

Table of Contents

LUMBAR SPINE 2

PELVIC GIRDLE 2

PELVIC ORGANS..... 5

VISCERA 5

THORACIC SPINE 13

CERVICAL SPINE..... 13

CRANIUM/TMJ..... 15

HEADACHES..... 18

CONCUSSIONS..... 22

SHOULDER GIRDLE..... 22

GLENOHUMERAL/SHOULDER 22

ELBOW..... 23

WRIST AND HAND 24

HIP..... 25

KNEE..... 27

FOOT AND ANKLE..... 42

MANUAL THERAPY/STRETCHING/MUSCLES STM..... 44

CFS/BET 48

ATHLETICS..... 51

RUNNING GAIT..... 54

PAIN 55

COMPLEX REGIONAL PAIN..... 61

FIBROMYALGIA..... 62

NUTRITION/VITAMINS/MEDICATION/TOPICALS 62

NEUROLOGICAL CONDITIONS 64

1. LUMBAR SPINE

2. LBP

Conservative care of spinal deformities

[Spine J.](#) 2015 Oct 30. pii: S1529-9430(15)01628-9. doi: 10.1016/j.spinee.2015.10.043. [Epub ahead of print]

The benefit of non-operative treatment for adult spinal deformity: identifying predictors for reaching a minimal clinically important difference.

[Liu S](#)¹, [Diebo B](#)¹, [Henry JK](#)¹, [Smith JS](#)², [Hostin R](#)³, [Cunningham ME](#)⁴, [Mundis G](#)⁵, [Ames CP](#)⁶, [Burton D](#)⁷, [Bess S](#)⁸, [Akbarian B](#)⁹, [Hart R](#)¹⁰, [Passias PG](#)¹, [Schwab FJ](#)¹, [Lafage V](#)¹¹; [International Spine Study Group \(ISSG\)](#).

[Author information](#)

Abstract

BACKGROUND CONTEXT:

Adult spinal deformity (ASD) patients may gain a MCID in one or more of the HRQOL instruments without surgical intervention. This study identifies baseline characteristics of this subset of non-operative patients and proposes predictors of those most likely to benefit.

PURPOSE:

Determine factors that affect likelihood of non-operative patients to reach minimum clinically important difference (MCID).

STUDY DESIGN/SETTING:

Retrospective review of prospective, multi-center database.

PATIENT SAMPLE:

Non-operative ASD patients.

OUTCOME MEASURES:

Health-related quality of life measures (HRQOL), including the Scoliosis Research Society (SRS)-22 questionnaire.

METHODS:

Multicenter database of 215 non-operative patients with ASD and minimum 2-year follow-up. Using a multivariate analysis, two groups were compared to identify possible predictors: those that reached an MCID in SRS Pain or Activity (n=86) at 2 years, and those who did not reach MCID (n=129). Subgroup multivariate analysis of patients with a deficit (potential improvement) in both SRS Pain and Activity (n=84) was performed. Data collection was supported by a grant from DePuy for the International Spine Study Group Foundation.

RESULTS:

At baseline, the non-operative patients that reached MCID had a significantly lower SRS Pain score (3.0 vs 3.6), smaller thoracolumbar (TL) Cobb angle (29.6° vs. 36.5°; 87 patients with SRS-Schwab classification Lumbar or Double), sacral slope (33.1° vs. 36.4°), and less lumbar lordosis (46.5° vs. 52.8°) (all P<0.05). SRS Pain and TL Cobb were significant predictors of reaching MCID. PI-LL was significant on univariate analysis but not by multivariate (7.5° vs. 2.6°; P=0.14). In the subset of severely disabled patients, worse vertebral obliquity was a predictor for not achieving MCID (P<0.05).

CONCLUSIONS:

Non-operative ASD patients who achieved an MCID in SRS Activity or Pain had a lower baseline SRS Pain Score and less coronal deformity in the TL region. Greater baseline pain offers significant room for potential improvement, which may be important in identifying ASD patients who have the potential to reach an MCID non-operatively. Coronal deformities in the TL region, and associated vertebral obliquity may negatively impact improvement potential with non-operative care.

Copyright © 2015 Elsevier Inc. All rights reserved.

KEYWORDS:

HRQOL; health-related quality of life; non-operative; outcomes; spinal deformity; treatment

PMID:

26523966

Self-efficacy and fear

[Pain Pract.](#) 2015 Nov 7. doi: 10.1111/papr.12397. [Epub ahead of print]

Pain Self-Efficacy and Fear of Movement are Similarly Associated with Pain Intensity and Disability in Italian Patients with Chronic Low Back Pain.

[Ferrari S](#)¹, [Chiarotto A](#)², [Pellizzer M](#)³, [Vanti C](#)¹, [Monticone M](#)⁴.

[Author information](#)

Abstract

The purpose of this study was to investigate cross-sectional associations of pain self-efficacy and fear of movement with pain intensity and disability in Italian patients with chronic low back pain (CLBP). One hundred and three adult outpatients with nonspecific CLBP were included in the study. Socio-demographic and clinical characteristics were assessed, together with Italian versions of self-reported questionnaires to measure the four constructs of interest. Multiple linear regression models were built with psychosocial constructs as main determinants, and pain intensity and disability as outcomes. Potential confounding of socio-demographic and clinical characteristics was assessed. Pain self-efficacy and fear of movement displayed moderate correlations with pain intensity ($r = -0.41$ and 0.42 , respectively) and disability (-0.55 and 0.54). Association models adjusted for pain intensity showed that both pain self-efficacy ($\beta = -0.35$, 95% CI = $-0.5; -0.2$, $R^2 = 41\%$) and fear of movement ($\beta = 0.65$, 95% CI = $0.36; 0.93$, $R^2 = 40\%$) are significantly and strongly associated with disability. Pain self-efficacy was no longer significantly associated with pain intensity when disability was added as a confounder to the model, whereas fear of movement retained its significant association ($\beta = 0.06$, 95% CI = $0.00; 0.11$, $R^2 = 30\%$). No other variables acted as confounders in these associations. Pain self-efficacy and fear of movement are very similarly associated with main outcomes in this sample of Italian patients with CLBP. The results of this study suggest that both psychosocial constructs should be considered in clinical management. Future studies should investigate whether these findings can be replicated in other samples, in longitudinal designs and if other variables not measured in this study confound the associations.

© 2015 World Institute of Pain.

KEYWORDS:

chronic low back pain; disability; fear of movement; pain intensity; pain self-efficacy

PMID:

26547511

PT and LBP

[Br J Sports Med](#). 2015 Oct 20. pii: bjsports-2015-095058. doi: 10.1136/bjsports-2015-095058. [Epub ahead of print]

Individualised physiotherapy as an adjunct to guideline-based advice for low back disorders in primary care: a randomised controlled trial.

[Ford JJ¹](#), [Hahne AJ¹](#), [Surkitt LD¹](#), [Chan AY¹](#), [Richards MC¹](#), [Slater SL¹](#), [Hinman RS²](#), [Pizzari T¹](#), [Davidson M¹](#), [Taylor NF¹](#).

[Author information](#)

Abstract

BACKGROUND:

Many patients with low-back disorders persisting beyond 6 weeks do not recover. This study investigates whether individualised physiotherapy plus guideline-based advice results in superior outcomes to advice alone in participants with low-back disorders.

METHODS:

This prospective parallel group multicentre randomised controlled trial was set in 16 primary care physiotherapy practices in Melbourne, Australia. Random assignment resulted in 156 participants receiving 10 sessions of physiotherapy that was individualised based on pathoanatomical, psychosocial and neurophysiological barriers to recovery combined with guideline-based advice, and 144 participants receiving 2 sessions of physiotherapist-delivered advice alone. Primary outcomes were activity limitation (Oswestry Disability Index) and numerical rating scales for back and leg pain at 5, 10, 26 and 52 weeks postbaseline. Analyses were by intention-to-treat using linear mixed models.

RESULTS:

Between-group differences showed significant effects favouring individualised physiotherapy for back and leg pain at 10 weeks (back: 1.3, 95% CI 0.8 to 1.8; leg: 1.1, 95% CI 0.5 to 1.7) and 26 weeks (back: 0.9, 95% CI 0.4 to 1.4; leg: 1.0, 95% CI 0.4 to 1.6). Oswestry favoured individualised physiotherapy at 10 weeks (4.7; 95% CI 2.0 to 7.5), 26 weeks (5.4; 95% CI 2.6 to 8.2) and 52 weeks (4.3; 95% CI 1.4 to 7.1). Responder analysis at 52 weeks showed participants receiving individualised physiotherapy were more likely to improve by a clinically important amount of 50% from baseline for Oswestry (relative risk (RR)=1.3) 1.5; 95% CI 1.2 to 1.8) and back pain (RR 1.3; 95% CI 1.2 to 1.8) than participants receiving advice alone.

CONCLUSIONS:

10 sessions of individualised physiotherapy was more effective than 2 sessions of advice alone in participants with low-back disorders of ≥ 6 weeks and ≤ 6 months duration. Between-group changes were sustained at 12 months for activity limitation and 6 months for back and leg pain and were likely to be clinically significant.

CLINICAL TRIAL REGISTRATION:

ACTRN12609000834257.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://group.bmj.com/group/rights-licensing/permissions>.

KEYWORDS:

Physiotherapy; Randomised controlled trial

PMID:

26486585

3. DISC

4. INJECTIONS

5. SURGERY

Return to sports

[Br J Sports Med](#). 2015 Oct 21. pii: bjsports-2015-094691. doi: 10.1136/bjsports-2015-094691. [Epub ahead of print]

Return to sport after open and microdiscectomy surgery versus conservative treatment for lumbar disc herniation: a systematic review with meta-analysis.

[Reiman MP](#)¹, [Sylvain J](#)², [Loudon JK](#)³, [Goode A](#)¹.

[Author information](#)

Abstract

BACKGROUND:

Lumbar disc herniation has a prevalence of up to 58% in the athletic population. Lumbar discectomy is a common surgical procedure to alleviate pain and disability in athletes. We systematically reviewed the current clinical evidence regarding athlete return to sport (RTS) following lumbar discectomy compared to conservative treatment.

METHODS:

A computer-assisted literature search of MEDLINE, CINAHL, Web of Science, PEDro, OVID and PubMed databases (from inception to August 2015) was utilised using keywords related to lumbar disc herniation and surgery. The design of this systematic review was developed using the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). Methodological quality of individual studies was assessed using the Downs and Black scale (0-16 points).

RESULTS:

The search strategy revealed 14 articles. Downs and Black quality scores were generally low with no articles in this review earning a high-quality rating, only 5 articles earning a moderate quality rating and 9 of the 14 articles earning a low-quality rating. The pooled RTS for surgical intervention of all included studies was 81% (95% CI 76% to 86%) with significant heterogeneity ($I^2=63.4%$, $p<0.001$) although pooled estimates report only 59% RTS at same level. Pooled analysis showed no difference in RTS rate between surgical (84% (95% CI 77% to 90%)) and conservative intervention (76% (95% CI 56% to 92%); $p=0.33$).

CONCLUSIONS:

Studies comparing surgical versus conservative treatment found no significant difference between groups regarding RTS. Not all athletes that RTS return at the level of participation they performed at prior to surgery. Owing to the heterogeneity and low methodological quality of included studies, rates of RTS cannot be accurately determined.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://group.bmj.com/group/rights-licensing/permissions>.

KEYWORDS:

Lumbar spine; Surgery

PMID:

26491033

Spondylo surgery

[Spine J.](#) 2015 Oct 26. pii: S1529-9430(15)01538-7. doi: 10.1016/j.spinee.2015.10.026. [Epub ahead of print]

Intraoperative reduction does not result in better outcomes in low grade lumbar spondylolisthesis with neurogenic symptoms after minimally invasive transforaminal lumbar interbody fusion - a 5 year follow-up study.

[Tay KS¹](#), [Bassi A²](#), [Yeo W³](#), [Yue WM⁴](#).

[Author information](#)

Abstract

BACKGROUND CONTEXT:

Intra-operative reduction of low-grade lumbar spondylolisthesis (LGLS) remains disputed. There is currently no published data comparing midterm outcomes of reduction versus in-situ fusion.

PURPOSE:

To compare mid-term clinical, radiological and peri-operative outcomes for reduction versus in-situ fusion in LGLS with neurogenic symptoms.

STUDY DESIGN/SETTING:

Retrospective review of prospectively collected spine registry data in a single institution.

PATIENT SAMPLE:

All patients who underwent minimally-invasive transforaminal lumbar interbody fusion (MISTLIF) for LGLS with neurogenic symptoms with minimum 5-year follow-up.

OUTCOME MEASURES:

Self-reported measures: Oswestry Disability Index, North American Spine Society Neurogenic Symptom Score, Health Outcomes Survey Short Form-36 score, Numerical Pain Rating Scale (back and leg pain). Radiological outcomes: fusion grading, adjacent segment degeneration (ASD), implant failure/loosening. Peri-operative outcomes: fluoroscopic time, operative time, intra-operative blood loss, opioid analgesia usage, time to ambulation, duration of hospitalization, complication rate. Functional outcomes: patient satisfaction rate, rate of return to full function.

METHODS:

A retrospective review was performed on prospectively collected registry data of patients undergoing MISTLIF for LGLS with neurogenic symptoms, from 2004-2009. The operative technique and post-operative protocol were standardized. 2 groups were formed based on complete reduction of the spondylolisthesis (reduction group, RG) or the lack thereof (non-reduction group, NRG) in the immediate post-operative radiograph. Outcomes at baseline, 6 months, 2 years and 5 years post-surgery were compared.

RESULTS:

56 patients were included (RG-30, NRG-26). The 2 groups had comparable baseline characteristics: demographics, body mass index, spondylolisthesis etiology, spinal level involved, bone graft and bone morphogenetic protein used, and all self-reported outcome measures. Peri-operative outcomes were not significantly different. The early complication rate (RG-3.3%, NRG-19.2%, $p=0.086$) and late complication rate (RG-10%, NRG-23.1%, $p=0.184$) were similar. All patients achieved Bridwell grade 1 fusion from 2 years onwards. ASD rate at 5 years was similar (RG-10%, NRG-0%, $p=NS$). Both groups showed significant post-operative improvement in all self-reported measures with no significant differences between the 2 groups at all follow-up points. Functional outcomes were equivalent.

CONCLUSIONS:

Intra-operative reduction does not improve outcomes in LGLS with neurogenic symptoms after MISTLIF. Adequate decompression and solid fusion are likely the keys to good mid-term outcomes.

Copyright © 2015. Published by Elsevier Inc.

KEYWORDS:

correction; decompression; fusion; instability; spine deformity

PMID:

26515392

Spondylo surgery

[Spine \(Phila Pa 1976\)](#). 2015 Nov;40(21):E1161-6. doi: 10.1097/BRS.0000000000001116.

Rationale for the Surgical Treatment of Lumbar Degenerative Spondylolisthesis.

[Schroeder GD¹](#), [Kepler CK](#), [Kurd MF](#), [Vaccaro AR](#), [Hsu WK](#), [Patel AA](#), [Savage JW](#).
[Author information](#)

Abstract

STUDY DESIGN:

A questionnaire survey.

OBJECTIVE:

The aim of this study was to determine the effect of patient age, dynamic instability, and/or low back pain on the treatment of patients with a degenerative spondylolisthesis, and if the operative approach is affected by surgeon specialty, location, or practice model.

SUMMARY OF BACKGROUND DATA:

The classic treatment for patients with symptomatic degenerative spondylolisthesis is decompression and fusion; however in a select group of patients, an isolated decompression may be reasonable.

METHODS:

A survey was sent to surgeon members of the Lumbar Spine Research Society and AOSpine requesting information regarding their preferred treatment of degenerative spondylolisthesis for a number of different clinical scenarios. Determinants included patient age, the presence of instability, symptoms of low back pain, surgeon's location, surgeon's specialty, and practice model.

RESULTS:

A total of 223 spine surgeons completed the survey. Age of the patient, the presence of instability, and low back pain all significantly ($P < 0.0001$) affected the recommended treatment, which were independent of surgeon factors. Older patients were significantly less likely to be offered an interbody fusion and more likely to be recommended for an isolated decompression ($P < 0.0001$), and the presence of dynamic instability made an interbody fusion more likely than an isolated decompression ($P < 0.0001$). Of those who responded, 53.2% of surgeons reported they would recommend an isolated decompression for a properly selected patient with a degenerative spondylolisthesis.

CONCLUSION:

The most common operative treatment for a degenerative spondylolisthesis is a decompression and fusion; however, the results of this survey demonstrate that surgeons consider degenerative

spondylolisthesis a heterogeneous condition that requires an individualized surgical plan. Future studies are needed to evaluate the effect of variables such as age, the presence of low back pain, and the presence of dynamic instability on patient reported outcomes from various surgical options.

LEVEL OF EVIDENCE:

N/A.

PMID:

26274525

6. PELVIC GIRDLE

7. PELVIC ORGANS/WOMAN'S HEALTH

Chronic pelvic pain

[Curr Opin Obstet Gynecol](#). 2015 Dec;27(6):445-8. doi: 10.1097/GCO.0000000000000222.

Chronic pelvic pain: how does noninvasive imaging compare with diagnostic laparoscopy?

[Tirlapur SA¹](#), [Daniels JP](#), [Khan KS](#); [MEDAL trial collaboration](#).

[Author information](#)

[Abstract](#)

PURPOSE OF REVIEW:

Chronic pelvic pain (CPP) has an annual prevalence of 38/1000 in the UK, with coexisting pathologies often present. Diagnostic laparoscopy has long been the gold standard diagnostic test, but with up to 40% showing no abnormality, we explore the value of noninvasive imaging, such as pelvic ultrasound and MRI.

RECENT FINDINGS:

A literature review from inception until January 2015 of the following databases: PubMed, MEDLINE, Cumulative Index to Nursing and Allied Health Literature, Excerpta Medica database, and System for Information on Grey Literature in Europe were performed to identify published studies assessing the usefulness of ultrasound, MRI, and laparoscopy in the diagnosis of CPP. Three studies (194 women) addressed their comparative performance in patients with endometriosis, showing the sensitivity of ultrasound ranged between 58 and 88.5%; MRI was 56-91.5% and in the one study using histology as its reference standard, the sensitivity of laparoscopy was 85.7%. Noninvasive imaging has the additional benefit of being well tolerated, safer, and cheaper than surgery.

SUMMARY:

CPP, by nature of its multifactorial causation, can be difficult to manage and often requires a multidisciplinary team. Ultrasound and MRI may provide information about the presence or lack of abnormality, which would allow general practitioners or office gynaecologists to initiate treatment and think about surgery as a second-line investigative tool.

PMID:

26485454

Weight gain

Gestational weight gain - United States, 2012 and 2013

sponsor

Morbidity and Mortality Weekly Report, 11/09/2015

In a recent study, 21% of pregnant women gained less than the recommended amount of weight, and 47% gained more than the recommended amount; however, state-specific prevalence was not examined. To estimate state-specific prevalence of GWG below, within, and above recommendations (referred to as inadequate, appropriate, and excessive, respectively), CDC analyzed 2013 birth data for U.S. resident women who delivered full-term (37–41 weeks gestation), singleton infants from 43 jurisdictions (41 states, New York City, and the District of Columbia [DC]) that used the 2003 revised birth certificate, which collects maternal height, prepregnancy weight, and delivery weight. In addition, 2012 data from the Pregnancy Risk Assessment Monitoring System (PRAMS) were analyzed to estimate prevalence for five states with available data that had not yet adopted the 2003 birth certificate. Overall, 32.1% of women had appropriate GWG. States varied in prevalence of inadequate (range = 12.6%–25.5%), appropriate (range = 26.2%–39.0%), and excessive (range = 38.2%–54.7%) GWG. The prevalence of inadequate GWG was $\geq 20\%$ in 20 states and New York City; the prevalence of excessive GWG was $\geq 50\%$ in 17 states. Stratification by prepregnancy BMI category indicated variation by state persisted; notably, overweight women had the highest prevalence of excessive GWG in nearly every state. Given the high prevalence of excessive GWG and its associated risks, including macrosomia and maternal obesity, effective interventions to prevent excessive GWG during pregnancy are needed.

Breast cancer/red meat

[Int J Cancer](#). 2015 Oct 27. doi: 10.1002/ijc.29901. [Epub ahead of print]

Red and processed meat, nitrite, and heme iron intakes and postmenopausal breast cancer risk in the NIH-AARP Diet and Health Study.

[Inoue-Choi M](#)^{1,2}, [Sinha R](#)³, [Gierach GL](#)⁴, [Ward MH](#)¹.

[Author information](#)

Abstract

Previous studies have shown inconsistent associations between red and processed meat intake and breast cancer risk. N-nitroso compounds and heme iron have been hypothesized as contributing factors. We followed 193,742 postmenopausal women in the NIH-AARP Diet and Health Study and identified 9,305 incident breast cancers (1995–2006). Dietary intake was assessed using a food frequency questionnaire at baseline. We adjusted daily intakes of meat,

nitrite, and heme iron for energy intake using the nutrient density method. We estimated multivariable-adjusted hazard ratios (HR) and 95% confidence intervals (CI) by quintiles of dietary exposures for all breast cancer, by stage (in-situ, localized, regional/distant), and by estrogen/progesterone receptor (ER/PR) status using Cox proportional hazards regression. Total red meat intake was positively associated with risk of regional/distant cancer (p-trend=0.02). The risk was 25% higher in the highest vs. lowest intake quintile (95%CI=1.03-1.52). Higher processed red meat intake (Q5 vs. Q1) was associated with 27% higher risk of localized breast cancer (95%CI=1.01-1.27, p-trend=0.03) and a 19% higher risk of regional/distant cancer (95%CI=0.98-1.44, p-trend=0.10). In addition, higher nitrite intake from processed red meat was positively associated with localized cancer (HR for Q5 vs. Q1=1.23, 95%CI=1.09-1.39, p-trend<0.0001). Heme iron intake was positively associated with breast cancer risk overall and all cancer stages (p-trend=0.02-0.05). No heterogeneity was observed in risk associations by hormone receptor status. Our findings suggest that high consumption of red meat and processed meat may increase risk of postmenopausal breast cancer. Added nitrite and heme iron may partly contribute to these observed associations. This article is protected by copyright. All rights reserved.

© 2015 UICC.

KEYWORDS:

Red meat; breast cancer; heme iron; nitrite; processed meat

PMID:

26505173

8. VISCERA

Celiac and gluten exposure

[Clin Gastroenterol Hepatol](#). 2015 Oct 7. pii: S1542-3565(15)01332-4. doi: 10.1016/j.cgh.2015.09.030. [Epub ahead of print]

Effects of Gluten Intake on Risk of Celiac Disease: a case-control study on a Swedish birth cohort.

[Andrén Aronsson C](#)¹, [Lee HS](#)², [Koletzko S](#)³, [Uusitalo U](#)², [Yang J](#)², [Virtanen SM](#)⁴, [Liu E](#)⁵, [Lernmark Å](#)¹, [Norris JM](#)⁶, [Agardh D](#)⁷; [TEDDY Study Group](#).

[Author information](#)

Abstract

BACKGROUND & AIMS:

It is not clear how intake of gluten during infancy affects subsequent risk of celiac disease. We investigated whether gluten intake before 2 years of age increases risk for celiac disease in genetically susceptible children.

METHODS:

We performed a case-control study of 436 pairs of children, generated from a database of 2525 children with genetic susceptibility to celiac disease in Sweden, matched for sex, birth year, and HLA genotype from September 2004 and February 2010. Children were screened annually for celiac disease using an assay for tissue transglutaminase autoantibodies (tTGA). Intestinal biopsies were collected from children who tested positive for tTGA to confirm the presence of celiac disease. Gluten intake was calculated from 3-day food records collected when the children were 9, 12, 18 and 24 months old.

RESULTS:

Breastfeeding duration (median 32 weeks) and age at first introduction to gluten (median 22 weeks) did not differ between cases and tTGA-negative children (controls). At the visit prior to tTGA seroconversion, cases reported a larger intake of gluten (median 4.9 g/day) than controls (median 3.9 g/day) (odds ratio [OR], 1.28; 95% confidence interval [CI], 1.13-1.46; P=.0002). More cases consumed amounts of gluten in the upper 3rd tertile (i.e. >5.0 g/day) before they tested positive for tTGA seroconversion than controls (OR, 2.65; 95% CI, 1.70-4.13; P<.0001). This increase in risk was similar for children homozygous for DR3-DQ2 (OR, 3.19; 95% CI, 1.61-6.30; P=.001), heterozygous for DR3-DQ2 (OR, 2.24; 95% CI, 1.08-4.62; P=.030), and for children not carrying DR3-DQ2 (OR, 2.43; 95% CI, 0.90-6.54; P=.079).

CONCLUSIONS:

Intake of gluten before 2 years of age increases risk of celiac disease at least 2-fold in children with genetic risk factors for this disease. This association did not differ among HLA-DR3-DQ2 haplotypes. These findings may be taken into account for future infant feeding recommendations.

Copyright © 2015 AGA Institute. Published by Elsevier Inc. All rights reserved.

KEYWORDS:

TEDDY study; diet; pediatric; wheat

PMID:

26453955

Emotional impact IBS

[Neurogastroenterol Motil.](#) 2015 Nov 3. doi: 10.1111/nmo.12710. [Epub ahead of print]

Altered brain responses in subjects with irritable bowel syndrome during cued and uncued pain expectation.

[Hong JY](#)^{1,2,3}, [Naliboff B](#)^{1,2,4,5}, [Labus JS](#)^{1,2,4,5}, [Gupta A](#)^{1,2}, [Kilpatrick LA](#)^{1,2,4}, [Ashe-McNalley C](#)^{1,2,4}, [Stains J](#)^{1,2}, [Heendeniya N](#)^{1,2}, [Smith SR](#)^{1,2}, [Tillisch K](#)^{1,2,4}, [Mayer EA](#)^{1,2,4,5,6,7}.

[Author information](#)

[Abstract](#)

BACKGROUND:

A majority of the subjects with irritable bowel syndrome (IBS) show increased behavioral and brain responses to expected and delivered aversive visceral stimuli during controlled rectal balloon distension, and during palpation of the sigmoid colon. We aimed to determine if altered brain responses to cued and uncued pain expectation are also seen in the context of a noxious somatic pain stimulus applied to the same dermatome as the sigmoid colon.

METHODS:

A task-dependent functional magnetic resonance imaging technique was used to investigate the brain activity of 37 healthy controls (18 females) and 37 IBS subjects (21 females) during: (i) a cued expectation of an electric shock to the abdomen vs a cued safe condition; and (ii) an uncued cross-hair condition in which the threat is primarily based on context vs a cued safe condition.

KEY RESULTS:

Regions within the salience, attention, default mode, and emotional arousal networks were more activated by the cued abdominal threat condition and the uncued condition than in the cued safe condition. During the uncued condition contrasted to the cued safe condition, IBS subjects (compared to healthy control subjects) showed greater brain activations in the affective (amygdala, anterior insula) and attentional (middle frontal gyrus) regions, and in the thalamus and precuneus. These disease-related differences were primarily seen in female subjects.

CONCLUSIONS & INFERENCES:

The observed greater engagement of cognitive and emotional brain networks in IBS subjects during contextual threat may reflect the propensity of IBS subjects to overestimate the likelihood and severity of future abdominal pain.

© 2015 John Wiley & Sons Ltd.

KEYWORDS:

contextual threat; functional magnetic resonance imaging; irritable bowel syndrome; pain expectations; sex differences

PMID:

26526698

Zinc helps bowel function

[Int J Epidemiol](#). 2015 Nov 5. pii: dyv301. [Epub ahead of print]

Zinc intake and risk of Crohn's disease and ulcerative colitis: a prospective cohort study.

[Ananthakrishnan AN](#)¹, [Khalili H](#)², [Song M](#)³, [Higuchi LM](#)⁴, [Richter JM](#)², [Chan AT](#)⁵.

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

Diet plays a role in the pathogenesis of Crohn's disease (CD) and ulcerative colitis (UC). Dietary zinc may influence risk of disease through effects on autophagy, innate and adaptive immune response and maintenance of the intestinal barrier.

METHODS:

We analysed data from 170 776 women from the Nurses Health Study I and Nurses Health Study II, who were followed for 26 years. Zinc intake was assessed using semi-quantitative food frequency questionnaires administered every 4 years. Incident CD and UC were ascertained by medical record review. Cox proportional hazards models adjusting for potential confounders determined the independent association between zinc intake and incident disease.

RESULTS:

Over 3 317 550 person-years (p-y) of follow-up, we identified 269 incident cases of CD and 338 incident cases of UC. Zinc intake ranged from 9 mg/day in the lowest quintile to 27 mg/day in the highest quintile. Compared with women with the lowest quintile of intake, the multivariate hazard ratios (HR) for CD were 0.92 [95% confidence interval (CI), 0.65 - 1.29] for women in the second quintile of intake, 0.60 (95% CI, 0.40 - 0.89) for the third quintile, 0.57 (95% CI, 0.38 - 0.86) for fourth quintile and 0.74 (95% CI, 0.50 - 1.10) for the highest quintile ($P_{\text{trend}} = 0.003$). The association was stronger for dietary zinc (HR 0.63, 95% CI, 0.43 - 0.93, comparing extreme quintiles) than for zinc intake from supplements. Neither dietary nor supplemental zinc modified risk of UC.

CONCLUSIONS:

In two large prospective cohorts of women, intake of zinc was inversely associated with risk of CD but not UC.

© The Author 2015; all rights reserved. Published by Oxford University Press on behalf of the International Epidemiological Association.

KEYWORDS:

Crohn's disease; Zinc; diet; epidemiology; risk

PMID:

26546032

9. THORACIC SPINE

10 A. CERVICAL SPINE

Follow up of post trauma symptoms

[J Trauma Acute Care Surg.](#) 2015 Nov;79(5):822-7. doi: 10.1097/TA.0000000000000847.

Outcomes of pediatric patients with persistent midline cervical spine tenderness and negative imaging result after trauma.

[Dorney K¹](#), [Kimia A](#), [Hannon M](#), [Hennelly K](#), [Meehan WP 3rd](#), [Proctor M](#), [Mooney DP](#), [Glitzbecker M](#), [Mannix R](#).

[Author information](#)

Abstract

BACKGROUND:

There is little evidence to guide management of pediatric patients with persistent cervical spine tenderness after trauma but with negative initial imaging study findings. Our objective was to determine the prevalence of clinically significant cervical spine injury among pediatric blunt trauma patients discharged from the emergency department with negative imaging study findings but persistent midline cervical spine tenderness.

METHODS:

We performed a single-center, retrospective study of subjects 1 year to 15 years of age discharged in a rigid cervical spine collar after blunt trauma over a 5-year period. We included patients with negative imaging results who were maintained in a collar because of persistent midline cervical spine tenderness. Primary outcome was clinically significant cervical spine injury. Secondary outcome was continued use of the collar after follow-up. Outcomes were ascertained from the medical record or self-report via telephone call.

RESULTS:

A total of 307 subjects met inclusion criteria, of whom 289 (94.1%) had follow-up information available (89.6% in chart, 10.4% via telephone call). Of those with follow-up information, 189 (65.4%) had subspecialty follow-up in the spine clinic. Of those with spine clinic follow-up, 84.6% had the hard collar discontinued at the first visit (median time to visit, 10 days). Of subjects with spine clinic follow-up, 10.1% were left in the collar for persistent tenderness without findings on imaging and 2.1% had imaging findings related to their injury; none required surgical intervention.

CONCLUSION:

A very small percentage of subjects with persistent midline cervical spine tenderness and normal radiographic study findings have a clinically significant cervical spine injury identified at follow-up. Referral for subspecialty evaluation may only be necessary in a small number of patients with persistent tenderness or concerning signs/symptoms.

LEVEL OF EVIDENCE:

Therapeutic study, level IV.

PMID:

26496108

10 B. CERVICAL EXERCISES**11. UPPER C SPINE****12 A. WHIPLASH****12 B. CERVICAL SURGERIES****Lordosis and Kyphosis**

[Spine J.](#) 2015 Oct 30. pii: S1529-9430(15)01627-7. doi: 10.1016/j.spinee.2015.10.042. [Epub ahead of print]

Relationship between t1 slope and loss of lordosis after laminoplasty in patients with cervical ossification of the posterior longitudinal ligament.

[Kim B¹](#), [Yoon DH¹](#), [Ha Y¹](#), [Yi S¹](#), [Shin DA¹](#), [Lee CK¹](#), [Lee N¹](#), [Kim KN²](#).

[Author information](#)

Abstract**BACKGROUND:**

Context Laminoplasty is a major surgical method to treat patients with cervical ossification of the posterior longitudinal ligament (OPLL). Sometimes patients with cervical OPLL demonstrate postoperative kyphosis despite sufficient preoperative lordosis. Recently, the impact of T1 slope has emerged as a predictor of kyphotic alignment change after laminoplasty. However, the relationship between T1 slope and postoperative cervical alignment change is not yet fully established.

PURPOSE:

The goals of this study were to investigate the relationship between T1 slope and loss of cervical lordosis (LCL) and to identify the role of T1 slope as a predictor of postoperative kyphosis after laminoplasty in patients with OPLL.

STUDY DESIGN:

Retrospective case study PATIENT SAMPLE: Between January 2011 and January 2012, 64 consecutive patients who underwent cervical laminoplasty for OPLL were enrolled (male: female ratio = 47:17; mean age = 55.9 years). Cervical spine lateral radiographs in neutral, flexion, and extension were taken before surgery and at 2-year follow-up.

OUTCOME MEASURES:

C2-7 Cobb angle, cervical range of motion (ROM), T1 slope, neck tilt, and C2-7 sagittal vertical axis (SVA) were measured from lateral radiographs of the cervical spine preoperatively and postoperatively at the 2-year follow-up.

METHODS:

Patients were divided into two groups according to preoperative T1 slope, and postoperative cervical alignment change was compared between groups. Postoperative kyphosis and LCL incidence were also evaluated at the 2-year follow-up. The relationships between postoperative cervical alignment change and preoperative variables including age, T1 slope, cervical ROM, C2-7 SVA, and T1 slope minus C2-7 Cobb angle (T1S-CL) were investigated.

RESULTS:

Patients were divided into two groups above and below median preoperative T1 slope (23.2°). There were no differences in age, sex, type of OPLL, or operation level between the 2 groups.

Patients with higher preoperative T1 slope demonstrated significantly more lordotic preoperative cervical alignment ($p=0.001$). Patients with higher preoperative T1 slope were more likely to exhibit postoperative LCL ($p=0.03$), and when it occurred, the degree of LCL was greater ($p=0.06$). In multiple linear regression analysis, higher T1 slope ($B=0.414$, $p=0.04$), and lower T1S-CL ($B=-0.412$, $p=0.03$) were significantly associated with more postoperative LCL. In spite of these results, postoperative kyphosis did not occur more frequently in patients with higher T1 slope ($p=0.64$).

CONCLUSION:

Patients with higher T1 slope had more lordotic curvature before surgery and demonstrated more LCL at the 2-year follow-up. Cervical alignment was compromised after laminoplasty, and the degree of LCL was correlated with preoperative T1 slope. After laminoplasty for cervical OPLL, patients with higher T1 slope tended to exhibit a greater LCL yet did not drift into frank postoperative kyphosis.

Copyright © 2015. Published by Elsevier Inc.

KEYWORDS:

T1 sagittal angle; T1 slope; cervical OPLL; cervical laminoplasty; kyphotic alignment change; postoperative kyphosis

PMID:

26523967

13. CRANIUM/TMJ

Molar relationship

[Am J Orthod Dentofacial Orthop.](#) 2015 Nov;148(5):782-92. doi: 10.1016/j.ajodo.2015.05.020.

Factors influencing molar relationship behavior in the mixed dentition.

[Barros SE¹](#), [Chiqueto K²](#), [Janson G³](#), [Ferreira E⁴](#).

[Author information](#)

Abstract

INTRODUCTION:

Our objectives were to compare different patterns of molar relationship changes from the mixed dentition to the permanent dentition and to discriminate the contributing dentoskeletal factors.

METHODS:

In this retrospective cohort study, we used a sample selected from 1212 untreated subjects who were longitudinally followed from the mixed to the permanent dentition. Eighty subjects (mean age, 8.69 years) had their right and left dental arch sides divided into 6 groups, according to molar relationship behavior: distal step kept in Class II (group 1A) or changed to Class I (group 1B); flush terminal plane kept in Class II (group 2A) or changed to Class I (group 2B); and mesial step kept in Class I (group 3A) or changed to Class III (group 3B). The groups were statistically evaluated at $P < 0.05$.

RESULTS:

Class I and Class II defined by mesial and distal steps were stable. The flush terminal plane groups had a similar probability of maintaining the Class II relationship or changing to Class I. Groups 2A and 2B had significantly different changes in molar relationship, maxillary width, and mandibular skeletal traits as a whole. Class II maxillomandibular discrepancy, maxillary narrowing, and sagittal mandibular deficiency were the disadvantageous factors for favorable molar relationship adjustment.

CONCLUSIONS:

Mesial and distal steps produced stable molar relationships from the mixed to the permanent dentition. There were 2 distinct dentoskeletal parameters of subjects with flush terminal planes regarding transverse maxillary and sagittal mandibular dimensions that should be diagnosed early to define the prognosis for molar relationship adjustment and orthodontic treatment need.

Copyright © 2015 American Association of Orthodontists. Published by Elsevier Inc. All rights reserved.

PMID:

26522038

Bruxism

[nt J Prosthodont](#). 2015 Nov-Dec;28(6):594-9. doi: 10.11607/ijp.4126.

Epigenetics and Bruxism: Possible Role of Epigenetics in the Etiology of Bruxism.

[Čalić A](#), [Peterlin B](#).

Abstract

Bruxism is defined as a repetitive jaw muscle activity characterized by clenching or grinding of the teeth and/or bracing or thrusting of the mandible. There are two distinct circadian phenotypes for bruxism: sleep bruxism (SB) and awake bruxism, which are considered separate entities due to the putative difference in their etiology and phenotypic variance. The detailed etiology of bruxism so far remains unknown. Recent theories suggest the central regulation of certain pathophysiological or psychological pathways. Current proposed causes of bruxism appear to be a combination of genetic and environmental (G×E) factors, with epigenetics providing a robust framework for investigating G×E interactions, and their involvement in bruxism makes it a suitable candidate for epigenetic research. Both types of bruxism are associated with certain epigenetically determined disorders, such as Rett syndrome (RTT), Prader-Willi syndrome (PWS), and Angelman syndrome (AS), and these associations suggest a mechanistic link between epigenetic deregulation and bruxism. The present article reviews the possible role of epigenetic mechanisms in the etiology of both types of bruxism based on the epigenetic pathways involved in the pathophysiology of RTT, PWS, and AS, and on other epigenetic disruptions associated with risk factors for bruxism, including sleep disorders, altered stress response, and psychopathology.

PMID:

26523718

Stem cells

[J Dent Res](#). 2015 Nov;94(11):1495-501. doi: 10.1177/0022034515603972. Epub 2015 Sep 8.

Stem Cells in Teeth and Craniofacial Bones.

[Zhao H](#)¹, [Chai Y](#)².

Author information

Abstract

Stem cells are remarkable, and stem cell-based tissue engineering is an emerging field of biomedical science aiming to restore damaged tissue or organs. In dentistry and reconstructive facial surgery, it is of great interest to restore lost teeth or craniofacial bone defects using stem cell-mediated therapy. In the craniofacial region, various stem cell populations have been identified with regeneration potential. In this review, we provide an overview of the current knowledge concerning the various types of tooth- and craniofacial bone-related stem cells and discuss their in vivo identities and regulating mechanisms.

© International & American Associations for Dental Research 2015.

KEYWORDS:

Gli1 protein; hedgehogs; mesenchymal stromal cells; neural crest; skull; stem cell niche

PMID:

26350960

Measuring fascial asymmetries

Prog Orthod. 2015 Dec;16(1):36. doi: 10.1186/s40510-015-0106-9. Epub 2015 Oct 21.

Facial asymmetry assessment in adults using three-dimensional surface imaging.

Patel A¹, Islam SM², Murray K³, Goonewardene MS⁴.

Author information

Abstract

BACKGROUND:

The use of three-dimensional (3D) surface imaging is becoming more popular and accepted in the fields of Medicine and Dentistry. The present study aims to develop a technique to automatically localise and quantify soft-tissue asymmetry in adults using 3D facial scans. This may be applied as a diagnostic tool to monitor growth and dynamic changes and to evaluate treatment outcomes.

METHODS:

3D facial surface data were captured from 55 adults comprising 28 symmetrical faces and 27 asymmetrical faces using a 3dMDface system. A landmark-independent method, which compared the original and the mirrored 3D facial data, was developed to quantify the asymmetry. A Weibull distribution-based probabilistic model was generated from the root-mean-square (RMS) error data for the symmetrical group to designate a level of asymmetry which represented a normal range.

RESULTS:

Statistically significant ($p < 0.0001$) differences in the RMS error values were found when comparing symmetrical with asymmetrical groups and a similarly significant difference was identified between the lower and the upper face of the asymmetrical group.

CONCLUSIONS:

The proposed 3D imaging-based method of identifying and quantifying facial soft-tissue asymmetry was fast and effective. The Weibull distribution-based comparison of a person's asymmetry with respect to a large sample of symmetrical faces may also be used to evaluate growth, soft-tissue compensations and surgical outcomes.

KEYWORDS:

3D surface imaging; Facial aesthetics; Facial soft-tissue asymmetry; Landmark-independent analysis; RMS distance measure; Weibull distribution

PMID:

26490376

Missing teeth[J Oral Rehabil.](#) 2015 Oct 27. doi: 10.1111/joor.12364. [Epub ahead of print]**Impact of shortened dental arches on oral health-related quality of life.**[Antunes JL](#)¹, [Tan H](#)², [Peres KG](#)², [Peres MA](#)².[Author information](#)**Abstract**

This study described the prevalence of adults with shortened dental arches (SDA) in Brazil, specifically assessing the differences of oral health-related quality of life [the prevalence and severity of oral impacts on daily performance (OIDP)] by dentition status. We analysed data from the 2010 National Survey of Oral Health in Brazil, including home interviews and oral examinations. The assessment of SDA used two alternative definitions: having 3-5 natural occlusal units (OUs) in posterior teeth or having 4 OUs in posterior teeth. Both definitions included having intact anterior region and no dental prosthesis. The analysis was weighted, and a complex sampling design was used. Negative binomial regression models assessed associations as adjusted for socio-demographic conditions and dental outcomes. A total of 9779 adults (35-44 years old) participated in the study. A non-negligible proportion had SDA: 9.9% and 3.8% for the first and second definition, respectively. Individuals with SDA (first definition) ranked higher in OIDP prevalence [count ratio (CR) 1.22; 1.09-1.36, 95% confidence interval (CI)] and severity (CR = 1.43; 1.19-1.72, 95% CI) than those with more natural teeth. This difference was not statistically significant when adjusted for socio-demographic and dental covariates: OIDP prevalence (CR = 1.04; 0.92-1.17, 95% CI) and severity (CR = 1.09; 0.91-1.30, 95% CI). Analogous results were obtained when the second definition of SDA was adopted. These findings suggest that a considerable contingent of adults may function well without dental prostheses, despite having several missing teeth.

This conclusion challenges the traditional approach of replacing any missing tooth and instructs the allocation of more dental resources to preventive, diagnostic and restorative services.

© 2015 John Wiley & Sons Ltd.

KEYWORDS:

dental health survey; dental prosthesis; oral health; quality of life; tooth loss

PMID:

26506211

14. HEADACHES**Auras**[J Headache Pain.](#) 2015 Dec;16(1):92. doi: 10.1186/s10194-015-0577-6. Epub 2015 Nov 2.

Visual evoked potentials in subgroups of migraine with aura patients.

[Coppola G](#)¹, [Bracaglia M](#)², [Di Lenola D](#)², [Di Lorenzo C](#)³, [Serrao M](#)², [Parisi V](#)⁴, [Di Renzo A](#)⁴, [Martelli F](#)⁵, [Fadda A](#)⁵, [Schoenen J](#)⁶, [Pierelli F](#)^{2,7}.

[Author information](#)

Abstract

BACKGROUND:

Patients suffering from migraine with aura can have either pure visual auras or complex auras with sensory disturbances and dysphasia, or both. Few studies have searched for possible pathophysiological differences between these two subgroups of patients.

METHODS:

Methods - Forty-seven migraine with aura patients were subdivided in a subgroup with exclusively visual auras (MA, N = 27) and another with complex neurological auras (MA+, N = 20). We recorded pattern-reversal visual evoked potentials (VEP: 15 min of arc cheques, 3.1 reversal per second, 600 sweeps) and measured amplitude and habituation (slope of the linear regression line of amplitude changes from the 1st to 6th block of 100 sweeps) for the N1-P1 and P1-N2 components in patients and, for comparison, in 30 healthy volunteers (HV) of similar age and gender distribution.

RESULTS:

VEP N1-P1 habituation, i.e. amplitude decrement between 1st and 6th block, which was obvious in most HV (mean slope -0.50), was deficient in both MA (slope +0.01, p = 0.0001) and MA+ (-0.0049, p = 0.001) patients. However, VEP N1-P1 amplitudes across blocks were normal in MA patients, while they were significantly greater in MA+ patients than in HVs.

CONCLUSIONS:

Our findings suggest that in migraine with aura patients different aura phenotypes may be underpinned by different pathophysiological mechanisms. Pre-activation cortical excitability could be higher in patients with complex neurological auras than in those having pure visual auras or in healthy volunteers.

KEYWORDS:

Complex aura; Cortical excitability; Habituation; Migraine with aura; Visual aura; Visual evoked potentials

PMID:

26527348

Understanding HA's

[Clin J Pain](#). 2015 Dec;31(12):1068-74. doi: 10.1097/AJP.0000000000000215.

Pain Intensity, Headache Frequency, and the Behavioral Activation and Inhibition Systems.

[Jensen MP](#)¹, [Tan G](#), [Chua SM](#).

[Author information](#)

Abstract

OBJECTIVES:

To test the hypothesized associations between measures of the behavioral inhibition system (BIS) and behavioral activation system (BAS) and both the intensity and frequency of pain.

METHODS:

A total of 563 college students were administered measures of BIS and BAS and asked to indicate both (1) the average intensity of pain at 10 body sites during the past week and (2) the

frequency with which they experience mild, moderate, and severe headaches. The associations between (1) the BIS and BAS scale scores and (2) the worst average pain intensity experienced and headache frequencies were examined using a series of 1-way analyses of variance.

RESULTS:

As predicted, the measure of BIS demonstrated significant and nonlinear associations with both pain intensity and headache frequency. The measure of BAS was not significantly related to pain intensity, but did demonstrate a nonlinear association with the frequency of severe headaches.

DISCUSSION:

The findings are consistent with predictions based on a model hypothesizing that pain has a nonlinear impact on both BIS and BAS, with a stronger impact on BIS than BAS. If the current results are replicated in other samples, including samples of individuals with chronic pain, they have important implications for identifying biological factors that could influence pain and behavioral responses to pain, as well as for the development and evaluation of treatments that could enhance positive treatment outcomes.

PMID:

25621428

Girls and boys youth and HA

[Pain](#). 2015 Nov;156(11):2212-21. doi: 10.1097/j.pain.000000000000292.

The migraine brain in transition: girls vs boys.

[Faria V¹](#), [Erpelding N](#), [Lebel A](#), [Johnson A](#), [Wolff R](#), [Fair D](#), [Burstein R](#), [Becerra L](#), [Borsook D](#).

[Author information](#)

Abstract

The prevalence of migraine has an exponential trajectory that is most obvious in young females between puberty and early adulthood. Adult females are affected twice as much as males. During development, hormonal changes may act on predetermined brain circuits, increasing the probability of migraine. However, little is known about the pediatric migraine brain and migraine evolution. Using magnetic resonance imaging, we evaluated 28 children with migraine (14 females and 14 males) and 28 sex-matched healthy controls to determine differences in brain structure and function between (1) females and males with migraine and (2) females and males with migraine during earlier (10-11 years) vs later (14-16 years) developmental stages compared with matched healthy controls. Compared with males, females had more gray matter in the primary somatosensory cortex (S1), supplementary motor area, precuneus, basal ganglia, and amygdala, as well as greater precuneus resting state functional connectivity to the thalamus, amygdala, and basal ganglia and greater amygdala resting state functional connectivity to the thalamus, anterior midcingulate cortex, and supplementary motor area. Moreover, older females with migraine had more gray matter in the S1, amygdala, and caudate compared to older males with migraine and matched healthy controls.

This is the first study showing sex and developmental differences in pediatric migraineurs in brain regions associated with sensory, motor, and affective functions, providing insight into the neural mechanisms underlying distinct migraine sex phenotypes and their evolution that could result in important clinical implications increasing treatment effectiveness.

PMID:

26172552

15. VESTIBULAR

Migraine and HA

[J Headache Pain](#). 2015 Dec;16(1):93. doi: 10.1186/s10194-015-0578-5. Epub 2015 Nov 2.

Subclinical vestibular dysfunction in migraine patients: a preliminary study of ocular and rectified cervical vestibular evoked myogenic potentials.

[Kim CH](#)¹, [Jang MU](#)², [Choi HC](#)³, [Sohn JH](#)⁴.

[Author information](#)

Abstract

BACKGROUND:

Many studies have identified various vestibular symptoms and laboratory abnormalities in migraineurs. Although the vestibular tests may be abnormal, the changes may exist without vestibular symptoms. To date, vestibular-evoked myogenic potential (VEMP) has been the easiest and simplest test for measuring vestibular function in clinical practice. Cervical VEMP (cVEMP) represents a vestibulo-collic reflex, whereas ocular VEMP (oVEMP) reflects a vestibulo-ocular pathway. Therefore, we determined whether ocular and rectified cervical VEMPs differed in patients with migraine or tension type headache (TTH) and compared the results to controls with no accompanying vestibular symptoms.

METHODS:

The present study included 38 females with migraine without aura, 30 with episodic TTH, and 50 healthy controls without vestibular symptoms. oVEMP and cVEMP using a blood pressure manometer were recorded during a headache-free period. From the VEMP graphs, latency and amplitude parameters were analyzed, especially following EMG rectification in cVEMP.

RESULTS:

With respect to oVEMP, the migraine group exhibited significantly longer mean latencies of bilateral n1 and left p1 than the other groups ($p < 0.05$). Amplitudes of n1-p1 were lower than in other groups, but the difference did not reach statistical significance. In regards to cVEMP, p13 and n23 latencies and amplitudes after rectification did not differ significantly among groups.

CONCLUSIONS:

An abnormal interictal oVEMP profile was associated with subclinical vestibular dysfunction in migraineurs, suggesting pathology within the vestibulo-ocular reflex. oVEMP is a more reliable measure than cVEMP to evaluate vestibular function in migraineurs, although results from the two tests in patients with migraine are complementary.

KEYWORDS:

Cervical VEMP; Migraine; Ocular VEMP; Vestibular evoked myogenic potential (VEMP)

PMID:

26527349

16. CONCUSSIONS

17. SHOULDER GIRDLE

18. CLAVICLE

19. GLENOHUMERAL/SHOULDER

20 A. ROTATOR CUFF

Rotator cuff stiffness in pitchers

Am J Sports Med. 2015 Nov;43(11):2783-93. doi: 10.1177/0363546515602446. Epub 2015 Sep 24.

Mechanisms of Shoulder Range of Motion Deficits in Asymptomatic Baseball Players.

Bailey LB¹, Shanley E², Hawkins R³, Beattie PF⁴, Fritz S⁴, Kwartowitz D⁵, Thigpen CA².

[Author information](#)

Abstract

BACKGROUND:

Shoulder range of motion (ROM) deficits have been identified as injury risk factors among baseball athletes. Despite the knowledge surrounding these risk factors, there is a lack of consensus regarding the specific tissues responsible for these deficits in ROM.

PURPOSE/HYPOTHESIS:

The purpose of this study was to elucidate the primary mechanisms of posterior shoulder tightness (capsular, musculotendinous, bony) by examining the tissue responses that occur with the application of an acute intervention in baseball players with ROM deficits. The hypothesis was that posterior rotator cuff stiffness, not glenohumeral joint mobility, would be primarily responsible for ROM gains observed within an acute treatment setting.

STUDY DESIGN:

Controlled laboratory study.

METHODS:

Through use of ultrasound elastography, electromagnetic motion analysis, and ultrasound imaging, posterior rotator cuff stiffness, glenohumeral joint translation, and humeral torsion were examined in 60 asymptomatic baseball players (age, mean \pm SD, 19 \pm 2 years) with shoulder ROM deficits. Tissue mechanisms were examined concurrently, with the ROM gains elicited by an acute application of instrument-assisted soft tissue mobilization plus self-stretching (n = 30) versus self-stretching only (n = 30). Separate 3-way analyses of variance (group \times arm \times time) and linear regression analyses were used to determine the treatment effects and relationships between tissue mechanisms and ROM gains.

RESULTS:

ROM gains were associated with decreases in rotator cuff stiffness (internal rotation: r = 0.35, P = .034; horizontal adduction: r = 0.44, P = .008) and increased humeral retrotorsion (internal rotation: r = -0.35, P = .034), not joint translation (P > .05). Players receiving instrument-assisted soft tissue mobilization plus stretching displayed greater shoulder ROM gains (internal rotation, +5° \pm 2° [P = .010]; total arc of motion, +8° \pm 6° [P = .010]; horizontal adduction, +7° \pm 2° [P = .004]; and decreased posterior rotator cuff stiffness, -0.2 \pm 0.3 kPa [P = .050]) compared with players receiving self-stretching alone.

CONCLUSION:

Decreases in rotator cuff stiffness were associated with acute ROM gains in baseball players. The study results show that changes in rotator cuff stiffness, not glenohumeral joint mobility or humeral torsion, are most likely associated with the ROM deficits observed in adolescent baseball players.

CLINICAL RELEVANCE:

Reducing rotator cuff stiffness may be beneficial in improving the ROM deficits associated with injury risk in overhead athletes.

© 2015 The Author(s).

KEYWORDS:

GIRD; ISTM; baseball; glenohumeral internal rotation deficit; instrument-assisted soft tissue mobilization; posterior shoulder tightness

PMID:

26403207

20 B. LABRUM

21. ADHESIVE CAPSULITIS

22 A. IMPINGMENT

22 B. INSTABILITY

23. SURGERY

24. ELBOW

Epicondylitis and wrist reaction

Medicine & Science in Sports & Exercise:

[Post Acceptance: November 10, 2015](#)

doi: 10.1249/MSS.0000000000000815

Original Investigation: PDF Only

Muscle Activity during Rapid Wrist Extension in People with Lateral Epicondylalgia.

Manickaraj, Nagarajan; Bisset, Leanne M.; Ryan, Michael; Kavanagh, Justin J.



Abstract

Background: Individuals with lateral epicondylalgia (LE) have delayed upper limb reaction time (RT), however, it is unknown if the mechanisms of this dysfunction are related to neural processing or the affected forearm muscles. The aim of this study was to examine the timing of processes that occur before and after forearm muscles are activated during the RT task.

Methods: Eleven LE (42 +/- 11 yr) and 11 healthy controls (42 +/- 11 yr) performed rapid wrist extension in response to an audio cue. Intramuscular EMG was obtained from extensor carpi radialis brevis (ECRB), extensor digitorum communis (EDC), extensor carpi ulnaris (ECU), and anconeus. Premotor time (PMT) was the duration from an audio cue to the onset of muscle activity, and motor time (MT) was the onset of muscle activity to the onset of wrist extension. Standard clinical assessments of LE were also performed.

Results: RT was significantly slower (33; 95% CI 1-66 ms) in the LE group. There were no group differences in PMT and the order of muscle activation. Instead, the MT of ECRB (18; 95% CI 6-31 ms), EDC (12; 95% CI 1-23 ms), ECU (28; 95% CI 9-46 ms) and anconeus (33; 95% CI 11-56 ms) showed significant delay in LE group. Regression analyses revealed the duration of LE could predict RT, ECRB and anconeus PMT, whereas cold pain threshold predicted ECRB MT.

Conclusion: Delayed RT in LE was predominantly caused by deficits in ECRB and EDC MT. This study provides preliminary evidence that in the people with longer LE symptoms duration appeared to have faster RT, although confirmation of this finding is required before firm conclusions can be drawn.

(C) 2015 American College of Sports Medicine

25. WRIST AND HAND

26. CARPAL TUNNEL SYNDROME

Cortisone vs. prednisone

[BMC Musculoskelet Disord.](#) 2015 Oct 26;16(1):322. doi: 10.1186/s12891-015-0752-6.

Comparison between the effects of progesterone versus corticosteroid local injections in mild and moderate carpal tunnel syndrome: a randomized clinical trial.

[Bahrami MH¹](#), [Shahraeeni S²](#), [Raeissadat SA³](#).

[Author information](#)

Abstract

BACKGROUND:

The objective of this study was to compare the short-term effects of progesterone and corticosteroid local injections in the treatment of female patients with carpal tunnel syndrome.

METHODS:

A randomized clinical trial was used for this study, 60 hands with mild and moderate Carpal Tunnel Syndrome categorized in two groups were used for this study. Patients were treated with a single local injection of triamcinolone acetonide in one group and single local injection of 17-alpha hydroxy progesterone in the other group. Variables such as pain (based on Visual Analogue Scale), symptom severity and functional status (based on Bostone/Levine symptom severity and functional status scale) and nerve conduction study were evaluated before and 10 weeks after the treatments.

RESULTS:

Ten weeks after treatment, pain severity and median nerve sensory and motor latencies decreased while patients' functional status increased meaningfully in both groups. However, there were no meaningful differences between two groups regarding mentioned variables. Pain severity was milder and duration of post-injection pain was shorter in the corticosteroid group. The rates of patient satisfaction were also meaningfully higher in the corticosteroid group.

CONCLUSIONS:

Both treatments were effective in the short-term management of mild and moderate disease, clinically and electrophysiologically. There were no significant differences in therapeutic effects between two groups.

TRIAL REGISTRATION:

Current controlled trials IRCT2013101313442N4.

PMID:

26502966

27. HIP**28. REPLACEMENTS**

Leg length measurements

The Assessment of Limb Length Discrepancy Before Total Hip Arthroplasty

Shane Tipton, BSc

,

John Sutherland, MD

,

Ran Schwarzkopf, MD MSc

DOI: <http://dx.doi.org/10.1016/j.arth.2015.10.026>

Abstract**Introduction**

The clinical relevance of limb length discrepancy (LLD) after total hip arthroplasty gains attention as the number of total hip arthroplasties increases. While several techniques are commonly employed to assess LLD using a pelvic radiograph, their accuracy is not well established. This study measures LLD using different techniques viewing the pelvis, and compares the measurements with the true LLD.

Method

Pelvic landmarks used included the femoral head, lesser trochanter, acetabular teardrop, ischial tuberosity, and tibial plafond. The true LLD was determined by finding the difference in distance

between the lowest point of the ischial tuberosity and the tibial plafond as well as the top of the femoral head to the center of the tibial plafond for each lower limb.

Results

Using pelvic landmarks to assess LLD is significantly different (p -value < 0.001) from the true LLD. The difference in distance from the center of the tibial plafond to the ischial tuberosity was not significantly different from the measurement from the top of the femoral head to the center of the tibial plafond (p -value 0.08). Also, using the acetabular teardrop as a landmark has less reliability when compared to the ischial tuberosity.

Discussion

Due to the extensive variety of pathologies that are associated with LLD, pre-operative planning should include an assessment of any pre-existing limb length discrepancy. While it may be reasonable to compare pelvic measurements pre and post-operatively to assess for changes, the data from this study do not support the estimation of the true LLD using a pelvic radiograph.

Keyword:

[total Hip Arthroplasty](#), [leg Length Discrepancy](#), [hip Joint](#), [pelvic radiograph](#).

29. OA

30 A. IMPINGEMENT

Increased CAM in athletes

[Am J Sports Med](#). 2015 Nov;43(11):2833-40. doi: 10.1177/0363546514563909. Epub 2015 Jan 13.

What Is the Association Between Sports Participation and the Development of Proximal Femoral Cam Deformity? A Systematic Review and Meta-analysis.

[Nepple JJ](#)¹, [Vigdorchik JM](#)², [Clohisy JC](#)³.

[Author information](#)

Abstract

BACKGROUND:

Femoroacetabular impingement (FAI) is recognized as a common cause of hip pain and intra-articular disorders in athletes. Studies have suggested a link between participation in athletics during adolescence and the development of cam-type deformities of the proximal femoral head-neck junction.

PURPOSE:

To investigate the association of sporting activity participation during adolescence and the development of cam deformity.

STUDY DESIGN:

Systematic review.

METHODS:

The PubMed, EMBASE, and Cochrane databases were searched to identify potential studies. Abstracts and manuscripts (when applicable) were independently reviewed by 2 reviewers. Nine studies met the inclusion criteria, including 8 studies that compared the prevalence of cam deformity in athletes with that in controls and 3 studies that compared the prevalence of cam deformity before and after physeal closure (2 with both). A meta-analysis was performed with pooling of data and random-effects modeling to compare rates of cam deformity between athletes and controls.

RESULTS:

High-level male athletes are 1.9 to 8.0 times more likely to develop a cam deformity than are male controls. The pooled prevalence rate (by hip) of cam deformity in male athletes was 41%, compared with 17% for male controls. The pooled mean alpha angle among male athletes was 61°, compared with 51° for male controls.

CONCLUSION:

Males participating in specific high-level impact sports (hockey, basketball, and possibly soccer) are at an increased risk of physeal abnormalities of the anterosuperior head-neck junction that result in a cam deformity at skeletal maturity.

© 2015 The Author(s).

KEYWORDS:

basketball; femoroacetabular impingement; hip; ice hockey

PMID:

25587186

30 B. LABRUM

31. KNEE

32 A. KNEE/ACL

Non-contact injuries

[Br J Sports Med.](#) 2015 Nov;49(22):1452-60. doi: 10.1136/bjsports-2014-094573. Epub 2015 Apr 23.

Three distinct mechanisms predominate in non-contact anterior cruciate ligament injuries in male professional football players: a systematic video analysis of 39 cases.

[Waldén M](#)¹, [Krosshaug T](#)², [Bjørneboe J](#)², [Andersen TE](#)², [Faul O](#)², [Hägglund M](#)³.

[Author information](#)

[Abstract](#)

BACKGROUND:

Current knowledge on anterior cruciate ligament (ACL) injury mechanisms in male football players is limited.

AIM:

To describe ACL injury mechanisms in male professional football players using systematic video analysis.

METHODS:

We assessed videos from 39 complete ACL tears recorded via prospective professional football injury surveillance between 2001 and 2011. Five analysts independently reviewed all videos to estimate the time of initial foot contact with the ground and the time of ACL tear. We then analysed all videos according to a structured format describing the injury circumstances and lower limb joint biomechanics.

RESULTS:

Twenty-five injuries were non-contact, eight indirect contact and six direct contact injuries. We identified three main categories of non-contact and indirect contact injury situations: (1) pressing (n=11), (2) re-gaining balance after kicking (n=5) and (3) landing after heading (n=5). The fourth main injury situation was direct contact with the injured leg or knee (n=6). Knee valgus was frequently seen in the main categories of non-contact and indirect contact playing situations (n=11), but a dynamic valgus collapse was infrequent (n=3). This was in contrast to the tackling-induced direct contact situations where a knee valgus collapse occurred in all cases (n=3).

CONCLUSIONS:

Eighty-five per cent of the ACL injuries in male professional football players resulted from non-contact or indirect contact mechanisms. The most common playing situation leading to injury was pressing followed by kicking and heading. Knee valgus was frequently seen regardless of the playing situation, but a dynamic valgus collapse was rare.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://www.bmj.com/company/products-services/rights-and-licensing/>

KEYWORDS:

ACL; Anterior cruciate ligament; Football; Prevention; Soccer

PMID:

25907183

Asymmetry and return to sports

[Am J Sports Med.](#) 2015 Nov;43(11):2727-37. doi: 10.1177/0363546515602016. Epub 2015 Sep 10.

Young Athletes With Quadriceps Femoris Strength Asymmetry at Return to Sport After Anterior Cruciate Ligament Reconstruction Demonstrate Asymmetric Single-Leg Drop-Landing Mechanics.

[Ithurburn MP](#)¹, [Paterno MV](#)², [Ford KR](#)³, [Hewett TE](#)⁴, [Schmitt LC](#)⁵.

[Author information](#)

Abstract

BACKGROUND:

Young athletes who have had anterior cruciate ligament (ACL) reconstruction demonstrate suboptimal rates of return to sport, high rates of second ACL injuries, and persistent movement asymmetries. Therefore, the influence of musculoskeletal impairments on movement mechanics in this population needs to be further evaluated.

HYPOTHESIS:

The primary hypothesis was that among young athletes who have had ACL reconstruction, those with greater quadriceps strength asymmetry would demonstrate altered single-leg drop-landing mechanics at return to sport compared with individuals with more symmetric quadriceps strength and also compared with healthy controls (ie, those with no ACL reconstruction). A second hypothesis was that quadriceps strength symmetry would predict single-leg drop-landing symmetry in individuals who have undergone ACL reconstruction.

STUDY DESIGN:

Controlled laboratory study.

METHODS:

The study entailed a total of 103 participants (age, 17.4 years) at the time of return to sport after ACL reconstruction and 47 control participants (age, 17.0 years). The quadriceps index (QI) was calculated for isometric quadriceps strength, which was then used to divide the ACL reconstruction participants into high-quadriceps (QI $\geq 90\%$; $n = 52$) and low-quadriceps (QI $< 85\%$; $n = 41$) subgroups. Biomechanical data were collected by use of 3-dimensional motion analysis during a single-leg drop-landing task. The LSI was calculated for kinematic and kinetic sagittal-plane variables of interest during landing. Group differences were compared by use of 1-way analysis of variance and linear regression analyses ($\alpha < .05$).

RESULTS:

Both the low- and high-quadriceps groups demonstrated greater limb asymmetry during landing compared with the control group in knee flexion excursion (mean LSI \pm SD: low quadriceps, $85.8\% \pm 15.5\%$ [$P < .001$]; high quadriceps, $94.2\% \pm 15.6\%$ [$P = .019$]; control, $102.7\% \pm 14.1\%$), peak trunk flexion angle (low quadriceps, $129.2\% \pm 36.6\%$ [$P < .001$]; high quadriceps, $110.5\% \pm 22.6\%$ [$P = .03$]; control, $95.5\% \pm 26.2\%$), and peak knee extension moment (low quadriceps, $79.5\% \pm 25.2\%$ [$P < .001$]; high quadriceps, $89.9\% \pm 19.8\%$ [$P = .005$]; control, $102.2\% \pm 10.9\%$). Compared with the high-quadriceps group, the low-quadriceps group also demonstrated greater asymmetry during landing in knee flexion excursion ($P = .026$), peak trunk flexion angle ($P = .006$), and peak knee extension moment ($P = .034$). In the ACL reconstruction group, quadriceps strength symmetry predicted symmetry in knee flexion excursion, peak trunk flexion, and peak knee extension moment (all $P < .001$) and predicted symmetry in peak trunk flexion angle ($P < .001$) after controlling for graft type, knee-related pain, function with activities of daily living, and sport function.

CONCLUSION:

At the time of return to sport, athletes who had undergone ACL reconstruction, including those in both the high- and low-quadriceps groups, demonstrated asymmetry during a single-leg drop-landing task compared with controls. Compensations included increased trunk flexion, decreased knee flexion excursion, and decreased knee extension moments on the involved limb. In addition, individuals in the low-quadriceps group demonstrated greater movement asymmetry compared with individuals in the high-quadriceps group.

CLINICAL RELEVANCE:

Restoration of symmetric quadriceps strength after ACL reconstruction is associated with more symmetric mechanics during a single-leg drop-landing movement. However, this appears to be multifactorial, as the high-quadriceps group also demonstrated landing asymmetries. Restoration of symmetric quadriceps strength may improve postoperative athletic participation; however, future study is warranted.

© 2015 The Author(s).

KEYWORDS:

ACL; biomechanics; knee; motion analysis

PMID:

26359376

Failed allograft

[Am J Sports Med.](#) 2015 Nov;43(11):2696-705. doi: 10.1177/0363546515589168. Epub 2015 Jun 11.

Revision Risk After Allograft Anterior Cruciate Ligament Reconstruction: Association With Graft Processing Techniques, Patient Characteristics, and Graft Type.

[Teiwani SG](#)¹, [Chen J](#)², [Funahashi TT](#)³, [Love R](#)², [Maletis GB](#)⁴.

[Author information](#)

Abstract

BACKGROUND:

Allograft tissue is a common graft choice for anterior cruciate ligament reconstruction (ACLR). Allograft sterilization methods vary widely across numerous commercial tissue vendors. Multiple studies, despite being limited in sample size, have suggested a higher rate of clinical failure associated with the use of allograft tissue in ACLR when compared with autograft.

PURPOSE:

To examine the association of graft processing techniques, patient characteristics, and graft type with risk of revision surgery after allograft ACLR.

STUDY DESIGN:

Cohort study; Level of evidence, 3.

METHODS:

A retrospective cohort study was conducted that used an integrated United States health care system's ACLR registry to identify primary unilateral cases in which allografts were used. Aseptic revision was the endpoint of the study. Allograft type, processing methods (irradiation dose, AlloWash, AlloTrue, BioCleanse), and graft donor age were assessed as potential risk factors for revision, with adjustment for patient age, sex, and body mass index (BMI) by use of survival analysis. Hazard ratios (HR) and 95% confidence intervals (CIs) were calculated.

RESULTS:

A total of 5968 primary ACLR cases with allograft were included in the study, of which 3688 (61.8%) were male patients. The median age of the cohort at the time of surgery was 34.1 years (interquartile range, 24.1-42.9 years). The mean time to follow-up (\pm SD) was 2.1 ± 1.5 years. There were 3751 (62.9%) allograft ACLRs using soft tissue, 1188 (19.9%) with Achilles tendon, and 1029 (17.2%) with bone-patellar tendon-bone (BPTB). Graft processing groups included BioCleanse ($n = 367$), AlloTrue or AlloWash ($n = 2278$), irradiation greater than 1.8 Mrad ($n = 1146$), irradiation up to 1.8 Mrad ($n = 3637$), and no irradiation ($n = 1185$). There were 156 (2.6%) aseptic revisions. After adjustment for patient age, sex, and BMI, the use of BioCleanse (HR = 2.45; 95% CI, 1.36-4.40) and irradiation greater than 1.8 Mrad (HR = 1.64; 95% CI, 1.08-2.49) were associated with a higher risk of revision when compared with all other methods of processing. BPTB allografts were at higher risk of revision (HR = 1.79; 95% CI, 1.20-2.66) when compared with soft tissue allografts. Conversely, with every 5-year increase in age, the risk of revision was 0.67 (95% CI, 0.61-0.73) times lower. Male patients were found to be at higher risk of revision when compared with females (HR = 1.47; 95% CI, 1.04-2.07). The use of AlloWash or AlloTrue processing, patient BMI, and graft donor age did not affect revision rate significantly.

CONCLUSION:

In the largest known study of its kind examining outcome after primary allograft ACLR, graft irradiation greater than 1.8 Mrad, BioCleanse graft processing, younger patient age, male patients, and BPTB allograft were all associated with a higher risk of clinical failure and subsequent revision surgery.

© 2015 The Author(s).

KEYWORDS:

ACL reconstruction; ACL registry; allograft; revision

PMID:

26068037

32 B. KNEE/PCL

33. MENISCUS

Return to sports after cartilage repair

[Arthroscopy](#). 2015 Oct 30. pii: S0749-8063(15)00706-9. doi: 10.1016/j.arthro.2015.08.028. [Epub ahead of print]

Return to Sport After Articular Cartilage Repair in Athletes' Knees: A Systematic Review.

[Campbell AB](#)¹, [Pineda M](#)¹, [Harris JD](#)², [Flanigan DC](#)³.

[Author information](#)

Abstract

PURPOSE:

To perform a systematic review of cartilage repair in athletes' knees to (1) determine which (if any) of the most commonly implemented surgical techniques help athletes return to competition, (2) identify which patient- or defect-specific characteristics significantly affect return to sport, and (3) evaluate the methodologic quality of available literature.

METHODS:

A systematic review of multiple databases was performed. Return to preinjury level of sport was defined as the ability to play in the same or greater level (i.e., league or division) of competition after surgery. Study methodologic quality for all studies analyzed in this review was evaluated with the Coleman Methodology Score.

RESULTS:

Systematic review of 1,278 abstracts identified 20 level I-IV studies for inclusion but only 1 randomized controlled trial. Twenty studies (1,117 subjects) were included. Subjects (n = 970) underwent 1 of 4 surgeries (microfracture [n = 529], autologous chondrocyte implantation [ACI, n = 259], osteochondral autograft [n = 139], or osteochondral allograft [n = 43]), and 147 were control patients. The rate of return to sports was greatest after osteochondral autograft transplantation (89%) followed by osteochondral allograft, ACI, and microfracture (88%, 84%, and 75%, respectively). Osteochondral autograft transplantation and ACI had statistically significantly greater rates of return to sports compared with microfracture (P < .001, P < .01; Fisher exact test).

CONCLUSIONS:

Athletes may return to sports participation after microfracture, ACI, osteochondral autograft, or osteochondral allograft, but microfracture patients were least likely to return to sports. The athletes who had a better prognosis after surgery were younger, had a shorter preoperative duration of symptoms, underwent no previous surgical interventions, participated in a more rigorous rehabilitation protocol, and had smaller cartilage defects.

LEVEL OF EVIDENCE:

Level IV, systematic review of Level I-IV studies.

Copyright © 2015 Arthroscopy Association of North America. Published by Elsevier Inc. All rights reserved.

PMID:

26524934

Non-contact injury

[Br J Sports Med.](#) 2015 Nov;49(22):1452-60. doi: 10.1136/bjsports-2014-094573. Epub 2015 Apr 23.

Three distinct mechanisms predominate in non-contact anterior cruciate ligament injuries in male professional football players: a systematic video analysis of 39 cases.

[Waldén M¹](#), [Krosshaug T²](#), [Bjørneboe J²](#), [Andersen TE²](#), [Faul O²](#), [Hägglund M³](#).

[Author information](#)

Abstract**BACKGROUND:**

Current knowledge on anterior cruciate ligament (ACL) injury mechanisms in male football players is limited.

AIM:

To describe ACL injury mechanisms in male professional football players using systematic video analysis.

METHODS:

We assessed videos from 39 complete ACL tears recorded via prospective professional football injury surveillance between 2001 and 2011. Five analysts independently reviewed all videos to estimate the time of initial foot contact with the ground and the time of ACL tear. We then analysed all videos according to a structured format describing the injury circumstances and lower limb joint biomechanics.

RESULTS:

Twenty-five injuries were non-contact, eight indirect contact and six direct contact injuries. We identified three main categories of non-contact and indirect contact injury situations: (1) pressing (n=11), (2) re-gaining balance after kicking (n=5) and (3) landing after heading (n=5). The fourth main injury situation was direct contact with the injured leg or knee (n=6). Knee valgus was frequently seen in the main categories of non-contact and indirect contact playing situations (n=11), but a dynamic valgus collapse was infrequent (n=3). This was in contrast to the tackling-induced direct contact situations where a knee valgus collapse occurred in all cases (n=3).

CONCLUSIONS:

Eighty-five per cent of the ACL injuries in male professional football players resulted from non-contact or indirect contact mechanisms. The most common playing situation leading to injury was pressing followed by kicking and heading. Knee valgus was frequently seen regardless of the playing situation, but a dynamic valgus collapse was rare.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://www.bmj.com/company/products-services/rights-and-licensing/>

KEYWORDS:

ACL; Anterior cruciate ligament; Football; Prevention; Soccer

PMID:

25907183

Meniscus and ACL

[Am J Sports Med.](#) 2015 Nov;43(11):2688-95. doi: 10.1177/0363546515604622. Epub 2015 Oct 1.

The Fate of Meniscus Tears Left In Situ at the Time of Anterior Cruciate Ligament Reconstruction: A 6-Year Follow-up Study From the MOON Cohort.

[Duchman KR](#)¹, [Westermann RW](#)¹, [Spindler KP](#)², [Reinke EK](#)², [Huston LJ](#)², [Amendola A](#)¹; [MOON Knee Group](#), [Wolf BR](#)³.

[Collaborators \(7\)](#)

[Author information](#)

[Abstract](#)

BACKGROUND:

The management of meniscus tears identified at the time of primary anterior cruciate ligament (ACL) reconstruction is highly variable and includes repair, meniscectomy, and nontreatment.

HYPOTHESIS/PURPOSE:

The purpose of this study was to determine the reoperation rate for meniscus tears left untreated at the time of ACL reconstruction with a minimum follow-up of 6 years. The hypothesis was that small peripheral tears identified at the time of ACL reconstruction managed with "no treatment" would have successful clinical outcomes.

STUDY DESIGN:

Cohort study; Level of evidence, 3.

METHODS:

Patients with meniscus tears left untreated at the time of primary ACL reconstruction were identified from a multicenter study group with a minimum 6-year follow-up. Patient, tear, and reoperation data were obtained for analysis. The need for reoperation was used as the primary endpoint, with analysis performed to determine patient and tear characteristics associated with reoperation.

RESULTS:

There were 194 patients with 208 meniscus tears (71 medial, 137 lateral) left in situ without treatment with a complete follow-up for analysis. Of these, 97.8% of lateral and 94.4% of medial untreated tears required no reoperation. Sixteen tears (7.7%) left in situ without treatment underwent subsequent reoperation: 9 tears (4.3%) underwent reoperation in the setting of revision ACL reconstruction, and 7 tears (3.4%) underwent reoperation for an isolated meniscus injury. The patient age was significantly lower in patients requiring reoperation, while tears measuring ≥ 10 mm more frequently required reoperation.

CONCLUSION:

Lateral and medial meniscus tears left in situ at the time of ACL reconstruction did not require reoperation at a minimum 6-year follow-up for 97.8% and 94.4% of tears, respectively. These findings re-emphasize the low reoperation rate after the nontreatment of small, peripheral lateral meniscus tears while noting less predictable results for medial meniscus tears left without treatment.

© 2015 The Author(s).

KEYWORDS:

anterior cruciate ligament (ACL) reconstruction; in situ; meniscus; nontreatment

PMID:

26430058

34. PATELLA

Risk factors

[Clin J Sport Med](#). 2015 Nov;25(6):478-86. doi: 10.1097/JSM.000000000000177.

Additional Effects of an Individualized Risk Factor-Based Approach on Pain and the Function of Patients With Patellofemoral Pain Syndrome: A Randomized Controlled Trial.

[Halabchi F¹](#), [Mazaheri R](#), [Mansournia MA](#), [Hamed Z](#).
[Author information](#)

Abstract

OBJECTIVE:

To investigate the clinical efficacy of adding risk factor-based approach (including appropriate exercises and orthoses) to routine quadriceps strengthening exercise with respect to pain and function in patients with patellofemoral pain syndrome (PFPS).

DESIGN:

A parallel group nonblinded randomized controlled trial with 12-week follow-up.

SETTING:

An outpatient Sports Medicine Clinic of Tehran University of Medical Sciences, Tehran, Iran.

PARTICIPANTS:

Patients (both sexes, 18-40 years) with clinically diagnosed PFPS of the duration over 2 months.

INTERVENTION:

The intervention group received an individualized program, including exercise therapy plus risk factor modification, and was instructed to practice the tailored interventions at home for 12 weeks. The control group received an exercise program, only focusing on quadriceps strengthening.

MAIN OUTCOME MEASURES:

The primary outcomes were pain severity during the activities of daily living (0- to 100-point visual analog scale), and function (0- to 100-point Kujala patellofemoral score) at a 12-week follow-up.

RESULTS:

A total of 53 participants completed the trial: 26 in the intervention and 27 in the control group. After 12 weeks, both groups showed improvements in pain and function, but the changes were significantly greater in the intervention group with regard to pain [adjusted difference, -14.90; 95% confidence interval (CI), -5.86 to -23.93, $P = 0.002$], and function (adjusted difference, 6.82; 95% CI, 2.54-11.10, $P = 0.002$).

CONCLUSIONS:

Assessment and modification of the risk factors may add to the treatment effects on pain and function at a 12-week follow-up in patients with PFPS. These findings may lead to a more comprehensive clinical approach to this very common problem.

CLINICAL RELEVANCE:

It seems that incorporating risk factor assessment into our clinical practice may add to treatment effects with regard to pain and function in patients with PFPS.

PMID:

25654629

Elliptical

[Clin J Sport Med](#). 2015 Nov;25(6):487-93. doi: 10.1097/JSM.0000000000000164.

Effects of Off-Axis Elliptical Training on Reducing Pain and Improving Knee Function in Individuals With Patellofemoral Pain.

[Tsai LC](#)¹, [Lee SJ](#), [Yang AJ](#), [Ren Y](#), [Press JM](#), [Zhang LQ](#).

[Author information](#)

Abstract

OBJECTIVE:

To examine whether an off-axis elliptical training program reduces pain and improves knee function in individuals with patellofemoral pain (PFP).

DESIGN:

Controlled laboratory study, pretest-posttest.

SETTING:

University rehabilitation center.

PARTICIPANTS:

Twelve adult subjects with PFP.

INTERVENTIONS:

Subjects with PFP completed an exercise program consisting of 18 sessions of lower extremity off-axis training using a custom-made elliptical trainer that allows frontal plane sliding and transverse plane pivoting of the footplates.

MAIN OUTCOME MEASURES:

Changes in knee pain and function posttraining and 6 weeks after training were evaluated using the Knee Injury and Osteoarthritis Outcome Score (KOOS) and International Knee Documentation Committee (IKDC) scores. Lower extremity off-axis control was assessed by pivoting and sliding instability, calculated as the root mean square (RMS) of the footplate pivoting angle and sliding distance during elliptical exercise. Subjects' single-leg hop distance and proprioception in detecting lower extremity pivoting motion were also evaluated.

RESULTS:

Subjects reported significantly greater KOOS and IKDC scores (increased by 12-18 points) and hop distance (increased by 0.2 m) after training. A significant decrease in the pivoting and sliding RMS was also observed after training. Additionally, subjects with PFP demonstrated improved pivoting proprioception when tested under a minimum weight-bearing position.

CONCLUSIONS:

An off-axis elliptical training program was effective in enhancing lower extremity neuromuscular control on the frontal and transverse planes, reducing pain, and improving knee function in persons with PFP.

CLINICAL RELEVANCE:

This study provides a novel intervention approach to enhance the control of the frontal and transverse plane motions of the lower extremities during functional weight-bearing activities. This

novel off-axis elliptical training may be incorporated with other common treatment options currently available for PFP to augment the effects of musculoskeletal rehabilitation for the PFP population.

PMID:

25591131

Proximal muscle rehab effective

[Br J Sports Med.](#) 2015 Nov;49(21):1365-76. doi: 10.1136/bjsports-2015-094723. Epub 2015 Jul 14.

Proximal muscle rehabilitation is effective for patellofemoral pain: a systematic review with meta-analysis.

[Lack S](#)¹, [Barton C](#)², [Sohan O](#)¹, [Crossley K](#)³, [Morrissey D](#)⁴.

[Author information](#)

Abstract

BACKGROUND:

Proximal muscle rehabilitation is commonly prescribed to address muscle strength and function deficits in individuals with patellofemoral pain (PFP). This review (1) evaluates the efficacy of proximal musculature rehabilitation for patients with PFP; (2) compares the efficacy of various rehabilitation protocols; and (3) identifies potential biomechanical mechanisms of effect in order to optimise outcomes from proximal rehabilitation in this problematic patient group.

METHODS:

Web of Knowledge, CINAHL, EMBASE and Medline databases were searched in December 2014 for randomised clinical trials and cohort studies evaluating proximal rehabilitation for PFP. Quality assessment was performed by two independent reviewers. Effect size calculations using standard mean differences and 95% CIs were calculated for each comparison.

RESULTS:

14 studies were identified, seven of high quality. Strong evidence indicated proximal combined with quadriceps rehabilitation decreased pain and improved function in the short term, with moderate evidence for medium-term outcomes. Moderate evidence indicated that proximal when compared with quadriceps rehabilitation decreased pain in the short-term and medium-term, and improved function in the medium term. Limited evidence indicated proximal combined with quadriceps rehabilitation decreased pain more than quadriceps rehabilitation in the long term. Very limited short-term mechanistic evidence indicated proximal rehabilitation compared with no intervention decreased pain, improved function, increased isometric hip strength and decreased knee valgum variability while running.

CONCLUSIONS:

A robust body of work shows proximal rehabilitation for PFP should be included in conservative management. Importantly, greater pain reduction and improved function at 1 year highlight the long-term value of proximal combined with quadriceps rehabilitation for PFP.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://group.bmj.com/group/rights-licensing/permissions>.

KEYWORDS:

Exercises; Knee; Rehabilitation

PMID:

26175019

Poor outcomes

[Br J Sports Med](#). 2015 Oct 13. pii: bjsports-2015-094664. doi: 10.1136/bjsports-2015-094664. [Epub ahead of print]

Factors that predict a poor outcome 5-8 years after the diagnosis of patellofemoral pain: a multicentre observational analysis.

[Lankhorst NE](#)¹, [van Middelkoop M](#)¹, [Crossley KM](#)², [Bierma-Zeinstra SM](#)¹, [Oei EH](#)³, [Vicenzino B](#)², [Collins NJ](#)⁴.
[Author information](#)

Abstract**BACKGROUND:**

Patellofemoral pain (PFP) has traditionally been viewed as self-limiting, but recent studies show that a large proportion of patients report chronic knee pain at long-term follow-up. We identified those patients with an unfavourable recovery ('moderate improvement' to 'worse than ever' measured on a Likert scale) and examined whether there is an association between PFP and osteoarthritis (OA) at 5-8-year follow-up.

METHODS:

Long-term follow-up data were derived from 2 randomised controlled trials (n=179, n=131). Patient-reported measures were obtained at baseline. Pain severity (100 mm visual analogue scale (VAS)), function (Anterior Knee Pain Scale (AKPS)) and self-reported recovery were measured 5-8 years later, along with knee radiographs. Multivariate backward stepwise linear regression analyses were used to evaluate the prognostic ability of baseline pain duration, pain VAS and AKPS on outcomes of pain VAS and AKPS at 5-8 years.

RESULTS:

60 (19.3%) participants completed the questionnaires at 5-8-year follow-up (45 women, mean age at baseline 26 years) and 50 underwent knee radiographs. No differences were observed between responders and non-responders regarding baseline demographics, and 3-month and 12-month pain severity and recovery. 34 (57%) reported unfavourable recovery at 5-8 years. 48 out of 50 participants (98%) had no signs of radiographic knee OA. Multivariate models revealed that baseline PFP duration (>12 months; $R^2=0.22$) and lower AKPS ($R^2=0.196$) were significant predictors of poor prognosis at 5-8 years on measures of worst pain VAS and AKPS, respectively.

SUMMARY AND CONCLUSION:

More than half of participants with PFP reported an unfavourable recovery 5-8 years after recruitment, but did not have radiographic knee OA. Longer PFP duration and worse AKPS score at baseline predict poor PFP prognosis. Education of health practitioners and the general public will provide patients with more realistic expectations regarding prognosis.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://group.bmj.com/group/rights-licensing/permissions>.

KEYWORDS:

Knee; Radiograph

PMID:

26463119

35. KNEE/TOTAL

36. KNEE/EXERCISE

Neuromuscular exercise and flair

Pain trajectory and exercise-induced pain flares during 8 weeks of neuromuscular exercise in individuals with knee and hip pain

Louise Fleng Sandal (Ph.D.,Fellow) Signe Juler Bøgesvang Jonas Bloch Thorlund 

DOI: <http://dx.doi.org/10.1016/j.joca.2015.11.002>

Objective

Patients considering or engaged in exercise as treatment may expect or experience transient increases in joint pain, causing fear of exercise and influencing compliance. This study investigated the pain trajectory during an 8-week neuromuscular exercise (NEMEX) program together with acute exercise-induced pain flares in persons with knee or hip pain.

Design

Individuals above 35 years self-reporting persistent knee or hip pain for the past 3 months were offered 8 weeks of supervised NEMEX, performed in groups twice weekly. The program consisted of 11 exercises focusing on joint stability and neuromuscular control. Participants self-reported joint pain on a 0 to 10 numerical rating scale (NRS) at baseline and 8-weeks follow-up. NRS pain ratings were also collected before and immediately after every attended exercise session.

Results

Joint pain was reduced from baseline (NRS 3.6; 95% CI 3.2 to 4.1) to 8-weeks follow-up (2.6; 95% CI 2.1 to 3.1), ($p<0.01$). Pain decreased 0.04 NRS (95% CI 0.02 to 0.05, $p<0.01$) on average per exercise session and pre-to post-exercise pain decreased 0.04 NRS (95% CI 0.03 to 0.05, $p<0.01$) on average per session, approaching no acute exercise induced pain in the last weeks.

Conclusion

This study found a clear decrease in size of acute exercise induced pain flares with increasing number of exercise sessions. In parallel, pain ratings decreased over the 8 weeks exercise period. Our findings provide helpful information for clinicians, which can be used to educate and balance patient expectation when starting supervised neuromuscular exercise.

Keywords:

neuromuscular exercise, pain measurements, joint pain, osteoarthritis

37. OSTEOARTHRITIS/KNEE

Central sensitization

[Int J Clin Pract](#). 2015 Nov 11. doi: 10.1111/ijcp.12749. [Epub ahead of print]

Predictive factors and clinical biomarkers for treatment in patients with chronic pain caused by osteoarthritis with a central sensitisation component.

[Akinci A¹](#), [Al Shaker M²](#), [Chang MH³](#), [Cheung CW⁴](#), [Danilov A⁵](#), [José Dueñas H⁶](#), [Kim YC⁷](#), [Guillen R⁸](#), [Tassanawipas W⁹](#), [Treuer T¹⁰](#), [Wang Y¹¹](#).

[Author information](#)

Abstract

AIMS:

The aim of this non-systematic review was to provide a practical guide for clinicians on the evidence for central sensitisation in chronic osteoarthritis (OA) pain and how this pain mechanism can be addressed in terms of clinical diagnosis, investigation and treatment.

METHODS:

The authors undertook a non-systematic review of the literature including a MEDLINE search (search terms included central sensitisation, osteoarthritis, osteoarthrosis) for relevant and current clinical studies, systematic reviews and narrative reviews. Case reports, letters to the editor and similar literature sources were excluded. Information was organised to allow a pragmatic approach to the discussion of the evidence and generation of practical recommendations.

RESULTS:

There is good evidence for a role of central sensitisation in chronic OA pain in a subgroup of patients. Clinically, a central sensitisation component in chronic OA pain can be suspected based on characteristic pain features and non-pain features seen in other conditions involving central sensitisation. However, there are currently no diagnostic inventories for central sensitisation specific to OA. Biomarkers may be helpful for confirming the presence of central sensitisation, especially when there is diagnostic uncertainty. Several non-pharmacological and pharmacological treatments may be effective in OA patients with central sensitisation features. Multimodal therapy may be required to achieve control of symptoms.

DISCUSSION:

Clinicians should be aware of central sensitisation in patients with chronic OA pain, especially in patients presenting with severe pain with unusual features.

© 2015 John Wiley & Sons Ltd.

PMID:

26558538

Knee extensor strength

[Arthritis Rheumatol.](#) 2015 Nov 10. doi: 10.1002/art.39484. [Epub ahead of print]

Longitudinal change in thigh muscle strength prior and concurrent to a minimal clinically important worsening or improvement in knee function - Data from the Osteoarthritis Initiative.

[Ruhdorfer A¹](#), [Wirth W¹](#), [Eckstein F¹](#).

[Author information](#)

Abstract

OBJECTIVE:

To test whether a clinically relevant change in knee function is associated with concurrent or prior change in thigh muscle strength.

METHODS:

2675 Osteoarthritis Initiative participants (1485 women/1190 men) with measurements of isometric muscle strength at baseline (BL), year 2 (Y2) and 4 (Y4) follow-up were divided into those with greater than minimal clinically important (MCI) worsening ($\geq 6/68$ in WOMAC function) during Y2→Y4, MCI improvement, or without relevant change. Changes in isometric muscle strength, concurrent (Y2→Y4) and preceding (BL→Y2) function change, were compared between groups using ANCOVA.

RESULTS:

Concurrent loss in extensor muscle strength in participants with worsening knee function during Y2→Y4 differed significantly ($p=0.03$) from that in participants without change (-4.6% 95% CI[-6.8, -2.4]) vs. -2.2% 95%CI[-3.0, -1.4]) and so did the concurrent increase in strength in those with functional improvement (+2.2% 95%CI[-0.3, 4.7]; $p<0.0001$). This increase in strength remained significantly different after adjusting for covariates but was preceded by a greater loss in strength (-7.7% 95%CI[-10.3, -5.0]; $p=0.02$) during BL→Y2 compared to those without function change during Y2→Y4 (-4.3% 95%CI[-5.2, -3.4]). The strength decrease during BL→Y2 in those with worsening knee function during Y2→Y4 (-4.5% 95%CI[-6.9, -2.2]) did not significantly differ ($p=0.87$) from those without change in function. No differences between changes in flexor muscle strength were observed between groups.

CONCLUSION:

The findings suggest a positive concurrent longitudinal association between change in extensor muscle strength and worsening/improvement in knee function in KOA. However, a corresponding change in muscle strength was not observed to precede change in function. This article is protected by copyright. All rights reserved.

© 2015, American College of Rheumatology.

KEYWORDS:

WOMAC function score; knee osteoarthritis; minimal clinically important difference; thigh muscle strength

PMID:

26556499

Sensitization and inflammation

[Arthritis Rheumatol.](#) 2015 Nov 10. doi: 10.1002/art.39488. [Epub ahead of print]

Joint inflammation is associated with pain sensitization in knee osteoarthritis: The Multicenter Osteoarthritis Study.

[Neogi T](#)¹, [Guermazi A](#)², [Roemer F](#)², [Nevitt M](#)³, [Scholz J](#)⁴, [Arendt-Nielsen L](#)⁵, [Woolf C](#)⁶, [Niu J](#)¹, [Bradley LA](#)⁷, [Quinn E](#)¹, [Frey Law L](#)⁸.

[Author information](#)

Abstract

OBJECTIVE:

Pain sensitization is associated with pain severity in knee osteoarthritis, but its cause in humans is not well-understood. We examined whether inflammation, assessed as synovitis and effusion on MRI, or mechanical load, assessed as bone marrow lesions (BMLs), were associated with sensitization in knee osteoarthritis.

METHODS:

Subjects in the Multicenter Osteoarthritis Study, a NIH-funded cohort of persons with or at risk of knee osteoarthritis, had knee radiographs and MRIs, and standardized quantitative sensory testing (QST) measures (temporal summation, pressure pain threshold (PPT)) at the wrist and

patellae obtained at baseline and two years later. We examined the relation of synovitis, effusion, and BMLs to temporal summation and PPT cross-sectionally and longitudinally.

RESULTS:

There were 1111 subjects in the study sample (mean age 67, mean BMI 30, 62% female). Synovitis was associated with a significant decrease in PPT at the patella (i.e., more sensitized) over two years (adjusted beta: -0.30, 95% CI -0.52 to -0.08). Effusion was similarly associated with a decrease in PPT at the wrist (-0.24, 95% CI -0.41 to -0.24) and with risk of incident temporal summation (adjusted OR 1.54, 95% CI 1.01-2.36). BMLs were not associated with either QST measure.

CONCLUSION:

Inflammation, as evidenced by synovitis or effusion, is associated with pain sensitization in knee osteoarthritis. In contrast, BMLs do not appear to contribute to sensitization in knee osteoarthritis. Early targeting of inflammation is a reasonable strategy to test for prevention of sensitization and through this, reduction of pain severity in knee osteoarthritis. This article is protected by copyright. All rights reserved.

© 2015, American College of Rheumatology.

PMID:

26554395

OA and increased risk of death

[Ann Rheum Dis](#). 2015 Nov 5. pii: annrheumdis-2015-208056. doi: 10.1136/annrheumdis-2015-208056. [Epub ahead of print]

Painful knee but not hand osteoarthritis is an independent predictor of mortality over 23 years follow-up of a population-based cohort of middle-aged women.

[Kluzek S](#)¹, [Sanchez-Santos MT](#)¹, [Leyland KM](#)¹, [Judge A](#)², [Spector TD](#)³, [Hart D](#)³, [Cooper C](#)², [Newton J](#)¹, [Arden NK](#)⁴.

[Author information](#)

Abstract

To assess whether joint pain or radiographic osteoarthritis (ROA) of the knee and hand is associated with all-cause and disease-specific mortality in middle-aged women.

METHODS:

Four subgroups from the prospective community-based Chingford Cohort Study were identified based on presence/absence of pain and ROA at baseline: (Pain-/ROA-; Pain+/ROA-; Pain-/ROA+; Pain+/ROA+). Pain was defined as side-specific pain in the preceding month, while side-specific ROA was defined as Kellgren-Lawrence grade ≥ 2 . All-cause, cardiovascular disease (CVD) and cancer-related mortality over the 23-year follow-up was based on information collected by the Office for National Statistics. Associations between subgroups and all-cause/cause-specific mortality were assessed using Cox regression, adjusting for age, body mass index, typical cardiovascular risk factors, occupation, past physical activity, existing CVD disease, glucose levels and medication use.

RESULTS:

821 and 808 women were included for knee and hand analyses, respectively. Compared with the knee Pain-/ROA- group, the Pain+/ROA- group had an increased risk of CVD-specific mortality (HR 2.93 (95% CI 1.47 to 5.85)), while the knee Pain+/ROA+ group had an increased HR of 1.97

(95% CI 1.23 to 3.17) for all-cause and 3.57 (95% CI 1.53 to 8.34) for CVD-specific mortality. We found no association between hand OA and mortality.

CONCLUSION:

We found a significantly increased risk of all-cause and CVD-specific mortality in women experiencing knee pain with or without ROA but not ROA alone. No relationship was found between hand OA and mortality risk. This suggests that knee pain, more than structural changes of OA is the main driver of excess mortality in patients with OA.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://www.bmj.com/company/products-services/rights-and-licensing/>

KEYWORDS:

Epidemiology; Hand Osteoarthritis; Knee Osteoarthritis

PMID:

26543059

38 A. FOOT AND ANKLE

Foot tapping

[Med Sci Sports Exerc.](#) 2015 Nov 4. [Epub ahead of print]

Effects of Taping and Orthoses on Foot Biomechanics in Adults with Flat Arched Feet.

[Bishop C¹](#), [Arnold JB](#), [May T](#).
[Author information](#)

Abstract

PURPOSE:

There is a paucity of evidence on the biomechanical effects of foot taping and foot orthoses in realistic conditions. This study aimed to determine the immediate effect and relationships between changes in multi-segment foot biomechanics with foot taping and customised foot orthoses in adults with flat-arched feet.

METHODS:

Multi-segment foot biomechanics were measured in 18 adults with flat-arched feet (age 25.1 ± 2.8 yrs; height 1.73 ± 13.2 m , body mass 70.3 ± 15.7 kg) during walking in four conditions in random order: neutral athletic shoe, neutral shoe with tape (low-Dye method and modified method) and neutral shoe with customised foot orthoses. In-shoe foot biomechanics were compared between conditions using a purpose developed foot model with 3D kinematic analysis and inverse dynamics.

RESULTS:

Foot orthoses significantly delayed peak eversion compared to the neutral shoe (44% stance vs. 39%, $p = 0.002$). Deformation across the midfoot and medial longitudinal arch was reduced with both the low-Dye taping (2.4° , $p = <0.001$) and modified taping technique (5.5° , $p = <0.001$). All interventions increased peak dorsiflexion of the 1st MTPJ (1.4 - 3.2° , $p = <0.001$ - 0.023). Biomechanical responses to taping significantly predicted corresponding changes to foot orthoses ($R = 0.08$ - 0.52 , $p = 0.006$ - <0.001).

CONCLUSIONS:

Foot orthoses more effectively altered timing of hindfoot motion while taping was superior in supporting the midfoot and medial longitudinal arch. The biomechanical response to taping was significantly related to the subsequent change observed with the use of foot orthoses.

PMID:

26540264

38 B. FOOT TYPES

38 C. FOOT EXERCISE

39 A. ORTHOTICS

39 B. SHOES

40. ANKLE SPRAINS AND INSTABILITY

41 A. ACHILLES TENDON AND CALF

Fascia cruris

[Br J Sports Med.](#) 2015 Nov;49(21):1398-403. doi: 10.1136/bjsports-2013-093273. Epub 2014 Sep 8.

Acute tear of the fascia cruris at the attachment to the Achilles tendon: a new diagnosis.

[Webborn N¹](#), [Morrissey D²](#), [Sarvananthan K²](#), [Chan O³](#).

[Author information](#)

[Abstract](#)

BACKGROUND:

The fascia cruris encloses the posterior structures of the calf and connects to the paratenon and the Achilles tendon. We describe the clinical presentation, ultrasound imaging characteristics and the time to the recovery of tears of the fascia cruris at the attachment to the Achilles tendon.

METHODS:

Retrospective review of 11 tears of the fascia cruris in the different legs as separate events in 9 patients (6 male and 3 female, mean age 35.52 years, range 11-48) identified using diagnostic ultrasound, after presenting with Achillodynia.

RESULTS:

11 participants presented at a mean of 4.5 weeks (range 0.5-12) after onset of symptoms. The left Achilles was more commonly injured than the right (7 : 4) and the lateral side more than the medial (6 : 4) with one case with medial and lateral presentation. Clinically, there was swelling and tenderness over the medial or lateral border in the mid to upper portion of the Achilles. 7 of the 11 (63.6%) had functional overpronation. Ultrasound appearances of a tear were identified as hypochoic area extending from the medial or lateral border of the Achilles extending along the anatomical plane of the fascia cruris. Average return to activity was 5.2 weeks (range 1-22).

Participants presenting later had longer recovery but all participants returned to full activity (r=0.4).

CONCLUSIONS:

This is the first description of the clinical details and sonographic findings of a tear to the fascia cruris at its attachment to the Achilles tendon. This needs to be considered as a cause of Achillodynia in athletes as recognition will affect the management.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://group.bmj.com/group/rights-licensing/permissions>.

KEYWORDS:

Achilles; Soft tissue; Sporting injuries; Tendon; Ultrasound

PMID:

25202137

41 B. COMPARTMENT SYNDROME

42. PLANTAR SURFACE

43. HALLUX VALGUS

44. RHUMATOID ARTHRITIS

45 A. MANUAL THERAPY LUMBAR & GENERAL

45 B. MANUAL THERAPY CERVICAL

HA's and chiropractic

[J Manipulative Physiol Ther.](#) 2015 Nov 5. pii: S0161-4754(15)00177-3. doi: 10.1016/j.jmpt.2015.10.002. [Epub ahead of print]

A Randomized Pragmatic Clinical Trial of Chiropractic Care for Headaches With and Without a Self-Acupressure Pillow.

[Vernon H¹](#), [Borody C²](#), [Harris G²](#), [Muir B³](#), [Goldin J²](#), [Dinulos M⁴](#).

[Author information](#)

Abstract

OBJECTIVE:

The purpose of this study was to determine if the addition of a self-acupressure pillow (SAP) to typical chiropractic treatment results in significantly greater improvement in tension-type and cervicogenic headache sufferers.

METHODS:

A pragmatic randomized clinical trial was conducted in a chiropractic college teaching clinic. Thirty-four subjects, including tension-type and cervicogenic headache sufferers, 21 to 60 years of age, male or female, completed the study. Group A (n = 15) received typical chiropractic care

only (manual therapy and exercises), and group B (n = 19) received typical chiropractic care with daily home use of the SAP. The intervention period was 4 weeks. The main outcome measure was headache frequency. Satisfaction and relief scores were obtained from subjects in the SAP group. Analysis of variance was used to analyze the intergroup comparisons.

RESULTS:

Owing to failure of randomization to produce group equivalence on weekly headache frequency, analysis of covariance was performed showing a trend (P = .07) favoring the chiropractic-only group; however, this was not statistically significant. Group A obtained a 46% reduction of weekly headache frequency (t = 3.1, P = .002; d = 1.22). The number of subjects in group A achieving a reduction in headaches greater than 40% was 71%, while for group B, this was 28%. The mean benefit score (0-3) in group B of the use of the SAP was 1.2 (.86). The mean satisfaction rating of users of the SAP was 10.4 (2.7) out of 15 (63%).

CONCLUSION:

This study suggests that chiropractic care may reduce frequency of headaches in patients with chronic tension-type and cervicogenic headache. The use of a self-acupressure pillow (Dr Zaxx device) may help those with headache and headache pain relief as well as producing moderately high satisfaction with use.

Copyright © 2015. Published by Elsevier Inc.

KEYWORDS:

Acupressure; Headache; Randomized clinical trial; Spinal manipulative therapy

PMID:

26548737

45 C. MANUAL THERAPY THORACIC

45 D. MANUAL THERAPY EXTREMITIES

46 A. UPPER LIMB NEUROMOBILIZATION

46 B. LOWER LIMB NEUROMOILIZATION

47. STRETCHING/MUSCLES

48 A. STM

48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE

48 C. MUSCLES

Hamstrings – eccentric exercise

[Am J Sports Med](#). 2015 Nov;43(11):2663-70. doi: 10.1177/0363546515599633. Epub 2015 Sep 2.

Eccentric Knee Flexor Strength and Risk of Hamstring Injuries in Rugby Union: A Prospective Study.

[Bourne MN](#)¹, [Opar DA](#)², [Williams MD](#)³, [Shield AJ](#)⁴.

[Author information](#)

Abstract

BACKGROUND:

Hamstring strain injuries (HSIs) represent the most common cause of lost playing time in rugby union. Eccentric knee flexor weakness and between-limb imbalance in eccentric knee flexor strength are associated with a heightened risk of HSIs in other sports; however, these variables have not been explored in rugby union.

PURPOSE:

To determine if lower levels of eccentric knee flexor strength or greater between-limb imbalance in this parameter during the Nordic hamstring exercise are risk factors for HSIs in rugby union.

STUDY DESIGN:

Cohort study; Level of evidence, 2.

METHODS:

This prospective study was conducted over the 2014 Super Rugby and Queensland Rugby Union seasons. In total, 178 rugby union players (mean age, 22.6 ± 3.8 years; mean height, 185.0 ± 6.8 cm; mean weight, 96.5 ± 13.1 kg) had their eccentric knee flexor strength assessed using a custom-made device during the preseason. Reports of previous hamstring, quadriceps, groin, calf, and anterior cruciate ligament injuries were also obtained. The main outcome measure was the prospective occurrence of HSIs.

RESULTS:

Twenty players suffered at least 1 HSI during the study period. Players with a history of HSIs had a 4.1-fold (95% CI, 1.9-8.9; P = .001) greater risk of subsequent HSIs than players without such a history. Between-limb imbalance in eccentric knee flexor strength of ≥15% and ≥20% increased the risk of HSIs by 2.4-fold (95% CI, 1.1-5.5; P = .033) and 3.4-fold (95% CI, 1.5-7.6; P = .003), respectively. Lower eccentric knee flexor strength and other prior injuries were not associated with an increased risk of future HSIs. Multivariate logistic regression revealed that the risk of reinjuries was augmented in players with strength imbalances.

CONCLUSION:

Previous HSIs and between-limb imbalance in eccentric knee flexor strength were associated with an increased risk of future HSIs in rugby union. These results support the rationale for reducing imbalance, particularly in players who have suffered a prior HSI, to mitigate the risk of future injuries.

© 2015 The Author(s).

KEYWORDS:

Nordic hamstring exercise; injury prevention; muscle injuries; physical therapy/rehabilitation; rugby

PMID:

26337245

49. STRETCHING

50 A. MOTOR CONTROL

NMC screening*Br J Sports Med* 2015;**49**:1416 doi:10.1136/bjsports-2015-095506.4

- **Prize Winning Abstracts BASEM Congress 2014**
- **004**

PROSPECTIVE USE OF A NEUROMUSCULAR SCREENING TOOL TO DETERMINE RISK OF ATHLETIC INJURY

Abstract

Aim Athletes with poor neuromuscular control of the lower limb and pelvis are more susceptible to non-contact injuries such as primary¹ and secondary² ACL injury. Neuromuscular screening methods can be utilised to identify individuals that may benefit from injury preventative methods. The aim of this pilot study is to prospectively evaluate the effectiveness of a visual rating criteria that does not limit focus to knee valgus alone and has not previously been used in a prospective study. The null hypothesis for this study is: poor neuromuscular control does not predispose an athlete to an increased risk of injury.

Methods 21 male footballers and 9 hockey players (4 male, 5 female) with a mean age of 21.5 years (SD 7.74) performed 3 repetitions of the single leg squat test on each limb whilst 2D video analysis software captured the movement in the sagittal plane. A single-leg loading qualitative assessment tool (QASLS) proposed by Herrington *et al* ³ was used to grade the neuromuscular control and injury statistics were collated throughout the remaining seasons of both sports.

Results Individuals that sustained injury (n=7), were found to have a poorer QASLS score than those that did not. Statistical significance was observed (p=0.01) between the two groups and inter-reliability of the assessment tool was good with no statistical difference (P=0.72) between two examiners who independently scored the athletes.

Conclusions The findings indicate that the QASLS is an effective and reliable tool for predicting injuries in athletes and as such can be used as a neuromuscular screening method as part of an injury preventative screening approach. These findings offer great potential for larger repeat studies of longer duration.

Impact of LBP on motor control

Reorganized Trunk Muscle Activity During Multi-Directional Floor Perturbations After Experimental Low Back Pain: A Comparison Of Bilateral Versus Unilateral Pain

Lars Henrik Larsen Rogerio Pessoto Hirata Thomas Graven-Nielsen

DOI: <http://dx.doi.org/10.1016/j.jpain.2015.10.012>

Highlights

- Muscle response to surface perturbation was studied after pain-induction in healthy
- Pain and trunk EMG examined during uni- and bilateral pain and control conditions

- Higher and widespread bilateral pain but few related single muscle activity changes
- Larger muscle activity changes in bilateral compared with unilateral pain
- Trunk muscle activity increase during bilateral and decrease during unilateral pain

Abstract

Low back pain (LBP) changes the trunk muscle activity after external perturbations but the relationships between pain intensities and distributions and their impact on the trunk muscle activity remains unclear. The effects of unilateral and bilateral experimental LBP on trunk muscle activity were compared during unpredictable multi-directional surface perturbations in 19 healthy participants. Pain intensity and distribution were assessed on a visual analogue scale (VAS) and by pain drawings. Root-mean-square (RMS) of the electromyographic (EMG) signals from 6 trunk muscles bilaterally after each perturbation was extracted and averaged across perturbations. The difference (Δ RMS-EMG) and absolute difference (absolute Δ RMS-EMG) RMS from baseline conditions were extracted for each muscle during pain conditions and averaged bilaterally for back and abdominal muscle groups. Bilateral compared with unilateral pain induced higher VAS scores ($P < 0.005$) and larger pain areas ($P < 0.001$). Significant correlation was present between VAS scores and muscle activity during unilateral ($P < 0.001$) and bilateral pain ($p > 0.001$), respectively.

Compared with control injections Δ RMS-EMG increased in the back ($P < 0.03$) and abdominal ($P < 0.05$) muscles during bilateral and decreased in the back ($P < 0.01$) and abdominal ($P < 0.01$) muscles during unilateral pain. Bilateral pain caused higher absolute Δ RMS-EMG changes in the back ($P < 0.01$) and abdominal ($P < 0.01$) muscle groups than unilateral pain.

Keywords: lumbar spine, pain induction, motor control, motor strategy, electromyography

50 B. PNF

51. CFS/BET

52. EXERCISE

53. CORE

Phasic shakes

Cures Revealed for Itches, Twitches and Other Exercise Oddities

November 13, 2015 | 15,614 views

|

By Dr. Mercola

Whether fitness newbie or seasoned athlete, you may have experienced some puzzling physical sensations in the midst of your exercise routine.

Do your muscles quiver when holding your body in plank? Do you start itching midway through your high-intensity interval routine, making you wonder what's going on with your body?

Many of those physical symptoms are normal—or at least benign—and you're not alone. The good news is, science continues to shed new light on some of these unusual exercise-induced phenomena.

We'll explore a few in this article, including how to tell if there might be something for which you really should see your doctor.

Quivering, Shaking Muscles

Quivering or shaking muscles are a normal result of muscle fatigue. But why does your body quiver instead of collapsing altogether when your muscles get tired? Exercise scientist Len Kravitz, PhD, of the University of New Mexico, says it has to do with the communication between your muscle fibers and nerve cells:¹

"Challenging exercise depletes the chemical messengers that carry signals between nerve and muscle cells. This causes some of the nerves and their corresponding fibers to drop out of service. And since your cells don't all fire at once — some are contracting as others are relaxing — your body shakes like a car sputtering on a low gas tank."

Holding your muscles in a high-stress position, such as holding your body in a plank or a [squat](#), or holding a dumbbell still mid bicep curl, is more likely to induce muscle fatigue.

Shaking muscles are linked to fast muscle contraction. Your muscles are smart—they divvy up the workload between fast and slow fibers, some working while others are allowed to rest, until your body says, "Switch!"

So, quivering is not a bad thing and can be one of the signs of an effective workout. However, pay close attention to form when your muscles begin to shake, as it's typically a sign of increasing fatigue and impending failure.

If your muscles are shaking earlier than expected in your workout, then other factors might be at play such as inadequate sleep, insufficient rest days since your last workout, not enough fuel, doing too much too soon, or possibly dehydration.²

If none of those factors seems to apply, you may just need to scale back on your [intensity](#) that day and lighten up the weights a bit.

Generally speaking, as your muscles get stronger and more accustomed to an exercise, the shaking will improve. But this is highly individual, and if it persists, it's not something that warrants much concern.

54. POSTURE

Disc degeneration and posture

Spine:

November 2015 - Volume 40 - Issue 21 - p 1690–1696

doi: 10.1097/BRS.0000000000001120

Diagnostics

Effect of Lumbar Disc Degeneration and Low-Back Pain on the Lumbar Lordosis in Supine and Standing: A Cross-Sectional MRI Study

Hansen, Bjarke B. MD*; Bendix, Tom MD, DMSc‡; Grindsted, Jacob MD†; Bliddal, Henning MD, DMSc*; Christensen, Robin MSc, PhD*; Hansen, Philip MD, PhD†; Riis, Robert G.C. MD*, †; Boesen, Mikael MD, PhD†, *

Abstract

Study Design. Cross-sectional study.

Objective. To examine the influence of low-back pain (LBP) and lumbar disc degeneration (LDD) on the lumbar lordosis in weight-bearing positional magnetic resonance imaging (pMRI).

Summary of Background Data. The lumbar lordosis increases with a change of position from supine to standing and is known as an essential contributor to dynamic changes. However, the lordosis may be affected by disc degeneration and pain.

Methods. Patients with LBP >40 on a 0 to 100mm Visual Analog Scale (VAS) both during activity and rest and a sex and age-decade matching control group without LBP were scanned in the supine and standing position in a 0.25-T open MRI unit. LDD was graded using Pfirrmann's grading-scale. Subsequently, the L2-to-S1 lumbar lordosis angle (LA) was measured.

Results. Thirty-eight patients with an average VAS of 58 (± 13.8) mm during rest and 75 (± 5.0) mm during activities, and 38 healthy controls were included. MRI findings were common in both groups, whereas, the summation of the Pfirrmann's grades (LDD-score) was significantly higher in the patients [(MD 1.44; 95% confidence intervals (CI) 0.80 to 2.10; $P < 0.001$]. The patients were less lordotic than the controls in both the supine (MD -6.4° ; 95% CI -11.4 to -1.3), and standing position (MD -5.6° ; 95% CI -10.7 to -0.7); however, the changes between the positions (ΔLA) were the same (MD 0.8° ; 95% CI -1.8 to 3.3). Using generalized linear model the LDD-score was associated with age ($P < 0.001$) for both groups. The LDD-score and ΔLA were negatively associated in the control group ($P < 0.001$), also after adjustments for gender and age (β -coefficient: -2.66 ; 95% CI -4.3 to -1.0 ; $P = 0.002$).

Conclusion. Patients may be less lordotic in both the supine and standing position, whereas, change in the lordosis between the positions may be independent of pain. Decreasing lordosis change seems to be associated with age-related increasing disc degeneration in healthy individuals.

Level of Evidence: 2

55. SCOLIOSIS

Surgery and height gain

[Spine J.](#) 2015 Oct 26. pii: S1529-9430(15)01539-9. doi: 10.1016/j.spinee.2015.10.027. [Epub ahead of print]

Change in spinal height following correction of adolescent idiopathic scoliosis.

[van Popta D](#)¹, [Stephenson J](#)², [Verma R](#)³.

[Author information](#)

Abstract

BACKGROUND CONTEXT:

Corrective surgery for adolescent idiopathic scoliosis (AIS) leads to vertical growth arrest of the instrumented spine. This might be offset by the immediate gain in spinal height (SH) as a result of correction of the curvature.

PURPOSE:

To identify predictors of gain in spinal height following corrective surgery for AIS. We present a unique model to predict postoperative height prior to intervention, which could contribute to the preoperative counselling and consenting process.

STUDY DESIGN:

This was a retrospective case series. All surgeries were performed by one of four substantive paediatric spinal surgeons within a single regional centre over a three-and-a-half year period.

PATIENT SAMPLE:

104 patients who had instrumented posterior spinal fusion for AIS were included. There were 93 females and the age range was 11 to 17 years. All patients had posterior instrumented fusion using rods and anchors (pedicle screws +/- hooks).

OUTCOME MEASURES:

Postoperative spinal height was the primary outcome measure. SH (C7 to L5) and Cobb angles were measured from a pre-and-postoperative standing X-ray of each patient.

METHODS:

Variables associated with patients (demographic and radiological) and the surgical constructs were analysed for predictability of height gain. A model was derived including only significant predictors of substantive importance using hierarchical regression methods. Cross-validation procedures verified the adequacy of the model fit. Analysis was performed using SPSS version 20.0.

RESULTS:

The major curve was thoracic in 90% of cases. The number of vertebrae fused ranged from 5 to 15. The average preoperative Cobb angle was 66°, with an average correction of 45°. The average change in SH was 4.66cm (SD 2.13 cm). The model presented included preoperative height, preoperative Cobb angle and number of vertebrae within the construct, with coefficients of 1.00 (95% CI: 0.90, 1.09), 0.067 (95% CI: 0.039, 0.095), and 0.26 (95% CI: 0.11, 0.41) respectively. This model had an adjusted-R² value of 0.83 and a R² for prediction of 0.79; and can be shown to have similar predictive capability as a model comprising a wider range of predictors.

CONCLUSIONS:

The greatest postoperative height values following posterior spinal fusion for AIS could be expected from a patient with greater preoperative height and Cobb angle, and whose construct spans a large number of vertebrae.

Copyright © 2015. Published by Elsevier Inc.

PMID:

26515395

56. ATHLETICS

Self blame and overuse injuries

[Br J Sports Med.](#) 2015 Nov;49(22):1472-7. doi: 10.1136/bjsports-2015-094622. Epub 2015 Sep 15.

The psychological factor 'self-blame' predicts overuse injury among top-level Swedish track and field athletes: a 12-month cohort study.

[Timpka T](#)¹, [Jacobsson J](#)², [Dahlström Ö](#)³, [Kowalski J](#)⁴, [Bargoria V](#)⁵, [Ekberg J](#)¹, [Nilsson S](#)², [Renström P](#)⁶.

[Author information](#)**Abstract****BACKGROUND:**

Athletes' psychological characteristics are important for understanding sports injury mechanisms. We examined the relevance of psychological factors in an integrated model of overuse injury risk in athletics/track and field.

METHODS:

Swedish track and field athletes (n=278) entering a 12-month injury surveillance in March 2009 were also invited to complete a psychological survey. Simple Cox proportional hazards models were compiled for single explanatory variables. We also tested multiple models for 3 explanatory variable groupings: an epidemiological model without psychological variables, a psychological model excluding epidemiological variables and an integrated (combined) model.

RESULTS:

The integrated multiple model included the maladaptive coping behaviour self-blame ($p=0.007$; HR 1.32; 95% CI 1.08 to 1.61), and an interaction between athlete category and injury history ($p<0.001$). Youth female ($p=0.034$; HR 0.51; 95% CI 0.27 to 0.95) and youth male ($p=0.047$; HR 0.49; 95% CI 0.24 to 0.99) athletes with no severe injury the previous year were at half the risk of sustaining a new injury compared with the reference group. A training load index entered the epidemiological multiple model, but not the integrated model.

CONCLUSIONS:

The coping behaviour self-blame replaced training load in an integrated explanatory model of overuse injury risk in athletes. What seemed to be more strongly related to the likelihood of overuse injury was not the athletics load per se, but, rather, the load applied in situations when the athlete's body was in need of rest.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://www.bmj.com/company/products-services/rights-and-licensing/>

KEYWORDS:

Athletics; Epidemiology; Injuries; Psychology

PMID:

26373585

Groin pain and PT

[Br J Sports Med](#). 2015 Nov;49(22):1447-51. doi: 10.1136/bjsports-2014-093715. Epub 2015 Jun 30.

Athletic groin pain: a systematic review and meta-analysis of surgical versus physical therapy rehabilitation outcomes.

[King E](#)¹, [Ward J](#)², [Small L](#)³, [Falvey E](#)⁴, [Franklyn-Miller A](#)⁵.

[Author information](#)**Abstract****BACKGROUND:**

Athletic groin pain (AGP) is an encompassing term for the multitude of chronic conditions presenting as pain in the inguinal region. The purpose of this review was to compare the return to play rates (RTPrate) and return to play times (RTPtime) between surgical and rehabilitation interventions in the treatment of AGP.

METHODS:

A systematic review of English language peer review journals was carried out between 1980 to June 2013 using PubMed, Embase, CINAHL and Google Scholar searching for all papers relating to AGP (and its various pseudonyms) and all surgical and rehabilitative interventions which reported RTPrate and/or RTPtime. AGP literature has been subdivided by many eponymous diagnoses but anatomical diagnostic groupings of (1) abdominal wall, (2) adductor and (3) pubic related pain were used in this review. Meta-analysis was then carried out on the data to compare results between the surgical and rehabilitation groups.

RESULTS:

Fifty-six papers out of the 561 discovered in the initial search were included in the review with 3332 athletes included. Evidence was mostly level IV. Using the Black and Downs checklist we found poor study quality overall with a high risk of bias especially among surgical studies. The results showed comparable RTPrate between surgical and rehabilitative interventions within the three diagnostic groups. Rehabilitation had significantly quicker RTPtime for pubic related groin pain compared to surgery (10.5 weeks and 23.1 weeks respectively). The abdominal group had the fastest return of the three groups for the rehabilitation and surgery.

CONCLUSIONS:

The review suggested better outcomes with rehabilitation for pubic-related groin pain with no difference between the adductor and abdominal groups. The review highlighted the poor quality and risk of bias in the literature making accurate comparison difficult.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://www.bmj.com/company/products-services/rights-and-licensing/>

KEYWORDS:

Exercise rehabilitation; Groin; Lower limb surgery; Physiotherapy

PMID:

26130700

Workouts and risk of injury

[Br J Sports Med.](#) 2015 Oct 28. pii: bjsports-2015-094817. doi: 10.1136/bjsports-2015-094817. [Epub ahead of print]

The acute:chronic workload ratio predicts injury: high chronic workload may decrease injury risk in elite rugby league players.

[Hulin BT](#)¹, [Gabbett TJ](#)², [Lawson DW](#)³, [Caputi P](#)⁴, [Sampson JA](#)⁵.

[Author information](#)

Abstract

AIM:

Investigate whether acute workload (1 week total distance) and chronic workload (4-week average acute workload) predict injury in elite rugby league players.

METHODS:

Data were collected from 53 elite players over two rugby league seasons. The 'acute:chronic workload ratio' was calculated by dividing acute workload by chronic workload. A value of greater than 1 represented an acute workload greater than chronic workload. All workload data were classified into discrete ranges by z-scores.

RESULTS:

Compared with all other ratios, a very-high acute:chronic workload ratio (≥ 2.11) demonstrated the greatest risk of injury in the current week (16.7% injury risk) and subsequent week (11.8% injury risk). High chronic workload ($>16\ 095\ m$) combined with a very-high 2-week average acute:chronic workload ratio (≥ 1.54) was associated with the greatest risk of injury (28.6% injury risk). High chronic workload combined with a moderate workload ratio (1.02-1.18) had a smaller risk of injury than low chronic workload combined with several workload ratios (relative risk range from 0.3 to 0.7 \times / \div 1.4 to 4.4; likelihood range=88-94%, likely). Considering acute and chronic workloads in isolation (ie, not as ratios) did not consistently predict injury risk.

CONCLUSIONS:

Higher workloads can have either positive or negative influences on injury risk in elite rugby league players. Specifically, compared with players who have a low chronic workload, players with a high chronic workload are more resistant to injury with moderate-low through moderate-high (0.85-1.35) acute:chronic workload ratios and less resistant to injury when subjected to

'spikes' in acute workload, that is, very-high acute:chronic workload ratios ~ 1.5 .

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://www.bmj.com/company/products-services/rights-and-licensing/>

KEYWORDS:

Fatigue; Fitness; Injury; Training

PMID:

26511006

57. GAIT

58. RUNNING

Gait alterations

[Br J Sports Med](#). 2015 Nov;49(21):1382-8. doi: 10.1136/bjsports-2014-094393. Epub 2015 Jun 23.

Gait modifications to change lower extremity gait biomechanics in runners: a systematic review.

[Napier C](#)¹, [Cochrane CK](#)¹, [Taunton JE](#)², [Hunt MA](#)¹.

[Author information](#)

[Abstract](#)

BACKGROUND:

Abnormal biomechanics have been cited as a potential risk factor for running-related injury. Many modifiable biomechanical risk factors have also been proposed in the literature as interventions via gait retraining.

AIM:

To determine which interventions have successfully modified biomechanical variables linked to running-related injury.

STUDY DESIGN:

Systematic literature review.

METHODS:

MEDLINE, EMBASE, CINAHL, SportDiscus and PSYCINFO were searched using key terms related to running biomechanics and gait retraining. Quality of included studies was assessed using the modified Downs and Black Quality Index and a best evidence synthesis was performed.

RESULTS:

27 studies investigating the effect of biomechanical interventions on kinetic, kinematic and spatiotemporal variables were included in this review. Foot strike manipulation had the greatest effect on kinematic measures (conflicting evidence for proximal joint angles; strong evidence for distal joint angles), real-time feedback had the greatest effect on kinetic measures (ranging from conflicting to strong evidence), and combined training protocols had the greatest effect on spatiotemporal measures (limited to moderate evidence).

CONCLUSIONS:

Overall, this systematic review shows that many biomechanical parameters can be altered by running modification training programmes. These interventions result in short term small to large effects on kinetic, kinematic and spatiotemporal outcomes during running. In general, runners tend to employ a distal strategy of gait modification unless given specific cues. The most effective strategy for reducing high-risk factors for running-related injury-such as impact loading-was through real-time feedback of kinetics and/or kinematics.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://group.bmj.com/group/rights-licensing/permissions>.

KEYWORDS:

Running; Sports & exercise medicine

PMID:

26105016

59. PAIN

Spinal cord stim

[Clin J Pain](#). 2015 Dec;31(12):1046-53. doi: 10.1097/AJP.0000000000000209.

Dynamic Changes in Nociception and Pain Perception After Spinal Cord Stimulation in Chronic Neuropathic Pain Patients.

[Biurrun Manresa JA](#)¹, [Sørensen J](#), [Andersen OK](#), [Arendt-Nielsen L](#), [Gerde B](#).

[Author information](#)

Abstract

OBJECTIVES:

Patients with an implanted spinal cord stimulation (SCS) system for pain management present an opportunity to study dynamic changes in the pain system in a situation where patients are not stimulated (ie, experiencing severe pain) compared with a situation in which patients have just been stimulated (ie, pain free or greatly reduced pain). The aims of this study were (1) to determine if there are differences in nociceptive withdrawal reflex thresholds (NWR-T) and

electrical pain thresholds (EP-T) before and after SCS; and (2) to establish if these differences are related to psychological factors associated with chronic pain.

METHODS:

Seventeen volunteers with chronic neuropathic pain participated in the experiment. Electrical stimuli were applied to assess the NWR-T and the EP-T. In addition, psychological factors (ie, pain characteristics, depression, anxiety, and disability indexes) were also recorded. The NWR-T and EP-T were assessed with the SCS system off (at least 8 h before the experiment), and then reassessed 1 hour after the SCS system was turned on.

RESULTS:

Ongoing pain intensity ratings decreased ($P=0.018$), whereas the NWR-T increased ($P=0.028$) after the SCS was turned on, whereas no significant difference was found for EP-T ($P=0.324$). Psychological factors were significant predictors for EP-T but not for NWR-T.

DISCUSSION:

The results of this study suggest that pain relief after SCS is partially mediated by a decrease in the excitability of dorsal horn neurons in the spinal cord.

PMID:

25789414

Behavioral changes

[Clin J Pain](#). 2015 Dec;31(12):1068-74. doi: 10.1097/AJP.0000000000000215.

Pain Intensity, Headache Frequency, and the Behavioral Activation and Inhibition Systems.

[Jensen MP¹](#), [Tan G](#), [Chua SM](#).

[Author information](#)

[Abstract](#)

OBJECTIVES:

To test the hypothesized associations between measures of the behavioral inhibition system (BIS) and behavioral activation system (BAS) and both the intensity and frequency of pain.

METHODS:

A total of 563 college students were administered measures of BIS and BAS and asked to indicate both (1) the average intensity of pain at 10 body sites during the past week and (2) the frequency with which they experience mild, moderate, and severe headaches. The associations between (1) the BIS and BAS scale scores and (2) the worst average pain intensity experienced and headache frequencies were examined using a series of 1-way analyses of variance.

RESULTS:

As predicted, the measure of BIS demonstrated significant and nonlinear associations with both pain intensity and headache frequency. The measure of BAS was not significantly related to pain intensity, but did demonstrate a nonlinear association with the frequency of severe headaches.

DISCUSSION:

The findings are consistent with predictions based on a model hypothesizing that pain has a nonlinear impact on both BIS and BAS, with a stronger impact on BIS than BAS. If the current results are replicated in other samples, including samples of individuals with chronic pain, they have important implications for identifying biological factors that could influence pain and behavioral responses to pain, as well as for the development and evaluation of treatments that could enhance positive treatment outcomes.

PMID:

25621428

Mindfulness

Mindfulness meditation trumps placebo in pain reduction

sponsor

Wake Forest Baptist Medical Center News, 11/12/2015

Scientists at Wake Forest Baptist Medical Center have found new evidence that mindfulness meditation reduces pain more effectively than placebo. This is significant because placebo-controlled trials are the recognized standard for demonstrating the efficacy of clinical and pharmacological treatments. The research, published in the Nov. 11 issue of the Journal of Neuroscience, showed that study participants who practiced mindfulness meditation reported greater pain relief than placebo. Significantly, brain scans showed that mindfulness meditation produced very different patterns of activity than those produced by placebo to reduce pain. “We were completely surprised by the findings,” said Fadel Zeidan, Ph.D., assistant professor of neurobiology and anatomy at Wake Forest Baptist and lead investigator of the study. “While we thought that there would be some overlap in brain regions between meditation and placebo, the findings from this study provide novel and objective evidence that mindfulness meditation reduces pain in a unique fashion.” Mindfulness meditation reduced pain by activating brain regions (orbitofrontal and anterior cingulate cortex) associated with the self-control of pain while the placebo cream lowered pain by reducing brain activity in pain-processing areas (secondary somatosensory cortex). Another brain region, the thalamus, was deactivated during mindfulness meditation, but was activated during all other conditions. This brain region serves as a gateway that determines if sensory information is allowed to reach higher brain centers. By deactivating this area, mindfulness meditation may have caused signals about pain to simply fade away, Zeidan said.

Pain and sleep walking

VOLUME 38, ISSUE 11

PAIN IN SLEEPWALKING: A CLINICAL ENIGMA**Pain in Sleepwalking: A Clinical Enigma**

<http://dx.doi.org/10.5665/sleep.5144>

Régis Lopez, MD^{1,2}; Isabelle Jaussent, PhD²; Yves Dauvilliers, MD, PhD^{1,2}

Study Objectives:

Sleepwalking is a disorder characterized by arousal specifically from slow wave sleep with dissociated brain activity that may be related to lower nociceptive state. Our objectives were to assess the frequency of chronic pain, headache, and migraine in sleepwalkers compared to controls, examine the impact and determinants of pain in sleepwalkers, and report analgesia frequency during injurious parasomnia episodes.

Design:

Cross-sectional case-control study.

Setting:

Data were collected at the Sleep Disorders Center, Montpellier, France.

Participants:

One hundred patients with sleepwalking were assessed for disease characteristics, sleep (polysomnography, sleepiness, and insomnia), pain (chronic pain, multidimensional pain inventory, headache, and migraine), depressive symptoms, and quality of life compared to 100 adult controls. Pain perception was retrospectively assessed during injurious parasomnia episodes.

Measurements and Results:

Raw association data showed that lifetime headache, migraine, and chronic pain at time of study were significantly associated with sleepwalking (also called somnambulism).

Compared to controls, sleepwalkers reported more frequent daytime sleepiness, and depressive and insomnia symptoms. After adjustments, sleepwalking was associated with increased risk for headache and migraine only. Compared to pain-free sleepwalkers, sleepwalkers with chronic pain were more likely to be older and to have greater daytime sleepiness, insomnia, and depressive symptoms, with no difference in polysomnography assessment. Of the 47 sleepwalkers with at least one previous violent parasomnia episode, 78.7% perceived no pain during episodes, allowing them to remain asleep despite injury.

Conclusion:

Our results highlight the clinical enigma of pain in sleepwalking patients with complaints of frequent chronic pain, migraine, and headache during wakefulness but who report

retrospectively experience of analgesia during severe parasomnia episodes, suggesting a relationship between dissociated brain activity and nociceptive dysregulation.

Citation:

Lopez R, Jaussent I, Dauvilliers Y. Pain in sleepwalking: a clinical enigma. *SLEEP* 2015;38(11):1693–1698.

Managing neuropathic pain

[Curr Pain Headache Rep.](#) 2015 Dec;19(12):56. doi: 10.1007/s11916-015-0530-z.

Emerging Treatments for Neuropathic Pain.

[Pessoa BL](#)¹, [Escudeiro G](#)¹, [Nascimento OJ](#)².

[Author information](#)

Abstract

Neuropathic pain is a series of well-known conditions caused by diseases or lesions to the somatosensory system. Due to the better understanding of the pathophysiology of neuropathic pain, previously unexplored therapies have been used with encouraging results. As such, Acetyl-L-carnitine (ALC), Alpha-lipoic-acid (ALA), cannabinoids, Clonidine, EMA401, Botulinum Toxin type A, and new voltage-gated sodium channel blockers, can be cited. Furthermore, new modalities in neuromodulation such as high-frequency spinal cord stimulation, burst stimulation, dorsal root ganglion stimulation, transcranial direct current stimulation, and many others have been showing exciting results. Besides, changing paradigms may occur with the advent of optogenetics and a better understanding of epigenetic regulation. This article reviews the published literature on the treatment of NP. Despite the interesting results, randomized controlled trials are demanded for the majority of the therapies previously mentioned.

KEYWORDS:

Neuropathic pain; Somatosensory nervous system; Spinal cord; Treatment; Trials

PMID:

26530058

Psychological subgroup

[Clin J Pain.](#) 2015 Dec;31(12):1036-45. doi: 10.1097/AJP.0000000000000216.

Does Classification of Chronic Musculoskeletal Disorder Patients Into Psychosocial Subgroups Predict Differential Treatment Responsiveness and 1-Year Outcomes After a Functional Restoration Program?

[Asih S](#)¹, [Mayer TG](#), [Williams M](#), [Choi YH](#), [Gatchel RJ](#).

[Author information](#)

Abstract

OBJECTIVES:

The objectives of this study: (1) to assess whether Multidimensional Pain Inventory (MPI) profiles predicted differential responses to a functional restoration program (FRP) in chronic disabling

occupational musculoskeletal disorder (CDOMD) patients; (2) to examine whether coping style improves following FRP; and (3) to determine whether discharge MPI profiles predict discharge psychosocial and 1-year socioeconomic outcomes.

METHODS:

Consecutive CDOMD patients (N=716) were classified into Adaptive Coper (AC, n=209), Interpersonally Distressed (ID, n=154), Dysfunctional (DYS, n=310), and Anomalous (n=43) using the MPI, and reclassified at discharge. Profiles were compared on psychosocial measures and 1-year socioeconomic outcomes. An intent-to-treat sample analyzed the effect of drop-outs on treatment responsiveness.

RESULTS:

The MPI classification significantly predicted program completion (P=0.001), although the intent-to-treat analyses found no significant effects of drop-out on treatment responsiveness. There was a significant increase in the number of patients who became AC or Anomalous at FRP discharge and a decrease in those who were ID or DYS. Patients who changed or remained as DYS at FRP discharge reported the highest levels of pain, disability, and depression. No significant interaction effect was found between MPI group and time for pain intensity or disability. All groups improved on psychosocial measures at discharge. DYS patients had decreased work retention and a greater health care utilization at 1 year.

CONCLUSIONS:

An FRP was clinically effective for CDOMD patients regardless of initial MPI profiles. The FRP modified profiles, with patients changing from negative to positive profiles. Discharge DYS were more likely to have poor 1-year outcomes. Those classified as Anomalous had a good prognosis for functional recovery similar to ACs.

PMID:

25621427

Sleep and mood

Sleep interruptions worse for mood than overall reduced amount of sleep, study finds

Johns Hopkins Medicine, 11/02/2015

As they report in the November 1 issue of the journal *Sleep*, researchers studied 62 healthy men and women randomly subjected to three sleep experimental conditions in an inpatient clinical research suite: three consecutive nights of either forced awakenings, delayed bedtimes or uninterrupted sleep. Participants subjected to eight forced awakenings and those with delayed bedtimes showed similar low positive mood and high negative mood after the first night, as measured by a standard mood assessment questionnaire administered before bedtimes. Participants were asked to rate how strongly they felt a variety of positive and negative emotions, such as cheerfulness or anger. But the researchers say significant differences emerged after the second night: The

forced awakening group had a reduction of 31 percent in positive mood, while the delayed bedtime group had a decline of 12 percent compared to the first day. Researchers add they did not find significant differences in negative mood between the two groups on any of the three days, which suggests that sleep fragmentation is especially detrimental to positive mood.

60. COMPLEX REGIONAL PAIN

Vasomotor impact

[Pain Pract.](#) 2015 Nov 7. doi: 10.1111/papr.12403. [Epub ahead of print]

Pathophysiological Mechanisms Involved in Vasomotor Disturbances in Complex Regional Pain Syndrome and Implications for Therapy: A Review.

[Kortekaas MC](#)¹, [Niehof SP](#)¹, [Stolker RJ](#)¹, [Huygen FJ](#)¹.

[Author information](#)

Abstract

Complex regional pain syndrome (CRPS) is characterized by continuous pain, disproportional to the initial trauma. It usually spreads to the distal parts of the affected limb. Besides continuing pain, a mix of sensory, sudo- and vasomotor disturbances, motor dysfunction, and trophic changes is responsible for physical complaints. Vasomotor disturbance is characterized by changes in skin temperature and color. In CRPS patients with a cold extremity, a decrease in blood flow can cause decreased tissue saturation and tissue acidosis, resulting in ischemic pain. The pathophysiology of vasomotor disturbances is not completely understood. Temperature asymmetry is generally assumed as a result of disturbance in the sympathetic nervous system. Vasodilating drugs and sympathetic blockade have been cornerstones of therapy in cold CRPS for years. However, only a limited part of these patients improve on this kind of therapies. Research has shown a pivotal role for inflammation in the pathophysiology of CRPS. Inflammation can result in endothelial dysfunction. Endothelial function plays an important role in the local regulation of vascular tone. Endothelial dysfunction could be another mechanism responsible for the vasomotor disturbances in cold CRPS. An important goal in the treatment of cold-type CRPS is the restoration of a normal blood flow. Consequently it is important to distinguish the underlying pathophysiological mechanisms of vasomotor disturbances.

A disturbance of the sympathetic nervous system may require another type of treatment than inflammation-induced endothelial dysfunction. Diagnostic tools to distinguish these underlying pathophysiological mechanisms of vasomotor disturbances would enable a mechanism-based treatment and improve clinical outcome.

© 2015 World Institute of Pain.

KEYWORDS:

complex regional pain syndrome; pain; sympathetic nervous system; therapeutics; type I

PMID:

26547635

61. FIBROMYALGIA

Small fiber changes

[Curr Pain Headache Rep.](#) 2015 Dec;19(12):55. doi: 10.1007/s11916-015-0527-7.

The Role and Importance of Small Fiber Neuropathy in Fibromyalgia Pain.

[Caro XJ¹](#), [Winter EF²](#).

[Author information](#)

Abstract

Serious investigators of fibromyalgia (FM) realize the profound implications of finding features of small fiber neuropathy (SFN) in this disorder. For the first time, an easily reproducible and generally agreed upon, peripheral tissue lesion has been reported from multiple investigative centers. Understanding how this discovery relates to other features of FM, and how one might utilize it to better comprehend, and care for, afflicted patients' painful complaints remains a challenge, however. In this article we review how the SFN seen in FM may be placed in context, and suggest how such a tissue abnormality might be used to better understand the pathophysiology of FM, and plan for its effective treatment. We also suggest how finding SFN in FM implies the need for continued focused research within the area of neuropathic disease in FM.

KEYWORDS:

Chronic pain; Chronic widespread pain; Epidermal nerve fiber density; Fibromyalgia; Neuropathic pain; Small fiber neuropathy

PMID:

26497568

62 A. NUTRITION/VITAMINS

Mediterranean diet decreases inflammation

[Swiss Med Wkly.](#) 2015 Nov 2;145:w14190. doi: 10.4414/smw.2015.14190. eCollection 2015.

How the Mediterranean diet and some of its components modulate inflammatory pathways in arthritis.

[Oliviero F¹](#), [Spinella P²](#), [Fiocco U¹](#), [Ramonda R¹](#), [Sfriso P¹](#), [Punzi L¹](#).

[Author information](#)

Abstract

Arthritis encompasses a heterogeneous group of diseases characterised by inflammation that leads not only to joint damage, bone erosion, severe pain and disability, but also affects other organs of the body, resulting in increased morbidity and mortality. Although the mechanisms underlying the pathogenesis of joint diseases are for the most part unknown, a number of nutrient and non-nutrient components of food have been shown to affect the inflammatory process and, in particular, to influence clinical disease progression. The Mediterranean diet model has already been linked to a number of beneficial health effects: both fat and non-fat components of the Mediterranean dietary pattern have been shown to exert important anti-inflammatory activities by affecting the arachidonic acid cascade, the expression of some proinflammatory genes, and the activity of immune cells. N-3 polyunsaturated fatty acids, in particular, have been shown to affect lymphocyte and monocyte functions, crucially involved in adaptive and innate immunity. Although some aspects concerning the mechanisms of action through which the Mediterranean diet pattern

exerts its beneficial effects remain to be elucidated, arthritis patients may potentially benefit from it in view of their increased cardiovascular risk and the treatment they require which may have side effects.

PMID:

26523418

Vit. D

[Clin J Pain](#), 2015 Dec;31(12):1060-7. doi: 10.1097/AJP.0000000000000210.

A Cross-sectional Examination of Vitamin D, Obesity, and Measures of Pain and Function in Middle-aged and Older Adults With Knee Osteoarthritis.

[Glover TL¹](#), [Goodin BR](#), [King CD](#), [Sibille KT](#), [Herbert MS](#), [Sotolongo AS](#), [Cruz-Almeida Y](#), [Bartley EJ](#), [Bulls HW](#), [Horgas AL](#), [Redden DT](#), [Riley JL 3rd](#), [Staud R](#), [Fessler BJ](#), [Bradley LA](#), [Fillingim RB](#).

[Author information](#)

Abstract

OBJECTIVES:

The prevalence of knee osteoarthritis (OA) is increasing with the aging population and is exacerbated by the growing numbers of obese older adults. Low levels of vitamin D, measured by serum 25-hydroxyvitamin D (25(OH)D), in older adults and obese individuals are correlated with several negative health conditions, including chronic pain. This cross-sectional study sought to examine the interactive influence of 25(OH)D levels and obesity on knee OA pain and functional performance measures.

METHODS:

The sample consisted of 256 (63% female) racially diverse (55% black/African Americans) middle-aged and older adults (mean age 56.8 y). Blood was collected for analysis of 25(OH)D by high-performance liquid chromatography. Participants provided self-report regarding knee OA pain and underwent a lower extremity functional performance test.

RESULTS:

Results demonstrated that obesity was associated with lower levels of 25(OH)D. Participants with adequate 25(OH)D levels reported significantly less knee OA pain compared with participants with deficient or insufficient levels, regardless of obesity status. Furthermore, there was a significant interaction between obesity and 25(OH)D levels for lower extremity functional performance, such that obese individuals with adequate 25(OH)D levels demonstrated better performance than those obese participants with deficient or insufficient 25(OH)D levels.

DISCUSSION:

The mechanisms by which adequate 25(OH)D levels are associated with pain severity and improved function have not been completely elucidated. It may be that the pleiotropic role of biologically active 25(OH)D influences pain and pain processing through peripheral and central mechanisms. Alternatively, higher levels of pain may lead to reduced outdoor activity, which may contribute to both obesity and decreased vitamin D. Thus, investigating vitamin D status in obese and nonobese individuals with knee OA warrants further study.

PMID:

25569220

62 B. CRYOTHERAPY

63. PHARMACOLOGY

64. ELECTROTHERAPY

65. NEUROLOGICAL CONDITIONS