, Esposito F⁶, Tessitore A⁷.

Author information

Abstract

OBJECTIVE:

To evaluate the resting-state visual network functional connectivity in patients with migraine with aura and migraine without aura during the interictal period.

POPULATION AND METHODS:

Using resting-state functional magnetic resonance imaging, the resting-state visual network integrity was investigated in 20 patients with migraine with aura, 20 age- and sex-matched patients with migraine without aura and 20 healthy controls. Voxel-based morphometry and diffusion tensor imaging were used to assess whether between-groups differences in functional connectivity were dependent on structural or microstructural changes.

RESULTS:

Resting-state functional magnetic resonance imaging data showed that patients with migraine with aura, compared to both patients with migraine without aura and healthy controls, had a significant increased functional connectivity in the right lingual gyrus within the resting-state visual network ($p < 0.05$, cluster-level corrected). This abnormal resting-state visual network functional connectivity was observed in the absence of structural or microstructural abnormalities and was not related to migraine severity.

CONCLUSIONS:

Our imaging data revealed that patients with migraine with aura exhibit an altered resting-state visual network connectivity. These results support the hypothesis of an extrastriate cortex involvement, centred in the lingual gyrus, a brain region related to mechanisms underlying the initiation and propagation of the migraine aura. This resting-state functional magnetic resonance imaging finding may represent a functional biomarker that could differentiate patients experiencing the aura phenomenon from patients with migraine without aura, even between migraine attacks.

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KEYWORDS: Migraine; aura; extrastriate; functional magnetic resonance imaging; lingual gyrus; resting-state

PMID: 25926619

Muscle pressure pain in HA's

Generalized pressure pain hypersensitivity in the cervical muscles in women with migraine
Pain Medicine, 05/01/2015 Florencio LL, et al.

Abstract

Objective

To investigate the differences in pressure sensitivity in the cervical musculature including the upper trapezius, sternocleidomastoid, suboccipital, levator scapulae, and anterior scalene muscles between women with migraine and healthy controls.

Design

Cross-sectional study.

Subjects

Thirty women with migraine and 30 healthy women participated.

Methods

Pressure pain thresholds (PPT) were bilaterally assessed over upper trapezius, sternocleidomastoid, suboccipital, levator scapulae, and anterior scalene muscles in a blinded design. Mean values of both sides were pooled for statistical analysis. Comparison between groups was performed by unpaired Student t-test and correlation with headache features with Spearman's correlation test.

Results

Migraine patients exhibited lower PPT in all muscles compared with controls: upper trapezius ($P = 0.046$); suboccipital ($P < 0.001$); sternocleidomastoid ($P < 0.001$); anterior scalene ($P < 0.001$), and levator scapulae ($P < 0.001$). No associations were observed between the frequency and the intensity of migraine or years with the disease and PPT.

Conclusion

This study showed generalized pressure pain hypersensitivity in the cervical musculature in women with migraine. Our findings provide support for the physical therapy treatment and evaluation of musculoskeletal cervical spine disorders in individuals with migraine and reinforce that all cervical muscles should be evaluated.

Menstrual cycle and HA's**Menstrual-cycle and menstruation disorders in episodic vs chronic migraine: an exploratory study** *Pain Medicine*, 05/01/2015 Spierings ELH, et al.

The highest prevalence is in those 18–49 years of age, generally when women menstruate. It is divided into episodic and chronic migraine depending on the total number of headache days per month being 14 or less or 15 or more, respectively. Migraine has been associated with menorrhagia, dysmenorrhea, and endometriosis, the latter particularly in chronic migraine. The authors conclude that chronic migraine is possibly more often than episodic migraine associated with menstrual-cycle disorders in general and dysmenorrhea, without impact on menstruation sensitivity of the headaches.

Methods

They conducted a questionnaire survey of 96 women with migraine, 18–45 years old, to determine the occurrence of the menstrual-cycle disorders, oligomenorrhea, polymenorrhea, and irregular cycle, and the menstruation disorders, dysmenorrhea and menorrhagia, in episodic vs chronic migraine.

Results

The prevalence of menstrual-cycle disorders in general (41.2 vs 22.2%) and dysmenorrhea (51.0 vs 28.9%) was statistically significantly higher in the women with chronic migraine than in those with episodic migraine ($P \leq 0.05$) (not corrected for multiple comparisons).

Whether the migraine was menstruation sensitive, that is, the headaches consistently occurred or worsened with menstruation, did not impact the prevalence of menstrual disorders

Tumors and HA's

J Headache Pain. 2015 Dec;16(1):501. doi: 10.1186/s10194-015-0501-0. Epub 2015 Mar 1.

Headache, migraine and risk of brain tumors in women: prospective cohort study.

Kurth T¹, Buring JE, Rist PM.
Author information

Abstract

BACKGROUND:

While headache is a common symptom among brain tumors patients, often patients with common headache have concerns of being at risk for developing brain tumors. We aimed to disprove that migraine or headache in general is associated with increased risk of developing brain tumors.

METHODS:

Prospective study among 39,534 middle-aged women, free of any cancer, and who provided information on headache history at baseline. We followed participants for occurrence of medical record-confirmed brain tumors. We ran multivariable-adjusted Cox proportional hazards models to evaluate associations between any headache, migraine, and non-migraine headache with incident brain tumors. We further evaluated whether migraine frequency and updated headache information during follow-up could be linked with brain tumors.

RESULTS:

A total of 13,022 (32.9%) women reported headache, of which 5,731 were classified as non-migraine headache and 7,291 as migraine. During a mean follow-up of 15.8 years, 52 brain tumors were confirmed. The multivariable-adjusted hazard ratios (95% confidence interval) for brain tumors were 1.33 (0.76-2.34) for any headache, 1.18 (0.58-2.41) for migraine and 1.53 (0.75-3.12) for non-migraine headache. The association for any headache was further attenuated in time-varying analyses (1.15; 0.58-2.24). Those who experience migraine six times/year were also not at increased risk of brain tumor (0.67; 0.13-3.32).

CONCLUSIONS:

Results of this large, prospective cohort study in women do not provide evidence that headache in general or migraine in particular are associated with the occurrence of brain tumors. Our data should reassure patients with headache that brain tumor is not a long-term consequence of headache.

PMID:25916329

Neck pain and headaches

Exploring the impact of comorbid primary headaches and neck pain

Scandinavian Journal of Pain, 04/30/2015 Ashina S, et al.

Migraine, tension-type headache, and neck-pain are highly prevalent in the population and frequently coexist. Neck pain is more common in patients with migraine and in patients with tension-type headache in comparison to individuals with no known primary headache disorder.

Migraine, tension-type headache, and neck-pain are highly prevalent in the population and frequently coexist [1,2]. Neck pain is more common in patients with migraine and in patients with tension-type headache in comparison to individuals with no known primary headache disorder [2]. Furthermore, neck pain is more common in persons with both migraine and tension-type headache than in individuals with just one of these primary headache disorder [2]. Given that migraine, tension-type headache, and neck pain co-occur, approaches to measuring the impact of headache should take these comorbidities into account.

Ehlers-Danlos and HA's

Neurol Sci. 2015 Mar 20.

A study of migraine characteristics in joint hypermobility syndrome a.k.a. Ehlers-Danlos syndrome, hypermobility type.

Puledda F1, Viganò A, Celletti C, Petolicchio B, Toscano M, Vicenzini E, Castori M, Laudani G, Valente D, Camerota F, Di Piero V.

Author information**Abstract**

Joint hypermobility syndrome (JHS) and Ehlers-Danlos syndrome, hypermobility type (EDS-HT) are two clinically overlapping heritable connective tissue disorders strongly associated with musculoskeletal pain, fatigue and headache. Migraine with or without aura is considered the most common form of headache in JHS/EDS-HT.

In this population of chronically ill patients, we investigated whether migraine characteristics were different from those of a control population of migraine patients. The study was carried out on 33 selected JHS/EDS-HT patients, diagnosed according to current criteria. Sixty-six migraine subjects matching age and gender were consecutively selected as controls (MO group) among patients attending our Headache Clinic. JHS/EDS-HT and MO were screened for a series of headache characteristics, such as frequency, intensity, age of onset, level of disability, use of rescue and prophylactic medications. Differences between the two groups were tested by using independent group comparisons.

Results showed that in JHS/EDS-HT: (1) migraine has an earlier onset (12.6 vs 17 years of age; $p = 0.005$); (2) the rate of migraine days/month is higher (15 vs 9.3 days/month; $p = 0.01$); (3) accompanying symptoms are usually more frequent; (4) HIT-6 and MIDAS scores are higher ($p = 0.04$ and $p = 0.03$); (5) efficacy of rescue medication is almost identical, although, total drug consumption is significantly lower ($p < 0.04$).

Joint hypermobility syndrome and Ehlers-Danlos syndrome, hypermobility type patients have a more severe headache syndrome with respect to the MO group, therefore demonstrating that migraine has a very high impact on quality of life in this disease.

HA prevention/Acupuncture

Headache. 2015 Mar;55(3):470-3. doi: 10.1111/head.12525. Epub 2015 Feb 16.

Acupuncture for migraine prevention.

Da Silva AN1.

Author information

Abstract

BACKGROUND:

Migraine is a complex and multifactorial brain disorder affecting approximately 18% of women and 5% of men in the United States, costing billions of dollars annually in direct and indirect healthcare costs and school and work absenteeism and presenteeism. Until this date, there have been no medications that were designed with the specific purpose to decrease the number of migraine attacks, which prompts a search for alternative interventions that could be valuable, such as acupuncture.

METHODS:

Acupuncture origins from ancient China and encompasses procedures that basically involve stimulation of anatomical points of the body.

RESULTS:

This manuscript reviews large and well-designed trials of acupuncture for migraine prevention and also the effectiveness of acupuncture when tried against proven migraine preventative medications.

CONCLUSION:

Acupuncture seems to be at least as effective as conventional drug preventative therapy for migraine and is safe, long lasting, and cost-effective. It is a complex intervention that may prompt lifestyle changes that could be valuable in patients' recovery.

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KEYWORDS: acupuncture; alternative medicine; prevention

**VESTIBULAR
CONCUSSIONS
SHOULDER GIRDLE
CLAVICLE**

Clavicle significance

J Shoulder Elbow Surg. 2015 Apr 3. pii: S1058-2746(15)00082-8. doi: 10.1016/j.jse.2015.02.009.

The significance of the clavicle on shoulder girdle function.

Van Tongel A1, Piepers I2, De Wilde L2.

Author information

Abstract

BACKGROUND:

Patients with cleidocranial dysplasia (CCD) can have a congenital partial or total absence of the clavicle. The aim of this study was to evaluate the functional shoulder score in these patients.

MATERIAL AND METHODS:

Patients with CCD who were members of a social media group were invited to take part in an Internet-based survey. The questionnaire was composed of 3 general questions, a question concerning partial or total absence of the clavicle, and 3 patient-based shoulder scores (American Shoulder and Elbow Surgeons score; shortened Disabilities of the Arm, Shoulder, and Hand score; and patient-based Constant-Murley score).

RESULTS:

Thirty-six patients (27 women, 9 men) with a mean age of 40 years participated in the survey; 17 patients had a bilateral absence, 16 patients had a bilateral partial absence, and 3 patients had a total absence on one side and a partial absence of the clavicle on the other side. The average patient-based Constant-Murley score was 79; shortened Disabilities of the Arm, Shoulder, and Hand score, 11; and American Shoulder and Elbow Surgeons score, 93. There was no significant difference in the scores between left and right. There was no correlation between partial and total absences and the shoulder scores.

CONCLUSION:

Patients with self-reported CCD are subjectively normal to their peers when they are evaluated with 3 common shoulder scores. There was no correlation between partial and total absences and the shoulder scores.

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KEYWORDS:

Shoulder function scores; absence; clavicle; cleidocranial dysplasia; social media

GLENOHUMERAL/SHOULDER

Subacromial grind test

The accuracy of "subacromial grind test" in diagnosis of supraspinatus rotator cuff tears
International Journal of Shoulder Surgery, 04/10/2015 Sawalha S, et al.

Purpose: The aim of this study is to assess the accuracy of a simple clinical test (subacromial grind test) in diagnosing supraspinatus tendon tears.

Patients and Methods: The test is considered positive if palpable crepitus or grinding is detected on passive internal and external rotation of the shoulder while abducted in the scapular plane. Data were collected prospectively on 47 patients undergoing shoulder arthroscopy, and the results of the test and arthroscopy compared.

Results: During arthroscopy, 17 patients had full thickness (FT) tears of supraspinatus tendon and 10 had partial thickness tears. For any supraspinatus tear, the sensitivity of the test was 63%, specificity 95%, positive predictive value 94%, negative predictive value 66% and overall accuracy 79%. For FT tears, the sensitivity was 82%, specificity 87%, positive predictive value 78%, negative predictive value 90% and overall accuracy 85%.

Conclusion: We found that this is a useful single test for diagnosing FT supraspinatus tears.

Level of Evidence: Level IV diagnostic study.

ROTATOR CUFF**Pitchers shoulder blood flow**

J Shoulder Elbow Surg. 2015 Apr 1. pii: S1058-2746(15)00083-X. doi: 10.1016/j.jse.2015.02.010.

Upper extremity blood flow changes in professional baseball pitchers between two consecutive seasons.

Laudner K1, Selkow N2, Burke N2, Meister K3.
Author information

Abstract

BACKGROUND:

Because of the tremendous forces produced and the repetitive nature of baseball, players have shown various shoulder adaptations in strength and range of motion. However, no research has identified whether alterations occur in the blood flow to the dominant arm among competitive baseball players.

METHODS:

Twenty professional baseball pitchers and 16 position players participated. Measurements were taken on day 1 of 2 consecutive spring training seasons. Diagnostic ultrasound was used to measure blood flow of the throwing arm brachial artery. These measurements were taken in a standing position with the test arm resting at the participant's side and again with the test arm in a provocative shoulder position. Separate 1-way analyses of variance were conducted to compare blood flow between seasons ($P < .05$).

RESULTS:

In a resting position, the blood flow of the pitchers did not change from 1 year to the next ($P = .48$). However, blood flow of the pitchers in the provocative position significantly decreased after the first year ($P = .009$). The position players did not have any significant changes in blood flow for either arm position ($P > .11$).

CONCLUSIONS:

In a provocative shoulder position, the blood flow of pitchers significantly decreased after 1 competitive baseball season. These results indicate that after a competitive season, the blood flow to the upper extremity of pitchers may be compromised.

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KEYWORDS: Prospective; throwing athlete; upper extremity; vasculature

Measurements for surgical recovery

J Shoulder Elbow Surg. 2015 Mar 27. pii: S1058-2746(15)00070-1. doi: 10.1016/j.jse.2015.01.017.

Alteration and recovery of arm usage in daily activities after rotator cuff surgery.

Pichonnaz C1, Duc C2, Jolles BM3, Aminian K2, Bassin JP4, Farron A5.
Author information

Abstract

BACKGROUND:

The objective measurement of dominant/nondominant arm use proportion in daily life may provide relevant information on healthy and pathologic arm behavior. This prospective case-control study explored the potential of such measurements as indicators of upper limb functional recovery after rotator cuff surgery.

METHODS:

Data on dominant/nondominant arm usage were acquired with body-worn sensors for 7 hours. The postsurgical arm usage of 21 patients was collected at 3, 6, and 12 months after rotator cuff surgery in the sitting, walking, and standing postures and compared with a reference established with 41 healthy subjects. The results were calculated for the dominant and nondominant surgical side subgroups at all stages. The correlations with clinical scores were calculated.

RESULTS:

Healthy right-handed and left-handed dominant arm usage was 60.2% ($\pm 6.3\%$) and 53.4% ($\pm 6.6\%$), respectively. Differences in use of the dominant side were significant between the right- and left-handed subgroups for sitting ($P = .014$) and standing ($P = .009$) but not for walking ($P = .328$). The patient group showed a significant underuse of 10.7% ($\pm 8.9\%$) at 3 months after surgery ($P < .001$). The patients recovered normal arm usage within 12 months, regardless of surgical side. The arm underuse measurement was weakly related to function and pain scores.

CONCLUSION:

This study provided new information on arm recovery after rotator cuff surgery using an innovative measurement method. It highlighted that objective arm underuse measurement is a valuable indicator of upper limb postsurgical outcome that captures a complementary feature to clinical scores.

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KEYWORDS: Shoulder; daily measurements; inertial sensors; kinematics; outcome treatment

Fat infiltration

J Shoulder Elbow Surg. 2015 Mar 26. pii: S1058-2746(15)00051-8. doi: 10.1016/j.jse.2015.01.013.

Magnetic resonance rotator cuff fat fraction and its relationship with tendon tear severity and subject characteristics.

Lee S1, Lucas RM2, Lansdown DA2, Nardo L3, Lai A3, Link TM3, Krug R3, Ma CB2.
Author information

Abstract

BACKGROUND:

Compared with the Goutallier classification, chemical shift-based magnetic resonance (MR) fat quantification has superior reliability and accuracy in evaluation of muscle fatty infiltration. We used this method to assess the relationship between rotator cuff (RC) muscle fat fractions, tendon disease severity, and subject characteristics.

METHODS:

In total, 182 subjects with shoulder symptoms underwent shoulder MR imaging including additional sequences for fat quantitation. Then, fat fraction maps were manually segmented, and custom software was used to compute the fat fraction. Goutallier scores were also obtained. The relationship between fat fraction and tendon tear severity and subject characteristics was assessed with descriptive statistics, analysis of variance, Student t test of different subgroups, and simple and multiple linear regression analysis.

RESULTS:

Statistically higher supraspinatus fat fractions were observed in subgroups with tendon tears >3 cm, retraction >1 cm, age >50 years, body mass index (BMI) >30, higher Goutallier score, female gender, and longer symptom duration. A significant linear relationship was seen between RC fat fraction and tendon disease severity, age, and BMI but not symptom duration. Multiple regression models with fat fraction and tendon disease, age, BMI, and gender were significant for all 4 muscles ($P < .001$). The slope of fatty infiltration increase with age was reduced after adjustment for tendon disease, BMI, and gender.

CONCLUSION:

RC fat fraction assessed by chemical shift MR demonstrated a significant linear relationship with tendon tear severity, age, BMI, and gender but not with symptom duration.

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KEYWORDS: MRI evaluation; Rotator cuff tear; fatty infiltration; muscle degeneration; tear size

**ADHESIVE CAPSULITIS
IMPINGEMENT
SURGERY
ELBOW**

Surgical drop sign

J Shoulder Elbow Surg. 2015 Mar 27. pii: S1058-2746(15)00071-3. doi: 10.1016/j.jse.2015.01.018.

Drop sign of the elbow joint after surgical stabilization of an unstable simple posterolateral dislocation: natural course and contributing factors.

Rhyou IH1, Lim KS2, Kim KC2, Lee JH2, Ahn KB2, Moon SC2.

Author information

Abstract

BACKGROUND:

We performed this study to investigate the natural course and factors affecting the incidence of drop sign immediately after stabilization of an unstable posterolateral (PL) dislocation of the elbow.

METHODS:

Twenty-three patients who underwent a stabilization procedure for persistent instability after closed reduction of PL dislocation of the elbow were enrolled. The natural course was evaluated with simple radiographs taken at regular intervals after the operation. Primary repair of medial or lateral ligaments and overlying muscles, degree of adjacent muscle injury, and type of anesthesia were analyzed to determine their relationship to postoperative drop sign. Functional outcomes were evaluated by the Disabilities of the Arm, Shoulder, and Hand score and Mayo Elbow Performance Score.

RESULTS:

A postoperative drop sign was observed in 4 cases (17%) and resolved within 1 week after the operation. There was no significant relationship between preoperative factors and drop sign except method of anesthesia. All drop signs were found in patients who had received a regional block ($P = .006$). There were no statistically significant differences in functional outcome between the drop sign group and the non-drop sign group.

CONCLUSIONS:

A postoperative drop sign was observed in 17% of patients who underwent a surgical stabilization procedure for an unstable PL elbow dislocation; this sign spontaneously disappeared in all 4 patients within 1 week of the operation. The drop sign was possibly caused by delayed return of muscle tone. A postoperative drop sign did not indicate the need to perform an additional stabilization procedure, nor did it affect postoperative functional outcome.

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KEYWORDS: Elbow dislocation; drop sign; lateral ulnar collateral ligament; posterolateral elbow dislocation; primary repair; ulnar collateral ligament

**WRIST AND HAND
CARPAL TUNNEL SYNDROME
HIP**

Groin injury risk

Br J Sports Med doi:10.1136/bjsports-2014-094287

Risk factors for groin injury in sport: an updated systematic review

Jackie L Whittaker¹, Claire Small², Lorrie Maffey^{3,4}, Carolyn A Emery^{5,6}

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⁶Department of Pediatrics and Department of Community Health Sciences, Alberta Children's Hospital Research Institute for Child and Maternal Health, Cummings School of Medicine, University of Calgary, Calgary, Canada

Abstract

Background The identification of risk factors for groin injury in sport is important to develop and implement injury prevention strategies.

Objective To identify and evaluate the evidence examining risk factors for groin injury in sport.

Material and methods Nine electronic databases were systematically searched to June 2014. Studies selected met the following criteria: original data; analytic design; investigated a risk factor(s); included outcomes for groin injury sustained during sport participation. The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines were followed and two independent authors assessed the quality and level of evidence with the Downs and Black (DB) criteria and Oxford Centre of Evidence-Based Medicine model, respectively.

Results Of 2521 potentially relevant studies, 29 were included and scored. Heterogeneity in methodology and injury definition precluded meta-analyses. The most common risk factors investigated included age, hip range of motion, hip adductor strength and height. The median DB score across studies was 11/33 (range 6–20). The majority of studies represented level 2 evidence (cohort studies) however few considered the inter-relationships between risk factors. There is level 1 and 2 evidence that previous groin injury, higher-level of play, reduced hip adductor (absolute and relative to the hip abductors) strength and lower levels of sport-specific training are associated with increased risk of groin injury in sport.

Conclusions We recommended that investigators focus on developing and evaluating preparticipation screening and groin injury prevention programmes through high-quality randomised controlled trials targeting athletes at greater risk of injury.

Return to sports FAI surgery

Br J Sports Med. 2015 Apr 3. pii: bjsports-2014-094414. doi: 10.1136/bjsports-2014-094414.

Return to sport after hip surgery for femoroacetabular impingement: a systematic review.

Casartelli NC1, Leunig M2, Maffiuletti NA1, Bizzini M1.

Abstract

BACKGROUND:

We aimed to appraise (1) the rate of return to sport of athletes after hip surgery for femoroacetabular impingement (FAI) and (2) some aspects that may influence the return to sport.

METHODS:

Four databases (EMBASE, PubMed, Web of Science, Cochrane Library) were searched until 21 October 2014. Studies evaluated return to sport of athletes who underwent hip surgery for the treatment of symptomatic FAI. A validated tool was used for quality evaluation of the studies.

RESULTS:

A total of 18 case series (level of evidence IV) with moderate-to-high methodological quality were included. On average, 87% of athletes returned to sport after hip surgery for FAI and 82% returned to the same sport level as before the occurrence of the symptoms. Professional athletes seem to return to sport at a higher rate compared with recreational and collegiate athletes. Sport participation after hip arthroscopy tends to decrease for professional athletes at short-term and mid-term follow-ups. Diffuse hip osteoarthritis at the time of surgery may not allow athletes to return to sport.

CONCLUSIONS:

Most athletes return to sport after hip surgery for the treatment of symptomatic FAI. The level of competition, time of evaluation after hip surgery and presence of articular cartilage lesions at the time of surgery may influence return to sport. Future studies with higher levels of evidence should describe and evaluate return to sport protocols after hip surgery for FAI.

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KEYWORDS:

Hip; Sports; Surgery

REPLACEMENTS

Leg length

J Arthroplasty. 2015 Apr 11. pii: S0883-5403(15)00277-6. doi: 10.1016/j.arth.2015.04.012.

The Influence of Leg Length Discrepancy after Total Hip Arthroplasty on Function and Quality of Life: A Prospective Cohort Study.

Mahmood SS¹, Mukka SS¹, Crnalic S¹, Sayed-Noor AS¹.

Author information

Abstract

We investigated whether patients with lengthening (> 9 mm), restoration (between 9 mm lengthening and 5 mm shortening) or shortening (> 5 mm) of the operated leg after total hip arthroplasty (THA) had different function (WOMAC score), quality of life (EQ-5D), residual hip pain, use of shoe lift and walking aid and leg length discrepancy (LLD) awareness, 12-15 months postoperatively. All patients had a significant postoperative improvement in WOMAC and EQ-5D regardless the LLD. However, the lengthening group showed less improvement in WOMAC, more use of shoe lift, residual hip pain and LLD awareness compared with the other two groups. No differences in EQ-5D were found. In spite of the improvement in function and quality of life, lengthening had adverse effects and should therefore be avoided.

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KEYWORDS: WOMAC; complication; leg length discrepancy; quality of life; total hip arthroplasty

PMID: 25922312

**OA
IMPINGEMENT****Surgical results**

Br J Sports Med. 2015 Apr 3. pii: bjsports-2014-094414. doi: 10.1136/bjsports-2014-094414.

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Casartelli NC1, Leunig M2, Maffiuletti NA1, Bizzini M1.

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KEYWORDS: Hip; Sports; Surgery

KNEE **KNEE/ACL**

Double vs. single bundle

Knee Surg Sports Traumatol Arthrosc. 2014 Mar 22.

Prospective randomized comparison of knee stability and joint degeneration for double- and single-bundle ACL reconstruction.

Sun R1, Chen BC, Wang F, Wang XF, Chen JQ.

Abstract

PURPOSE:

This study aims to determine the outcome of double-bundle anterior cruciate ligament (ACL) reconstruction using an allograft in comparison with ACL reconstruction using a double-bundle autograft or a single-bundle allograft.

METHODS:

A total of 424 patients who accepted primary ACL reconstructions were divided randomly into three groups: double-bundle technique with autograft (DB-AU group, n = 154), double-bundle technique with allograft (DB-AL group, n = 128), and single-bundle technique with allograft (SB group, n = 142). The KT-1000 arthrometer and pivot-shift tests were performed at 3, 12, and 36 months after surgery, and clinical outcome measurements include the Lysholm score and the IKDC rating scales. Radiological assessments evaluated arthritic changes and tunnel expansion at 36 months postoperatively.

RESULTS:

The KT-1000 test scores in the DB-AU and DB-AL groups were significantly better than those in the SB group at 12 and 36 months postoperatively ($P < 0.05$). The pivot-shift tests scores in the DB-AU and DB-AL groups were significantly better than those in the SB group at the 3, 12, and 36 month follow-ups ($P < 0.05$). Based on the IKDC score and Lysholm score, there were no significant difference between the three groups during follow-up ($P > 0.05$). At 36 months postoperatively, 42.3 % of patients in the SB group showed a progression in arthritic changes, which was greater than in the DB-AU (29.2 %) and DB-AL (27.3 %) groups ($P < 0.05$). At 36 months, the rates of tunnel expansion in the DB-AU group and the DB-AL group were lower than in the SB group ($P < 0.05$).

CONCLUSIONS:

Double-bundle ACL reconstruction can be used to achieve better anterior and rotational stability and has a lower rate of arthritic progression and tunnel expansion than the single-bundle procedure. **LEVEL OF EVIDENCE: I.**

Factors for excellent results

Knee Surg Sports Traumatol Arthrosc. 2015 Apr;23(4):1053-9. doi: 10.1007/s00167-014-2869-9. Epub 2014 Feb 15.

Factors associated with excellent 6-month functional and isokinetic test results following ACL reconstruction.

Krych AJ1, Woodcock JA, Morgan JA, Levy BA, Stuart MJ, Dahm DL.

Author information

Abstract

PURPOSE:

To identify patient concomitant injury and surgical characteristics associated with 6-month excellent functional and isokinetic testing results following anterior cruciate ligament (ACL) reconstruction.

METHODS:

Patients that underwent ACL reconstruction by a single surgeon had isokinetic and functional testing performed with excellent 6-month outcome defined as greater than 85 % in isokinetic strength and 90 % in functional tests (excellent 6-month group vs. delayed 6-month group). Patient concomitant injury and surgical factors were then analysed in univariate and multivariate statistical models to assess which characteristics predicted the excellent 6-month group.

RESULTS:

The 224 patients included 93 males and 131 females, with median age of 22 (range 12-59) years, body mass index (BMI) of 25.4 (range 17-44), and median Tegner activity score of 6 (range 2-10). Fifty-two patients (23 %) were included in the excellent 6-month group, while 172 patients (77 %) were in the delayed 6-month group. In univariate analysis, favourable factors with the excellent 6-month outcome group were younger age (24 vs. 27; $p = 0.01$), lower BMI (24.5 vs. 26.2; $p = 0.03$), and minimal articular cartilage damage (71 vs. 56 %; $p = 0.048$). In multivariate analysis, a negative effect was observed for patients older than 30 years that had ACL reconstruction with autograft ($p = 0.0004$).

CONCLUSION:

Factors significantly associated with excellent 6-month functional and isokinetic test results following ACL reconstruction included younger age, lower BMI, and minimal cartilage degeneration. The use of allograft was associated with improved functional and strength testing after ACL reconstruction in patients over 30 years of age.

LEVEL OF EVIDENCE:

Prognostic/therapeutic study, Level III.

OA IN surgical and nonsurgical patients

Knee Surg Sports Traumatol Arthrosc. 2015 Apr 9.

No difference in osteoarthritis after surgical and non-surgical treatment of ACL-injured knees after 10 years.

Tsoukas D¹, Fotopoulos V, Basdekis G, Makridis KG.
Author information

Abstract

PURPOSE:

Aim of this study was to record and compare the functional and activity level as well as the manifestations of osteoarthritis after isolated ACL ruptures between patients with conservative treatment and ACL reconstruction with hamstrings tendon graft.

METHODS:

Thirty-two patients diagnosed with ACL rupture were recorded. Clinical examination included the Tegner and Lysholm activity scale, the International Knee Documentation Committee Subjective Form and KT-1000 arthrometer. Narrowing of the medial and lateral joint spaces was assessed using the IKDC knee examination score.

RESULTS:

Median follow-up was 10.3 years (range 10-11). Fifteen patients were conservatively treated (median age 33 years, range 25-39). Seventeen patients were operated (median age 31 years, range 20-36). There was significant difference between the mean values of IKDC scores in favour of the ACL-reconstruction group of patients, 86.8 (SD 6.5) versus 77.5 (SD 13.8), respectively ($p = 0.04$). The mean value of anteroposterior tibial translation was 1.5 mm (SD 0.2) for ACL-reconstruction group of patients, while the corresponding mean value for ACL-conservative group was 4.5 mm (SD 0.5), $p = 0.03$. Four patients in ACL-reconstruction group had radiological findings of grade C or D according to IKDC form. In ACL-conservative group, five patients presented similar signs (n.s.).

CONCLUSIONS:

ACL reconstruction using hamstrings autograft resulted in better functional outcome and laxity measurements than ACL-conservative management. However, the incidence of radiological osteoarthritis was similar between the two groups and independent on the pre-operative grade of laxity and functional status of the patients. Equally, bone bruises were not found as a risk factor for the development of osteoarthritis after ACL rupture.

LEVEL OF EVIDENCE:

Prospective randomized study, Level II.

PMID:25854500

Risk of OA

Br J Sports Med doi:10.1136/bjsports-2014-094287

Risk factors for groin injury in sport: an updated systematic review

Jackie L Whittaker¹, Claire Small², Lorrie Maffey^{3,4}, Carolyn A Emery^{5,6}

¹Faculty of Kinesiology, Sport Injury Prevention Research Centre, University of Calgary, Calgary, Alberta, Canada

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⁴School of Rehabilitation Science, McMaster University, Canada

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⁶Department of Pediatrics and Department of Community Health Sciences, Alberta Children's Hospital Research Institute for Child and Maternal Health, Cummings School of Medicine, University of Calgary, Calgary, Canada

Abstract

Background The identification of risk factors for groin injury in sport is important to develop and implement injury prevention strategies.

Objective To identify and evaluate the evidence examining risk factors for groin injury in sport.

Material and methods Nine electronic databases were systematically searched to June 2014. Studies selected met the following criteria: original data; analytic design; investigated a risk factor(s); included outcomes for groin injury sustained during sport participation. The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines were followed and two independent authors assessed the quality and level of evidence with the Downs and Black (DB) criteria and Oxford Centre of Evidence-Based Medicine model, respectively.

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Conclusions We recommended that investigators focus on developing and evaluating preparticipation screening and groin injury prevention programmes through high-quality randomised controlled trials targeting athletes at greater risk of injury.

MENISCUS
PATELLA
KNEE/TOTAL

Impact of presurgical PT

J Arthroplasty. 2015 Apr 11. pii: S0883-5403(15)00278-8. doi: 10.1016/j.arth.2015.04.013.

Does Pre-Operative Physiotherapy Improve Outcomes in Primary Total Knee Arthroplasty? - A Systematic Review.

Kwok IH¹, Paton B¹, Haddad FS¹.

Author information

Abstract

We undertook a systematic review of 11 randomised controlled trials comparing patient outcomes in total knee arthroplasty in those who had undergone pre-operative physiotherapy-based interventions against control groups. Results show that there is little evidence that pre-operative physiotherapy brings about significant improvements in patient outcome scores, lower limb strength, pain, range of movement and hospital length of stay following total knee arthroplasty. The overall quality of the studies was moderate to poor, mostly due to the small sample sizes.

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KEYWORDS: exercise; knee arthroplasty; knee replacement; osteoarthritis; physiotherapy
PMID:25913232

Weight bearing CT scan and joint alignment**Upright CT of the knee: the effect of weight-bearing on joint alignment**

European Radiology, 05/02/2015 Hirschmann A, et al.

Abstract**Objectives**

To prospectively compare patellofemoral and femorotibial alignment in supine non-weight-bearing computed tomography (NWBCT) and upright weight-bearing CT (WBCT) and assess the differences in joint alignment.

Methods

NWBCT and WBCT images of the knee were obtained in 26 patients (mean age, 57.0 ± 15.9 years; range, 21-81) using multiple detector CT for NWBCT and cone-beam extremity CT for WBCT. Two musculoskeletal radiologists independently quantified joint alignment by measuring femorotibial rotation, tibial tuberosity-trochlear groove distance (TTTG), lateral patellar tilt angle, lateral patellar shift, and medial and lateral femorotibial joint space widths. Significant differences between NWBCT and WBCT were sought using Wilcoxon signed-rank test (P -value < 0.05).

Results

Significant differences were found for femorotibial rotation (the NWBCT mean changed from $2.7^\circ \pm 5.1$ (reader 1)/ $2.6^\circ \pm 5.6$ (reader 2) external rotation to WBCT $0.4^\circ \pm 7.7/0.2^\circ \pm 7.5$ internal rotation; $P = 0.009/P = 0.004$), TTTG (decrease from NWBCT ($13.8 \text{ mm} \pm 5.1/13.9 \text{ mm} \pm 3.9$) to WBCT ($10.5 \text{ mm} \pm 5.0/10.9 \text{ mm} \pm 5.2$; $P = 0.008/P = 0.002$), lateral patellar tilt angle (decrease from NWBCT ($15.6^\circ \pm 6.7/16.9^\circ \pm 7.4$) to WBCT ($12.5^\circ \pm 7.7/15.0^\circ \pm 6.2$; $P = 0.011/P = 0.188$). The medial femorotibial joint space decreased from NWBCT ($3.9 \text{ mm} \pm 1.4/4.5 \text{ mm} \pm 1.3$) to WBCT ($2.9 \text{ mm} \pm 2.2/3.5 \text{ mm} \pm 2.2$; $P = 0.003/P = 0.004$). Inter-reader agreement ranged from 0.52-0.97.

Conclusion

Knee joint alignment changes significantly in the upright weight-bearing position using CT when compared to supine non-weight-bearing CT.

Key Points

- Cone-beam extremity CT offers upright weight-bearing examinations of the lower extremities.
- Knee alignment changes significantly in an upright position compared to supine position.
- Tibial tuberosity-trochlear groove distance (TTTG) is less pronounced in a weight-bearing position.
- The weight-bearing position leads to a decrease of the lateral patellar tilt angle.

Risk factors

Arch Orthop Trauma Surg. 2015 Apr 9.

Risk factors for venous thromboembolism after total hip and total knee arthroplasty: a meta-analysis.

Zhang J¹, Chen Z, Zheng J, Breusch SJ, Tian J.
Author information

Abstract

INTRODUCTION:

Venous thromboembolism (VTE) is a common complication after total hip arthroplasty (THA) or total knee arthroplasty (TKA) and may be the cause for a secondary PE and associated morbidity/mortality. We performed a systematic literature review of risk factors and risk reduction of VTE after THA or TKA.

MATERIALS AND METHODS:

A systematic search of PubMed database, the Cochrane Library, OVID MEDLINE and American Academy of Orthopaedic Surgeons (AAOS), without restriction of publication data and language, was conducted. We performed a meta-analysis of ten factors for VTE after THA or TKA. Four authors independently assessed data extraction and quality of the studies using the Newcastle-Ottawa Scale (NOS) as quality assessment tool. Assessment of heterogeneity and analysis of data were operated by Review Manager 5.2.9.

RESULTS:

Fourteen retrospective case-control or prospective cohort studies, which included 18,075 patients who developed VTE after THA or TKA of a total of 1,723,350 cases, were selected. Our results demonstrated that, among all ten factors investigated, 3 main risk factors were significantly associated with VTE after THA or TKA: history of VTE (RR > 10.6), varicose vein (RR > 2.7) and congestive cardiac failure (RR 2). There was also an increase of VTE risk ranging from 8 to 30 % for female gender < age (≥ 80) < hypertension < (active) cancer < obesity (BMI ≥ 30) < (black) race. Data analysis revealed that diabetes mellitus had no significant relationship with VTE after THA or TKA.

CONCLUSIONS:

This study highlighted the role of nine significant risk factors in the development of VTE after THA or TKA. Among all risk factors, history of VTE seems the one main indication for more potent anticoagulation. All other risk factors need to be considered and discussed with patients individually and balanced against the risk of bleeding and infection. Individual patient risk assessment, rather than a "blanket policy", is considered the best management strategy before deciding on the type of chemical prophylaxis.

PMID:25854654

Importance of alignment

Bone Joint J. 2015 Apr;97-B(4):498-502. doi: 10.1302/0301-620X.97B4.33740.

The dynamic nature of alignment and variations in normal knees.

Deep K1, Eachempati KK2, Apsingi S2.

Author information

Abstract

The restoration of knee alignment is an important goal during total knee arthroplasty (TKA). In the past surgeons aimed to restore neutral limb alignment during surgery. However, previous studies have demonstrated alignment to be dynamic, varying depending on the position of the limb and the degree of weight-bearing, and between patients.

We used a validated computer navigation system to measure the femorotibial mechanical angle (FTMA) in 264 knees in 77 male and 55 female healthy volunteers aged 18 to 35 years (mean 26.2). We found the mean supine alignment to be a varus angle of 1.2° (standard deviation (sd) 4), with few patients having neutral alignment. FTMA differs significantly between males and females (with a mean varus of 1.7° (sd 4) and 0.4° (sd 3.9), respectively; $p = 0.008$). It changes significantly with posture, the knee hyperextending by a mean of 5.6°, and coronal plane alignment becoming more varus by 2.2° (sd 3.6) on standing compared with supine.

Knee alignment is different in different individuals and is dynamic in nature, changing with different postures. This may have implications for the assessment of alignment in TKA, which is achieved in non-weight-bearing conditions and which may not represent the situation observed during weight-bearing. Cite this article: Bone Joint J 2015; 97-B:498-502.

©2015 The British Editorial Society of Bone & Joint Surgery.

KEYWORDS:

alignment; knee; measurement; mechanical axis; normal knee; total knee replacement

KNEE/EXERCISE
 OSTEOARTHRITIS/KNEE
 FOOT AND ANKLE

Reliability of fluoroscopy on articular congruity

J Orthop Trauma. 2015 Apr;29(4):e161-5. doi: 10.1097/BOT.0000000000000219.

Standard perioperative imaging modalities are unreliable in assessing articular congruity of ankle fractures.

Garner MR1, Fabricant PD, Schottel PC, Berkes MB, Shaffer AD, Ni A, Lorch DG.
 Author information

Abstract

OBJECTIVES:

To determine the sensitivity, specificity, and interobserver and intraobserver reliabilities of intraoperative fluoroscopy and postoperative plain radiographs (XR) in the assessment of articular congruity after open reduction and internal fixation (ORIF) of ankle fractures involving the tibial plafond.

DESIGN:

Retrospective cohort.

SETTING:

Academic level 1 trauma center.

PATIENTS/PARTICIPANTS:

One hundred five patients treated surgically for rotational ankle fractures.

INTERVENTION:ORIF.

MAIN OUTCOME MEASUREMENTS:Sensitivity, specificity, and interobserver and intraobserver reliabilities of fluoroscopy and plain radiographs when compared with computed tomography imaging.

RESULTS:The sensitivities of fluoroscopy and XR were 21% and 36%, respectively. Specificities were 95% (fluoroscopy) and 89% (XR). Fluoroscopy interobserver reliability was $\kappa = 0.15$, and mean intraobserver reliability was $\kappa = 0.32$. XR interobserver and mean intraobserver reliabilities were $\kappa = 0.30$ and $\kappa = 0.59$.

CONCLUSIONS:Although results show acceptable specificity, the reliability and sensitivity of both intraoperative fluoroscopy and postoperative XR in the assessment of ankle articular congruity are low. This calls into question available literature correlating clinical results with articular reduction. During ORIF of an intra-articular ankle fracture, surgeons should be highly critical of fluoroscopic imaging that seems adequately reduced and direct visualization of the articular surface should be used as a reduction aid if possible. Furthermore, in the postoperative period, axial imaging may be warranted in patients who have poor clinical outcomes despite apparent anatomic articular reduction to evaluate for occult joint incongruence.

PMID: 25233163

Syndesmotic evaluation

J Orthop Trauma. 2015 Apr;29(4):e157-60. doi: 10.1097/BOT.0000000000000247.

Prospective intraoperative syndesmotic evaluation during ankle fracture fixation: stress external rotation versus lateral fibular stress.

Matuszewski PE1, Dombroski D, Lawrence JT, Esterhai JL Jr, Mehta S.

Author information

Abstract

OBJECTIVES:

We hypothesized that the method of stress external rotation more accurately reproduces the mechanism of injury, and therefore this diagnostic method more likely detects ankle instability than the fibular stress examination.

DESIGN:

Prospective cohort comparison study.

SETTING:

Level 1 trauma center.

PATIENTS: Twenty-eight consecutive patients with unstable ankle fractures presenting within 7 days from the time of injury. Previous ankle surgical history or age younger than 18 years was excluded.

INTERVENTION: Stress external rotation and lateral fibular stress examination was performed intraoperatively.

MAIN OUTCOME MEASURE: Radiographic measurement of the tibiofibular clear space, tibiofibular overlap, and medial clear space were recorded.

RESULTS: After normalization of the fluoroscopic measurements, there was no difference in detecting changes in tibiofibular clear space or tibiofibular overlap. However, there was a significant difference in detecting medial clear space widening with stress external rotation. Compared with lateral fibular stress, stress external rotation demonstrated a 35% increase ($P < 0.05$) in medial clear space widening. This difference correlates with the 1-2-mm difference of additional widening with stress external rotation.

CONCLUSIONS: Untreated instability impacts patient outcomes. The difference in widening with stress external rotation was significantly greater than lateral fibular stress and appreciable on standard fluoroscopic views. Stress external rotation radiographs are a more reliable indicator of mortise instability than traditional lateral fibular stress.

LEVEL OF EVIDENCE: Diagnostic Level IV. See Instructions for Authors for a complete description of levels of evidence.

**ORTHOTICS
SPRAINS/INSTABILITY****NMC for sprains**

BMC Musculoskelet Disord. 2015 Apr 9;16:78. doi: 10.1186/s12891-015-0539-9.

The trAPP-study: cost-effectiveness of an unsupervised e-health supported neuromuscular training program for the treatment of acute ankle sprains in general practice: design of a randomized controlled trial.

Mailuhu AK¹, Verhagen EA², van Ochten JM³, Bindels PJ⁴, Bierma-Zeinstra SM⁵, van Middelkoop M⁶.

Author information

Abstract

BACKGROUND:

Ankle sprains are one of the most frequent injuries of the musculoskeletal system, with yearly around 680.000 new sprains in the Netherlands. Of these, about 130.000 people will visit the general practitioner (GP) each year. In addition, patients have an increased risk of a recurrent ankle sprain and about a third report at least one re-sprain. No optimal treatment strategy has proven to be effective in general practice, however promising results were achieved in a preventive trial among athletes. Therefore, the objective is to examine the (cost)-effectiveness of an unsupervised e-health supported neuromuscular training program in combination with usual care in general practice compared to usual care alone in patients with acute ankle sprains in general practice.

METHOD/DESIGN:

This study is a multi-center, open-label randomized controlled trial, with a one-year follow-up. Patients with an acute lateral ankle sprain, aged between 14 and 65 years and visiting the GP within three weeks of injury are eligible for inclusion. Patients will be randomized in two study groups. The intervention group will receive, in addition to usual care, a standardized eight-week neuromuscular training program guided by an App. The control group will receive usual care in general practice alone. The primary outcome of this study is the total number of ankle sprain recurrences reported during one year follow-up. Secondary outcomes are subjective recovery after one year follow-up, pain at rest and during activity, function, return to sport, cost-effectiveness and compliance of the intervention. Measurements will take place monthly for the study period of 12 months after baseline measurement.

DISCUSSION:

For general practitioners the treatment of acute ankle sprains is a challenge. A neuromuscular training program that has proven to be effective for athletes might be a direct treatment tool for acute ankle sprains in general practice. Positive results of this randomized controlled trial can lead to changes in practice guidelines for general practitioners. In addition, since this training program is e-health supported, positive results can also lead to a novel way of injury prevention.

TRIAL REGISTRATION:

Dutch Trial Registration: NTR4765 .

PMID:25887998

ACHILLES TENDON
PLANTAR SURFACE
HALLUX VALGUS
RHUMATOID ARTHRITIS
MANUAL THERAPY
NEUROMOBILIZATION
STRETCHING/MUSCLES
STM

C spine pain trigger points

Range of motion and cervical myofascial pain

Journal of Bodywork & Movement Therapies , 04/30/2015 Wilke J, et al.

T

Summary

Several studies investigating myofascial pain syndrome include assessments of range of motion (ROM) as a diagnostic criterion. However, the value of ROM in this context has not yet been evaluated in controlled clinical studies. We aimed to examine whether patients with myofascial pain syndrome display alterations of ROM when compared to healthy subjects.

Twenty-two individuals (13 females, 9 males; aged 33.4 ± 13.9 yrs) afflicted with active myofascial trigger points in the upper trapezius muscle as well as 22 age and sex matched healthy controls were included. All subjects underwent an examination of maximal active cervical ROM in flexion/extension assessed by means of a 3D ultrasonic movement analysis system (30 Hz; Zebris CMS 70). In the patients group, pressure pain threshold (PPT) of the trigger points was determined using a pressure algometer.

Maximum range of motion in the sagittal plane did not differ between individuals with MTrP ($125.9 \pm 23.2^\circ$, 95% CI: 116.2-135.6°) and asymptomatic subjects ($128.2 \pm 20.4^\circ$, 95% CI: 119.7-136.7°; $p > .05$). In patients, PPT (1.7 ± 0.6 , 95% CI: 1.5-1.9) was not correlated with cervical mobility ($r = -0.13$; $p > .05$).

Based on these pilot data, range of motion in flexion/extension is not a valid criterion for the detection of myofascial trigger points. Additional research incorporating movement amplitudes in other anatomical planes and additional afflicted muscles should be conducted in order to further delineate the relative impact of MTrP on range of motion.

Dry needling and multifidus function

Man Ther. 2015 Mar 13. pii: S1356-689X(15)00051-X. doi: 10.1016/j.math.2015.03.003.

Changes in lumbar multifidus muscle function and nociceptive sensitivity in low back pain patient responders versus non-responders after dry needling treatment.

Koppenhaver SL1, Walker MJ2, Su J2, McGowen JM2, Umlauf L2, Harris KD3, Ross MD4.

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

Little is known about the physiologic mechanism of dry needling. While some evidence suggests that dry needling may decrease nociceptive sensitivity and facilitate muscle function, no studies to date have examined these physiologic changes compared to clinical outcomes.

OBJECTIVE:

To examine changes in lumbar multifidus (LM) muscle function and nociceptive sensitivity after dry needling in patients with LBP and to determine if such changes differ in patients that exhibit improved disability (responders) and those that do not (non-responders).

DESIGN:

Quasi-experimental study.

METHODS:

Sixty-six volunteers with mechanical LBP (38 men, age = 41.3 ± 9.2 years) completed the study. Ultrasound measurements and pain algometry of the LM were taken at baseline and repeated immediately following dry needling treatment to the LM muscles and after one week. The percent change in muscle thickness from rest to contraction was calculated for each time point to represent muscle function. Pressure pain threshold (PPT) was used to measure nociceptive sensitivity. Participants were dichotomized as responders and non-responders based on whether or not they experienced clinical improvement using the modified Oswestry Disability Index after one week. 2×3 mixed-model ANOVA were conducted for group (responders vs. non-responders) by time.

RESULTS:

Patient responders exhibited larger improvements in LM muscle contraction and nociceptive sensitivity 1 week, but not immediately, after dry needling than non-responders.

CONCLUSIONS:

Our results suggest that there may be lasting and clinically relevant sensorimotor changes that occur in LBP patients that improve with dry needling treatment that partially explain the physiologic mechanism of action.

Published by Elsevier Ltd.

KEYWORDS: Acupuncture; Low back pain; Muscle contraction; Ultrasonography

Fibrosis

Proteomics. 2015 Mar 3. doi: 10.1002/pmic.201400471.

Label-free mass spectrometric analysis of the mdx-4cv diaphragm identifies the matricellular protein periostin as a potential factor involved in dystrophinopathy-related fibrosis.

Holland A1, Dowling P, Meleady P, Henry M, Zweyer M, Mundegar RR, Swandulla D, Ohlendieck K.

Author information**Abstract**

Proteomic profiling plays a decisive role in the identification of novel biomarkers of muscular dystrophy and the elucidation of new pathobiochemical mechanisms that underlie progressive muscle wasting.

Building on the findings of recent comparative analyses of tissue samples and body fluids from dystrophic animals and patients afflicted with Duchenne muscular dystrophy, we have used here label-free MS to study the severely dystrophic diaphragm from the not extensively characterized mdx-4cv mouse. This animal model of progressive muscle wasting exhibits less dystrophin-positive revertant fibers than the conventional mdx mouse, making it ideal for the future monitoring of experimental therapies. The pathoproteomic signature of the mdx-4cv diaphragm included a significant increase in the fibrosis marker collagen and related extracellular matrix proteins (asporin, decorin, dermatopontin, prolargin) and cytoskeletal proteins (desmin, filamin, obscurin, plectin, spectrin, tubulin, vimentin, vinculin), as well as decreases in proteins of ion homeostasis (parvalbumin) and the contractile apparatus (myosin-binding protein).

Importantly, one of the most substantially increased proteins was identified as periostin, a matricellular component and apparent marker of fibrosis and tissue damage. Immunoblotting confirmed a considerable increase of periostin in the dystrophin-deficient diaphragm from both mdx and mdx-4cv mice, suggesting an involvement of this matricellular protein in dystrophinopathy-related fibrosis.

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KEYWORDS:

Animal proteomics; Collagen; Duchenne muscular dystrophy; Fibrosis; Matricellular protein; Periostin

MUSCLES**Hamstring insertion**

Arthroscopy. 2015 Apr 18. pii: S0749-8063(15)00134-6. doi: 10.1016/j.arthro.2015.02.025.

Anatomic Description of the Origin of the Proximal Hamstring.

Neuschwander TB¹, Benke MT², Gerhardt MB³.

Author information

Abstract

PURPOSE:

To define the topographic anatomy of the footprint of the hamstrings origin on the ischium.

METHODS:

Dissection of the hamstrings origin in 6 cadaveric pelvises was performed. The hamstrings origin was isolated with sharp dissection, and it was noted whether the semimembranosus had a separate attachment or whether there was one confluent tendon attached at the footprint. The common hamstrings tendon was then sharply dissected from the ischium, and the footprint was outlined with surgical marker followed by radiopaque paint. Paint was prepared by mixing 0.25 g Daler-Rowney acrylic artists ink scarlet no. 567 (Daler-Rowney, Bracknell, England) per gram of EZ-HD 98% v/w barium sulfate (E-Z-EM Inc, Lake Success, NY). The paint was then applied to the area of the footprint, and the specimen underwent a 0.5-mm-slice computed tomographic (CT) scan of the pelvis with 3-dimensional (3D) reconstructions. Vitrea (Vital Images, Minnetonka, MN) software was used to determine the surface area of the ligament footprint as well as the distance from the ischial tuberosity to the center of the footprint. The thickness of the bone underlying the footprint was measured. Data are presented as means \pm standard error.

RESULTS:

Five of 6 specimens had a common hamstrings tendon, whereas one had a separate attachment for the semimembranosus. The semimembranosus joined the common hamstrings tendon 2.33 ± 0.61 cm distal to the footprint. The average surface area of the hamstrings footprint measured 10.19 ± 0.75 cm². The distance from the tip of the ischial tuberosity to the center of the hamstrings footprint measured 3.73 ± 0.22 cm. The average thickness of the bone deep to the footprint was 3.77 ± 0.9 cm.

CONCLUSIONS:

This study provides a topographic description of the origin of the hamstrings footprint and may assist surgeons in performing anatomic reattachment of this tendon.

CLINICAL RELEVANCE:

Our data will assist surgeons in performing anatomic repair of proximal hamstrings avulsions.

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PMID:25896274

**STRETCHING
MOTOR CONTROL
CFS/BET****Sit to stand monitoring**

Gait Posture. 2015 Apr 7. pii: S0966-6362(15)00430-0. doi: 10.1016/j.gaitpost.2015.03.350.

Sensor-based monitoring of sit-to-stand performance is indicative of objective and self-reported aspects of functional status in older adults.

Regterschot GR¹, Zhang W², Baldus H³, Stevens M⁴, Zijlstra W⁵.
Author information

Abstract

Studies show that body-fixed motion sensors can be used for long-term monitoring of sit-to-stand (STS) performance in older persons. However, it is unclear how sensor-based measures of STS performance relate to functional status in older adults. Therefore, this study investigated the associations between sensor-based STS measures and standard clinical measures of functional status in older adults. Participants (24 females, 12 males; 72-94 years) performed five normal STS movements while wearing motion sensors on the hip and chest. Objective measures were used to assess mobility (Timed-Up-and-Go Test, Five-Times-Sit-to-Stand Test, Stair Walk Test) and quadriceps strength. Self-reported questionnaires were used to assess limitations in activities of daily living (Groningen Activity Restriction Scale) and frailty (Groningen Frailty Indicator). In general, chest STS measures showed a larger number of significant associations and stronger associations with clinical measures than hip STS measures. Chest maximal velocity, chest peak power, chest scaled peak power and chest stabilization phase SD demonstrated significant associations (weak to strong) with all six clinical measures. Noteworthy is that hip stabilization phase SD showed significant associations (weak to moderate) with five clinical measures. In particular chest peak power and chest scaled peak power demonstrated a moderate ability to discriminate between higher and lower functioning individuals (area under the receiver-operating characteristic curve: 0.75-0.90).

This study shows that in particular chest STS measures are indicative of objective and self-reported aspects of functional status in older adults. These findings support the clinical relevance of sensor-based monitoring of STS performance in older persons.

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KEYWORDS: Accelerometry; Aged; Balance; Clinical assessment; Kinematics

PMID: 25890489

EXERCISE**Exercise and weight loss****Addition of Exercise Increases Plasma Adiponectin and Release from Adipose Tissue.**

Wang X1, You T, Murphy K, Lyles MF, Nicklas BJ.

Author information**Abstract****INTRODUCTION:**

Adiponectin is an adipose tissue-derived anti-inflammatory protein that is down-regulated in obesity. The effects of caloric restriction and exercise induced weight loss on adiponectin are not clear.

PURPOSE:

To determine whether addition of aerobic exercise training to caloric restriction has additive effects over caloric restriction alone on circulating adiponectin concentrations and adiponectin release from abdominal and gluteal adipose tissue.

METHODS:

Overweight or obese (body mass index=25-40 kg/m, waist>88 cm) postmenopausal women were randomized to 20-week caloric restriction with and without aerobic exercise (CR+EX, n=48 and CR, n=22). Blood samples were collected for measuring plasma adiponectin concentration, and abdominal and gluteal subcutaneous adipose tissue biopsies were performed in a subgroup to determine in vitro adiponectin release, before and after the interventions.

RESULTS:

The interventions elicited similar amounts of weight loss (CR+EX: -11.3±4.6 kg ; CR:-11.2±3.4 kg) and fat loss (CR+EX: -8.0±3.5 kg; CR:-7.4±2.7 kg). The two groups had differential changes in plasma adiponectin concentrations (p for interaction = 0.014); CR+EX increased (6.9±3.9 to 8.5±4.9 µg/ml, p= 0.0001), while CR did not alter (6.4±4.4 to 6.5±4.5 µg/ml, p=0.42), plasma adiponectin. Likewise, adiponectin release from abdominal and gluteal subcutaneous adipose tissue increased with CR+EX (p=0.0076 and 0.089, respectively), but did not change with CR (p=0.13 and 0.95, respectively).

CONCLUSION:

Despite similar reductions in body weight and fat mass, the addition of aerobic exercise to caloric restriction increased plasma adiponectin concentrations, which may be partly explained by increased adiponectin release from abdominal and gluteal subcutaneous adipose tissue.

**CORE
POSTURE
SCOLIOSIS
ATHLETICS**

Aging and performance

J Aging Phys Act. 2015 Apr 16.

Age-related Changes in Performance and Recovery Kinetics in Masters Athletes: A Narrative Review.

Borges N¹, Reaburn P, Driller M, Argus C.
Author information

Abstract

Despite increasing participation rates in masters sport and extensive research examining age-related changes in performance, little is known about the effect of age on recovery kinetics in masters athletes. This narrative review focuses on the relationship between ageing and sports participation, and their effect on both performance and recovery following an exercise bout. Current research suggests the effect of age on performance and recovery may be smaller than originally suggested and that increasing sedentary lifestyles appear play a larger role in any observed decrements in performance and recovery in masters athletes.

Currently, it appears that performance decrements are inevitable with age. However, performance capacities can be maintained through systematic physical training. Moreover, the limited current research suggests there may be an age effect on recovery kinetics following an exercise bout although further research is required to understand the acute and chronic recovery processes in the masters athlete.

PMID: 25880787

% of sports injuries

Scand J Med Sci Sports. 2015 Apr 8. doi: 10.1111/sms.12462.

Incidence and severity of reported acute sports injuries in 35 sports using insurance registry data.

Åman M¹, Forssblad M, Henriksson-Larsén K.
Author information

Abstract

Acute injuries in sport are still a problem where limited knowledge of incidence and severity in different sports at national level exists. In Sweden, 80% of the sports federations have their mandatory injury insurance for all athletes in the same insurance company and injury data are systematically kept in a national database. The aim of the study was to identify high-risk sports with respect to incidence of acute and severe injuries in 35 sports reported to the database. The number and incidences of injuries as well as injuries leading to permanent medical impairment (PMI) were calculated during 2008-2011.

Each year approximately 12 000 injuries and 1 162 660 licensed athletes were eligible for analysis. Eighty-five percent of the injuries were reported in football, ice hockey, floorball, and handball. The highest injury incidence as well as PMI was in motorcycle, handball, skating, and ice hockey. Females had higher risk of a PMI compared with males in automobile sport, handball, floorball, and football. High-risk sports with numerous injuries and high incidence of PMI injuries were motorcycle, handball, ice hockey, football, floorball, and automobile sports. Thus, these sports ought to be the target of preventive actions at national level.

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KEYWORDS: Sports injury; athletic injury; epidemiology; medical impairment; severe injury
PMID: 25850826

Throwers shoulder

Arthroscopy. 2015 Apr 4. pii: S0749-8063(15)00073-0. doi: 10.1016/j.arthro.2015.01.016.

Posterior Shoulder Instability in Throwing Athletes: A Case-Matched Comparison of Throwers and Non-Throwers.

McClincy MP1, Arner JW2, Bradley JP3.

Abstract

PURPOSE:

To evaluate the results of arthroscopic capsulolabral repair for the treatment of posterior shoulder instability in a throwing athlete cohort when compared with non-throwers.

METHODS:

Forty-eight overhead-throwing athletes undergoing arthroscopic posterior capsulolabral reconstruction were case matched with 48 non-throwing athletes. These cohorts were followed as they underwent posterior capsulolabral reconstruction by measuring shoulder pain, function, return to sport, and operative failures. Operative details such as intra-articular pathology and repair construct were also recorded.

RESULTS:

At a mean follow-up of 37 months (range, 12 to 97 months) postoperatively, no statistical differences were noted between throwers and non-throwers regarding American Shoulder and Elbow Surgeons scores, stability, strength, or range of motion. Sixty percent of throwing athletes were able to return to their preinjury level of competitive throwing. Throwers with a discrete labral tear intraoperatively had a 10-fold increased likelihood of returning to sport (odds ratio, 9.6; $P = .012$). Similarly, throwers who had suture anchor constructs showed a 10-fold increased likelihood of returning to play compared with anchor-less repairs (odds ratio, 9.6; $P = .012$). Non-throwers showed no variability by labral findings or fixation techniques. Pitchers had equivocal outcome scores when compared with other throwers but had poorer return-to-play rates (50% v 60% full return).

CONCLUSIONS:

Arthroscopic capsulolabral plication for unidirectional posterior shoulder instability is an effective treatment for overhead-throwing athletes. Intraoperatively, achieving an adequate capsular plication and stabilizing the repair with suture anchors will give this athletic population the best odds of returning to competitive sports.

LEVEL OF EVIDENCE:

Level III, retrospective comparative study.

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GAIT

Duel task performance

Gait Posture. 2015 Apr 7. pii: S0966-6362(15)00428-2. doi: 10.1016/j.gaitpost.2015.03.348.

Instructions and skill level influence reliability of dual-task performance in young adults.

Plummer P¹, Grewal G², Najafi B², Ballard A³.

Author information

Abstract

The purpose of this study was to assess the trial-to-trial repeatability of dual-task performance and establish the minimal detectable change (MDC₉₅) of gait-related dual-task interference.

Thirty-one healthy young adults (22.5, SD 2.1 years) performed texting and walking tasks in isolation (single-task) and in combination (dual-task). The dual-task was repeated with three different instructional sets regarding how attention should be prioritized (no-priority, gait-priority, texting-priority) in two different environments (low-distraction, high-distraction). Participants performed two trials for each condition. Trial-to-trial repeatability of gait speed, texting speed, texting accuracy, and the relative dual-task effects (DTE) on each was examined using intraclass correlation coefficients and standard error of measurement. MDC₉₅ scores were also computed for each performance measure. Among young adults, reliability of gait speed in a challenging dual-task situation is excellent, even in a high-distraction environment. In the absence of specific task prioritization instructions, changes in dual-task gait speed greater than 0.15m/s or 11.9% DTE represent real change.

Reliability of the more novel, non-gait task has poor to good reliability. Dual-task effects are more reliable when participants are given specific instructions about how to prioritize their attention. The findings also suggest that reliability of dual-task performance in a novel or challenging task is greater when individuals are more skilled at the task. Implications for clinical assessment of dual-task performance are discussed.

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KEYWORDS: Assessment; Dual-task; Gait; Repeatability

PMID: 25891529

Changes in gait after ACL

Med Sci Sports Exerc. 2015 Mar 31.

Gait Characteristics of People With Lateral Knee OA After ACL Reconstruction.

Hart HF1, Collins NJ, Ackland DC, Cowan SM, Crossley KM.

Author information**Abstract****PURPOSE:**

Lateral knee osteoarthritis (OA) is common following anterior cruciate ligament reconstruction (ACLR), yet gait characteristics associated with lateral knee OA after ACLR are not well understood. This cross-sectional study aimed to compare knee, trunk, pelvis, hip and ankle kinematics and moments between people with predominant lateral knee OA after ACLR and healthy controls.

METHODS:

Nineteen post-ACLR people with lateral knee OA and twenty-five healthy controls were recruited. Quantitative gait analysis was conducted during walking, and knee pain, confidence, and kinesiophobia assessed. Between-group differences in peak kinematics and moments were evaluated, and Pearson correlations evaluated relationships between biomechanical and patient-reported measures ($p < 0.05$).

RESULTS:

Participants with lateral knee OA after ACLR had greater peak knee flexion (mean difference: 3.5° , 95% confidence interval: 0.9 to 6.1) and lower knee internal rotation angles (-3.3° , -6.2 to -0.5) than the controls. Those with lateral knee OA also had greater peak pelvic anterior tilt (3.1° , 0.4 to 5.9), and hip flexion angles (5.1° , 1.9 to 8.3), and a greater peak ankle dorsiflexion moment (0.1Nm/kg, 0.0 to 0.2). In the lateral knee OA group, worse knee confidence and kinesiophobia were significantly correlated with greater peak trunk flexion angle ($r=0.654$; $r=0.535$, respectively), and greater knee pain was significantly correlated with greater peak knee flexion angle ($r=0.535$).

CONCLUSION:

Gait characteristics associated with lateral knee OA after ACLR differ from healthy individuals, predominantly in the sagittal plane. Increased sagittal plane knee and trunk kinematics appear to be related to worse knee pain, confidence and kinesiophobia. These findings will assist development of compartment-specific interventions for individuals with post-traumatic lateral knee OA.

RUNNING

PFP and running

Gait Posture. 2015 Mar 9. pii: S0966-6362(15)00068-5. doi: 10.1016/j.gaitpost.2015.02.020.

Lower limb control and strength in runners with and without patellofemoral pain syndrome.

Esculier JF1, Roy JS2, Bouyer LJ3.

Author information**Abstract**

Recreational runners with patellofemoral pain syndrome (PFPS) have been shown to present altered movement kinematics, muscle activations, and ground reaction forces (GRF) during running as well as decreased lower limb strength.

However, these variables have never been concurrently evaluated in a specific cohort. Therefore, the aim of this study was to compare lower limb control variables during running in recreational runners with and without PFPS. Lower limb control during treadmill running under typical training conditions (usual shoes, foot strike pattern, and speed) was compared between runners with (n=21) and without (n=20) PFPS using lower limb kinematics, electromyographic (EMG) recordings from representative muscles (gluteus medius/maximus, quadriceps and soleus), and vertical GRF. Isometric muscle strength was also evaluated. When comparing all runners from both groups, no between-group differences were found in variables commonly associated with PFPS such as peak hip adduction, hip internal rotation, contralateral pelvic drop, EMG of gluteal and quadriceps muscles, vertical loading rate, or lower limb strength. However, runners with PFPS showed significantly higher hip adduction at toe-off, lower excursion in hip adduction during late-stance, and longer duration of soleus activation. Sub-analyses were performed for females and for rearfoot strikers (RFS), and revealed that these subgroups accounted for most of between-group differences in hip adduction kinematics. Specifically for RFS with PFPS, lower activation of gluteus medius as well as lower GRF were observed.

Our results suggest that deficits reported in runners with PFPS may vary depending on gender and on foot strike pattern.

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KEYWORDS: Anterior knee pain; Electromyography; Kinematics; Running

Treadmill running

J Phys Ther Sci. 2015 Feb;27(2):353-6. doi: 10.1589/jpts.27.353. Epub 2015 Feb 17.

Activity of lower limb muscles during treadmill running at different velocities.

Tsuji K1, Ishida H1, Oba K1, Ueki T1, Fujihashi Y1.

Author information

Abstract

[Purpose] The present study aimed to determine changes in muscle activity while moving on a treadmill at various speeds. [Subjects] The activities of the left vastus lateralis, vastus medialis, hip adductors, lateral head of gastrocnemius, medial head gastrocnemius, soleus, and tibialis anterior of 10 healthy male university students were analyzed.

[Methods] University students walked, jogged, and ran for 10 minutes each in random order, and then myogenic potentials were measured 10 minutes later for 30 seconds. The flexion angle of the lower limb upon initial contact, mid stance, and toe off were measured.

[Results] The average walking, jogging, and running speeds were 3.6 ± 0.4 , 6.7 ± 0.6 , and 10.4 ± 1.3 km/h, respectively. The average electromyographic activities of the vastus medial, tibialis anterior, medial head of gastrocnemius, and lateral head of gastrocnemius significantly differed. All muscles were more active during jogging and running than walking. Only the soleus was more active during running than walking, and the activities of the hip adductors and vastus lateralis did not significantly differ.

[Conclusion] Velocity is faster and the angles of the lower limbs and ground reaction force (GRF) are larger during running than walking. The vastus medialis and soleus worked more easily according to the angle of the knee joint, whereas the tibialis anterior worked more easily at faster velocities and the medial and lateral heads of the gastrocnemius worked more easily with an increased GRF.

KEYWORDS: Running; Skeletal muscle; Walking

Barefoot and shod running

Gait Posture. 2015 Mar 12. pii: S0966-6362(15)00071-5. doi: 10.1016/j.gaitpost.2015.03.002.

Kinematic and kinetic comparison of barefoot and shod running in mid/forefoot and rearfoot strike runners.

Thompson MA1, Lee SS2, Seegmiller J3, McGowan CP4.

Author information

Abstract

Barefoot running has been associated with decreased stride length and switching from a rearfoot strike (RFS) pattern to a mid/forefoot strike (M/FFS) pattern. However, some individuals naturally contact the ground on their mid/forefoot, even when wearing cushioned running shoes. The purpose of this study was to determine if the mechanics of barefoot running by natural shod RFS runners differed from natural shod M/FFS runners. Twenty habitually shod runners (ten natural M/FFS and ten natural RFS) participated in this study. Three-dimensional motion analysis and ground reaction force data were captured as subjects ran at their preferred running speed in both barefoot and shod conditions. M/FFS experienced only a decrease in stride length when switching from shod to barefoot running. Whereas, when switching from shod to barefoot running, RFS individuals experienced a decrease in stride length, switched to a plantarflexed position at ground contact and saw reduced impact peak magnitudes. These results suggest that when barefoot, the RFS group ran similar to the M/FFS group running barefoot or shod.

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KEYWORDS:

Barefoot; Biomechanics; Foot strike; Locomotion; Running

IT band injury and running mechanics

Gait Posture. 2015 Feb;41(2):706-10. doi: 10.1016/j.gaitpost.2015.01.031. Epub 2015 Feb 7.

Associations between iliotibial band injury status and running biomechanics in women.

Foch E1, Reinbolt JA2, Zhang S3, Fitzhugh EC3, Milner CE3.

Author information**Abstract**

Iliotibial band syndrome (ITBS) is a common overuse knee injury that is twice as likely to afflict women compared to men. Lower extremity and trunk biomechanics during running, as well as hip abductor strength and iliotibial band flexibility, are factors believed to be associated with ITBS.

The purpose of this cross-sectional study was to determine if differences in lower extremity and trunk biomechanics during running exist among runners with current ITBS, previous ITBS, and controls. Additionally, we sought to determine if isometric hip abductor strength and iliotibial band flexibility were different among groups. Twenty-seven female runners participated in the study. Participants were divided into three equal groups: current ITBS, previous ITBS, and controls. Overground running trials, isometric hip abductor strength, and iliotibial band flexibility were recorded for all participants. Discrete joint and segment biomechanics, as well as hip strength and flexibility measures were analyzed using a one-way analysis of variance. Runners with current ITBS exhibited 1.8 (1.5)° greater trunk ipsilateral flexion and 7 (6)° less iliotibial band flexibility compared to runners with previous ITBS and controls. Runners with previous ITBS exhibited 2.2 (2.9)° less hip adduction compared to runners with current ITBS and controls. Hip abductor strength 3.3 (2.6) %BM×h was less in runners with previous ITBS but not current ITBS compared to controls.

Runners with current ITBS may lean their trunk more towards the stance limb which may be associated with decreased iliotibial band flexibility.

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KEYWORDS:

Female; Hip abductor strength; Iliotibial band flexibility; Ober test; Trunk lateral flexion

PAIN**Suffering and pain**

Eur J Pain. 2015 Apr 7. doi: 10.1002/ejp.709.

Suffering as an independent component of the experience of pain.

Bustan S1, Gonzalez-Roldan AM, Kamping S, Brunner M, Löffler M, Flor H, Anton F.

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

Pain has consistently been viewed as containing two dimensions, a sensory (intensity) and an emotional (unpleasantness). It has been suggested that pain involves higher order cognitive processes that go beyond unpleasantness. We therefore aimed at extending the assessment of pain by introducing an additional dimension of pain-related suffering and identifying noxious stimulation protocols that are most adequate for its psychophysical and psychophysiological characterization.

METHODS:

Twenty-four healthy volunteers received separate series of tonic and phasic noxious mechanical stimuli. Visual analogue scales were used to rate intensity, unpleasantness and suffering and psychophysiological measurements such as heart rate, skin conductance and corrugator electromyography were recorded. Acoustically evoked startle responses were measured in part of the assessments to obtain additional indicators of pain aversiveness.

RESULTS:

Spearman's correlation coefficients and partial correlations analyses as well as principal component analyses confirmed that suffering constitutes an integral component of pain processing that is distinct from intensity and unpleasantness. Tonic, rather than phasic, stimulation method was more effective in eliciting pain and suffering and under this condition startle responses were higher during long compared to short stimuli.

CONCLUSIONS:

These results suggest that in acute pain, suffering is a constitutive dimension that might even be more crucial in clinical states of pain.

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Social position and pain

International Archives of Occupational and Environmental Health

April 2015

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Social position modifies the association between severe shoulder/arm and knee/leg pain, and quality of life after retirement

- Clermont E. Dionne, Annette Leclerc, Matthieu Carton, Zakia Mediouni, Marcel Goldberg,
- Marie Zins, Alexis Descatha

Purpose

Musculoskeletal disorders are extremely frequent and account for an important part of the global burden of disease. Risk factors for musculoskeletal disorders include sustained occupational exposure to physically demanding jobs. The effects of sustained occupational physical exposures on knee and shoulder pain are known to persist after retirement; also, several studies have shown a socio-economic gradient in health and quality-of-life outcomes, including for musculoskeletal pain. It is thus possible that prolonged occupational exposures affect workers differently in the long-term along a socio-economic gradient. This study was conducted to investigate whether the impacts of severe shoulder/arm and knee/leg pain on the quality of life of retired workers follow a socio-economic gradient.

Methods

Data from the French GAZEL cohort study (n = 14,249) were used to compare the impacts of severe shoulder/arm and knee/leg pain separately on the SF-36, [Nottingham Health Profile](#) and limitations in activities of daily living measured in 2006 and 2007, between four groups of social position (measured in 1989). Analyses were made in 2014 with multiple linear and logistic regressions and stratified by sex.

Results

For both pain sites, in men and women, there was a strong general tendency for the impacts of severe pain to be smaller among participants in higher social positions. Most important differences were related to pain and physical limitations.

Conclusions

These results suggest inequalities in the impacts of severe joint pain by socio-economic status. The source of these inequalities is still speculative and merits the scientific attention.

Lifestyle changes in chronic pain

BMC Musculoskelet Disord. 2015 Apr 13;16:87. doi: 10.1186/s12891-015-0545-y.

What is the role of lifestyle behaviour change associated with non-communicable disease risk in managing musculoskeletal health conditions with special reference to chronic pain?

Dean E^{1,2}, Söderlund A³.

Author information

Abstract

BACKGROUND:

Other than activity and exercise, lifestyle practices such as not smoking and healthy nutrition, well established for preventing and managing lifestyle-related non-communicable diseases (i.e., heart disease, cancer, hypertension, stroke, obstructive lung disease, diabetes, and obesity), are less emphasized in the physical therapy guidelines for addressing chronic pain, e.g., back pain. This state-of-the-art review examines the relationships between lifestyle behaviours and musculoskeletal health, with special reference to chronic pain, and their clinical and research implications.

DISCUSSION:

A state-of-the-art review was conducted to synthesize evidence related to lifestyle factors (not smoking, healthy diet, healthy weight, optimal sleep and manageable stress, as well as physical activity) and musculoskeletal health, with special reference to chronic pain. The findings support that health behaviour change competencies (examination/assessment and intervention/treatment) may warrant being included in first-line management of chronic pain, either independently or in conjunction with conventional physical therapy interventions. To address knowledge gaps in the literature however three lines of clinical trial research are indicated: 1) to establish the degree to which traditional physical therapy interventions prescribed for chronic pain augment the benefits of lifestyle behaviour change; 2) to establish the degree to which adopting healthier lifestyle practices, avoids or reduces the need for conventional physical therapy; and 3) to establish whether patients/clients with healthier lifestyles and who have chronic pain, respond more favourably to conventional physical therapy interventions than those who have less healthy lifestyles. Lifestyle behaviour change is well accepted in addressing lifestyle-related non-communicable diseases.

Compelling evidence exists however supporting the need for elucidation of the role of negative lifestyle behaviours on the incidence of chronic pain, and the role of positive lifestyle behaviours on its incidence and effective management. Addressing lifestyle behaviour change in patients/clients with chronic pain, e.g., back pain, as a first-line intervention might not only constitute a novel approach, but also reduce the socioeconomic burden related to chronic pain as well as non-communicable diseases.

PMID: 25888381

Obesity and chronic pain

JAMA Pediatr. 2015 Apr 27. doi: 10.1001/jamapediatrics.2015.0378.

Musculoskeletal Pain, Self-reported Physical Function, and Quality of Life in the Teen-Longitudinal Assessment of Bariatric Surgery (Teen-LABS) Cohort.

Bout-Tabaku S¹, Michalsky MP¹, Jenkins TM², Baughcum A¹, Zeller MH², Brandt ML³, Courcoulas A⁴, Buncher R⁵, Helmuth M², Harmon CM⁶, Chen MK⁷, Inge TH².
Author information

Abstract

IMPORTANCE: Obesity is associated with chronic musculoskeletal pain and is a risk factor for disability and osteoarthritis.

OBJECTIVES: To describe the prevalence, sites, and intensity of musculoskeletal pain in adolescents with severe obesity; to evaluate associations between musculoskeletal pain and self-reported physical function as well as weight-related quality of life; and to evaluate the association between musculoskeletal pain and high-sensitivity C-reactive protein level.

DESIGN, SETTING, AND PARTICIPANTS: Teen-Longitudinal Assessment of Bariatric Surgery (Teen-LABS) is a prospective, observational study that collects standardized data on adolescents undergoing weight loss surgery at 5 US centers. We examined baseline data from this cohort between February 28, 2007, and December 30, 2011. We excluded adolescents with Blount disease and slipped capital femoral epiphyses. A total of 233 participants were included in these analyses.

MAIN OUTCOMES AND MEASURES: We assessed musculoskeletal pain and pain intensity of the lower back, hips, knees, and ankles/feet using the visual analog scale, categorizing musculoskeletal pain into lower back pain, lower extremity (hips, knees, and feet/ankles combined) pain, and no pain. We assessed self-reported physical function status with the Health Assessment Questionnaire Disability Index and assessed weight-related quality of life with the Impact of Weight on Quality of Life-Kids measure. We adjusted for sex, race, age at surgery, body mass index (BMI; calculated as weight in kilograms divided by height in meters squared), and clinical depressive symptoms in regression analyses.

RESULTS: Among the 233 participants, the mean (SD) age at surgery was 17.1 (1.56) years and the median BMI was 50.4. Participants were predominantly female (77%), white (73%), and non-Hispanic (93%). Among the participants, 49% had poor functional status and 76% had musculoskeletal pain. Lower back pain was prevalent (63%), followed by ankle/foot (53%), knee (49%), and hip (31%) pain; 26% had pain at all 4 sites. In adjusted analyses, compared with pain-free participants, those reporting lower extremity pain had greater odds of having poor physical function according to scores on the Health Assessment Questionnaire Disability Index (odds ratio = 2.82; 95% CI, 1.35 to 5.88; P < .01). Compared with pain-free participants, those reporting lower extremity pain had significantly lower Impact of Weight on Quality of Life-Kids total scores ($\beta = -9.42$; 95% CI, -14.15 to -4.69; P < .01) and physical comfort scores ($\beta = -17.29$; 95% CI, -23.32 to -11.25; P < .01). After adjustment, no significant relationship was observed between musculoskeletal pain and high-sensitivity C-reactive protein level.

CONCLUSIONS AND RELEVANCE: Adolescents with severe obesity have musculoskeletal pain that limits their physical function and quality of life. Longitudinal follow-up will reveal whether weight loss surgery reverses pain and physical functional limitations and improves quality of life.

PMID: 25915190

Neuropathic pain

Clin J Pain. 2015 May;31(5):438-43. doi: 10.1097/AJP.0000000000000135.

An adaptive role for negative expected pain in patients with neuropathic pain.

Bostick GP¹, Toth C, Dick BD, Carr EC, Stitt LW, Moulin DE.
Author information

Abstract

OBJECTIVES:

To study the relationship between expected pain and future outcomes along with the moderating effects of expected pain in neuropathic pain patients.

METHODS:

Study participants were recruited for the Canadian Neuropathic Pain Database. To examine the relationship between expected pain and 6-month pain intensity, pain-related disability, and catastrophizing, multiple regressions were performed. These relationships were adjusted for potential confounding (age, sex, baseline pain intensity, and psychological distress). To evaluate the moderating effect of expected pain on the relationship between baseline pain intensity and 6-month outcomes, pain intensity×expected pain interaction terms were created.

RESULTS:

Complete data for analysis was available for 560 patients (71%). Expected pain was positively correlated with pain intensity and pain-related disability scores at 6 months. The relationship between baseline pain intensity and 6-month catastrophizing scores was moderated by expected pain (however, despite a similar trend, expected pain did not statistically moderate the relationship between baseline pain intensity and 6-month pain intensity or disability). At higher levels of pain, predicted catastrophizing scores were higher for those with low levels of expected pain than those with high levels of expected pain. An opposite relationship was observed for patients with the lower levels of pain.

DISCUSSION:

In neuropathic pain patients whose pain does not respond to therapy, high levels of expected pain may relate to relatively lower catastrophizing scores by shifting focus away from futile attempts at "curing" pain toward focusing on achievement of more realistic personal goals.

PMID: 25370145

Fear avoidance interventions

BMC Musculoskelet Disord. 2015 Apr 21;16(1):94.

Change in pain, disability and influence of fear-avoidance in a work-focused intervention on neck and back pain: a randomized controlled trial.

Marchand GH^{1,2}, Myhre K³, Leivseth G^{4,5}, Sandvik L⁶, Lau B^{7,8}, Bautz-Holter E^{9,10}, Røe C^{11,12}.
Author information

Abstract**BACKGROUND:**

Neck and back pain are among the most common causes of prolonged disability, and development of interventions with effect on pain, disability and return to work is important. Reduction of fear avoidance might be one mechanism behind improvement after interventions. The aim of the present study was to evaluate changes in pain and disability at the 12-month follow-up of patients with neck and back pain treated with a work-focused intervention compared to patients treated with standard interventions, and the influence of improvement fear avoidance beliefs during the interventions on pain, disability and return to work at 12-month follow-up.

METHODS:

413 employed patients with back or neck pain referred to secondary care, and sick-listed between 4 weeks and 12 months, were randomized to a work-focused rehabilitation or control interventions. Follow-up was conducted 4 and 12 months after inclusion. The groups were compared (independent sample t-test) regarding differences in disability scores (Oswestry disability index/neck disability index) and pain (numeric rating scale) from baseline to 12-month follow-up. Changes in fear avoidance beliefs (FABQ) from baseline to 4 month follow-up were calculated, and the association between this change and return to work, pain and disability at 12 months were tested in stepwise multiple logistic regression models.

RESULTS:

Pain and, disability scores decreased to in both the work-focused and control intervention to 12-month follow-up, and there were no significant differences between the groups. FABQ decreased similarly in both groups to 4 month follow-up. The logistic regression model revealed an association between a reduced FABQ work score at 4 months and return to work within one year (adjusted OR 3.60, 95% CI 1.19 to 10.88). Reduced FABQ physical activity score at 4 months was associated with decreased disability after 12 months (adjusted OR (3.65. 95% CI 1.43 to 9.28).

CONCLUSIONS:

Short work-focused rehabilitation had the same effect on pain and disability as control interventions. Reduction in FABQ-W score after treatment seems to be an important predictor for return to work in both groups.

TRIAL REGISTRATION:

Clinicaltrials.gov NCT00840697.

PMID: 25896785

Phantom pain and mirror therapy

Pain Pract. 2015 Apr 16. doi: 10.1111/papr.12301.

Development of a Clinical Framework for Mirror Therapy in Patients with Phantom Limb Pain: An Evidence-based Practice Approach.

Rothgangel A¹, Braun S, de Witte L, Beurskens A, Smeets R.
Author information

Abstract

OBJECTIVE:

To describe the development and content of a clinical framework for mirror therapy (MT) in patients with phantom limb pain (PLP) following amputation.

METHODS:

Based on an a priori formulated theoretical model, 3 sources of data collection were used to develop the clinical framework. First, a review of the literature took place on important clinical aspects and the evidence on the effectiveness of MT in patients with phantom limb pain. In addition, questionnaires and semi-structured interviews were used to analyze clinical experiences and preferences of physical and occupational therapists and patients suffering from PLP regarding the application of MT. All data were finally clustered into main and subcategories and were used to complement and refine the theoretical model.

RESULTS:

For every main category of the a priori formulated theoretical model, several subcategories emerged from the literature search, patient, and therapist interviews. Based on these categories, we developed a clinical flowchart that incorporates the main and subcategories in a logical way according to the phases in methodical intervention defined by the Royal Dutch Society for Physical Therapy. In addition, we developed a comprehensive booklet that illustrates the individual steps of the clinical flowchart.

CONCLUSIONS:

In this study, a structured clinical framework for the application of MT in patients with PLP was developed. This framework is currently being tested for its effectiveness in a multicenter randomized controlled trial.

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KEYWORDS:

amputation/adverse effects; imagery; mirror therapy; phantom limb pain; phantom limb/rehabilitation; physical Therapy; psychotherapy

PMID: 25880456

COMPLEX REGIONAL PAIN**Review**

Acta Anaesthesiol Scand. 2015 Apr 22. doi: 10.1111/aas.12489.

Complex regional pain syndrome type I: a comprehensive review.

Bussa M¹, Guttilla D, Lucia M, Mascaro A, Rinaldi S.
Author information

Abstract**BACKGROUND:**

Complex regional pain syndrome type I (CRPS I), formerly known as reflex sympathetic dystrophy (RSD), is a chronic painful disorder that usually develops after a minor injury to a limb. This topical review gives a synopsis of CRPS I and discusses the current concepts of our understanding of CRPS I in adults, the diagnosis, and treatment options based on the limited evidence found in medical literature. CRPS I is a multifactorial disorder. Possible pathophysiological mechanisms of CRPS I are classic and neurogenic inflammation, and maladaptive neuroplasticity. At the level of the central nervous system, it has been suggested that an increased input from peripheral nociceptors alters the central processing mechanisms.

METHODS:

A literature search was conducted using, as electronic bibliographic database, Medline from 1980 until 2014.

RESULTS:

An early diagnosis and multidisciplinary treatment are necessary to prevent permanent disability.

CONCLUSIONS:

The pharmacological treatment of CRPS I is empirical and insufficiently effective. Further research is needed regarding the therapeutic modalities discussed in the guidelines. Physical therapy is widely recommended as a first-line treatment. The efficacy of local anesthetic sympathetic blockade as treatment for CRPS I is questionable.

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PMID: 25903457

FIBROMYALGIA**Central changes in pain****The lateral prefrontal cortex mediates the hyperalgesic effects of negative cognitions in chronic pain patients**

The Journal of Pain, 05/01/2015 Loggia ML, et al.

Highlights

- •Fibromyalgia patients demonstrate altered pain anticipatory brain activity
- •Catastrophizing is negatively correlated with pain-anticipatory activation of IPFC
- •IPFC anticipatory activity mediates the hyperalgesic effects of catastrophizing
- •These findings implicate IPFC in pathophysiology of fibromyalgia

Abstract

While high levels of negative affect and cognitions have been associated in chronic pain conditions with greater pain sensitivity, the neural mechanisms mediating the hyperalgesic effect of psychological factors in patients with pain disorders are largely unknown. In this cross-sectional study, we hypothesized that 1) catastrophizing modulates brain responses to pain anticipation, and that 2) anticipatory brain activity mediates the hyperalgesic effect of different levels of catastrophizing, in fibromyalgia (FM) patients. Using functional Magnetic Resonance Imaging, we scanned the brains of 31 FM patients exposed to visual cues anticipating the onset of moderately intense deep-tissue pain stimuli. Our results indicated the existence of a negative association between catastrophizing and pain-anticipatory brain activity, including in the right lateral prefrontal cortex (IPFC). A bootstrapped mediation analysis revealed that pain-anticipatory activity in lateral prefrontal cortex (IPFC) mediates the association between catastrophizing and pain sensitivity. These findings highlight the role of IPFC in the pathophysiology of FM related hyperalgesia, and suggest that deficits in the recruitment of pain-inhibitory brain circuitry during pain-anticipatory periods may play an important contributory role in the association between various degrees of widespread hyperalgesia in FM and levels of catastrophizing, a well validated measure of negative cognitions and psychological distress.

Perspective

This article highlights the presence of alterations in pain-anticipatory brain activity in FM. These findings provide the rationale for the development of psychological or neurofeedback-based techniques aimed at modifying patients' negative affect and cognitions towards pain.

Variation between men and women

Clin J Pain. 2015 May;31(5):425-32. doi: 10.1097/AJP.0000000000000132.

Sex differences in psychological response to pain in patients with fibromyalgia syndrome.

Racine M¹, Castarlenas E, de la Vega R, Tomé-Pires C, Solé E, Miró J, Jensen MP, Moulin DE, Nielson WR.

Author information

Abstract

OBJECTIVES:

To examine whether men and women with fibromyalgia syndrome (FMS) differ with respect to pain severity and functioning, pain-related beliefs, or pain-related coping. We hypothesized no significant sex differences in measures of pain and functioning, but that we would observe differences between men and women in how they view and how they cope with FMS-related pain.

METHODS:

A total of 747 women and 48 men with FMS who attended a multidisciplinary treatment program completed the study measures. Analyses of covariance were used to examine sex differences in the study measures, with a P-value of ≤ 0.01 and at least a moderate effect size (Cohen $d \geq 0.5$) required for a difference to be deemed statistically significant.

RESULTS:

Men and women did not differ on demographic measures except for their age, with the men in our sample being significantly younger than the women. Consistent with the study hypothesis, the results revealed no sex differences in the measures of pain and functioning. For pain-related beliefs, men were more likely to view pain as reflecting harm, and they were also more likely than women to use activity avoidance as a pain-coping strategy.

DISCUSSION:

The study findings suggest that women and men with FMS may think about and cope with pain somewhat differently, and may therefore benefit from different types of psychosocial pain intervention.

PMID: 25329143

NUTRITION/VITAMINS

Glucosamine

Ann Rheum Dis. 2015 May;74(5):851-8. doi: 10.1136/annrheumdis-2013-203954. Epub 2014 Jan 6.

Glucosamine and chondroitin for knee osteoarthritis: a double-blind randomised placebo-controlled clinical trial evaluating single and combination regimens.

Fransen M1, Agaliotis M1, Nairn L1, Votrubec M2, Bridgett L1, Su S3, Jan S4, March L5, Edmonds J6, Norton R4, Woodward M4, Day R7; LEGS study collaborative group.

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

To determine if the dietary supplements, glucosamine and/or chondroitin, result in reduced joint space narrowing (JSN) and pain among people with symptomatic knee osteoarthritis.

METHODS:

A double-blind randomised placebo-controlled clinical trial with 2-year follow-up. 605 participants, aged 45-75 years, reporting chronic knee pain and with evidence of medial tibio-femoral compartment narrowing (but retaining >2 mm medial joint space width) were randomised to once daily: glucosamine sulfate 1500 mg (n=152), chondroitin sulfate 800 mg (n=151), both dietary supplements (n=151) or matching placebo capsules (n=151). JSN (mm) over 2 years was measured from digitised knee radiographs. Maximum knee pain (0-10) was self-reported in a participant diary for 7 days every 2 months over 1 year.

RESULTS:

After adjusting for factors associated with structural disease progression (gender, body mass index (BMI), baseline structural disease severity and Heberden's nodes), allocation to the dietary supplement combination (glucosamine-chondroitin) resulted in a statistically significant (p=0.046) reduction of 2-year JSN compared to placebo: mean difference 0.10 mm (95% CI 0.002 mm to 0.20 mm); no significant structural effect for the single treatment allocations was detected. All four allocation groups demonstrated reduced knee pain over the first year, but no significant between-group differences (p=0.93) were detected. 34 (6%) participants reported possibly-related adverse medical events over the 2-year follow-up period.

CONCLUSIONS:

Allocation to the glucosamine-chondroitin combination resulted in a statistically significant reduction in JSN at 2 years. While all allocation groups demonstrated reduced knee pain over the study period, none of the treatment allocation groups demonstrated significant symptomatic benefit above placebo.

TRIAL REGISTRATION CLINICALTRIALSGOV IDENTIFIER:

NCT00513422; <http://www.clinicaltrials.gov>.

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KEYWORDS:

chondroitin; disease progression; glucosamine; osteoarthritis knee; pain

PHARMACOLOGY**Microscopic colitis**

Am J Gastroenterol. 2015 Apr 28. doi: 10.1038/ajg.2015.119. [Epub ahead of print]

Increased Risk of Microscopic Colitis With Use of Proton Pump Inhibitors and Non-Steroidal Anti-Inflammatory Drugs.

Masclee GM¹, Coloma PM², Kuipers EJ³, Sturkenboom MC⁴.

[Author information](#)

[Abstract](#)

OBJECTIVES:

Microscopic colitis (MC) is characterized by chronic watery diarrhea. Recently, several drugs were reported to increase the risk of MC. However, studies lacked a clear exposure definition, did not address duration relationships, and did not take important biases into account. We estimated the risk of MC during drug use.

METHODS:

This is a population-based nested case-control study using a Dutch primary care database (1999-2013). Incident MC cases (aged ≥ 18 years) were matched to community-based and colonoscopy-negative controls on age, sex, and primary care practice. Drug use was assessed within 1 and 2 years before the index date. Adjusted odds ratios (OR) were calculated by conditional logistic regression.

RESULTS:

From the source population of 1,458,410 subjects, 218 cases were matched to 15,045 community controls and 475 colonoscopy-negative controls. Current use (≤ 3 months) of proton pump inhibitors (PPIs), nonsteroidal anti-inflammatory drugs (NSAIDs), selective serotonin reuptake inhibitors, low-dose aspirin, angiotensin-converting enzyme (ACE) inhibitors and beta-blockers significantly increased the risk of MC compared with never use in community controls. Adjusted ORs ranged from 2.5 (95% confidence interval (CI): 1.5-4.2) for ACE inhibitors to 7.3 (95% CI: 4.5-12.1) for PPIs in the year prior to the index date. After accounting for diagnostic delay, only use of NSAIDs, PPIs, low-dose aspirin, and ACE inhibitors increased the risk of MC. Compared with colonoscopy controls, only use of PPIs (OR-adjusted 10.6; 1.8-64.2) and NSAIDs (OR-adjusted 5.6; 1.2-27.0) increased the risk of MC.

CONCLUSIONS:

NSAIDs and PPIs are associated with an increased risk of MC. The association of MC with use of the other drugs is probably explained by worsening of diarrhea/symptoms rather than increasing the risk of MC itself. *Am J Gastroenterol* advance online publication, 28 April 2015; doi:10.1038/ajg.2015.119.

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Anti-inflammatory medications

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Safe prescribing of non-steroidal anti-inflammatory drugs in patients with osteoarthritis - an expert consensus addressing benefits as well as gastrointestinal and cardiovascular risks.

Scarpignato C, Lanas A, Blandizzi C, Lems WF, Hermann M, Hunt RH; International NSAID Consensus Group.

Abstract

BACKGROUND:

There are several guidelines addressing the issues around the use of NSAIDs. However, none has specifically addressed the upper versus lower gastrointestinal (GI) risk of COX-2 selective and non-selective compounds nor the interaction at both the GI and cardiovascular (CV) level of either class of drugs with low-dose aspirin. This Consensus paper aims to develop statements and guidance devoted to these specific issues through a review of current evidence by a multidisciplinary group of experts.

METHODS:

A modified Delphi consensus process was adopted to determine the level of agreement with each statement and to determine the level of agreement with the strength of evidence to be assigned to the statement.

RESULTS:

For patients with both low GI and CV risks, any non-selective NSAID (ns-NSAID) alone may be acceptable. For those with low GI and high CV risk, naproxen may be preferred because of its potential lower CV risk compared with other ns-NSAIDs or COX-2 selective inhibitors, but celecoxib at the lowest approved dose (200 mg once daily) may be acceptable. In patients with high GI risk, if CV risk is low, a COX-2 selective inhibitor alone or ns-NSAID with a proton pump inhibitor appears to offer similar protection from upper GI events. However, only celecoxib will reduce mucosal harm throughout the entire GI tract. When both GI and CV risks are high, the optimal strategy is to avoid NSAID therapy, if at all possible.

ELECTROTHERAPY NEUROLOGICAL CONDITIONS