

ABSTRACTS

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LUMBAR SPINE

LBP

Depression/LBP/Twins

Pain. 2015 Mar;156(3):496-503. doi: 10.1097/01.j.pain.0000460330.56256.25.

Genetics and the environment affect the relationship between depression and low back pain: a co-twin control study of Spanish twins.

Pinheiro MB¹, Ferreira ML, Refshauge K, Colodro-Conde L, Carrillo E, Hopper JL, Ordoñana JR, Ferreira PH.

Author information

Abstract

Although the co-occurrence of low back pain (LBP) and depression is common, the nature of this association remains unclear. We aimed to investigate whether symptoms of depression are associated with LBP after adjusting for various confounders, including genetics. We used cross-sectional data from 2148 twins from the Murcia Twin Registry, Spain. All twins answered questions about lifetime prevalence of LBP (outcome variable) and symptoms of depression, collected through two instruments, deriving 3 measures: (1) self-report feelings of depression and anxiety; (2) state depression, and (3) trait depression. First, associations were investigated using logistic regression analysis of the total sample.

We performed subsequent matched within-pair twin case-control analyses with all complete twin pairs discordant for LBP regardless of zygosity, and separately for dizygotic and monozygotic pairs. This sequential analysis allows for more precise estimates of the relationship between variables, as in each step, the impact of early shared environment and genetics is further considered. Symptoms of depression and anxiety were associated with higher prevalence of LBP in the total sample analysis (odds ratio [OR], 1.64; 95% confidence interval [CI], 1.31-2.05), and this relationship was stronger in the subsequent case-control analysis (OR, 1.74; 95% CI, 1.13-2.69) and dizygotic case-control analysis (OR, 2.39; 95% CI, 1.39-4.08) but disappeared when the analysis was conducted for monozygotic twins (OR, 0.92; 95% CI, 0.42-2.05). A similar pattern was found for state and trait depression.

The depression-LBP relationship disappears when high levels of control for confounding factors are applied and seems to be driven by genetic or environmental factors that influence both conditions.

PMID:25679471

Prevention

Occup Med (Lond). 2015 Mar;65(2):147-53. doi: 10.1093/occmed/kqu190. Epub 2015 Jan 29.

Combined effect of back pain and stress on work ability.

Oberlinner C¹, Yong M², Nasterlack M¹, Pluto RP¹, Lang S¹.
[Author information](#)

Abstract

BACKGROUND:

Back pain and occupational stress are known risk factors for absenteeism and presenteeism. In addition, the relationship between back pain (BP) and psychosocial stressors has been examined in numerous studies.

AIMS:

To examine the prevalence of BP and perceived stress among employees of different occupational status and to investigate their combined impact on work ability.

METHODS:

A comprehensive survey combining questionnaire data and medical examination offered in one division of a major chemical company in Germany. Self-rated health and work ability were assessed using the Work Ability Index (WAI). A synergy index was used to assess a potential interaction between both exposures under an additive model.

RESULTS:

Of 867 voluntary participants, 653 returned complete questionnaires on BP and job stress perception. Although occupational stressors were perceived differently, there was no difference in the prevalence of BP between the occupational groups. Back pain and stress perception are correlated with each other and both are negatively associated with work ability. After adjustment for occupational status, demographic and lifestyle factors, we found a synergy effect of BP and stress perception with a modest to strong impact on declining WAI.

CONCLUSIONS:

Corporate health promotion interventions to reduce the impact of BP and stress perception on work ability should target both physical and psychological dimensions. Such interventions may be initiated in the context of regular (occupational) medical examinations.

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KEYWORDS:

Back pain; Work Ability Index (WAI).; combined effect; corporate health promotion; cross-sectional study; stress perception; synergy index

PMID: 25634953

Course of LBP

Spine J. 2015 Feb 10. pii: S1529-9430(15)00110-2. doi: 10.1016/j.spinee.2015.02.012.

Patients with low back pain had distinct clinical course patterns that were typically neither complete recovery nor constant pain. A Latent Class Analysis of longitudinal data.

Kongsted A¹, Kent P², Hestbaek L³, Vach W⁴.

[Author information](#)

Abstract

BACKGROUND CONTEXT:

The clinical presentation and outcome of patients with non-specific low back pain (LBP) are very heterogeneous and may be better understood by the recognition of reproducible subgroups. One approach to subgrouping is the identification of clinical course patterns (trajectories). However, it has been unclear how dependent these trajectories are on the analytical model used and the pain characteristics included.

PURPOSE:

To identify LBP trajectories using LBP intensity and LBP frequency measured once a week over one year, and compare results obtained using different analytical approaches.

STUDY DESIGN:

Prospective observational cohort study. Patient Sample Patients presenting with non-specific LBP to general practitioners and chiropractors.

OUTCOME MEASURES:

Weekly self-report of LBP intensity (0-10) and number of LBP days, measured by SMS cell phone questions over a one year follow-up period.

METHODS:

Latent Class Analysis was used to identify trajectories of LBP and 12 different analytical models were compared. The study was a component of a broader study funded by an unrestricted grant from the Danish Chiropractors' Foundation (USD 370,000). The funder of this study had no capacity to influence the scholarly conduct of the research, interpretation of results or the dissemination of study outcomes.

RESULTS:

The study included 1,082 patients. The 12 models resulted in five to 12 subgroups, with a number of trajectories stable across models that differed on pain intensity, number of LBP days, and shape of trajectory.

CONCLUSIONS:

The clinical course of LBP is complex. Most primary care patients do not become pain-free within a year, but only a small proportion reports constant severe pain. Some distinct patterns exist that were identified independently of the way the outcome was modelled. These patterns would not be revealed by using the simple summary measures traditionally applied in LBP research or when describing a patient's pain history only in terms of duration. The appropriate number of subgroups will depend on the intended purpose of subgrouping.

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PMID: 25681230

**DISC
INJECTIONS
SURGERY
PELVIC GIRDLE**

SI belts and pregnancy

Adherence, tolerance and effectiveness of two different pelvic support belts as a treatment for pregnancy-related symphyseal pain - a pilot randomized trial

BMC Pregnancy and Childbirth, 02/25/2015

Clinical Article

Flack NAMS, et al. – This pilot compared two pelvic belts to determine effectiveness (symptomatic relief), tolerance (comfort) and adherence (frequency, duration of use). The preliminary results suggest the flexible pelvic support belt may be more effective in reducing pain and is potentially better tolerated than a rigid belt. Based on these data, a larger trial is both feasible and clinically useful.

Methods

- Unblinded, 2-arm, single-center, randomized (1:1) parallel-group trial.
- Twenty pregnant women recruited from the community (Dunedin, New Zealand), with physiotherapist-diagnosed symphyseal pain, were randomly allocated to wear either a flexible or rigid belt for three weeks.
- One author, not involved in data collection, randomized the allocation to trial group. The unblinded primary outcome was the Patient Specific Functional Scale (PSFS).
- Secondary outcomes were pain intensity during the preceding 24 hours and preceding week (visual analogue scale [VAS]), and disability (Modified Oswestry Disability Questionnaire [MODQ]).
- Duration of use (hours) was recorded daily by text messaging.
- Participants were assessed at baseline, by weekly phone interviews and at intervention completion (three weeks).
- To assess comfort, women wore the alternate belt in the fourth week.

Results

- Twenty pregnant women (mean \pm SD age, 29.4 ± 6.5 years; mean gestation at baseline, 30.8 ± 5.2 weeks) were randomized to treatment groups (flexible = 10, rigid = 10) and all were included in analysis.
- When adjusted for baseline, PSFS scores were not significantly different between groups at follow up (mean difference -0.1; 95% CI: -2.5 to 2.3; $p=0.94$).
- Pain in the preceding 24 hours reached statistical significance in favor of the flexible belt (VAS, $p = 0.049$).
- Combining both groups' data, function and pain were significantly improved at three weeks (mean difference -2.3; 95% CI: 1.2 to 3.5; $p < 0.001$).
- Belts were worn for an average of 4.9 ± 2.9 hours per day; women preferred the flexible belt.
- No adverse events were reported.

PELVIC ORGANS
VISCERA
THORACIC SPINE

Prevalence of T spine pain

Occup Med (Lond). 2015 Mar;65(2):122-5. doi: 10.1093/occmed/kqu151. Epub 2014 Oct 24.

Prevalence of thoracic spine pain in a surveillance network.

Fouquet N¹, Bodin J², Descatha A³, Petit A⁴, Ramond A⁵, Ha C⁶, Roquelaure Y⁴.

Author information

Abstract

BACKGROUND:

Back pain has long been identified as a major occupational health issue, but there are few prevalence studies on thoracic spine pain (TSP). The epidemiological surveillance of musculoskeletal disorders implemented in 2002 by the French Institute for Public Health Surveillance in the Pays de la Loire region provided the opportunity to study the prevalence of TSP in a large, representative sample of workers.

AIMS:

To assess the prevalence of TSP across a week in a regional workforce according to age, occupational category and industry sector in men and women separately.

METHODS:

A random sample of workers aged 20-59 years, representative of the regional workforce, was constituted between 2002 and 2005. Medical and occupational data were gathered by questionnaire.

RESULTS:

The sample consisted of 3710 workers (58% men). The prevalence of TSP was higher in women (17%) than in men (9%). Lower grade male white-collar workers were more likely to report TSP (17%) than male workers in other occupational categories, whereas upper grade female white-collar and professional workers were more likely to report TSP. No significant difference in the prevalence of TSP was noted in either men or women according to industry sector.

CONCLUSIONS:

Although TSP is less frequent than low back and neck pain, the results of this study indicate that 1 in 10 men and 1 in 5 women suffer from TSP.

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KEYWORDS: Musculoskeletal disorders; occupation; prevalence; thoracic spine pain.
PMID:25344959

**CERVICAL SPINE
UPPER C SPINE
WHIPLASH****T spine pain after**

[Eur J Pain](#). 2015 Feb 17. doi: 10.1002/ejp.681.

A population-based, incidence cohort study of mid-back pain after traffic collisions: Factors associated with global recovery.

[Johansson MS¹](#), [Boyle E](#), [Hartvigsen J](#), [Jensen Stochkendahl M](#), [Carroll L](#), [Cassidy JD](#).
[Author information](#)

Abstract

BACKGROUND:

Traffic collisions often result in a wide range of symptoms included in the umbrella term whiplash-associated disorders. Mid-back pain (MBP) is one of these symptoms. The incidence and prognosis of different traffic injuries and their related conditions (e.g. neck pain, low back pain, depression or others) has been investigated previously; however, knowledge about traffic collision-related MBP is lacking. The study objectives were to describe the incidence, course of recovery and prognosis of MBP after traffic collisions, in terms of global self-reported recovery.

METHODS:

Longitudinal data from a population-based inception cohort of all traffic injuries occurring in Saskatchewan, Canada, during a 2-year period were used. Annual overall and age-sex-specific incidence rates were calculated, the course of recovery was described using the Kaplan-Meier technique, and associations between participant characteristics and time-to-self-reported recovery were explored in 3496 MBP cases using Cox proportional hazards models.

RESULTS:

The yearly incidence rate was 236 per 100,000 population during the study period, and was highest in women and in young persons. The median time-to-first reported recovery was 101 days (95% CI: 99-104) and about 23% were still not recovered after 1 year. Participant's expectation for recovery, general health, extent of severely affecting comorbidities and having experienced a previous traffic injury were some of the prognostic factors identified.

CONCLUSIONS:

These findings show that MBP is common after traffic collisions, may result in a long recovery process and that a range of biopsychosocial factors are associated with recovery.

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PMID:25690804

**CRANIUM/TMJ
HEADACHES****Migraine**

NMR Biomed. 2013 Sep;26(9):1103-12. doi: 10.1002/nbm.2924. Epub 2013 Feb 27.

White matter integrity affected by depressive symptoms in migraine without aura: a tract-based spatial statistics study.

Yu D¹, Yuan K, Zhao L, Dong M, Liu P, Yang X, Liu J, Sun J, Zhou G, Xue T, Zhao L, Cheng P, Dong T, von Deneen KM, Qin W, Tian J.

Author information

Abstract

Previous studies have proven that migraine and depression are bidirectionally linked. However, few studies have investigated white matter (WM) integrity affected by depressive symptoms in patients suffering from migraine without aura (MWOA). Forty patients with MWOA were divided into two groups according to their self-rating depression scale (SDS) score in the present study, including 20 in the SDS (+) (SDS > 49) group and 20 in the SDS (-) (SDS ≤ 49) group. Forty healthy participants were also recruited as the control group. Tract-based spatial statistics analyses with multiple diffusion tensor imaging-derived indices [fractional anisotropy (FA), mean diffusivity (MD), radial diffusivity (RD), axial diffusivity (AD)] were employed collectively to investigate WM integrity between all patients with MWOA and all healthy controls, between each subgroup (SDS (-) group and SDS (+) group) and healthy controls, and between the SDS (-) and SDS (+) groups. Compared with healthy controls, decreased AD was shown in several WM tracts of the whole MWOA group, SDS (-) group and SDS (+) group. In addition, compared with the SDS (-) group, the SDS (+) group showed decreased FA and increased MD and RD, with conserved AD, including the genu, body and splenium of the corpus callosum, bilateral superior longitudinal fasciculi, the right anterior corona radiata and some other WM tracts, similar to previous findings in depression disorder. Furthermore, mean FA and RD in some of the above-mentioned WM tracts in the SDS (+) group were correlated significantly with SDS scores, including the genu and splenium of the corpus callosum, the right anterior corona radiata and the superior longitudinal fasciculi.

Our results suggest that WM integrity may be affected by both depression symptoms (more sensitive as RD) and migraine (more sensitive as AD). The findings may serve as a sensitive biomarker of depression severity in MWOA.

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KEYWORDS: anterior corona radiata (ACR); corpus callosum (CC); depressive symptoms; migraine without aura (MWOA); superior longitudinal fasciculi (SLF); tract-based spatial statistics (TBSS)

PMID: 23447382

Visual impact

Headache. 2015 Feb;55 Suppl 1:84-98. doi: 10.1111/head.12514. Epub 2015 Feb 6.

The visual system in migraine: from the bench side to the office.

Kowacs PA¹, Utiumi MA, Piovesan EJ.

Author information

Abstract

BACKGROUND:

Throughout history, migraine-associated visual symptoms have puzzled patients, doctors, and neuroscientists. The visual aspects of migraine extend far beyond the aura phenomena, and have several clinical implications.

METHODS:

A narrative review was conducted, beginning with migraine mechanisms, then followed by pertinent aspects of the anatomy of visual pathways, clinical features, implications of the visual system on therapy, migraine on visually impaired populations, treatment of visual auras and ocular (retinal) migraine, effect of prophylactic migraine treatments on visual aura, visual symptoms induced by anti-migraine or anti-headache drugs, and differential diagnosis.

RESULTS:

A comprehensive narrative review from both basic and clinical standpoints on the visual aspects of migraine was attained; however, the results were biased to provide any useful information for the clinician.

CONCLUSION:

This paper achieved its goals of addressing and condensing information on the pathophysiology of the visual aspects of migraine and its clinical aspects, especially with regards to therapy, making it useful not only for those unfamiliar to the theme but to experienced physicians as well.

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KEYWORDS: migraine; migraine aura; migraine treatment; migraine with aura; visual system
PMID: 25659971

Managing migraines

Headache. 2015 Mar;55 Suppl 2:103-22. doi: 10.1111/head.12505_2.

Episodic and chronic migraine headache: breaking down barriers to optimal treatment and prevention.

Lipton RB¹, Silberstein SD.

Author information

Abstract

Migraine is a common disabling primary headache disorder that affects an estimated 36 million Americans. Migraine headaches often occur over many years or over an individual's lifetime. By definition, episodic migraine is characterized by headaches that occur on fewer than 15 days per month. According to the recent International Classification of Headache Disorders (third revision) beta diagnostic criteria, chronic migraine is defined as "headaches on at least 15 days per month for at least 3 months, with the features of migraine on at least 8 days per month." However, diagnostic criteria distinguishing episodic from chronic migraine continue to evolve. Persons with episodic migraine can remit, not change, or progress to high-frequency episodic or chronic migraine over time. Chronic migraine is associated with a substantially greater personal and societal burden, more frequent comorbidities, and possibly with persistent and progressive brain abnormalities. Many patients are poorly responsive to, or noncompliant with, conventional preventive therapies. The primary goals of migraine treatment include relieving pain, restoring function, and reducing headache frequency; an additional goal may be preventing progression to chronic migraine. Although all migraineurs require abortive treatment, and all patients with chronic migraine require preventive treatment, there are no definitive guidelines delineating which persons with episodic migraine would benefit from preventive therapy.

Five US Food and Drug Association strategies are approved for preventing episodic migraine, but only injections with onabotulinumtoxinA are approved for preventing chronic migraine.

Identifying persons who require migraine prophylaxis and selecting and initiating the most appropriate treatment strategy may prevent progression from episodic to chronic migraine and alleviate the pain and suffering associated with frequent migraine.

© 2015 American Headache Society.

KEYWORDS: chronic migraine; diagnosis; episodic migraine; iontophoretic transdermal system; onabotulinumtoxinA injection; treatment

PMID:25662743

**VESTIBULAR
CONCUSSIONS
SHOULDER GIRDLE****Scapula dyskinesia**

J Shoulder Elbow Surg. 2015 Feb 19. pii: S1058-2746(15)00008-7. doi: 10.1016/j.jse.2014.12.022.

Specific kinematics and associated muscle activation in individuals with scapular dyskinesia.

Huang TS¹, Ou HL¹, Huang CY¹, Lin JJ².

Author information

Abstract

BACKGROUND:

Knowledge of the kinematics and associated muscular activity in individuals with scapular dyskinesia may provide insight into the injury mechanism and inform the planning of treatment strategies. We investigated scapular kinematics and associated muscular activation during arm movements in individuals with scapular dyskinesia.

METHODS:

A visual-based palpation method was used to evaluate 82 participants with unilateral shoulder pain. Scapular movements during arm raising/lowering movements were classified as abnormal single pattern (inferior angle prominence, pattern I; medial border prominence, pattern II; excessive/inadequate scapular elevation or upward rotation, pattern III), abnormal mixed patterns, or normal pattern (pattern IV). Scapular kinematics and associated muscular activation were assessed with an electromagnetic motion-capturing system and surface electromyography.

RESULTS:

More scapular internal rotation was found in pattern II subjects (4° , $P = .009$) and mixed pattern I and II subjects (4° , $P = .023$) than in control subjects during arm lowering. Scapular posterior tipping (3° , $P = .028$) was less in pattern I subjects during arm lowering. Higher upper trapezius activity (14%, $P = .01$) was found in pattern II subjects during arm lowering. In addition, lower trapezius (5%, $P = .025$) and serratus anterior activity (10%, $P = .004$) were less in mixed pattern I and II subjects during arm lowering.

CONCLUSIONS:

Specific alterations of scapular muscular activation and kinematics were found in different patterns of scapular dyskinesia. The findings also validated the use of a comprehensive classification test to assess scapular dyskinesia, especially in the lowering phase of arm elevation.

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KEYWORDS: Scapula; clinical assessment; dyskinesia; electromyography; kinematics; movement patterns
PMID:25704212

Snapping scapula

J Shoulder Elbow Surg. 2015 Feb 14. pii: S1058-2746(15)00020-8. doi: 10.1016/j.jse.2014.12.034.

Association between scapula bony morphology and snapping scapula syndrome.

Spiegl UJ¹, Petri M¹, Smith SW², Ho CP¹, Millett PJ³.
[Author information](#)

Abstract

HYPOTHESIS AND BACKGROUND:

Scapular incongruity has been described as a contributing factor to the development of snapping scapula syndrome (SSS). The purpose of this retrospective case-control study was to determine the association between scapula bony morphology on magnetic resonance imaging (MRI) and the diagnosis of SSS.

METHODS:

Bony morphologies of the scapula were evaluated on MRI scans of 26 patients with SSS and 19 patients with non-SSS pathologies. The medial scapula corpus angle (MSCA) was measured on axial MRI sequences. Scapulae were categorized as straight, S shaped, or concave. Two independent observers performed the measurements. Interobserver and intraobserver agreements of MSCA measurements were determined with intraclass correlation coefficients.

RESULTS:

Axial scapula bony morphology identified 28 scapulae of the straight type, 14 S-shaped scapulae, and 5 concave scapulae. All 5 concave scapulae had confirmed SSS. Measurement of the MSCA showed excellent interobserver agreement of 0.80 (95% confidence interval [CI], 0.67 to 0.89) and intraobserver agreement of 0.70 (95% CI, 0.52 to 0.82). There were significant differences in the mean MSCAs between shoulders with SSS ($14.4^\circ \pm 19.3^\circ$) and non-SSS shoulders ($-3.3^\circ \pm 15.3^\circ$, $P = .001$). The odds ratio was 8.4 (95% CI, 2.2 to 31.8) for positive MSCA and SSS. The scapulothoracic distance was significantly decreased in the SSS group (14.9 ± 5.8 mm) compared with the non-SSS patients (24.0 ± 6.7 mm, $P < .001$).

DISCUSSION AND CONCLUSION:

Anterior angulation of the medial scapula in the axial plane was associated with SSS. Patients with a concave-shaped scapula and a positive MSCA have a 12-fold increased risk of SSS. The MSCA may prove helpful in determining the location and amount of scapular resection needed for patients with SSS.

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KEYWORDS: *Snapping scapula syndrome; medial scapula corpus angle; partial scapulectomy; scapula bony morphology* [nPMID:25690534](#)

**CLAVICLE
 GLENOHUMERAL/SHOULDER**

ROTATOR CUFF**Age and tendon health**

Am J Sports Med. 2015 Jan 8. pii: 0363546514562552.

Do Patient Age and Sex Influence Tendon Cell Biology and Clinical/Radiographic Outcomes After Rotator Cuff Repair?

Pauly S¹, Stahnke K², Klatte-Schulz F³, Wildemann B³, Scheibel M², Greiner S².
Author information

Abstract**BACKGROUND:**

Many clinical and radiographic studies suggest that patient age and sex have an influence on rotator cuff (RC) repair outcomes. However, these findings result from retrospective statistical analyses and cannot provide a causal answer.

PURPOSE:

To analyze whether age and sex influence the biological potential at the time of RC repair or midterm clinical and radiographic outcomes. Also assessed was the effect of the biological potential on intraindividual clinical/radiographic results.

STUDY DESIGN:

Cohort study; Level of evidence, 2.

METHODS:

A total of 40 patients underwent arthroscopic RC repair. At the time of surgery (t = 0), supraspinatus tendon biopsy specimens were obtained, cultivated, and assessed for their biological potential, particularly (1) cell growth and (2) collagen type I production. After a follow-up at 24 months (t = 1), all patients were assessed by clinical scores (Constant score, subjective shoulder value, American Shoulder and Elbow Surgeons [ASES] score, and Western Ontario Rotator Cuff Index [WORC] score) and underwent magnetic resonance imaging to determine RC integrity. The data were examined for age- and sex-related differences and to identify the correlation between biological potential (t = 0) and clinical/radiographic outcome (t = 1).

RESULTS:

The follow-up rate for the imaging and clinical evaluation was 100%. Age, but not sex, influenced the biological tendon cell parameters at t = 0. However, there was no effect of age or sex on the clinical and radiographic results at t = 1. Furthermore, no correlation was observed between the initial biological parameters and later clinical outcomes or radiographic RC integrity. Finally, there was no significant difference between intact and nonhealed repairs in terms of the respective clinical scores.

CONCLUSION:

Age, but not sex, was found to have a negative effect on RC tendon cell biology. However, neither sex nor, in particular, a higher age influenced repair outcomes after 24 months. © 2015 The Author(s).

KEYWORDS: biological healing enhancement; prognostic factors; rotator cuff; shoulder
PMID: 25573392

**ADHESIVE CAPSULITIS
IMPINGMENT
SURGERY
ELBOW
WRIST AND HAND
CARPAL TUNNEL SYNDROME**

CTS

[Pituitary](#). 2015 Feb 8.

Median nerve conduction studies and wrist magnetic resonance imaging in acromegalic patients with carpal tunnel syndrome.

[Sasagawa Y¹](#), [Tachibana O](#), [Doai M](#), [Tonami H](#), [Iizuka H](#).
[Author information](#)

Abstract

PURPOSE:

Carpal tunnel syndrome (CTS) often occurs with acromegaly; however, the pathophysiology of CTS in acromegalic patients remains unclear. This study evaluated the median nerve in acromegalic patients with and without CTS.

METHODS:

We examined the median nerves of 21 acromegalic patients (eight patients with CTS and 13 patients without CTS) using electrophysiological nerve conduction studies and wrist magnetic resonance images. They underwent transsphenoidal surgery to resect their growth hormone-secreting pituitary adenomas. The median nerves of the patients with CTS were reassessed by the same studies.

RESULTS:

The sensory conduction velocity was significantly later in the median nerves of patients with CTS than in patients without CTS (34.9 vs. 45.8 m/s, respectively; $P = 0.006$). In the wrist magnetic resonance images, the cross-sectional area of the median nerve in CTS patients and non-CTS patients was 18.7 and 10.5 mm², respectively. The median nerve was significantly larger in patients with CTS than in patients without CTS ($P < 0.003$). The flattening ratio of the median nerve and palmar deviation of the flexor retinaculum were not significantly different between the two patient groups. After tumor resection, the nerve conduction velocities improved in patients with CTS, but the nerve remained enlarged. The CTS symptoms disappeared in all patients, except one.

CONCLUSIONS:

The median nerves of acromegalic patients with CTS were enlarged and had impaired nerve conduction. This finding represents a predominant intrinsic feature in the pathophysiology of the disease rather than an extrinsic feature such as a thickened transverse carpal ligament.

PMID:25663441

HIP REPLACEMENTS OA IMPINGEMENT

MRI and impingement

J Magn Reson Imaging. 2015 Mar;41(3):spcone. doi: 10.1002/jmri.24868.

MRI of the Hip for the evaluation of femoroacetabular impingement; past, present, and future.

Riley GM¹, McWalter EJ, Stevens KJ, Safran MR, Lattanzi R, Gold GE.

Author information

Abstract

The concept of femoroacetabular impingement (FAI) has, in a relatively short time, come to the forefront of orthopedic imaging. In just a few short years MRI findings that were in the past ascribed to degenerative change, normal variation, or other pathologies must now be described and included in radiology reports, as they have been shown, or are suspected to be related to, FAI. Crucial questions have come up in this time, including: what is the relationship of bony morphology to subsequent cartilage and labral damage, and most importantly, how is this morphology related to the development of osteoarthritis?

In this review, we attempt to place a historical perspective on the controversy, provide guidelines for interpretation of MRI examinations of patients with suspected FAI, and offer a glimpse into the future of MRI of this complex condition. *J. Magn. Reson. Imaging* 2015;41:558-572. © 2014 Wiley Periodicals, Inc.

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KEYWORDS: acetabular labrum; cartilage mapping; femoroacetabular impingement; hip cartilage; magnetic resonance imaging

PMID: 25693521

KNEE
KNEE/ACL**ACL deficient changes**

Am J Sports Med. 2015 Feb 3. pii: 0363546514567296.

Relationship Between Knee Mechanics and Time Since Injury in ACL-Deficient Knees Without Signs of Osteoarthritis.

Zabala ME¹, Favre J², Andriacchi TP³.

Author information

Abstract

BACKGROUND: There is increasing evidence that kinematic changes after anterior cruciate ligament (ACL) injury can influence the risk for premature osteoarthritis. However, kinematics can change over time, and the factors influencing those changes remain unknown but potentially important.

HYPOTHESIS/PURPOSE: The purpose of this study was to perform gait analysis on a population of ACL-deficient (ACLD) subjects without knee osteoarthritis after considerable time had elapsed since their injuries. The following hypotheses were tested: (1) ACLD knees will have greater anterior femoral translation, external femoral rotation, and flexion moment as compared with healthy contralateral knees with increased time since injury; (2) side-to-side differences in anterior femoral translation and external femoral rotation are positively associated with side-to-side differences in knee flexion moment.

STUDY DESIGN: Cross-sectional study; Level of evidence, 3.

METHODS: Nineteen subjects with unilateral ACLD (time since injury, 1-384 months) underwent gait testing. Linear regression testing was performed for significant relationships between side-to-side differences in tibial translation and rotation during stance and the amount of time since injury, as well as the relationship between differences in peak flexion moment and differences in translation and rotation.

RESULTS: There was a time dependency in side-to-side differences. Subjects with shorter times since injury had the femur of the ACLD knee more posteriorly translated and internally rotated than the femur of the contralateral knee, and subjects with longer times since injury had the femur of the ACLD knee more anteriorly translated ($R^2 = 0.33$) and externally rotated ($R^2 = 0.53$) than the femur of the contralateral knee. Additionally, when the population was stratified into 2 subgroups based on time after injury (short-term: 1.4-18.7 months; long-term: 58-383.5 months), a relationship between side-to-side differences in knee flexion moment and side-to-side differences in knee translation and rotation was found for the long-term subgroup.

CONCLUSION: The results of this study provide an understanding of the relationship between kinematics and kinetics of the ACLD knee and the amount of time since injury. They suggest that elapsed time since injury might be an important factor when the function of ACL-injured knees is interpreted as it relates to osteoarthritis.

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KEYWORDS: anterior cruciate ligament; deficiency; mechanics

**MENISCUS
PATELLA****Hip impact on PFP in females**

Med Sci Sports Exerc. 2015 Jan 20.

Femur Rotation Increases Patella Cartilage Stress in Females with Patellofemoral Pain.

Liao TC¹, Yang N, Ho KY, Farrokhi S, Powers CM.

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

To test the hypothesis that internal rotation of the femur increases patellofemoral joint stress in persons with patellofemoral pain (PFP).

METHODS:

Patella cartilage stress profiles of nine females with PFP were obtained during squatting using subject-specific finite element (FE) models of the patellofemoral joint (15° and 45° of knee flexion). Input parameters for the FE model included joint geometry, quadriceps muscle forces during squatting, and weight-bearing patellofemoral joint kinematics. The femur of each model was then internally rotated 5° and 10° along its long axis beyond that of the natural degree of rotation. Using a nonlinear FE solver, quasi-static loading simulations were performed to quantify patellofemoral joint stress.

RESULTS:

Compared to the natural position of the femur, mean hydrostatic pressure and mean octahedral shear stress were significantly higher when the femur was internally rotated 5° and 10°. No significant differences in stress variables were observed when the femur was rotated from 5° to 10°. These findings were consistent across both knee flexion angles (15° and 45°).

CONCLUSIONS:

The finding of elevated hydrostatic pressure and octahedral shear stress with internal rotation of the femur supports the premise that females with PFP who exhibit abnormal hip kinematics may be exposed to elevated patellofemoral joint stress.

**KNEE/TOTAL
KNEE/EXERCISE
OSTEOARTHRITIS/KNEE
FOOT AND ANKLE**

MRI in foot pain

PLoS One. 2015 Feb 10;10(2):e0117583. doi: 10.1371/journal.pone.0117583. eCollection 2015.

Comparison of SPECT/CT and MRI in Diagnosing Symptomatic Lesions in Ankle and Foot Pain Patients: Diagnostic Performance and Relation to Lesion Type.

Ha S¹, Hong SH², Paeng JC¹, Lee DY³, Cheon GJ¹, Arya A⁴, Chung JK¹, Lee DS¹, Kang KW¹.
Author information

Abstract

PURPOSE:

The purpose of this study was to compare the diagnostic performance of SPECT/CT and MRI in patients with ankle and foot pain, with regard to the lesion types.

MATERIALS AND METHODS:

Fifty consecutive patients with ankle and foot pain, who underwent 99mTc-MDP SPECT/CT and MRI, were retrospectively enrolled in this study. Symptomatic lesions were determined based on clinical examination and response to treatment. On MRI and SPECT/CT, detected lesions were classified as bone, ligament/tendon, and joint lesions. Uptake on SPECT/CT was assessed using a 4-grade system. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of SPECT/CT and MRI were evaluated in all detected lesions and each lesion type. Diagnostic value of uptake grade was analyzed using receiver-operating characteristics (ROC) curve analysis, and diagnostic performance was compared using Chi-square or McNemar tests.

RESULTS:

In overall lesions, the sensitivity, PPV and NPV of SPECT/CT for symptomatic lesions were 93%, 56%, 91%, and they were 98%, 48%, 95% for MRI. There was no significant difference between SPECT/CT and MRI. However, the specificity of SPECT/CT was significantly higher than that of MRI (48% versus 24%, $P = 0.016$). Uptake grade on SPECT/CT was significantly higher in symptomatic lesions ($P < 0.001$), and its area under curve on ROC analysis was 0.787. In the analysis of each lesion type, the specificity of SPECT/CT was poor in joint lesions compared with other lesion types and MRI ($P < 0.001$, respectively). MRI exhibited lower specificity than SPECT/CT in bone lesions ($P = 0.004$) and ligament/tendon lesions ($P < 0.001$).

CONCLUSIONS:

SPECT/CT has MRI-comparable diagnostic performance for symptomatic lesions in ankle and foot pain patients. SPECT/CT and MRI exhibit different diagnostic specificity in different lesion types. SPECT/CT may be used as a complementary imaging method to MRI for enhancing diagnostic specificity.

PMID: 25668182

ORTHOTICS

ANKLE/INSTABILITY

ACHILLES TENDON

PLANTAR SURFACE

HALLUX VALGUS

RHUMATOID ARTHRITIS

MANUAL THERAPY

P/A mobilizations

Effects of unilateral posteroanterior mobilization in subjects with sacralized lumbosacral transitional vertebrae

Journal of Bodywork & Movement Therapies , 02/25/2015 Clinical Article
Angmo P, et a

Abstract

AIM OF THE STUDY

To find out the efficacy of unilateral posteroanterior (PA) mobilization over type IA and type IIA sacralized lumbosacral transitional vertebrae in patients with low back pain with or without leg pain.

Research design: experimental randomized control study.

Sample size: 30 subjects, **Sampling:** simple random sampling.

GROUP A- 15 subjects –self lumbar mobility and stretching exercises + Unilateral PA mobilization + hot pack.

GROUP B- 15 subjects – self lumbar mobility and stretching exercises + hot pack.

Before initiating treatment, subjects were assessed for dependent variables: Pain intensity by VAS, Forward bending and side bending ROM by modified finger to floor method with the help of an inch-tape and functions by Modified Oswestry Functional Disability Questionnaires. Post test measurements were taken after completion 2 weeks of therapy.

The results of the study suggest that unilateral PA pressure is an effective mobilization method in reducing low back pain, improving ROM and related disability as compared to impairment based exercises alone in patients with low back pain with or without radiation to lower limbs having abnormally large transverse processes and hypomobile type IA and II A lumbo-sacral transitional vertebrae.

**NEUROMOBILIZATION
STRETCHING/MUSCLES
STM****Tendon changes with stress**

Scand J Med Sci Sports. 2014 Dec 30. doi: 10.1111/sms.12333.

Tendon overload results in alterations in cell shape and increased markers of inflammation and matrix degradation.

Thorpe CT1, Chaudhry S, Lei II, Varone A, Riley GP, Birch HL, Clegg PD, Screen HR.
Author information

Abstract

Tendon injury is thought to involve both damage accumulation within the matrix and an accompanying cell response.

While several studies have characterized cell and matrix response in chronically injured tendons, few have assessed the initial response of tendon to overload-induced damage. In this study, we assessed cell response to cyclic loading. Fascicle bundles from the equine superficial digital flexor tendon were exposed to cyclic loading in vitro, designed to mimic a bout of high-intensity exercise. Changes in cell morphology and protein-level alterations in markers of matrix inflammation and degradation were investigated. Loading resulted in matrix damage, which was accompanied by cells becoming rounder. The inflammatory markers cyclooxygenase-2 and interleukin-6 were increased in loaded samples, as were matrix metalloproteinase-13 and the collagen degradation marker C1,2C.

These results indicate upregulation of inflammatory and degradative pathways in response to overload-induced in vitro, which may be initiated by alterations in cell strain environment because of localized matrix damage. This provides important information regarding the initiation of tendinopathy, suggesting that inflammation may play an important role in the initial cell response to tendon damage. Full understanding of the early tenocyte response to matrix damage is critical in order to develop effective treatments for tendinopathy.

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Dry needling and neck pain

Arch Phys Med Rehabil. 2015 Jan 9. pii: S0003-9993(15)00006-4. doi: 10.1016/j.apmr.2014.12.016.

The Effectiveness of Dry Needling On The Lower Trapezius In Patients With Mechanical Neck Pain: A Randomized Clinical Trial.

Pecos-Martin D¹, Montañez-Aguilera FJ², Gallego-Izquierdo T¹, Urraca-Gesto A³, Gómez-Conesa A⁴, Romero-Franco N⁵, Plaza-Manzano G⁶.

Author information

Abstract

OBJECTIVE:

To evaluate the effect of dry needling into a myofascial trigger point (MTrP) in the lower trapezius (LT) muscle of patients with mechanical idiopathic neck pain.

DESIGN:

A single-center, randomized, double-blinded, controlled study.

SETTING:

Patients were recruited from the student population of a local hospital by advertisement in the University Clinic from January 2010 to December of 2011.

PARTICIPANTS:

Seventy-two patients with unilateral neck pain, neck pain for at least 3 months, and active trigger points in the lower trapezius were randomly assigned to (1) of (2) treatment groups. All of the patients completed the study.

INTERVENTION:

(1) Dry needling in a myofascial trigger point (MTrP) in the LT muscle or (2) dry needling in the LT muscle but not at a MTrP.

MAIN OUTCOME MEASURES:

The Visual Analog Scale (VAS), the Neck Questionnaire Test (NPQ) and the pressure pain threshold (PPT) were assessed before the intervention and one week and one month post-intervention.

RESULTS:

Treatment with dry needling of the LT muscle close to the MTrP showed decreases in pain and PPT as well as an improvement in the degree of disability ($p < .001$) compared with the baseline and control group measurements ($p < .001$). The dry needling technique performed in the MTrP showed more significant therapeutic effects ($p < .001$).

CONCLUSIONS:

The application of dry needling into an active MTrP of the LT muscle induces significant changes in the VAS, NPQ and PPT levels compared to the application of dry needling in other locations of the same muscle in patients with mechanical neck pain.

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KEYWORDS: dry needling; lower trapezius; neck pain; trigger points
PMID: 25582412

MUSCLES
STRETCHING
MOTOR CONTROL
CFS/BET
EXERCISE
CORE
POSTURE
SCOLIOSIS
ATHLETICS

Soccer running

Sports Med. 2015 Feb 19.

Match Running Performance During Fixture Congestion in Elite Soccer: Research Issues and Future Directions.

Carling C¹, Gregson W, McCall A, Moreira A, Wong DP, Bradley PS.
Author information

Abstract

It has been proposed that match congestion in elite soccer results in residual fatigue and underperformance in ensuing competition due to insufficient recovery time. In this article, matters relating to match congestion and running performance in elite soccer competition are discussed. We suggest a need to determine the extent to which elite players are, in reality, exposed to periods of match congestion and hence to potential declines in performance. Despite evidence of exercise-induced muscle damage combined with a decline in physical performance up to 72 h post-match, research using time-motion analyses suggests that running performance represented by distances covered is unaffected over periods of match congestion. We recommend analysis of alternative movement variables including accelerations, decelerations and turns that are taxing metabolically and contribute greatly to muscle damage. Moreover, a holistic approach combining subjective ratings with biochemical, hormonal and immunological responses to exercise would be pertinent, especially in players frequently exposed to match congestion. Contemporary practitioners typically implement various post-match recovery treatments during dense schedules in an attempt to accelerate recovery and ensure that subsequent running performance is not unduly affected.

However, empirical evidence to support their efficacy in maintaining running performance is lacking and we recommend controlled intervention studies using match simulations in an attempt to verify their effectiveness.

These points are critically addressed using findings from the current scientific literature, while gaps in the current body of knowledge and future directions for research are highlighted.

PMID: 25694027

GAIT**Gait scales**

Gait Posture. 2015 Feb 3. pii: S0966-6362(15)00025-9. doi: 10.1016/j.gaitpost.2015.01.022.

The relationship between the Edinburgh Visual Gait Score, the Gait Profile Score and GMFCS levels I-III.

Robinson LW¹, Clement N², Fullarton M¹, Richardson A³, Herman J³, Henderson G³, Robb JE³, Gaston MS⁴.

Author information

Abstract

OBJECTIVE:

To determine the relationship between the Edinburgh Visual Gait Score (EVGS) and the Gait Profile Score (GPS).

METHOD:

Three dimensional gait data and EVGS scores from 151 diplegic children (Gross Motor Function Classification System (GMFCS) levels I-III) were used for analysis.

RESULTS:

The EVGS correlated strongly with GPS ($r=0.816$). There was a significant difference in both gait scores between each level of the GMFCS.

CONCLUSIONS:

The strong correlation of GPS with EVGS implies that any advantages of using GPS can also be applied to centres without 3-dimensional gait analysis facilities if the EVGS is used.

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KEYWORDS:

Cerebral Palsy; Visual gait analysis

PMID:25684144

RUNNING

Sprinting and ROM

Med Sci Sports Exerc. 2015 Feb 20.

How Much Do Range of Movement and Coordination Affect Paralympic Sprint Performance?

Connick MJ¹, Beckman E, Spathis J, Deuble R, Tweedy SM.
Author information

Abstract

INTRODUCTION:

Development of evidence-based methods of Paralympic classification requires research quantifying the relative strength of association between ratio-scaled measures of impairment and sports performance. To date, no such research has been conducted. The purpose of this study was to quantify the extent to which range of movement (ROM) and coordination affect running performance in runners with and without brain impairment.

METHODS:

Participants were 41 male runners, 13 with brain impairments (RBI) and 28 non-disabled (NDR). All participants completed a maximal 60metre sprint as well as a novel battery of 5 lower limb ROM tests and 3 lower limb coordination tests.

RESULTS:

In the coordination tests, RBI showed significantly slower mean movement times compared to NDR on all measures (e.g. $0.54s \pm 0.12$ vs. $0.34s \pm 0.05$). RBI had significantly lower range of movement on five of ten measures (e.g. $25.9^\circ \pm 5.4$ vs. $37.0^\circ \pm 6.0$) and had significantly slower acceleration (0-15m) ($3.2s \pm 0.3$ vs. $2.8s \pm 0.2$) and top speed (30-60 m) ($4.3s \pm 0.6$ vs. $3.8s \pm 0.3$). Five ROM measures significantly correlated with sprint performance in RBI and did not significantly correlate with sprint performance in NDR satisfying convergent and divergent validity criteria. These individual tests explained 38% to 58% of the variance in sprint performance in RBI.

CONCLUSION:

This is the first study to quantify the extent to which eligible impairments impact on performance in a Paralympic sport. Five of the ROM measures significantly affected sprint performance in RBI and were deemed valid for the purposes of classifying impairments in classes T35-T38. This study is an important methodological step towards development of evidence-based methods of classifying impairments in classes T35-T38 and provides practical methodological guidance to researchers in this field.

PMID:25706295

PAIN

Brain changes in neuropathic pain

Eur J Pain. 2015 Feb 23. doi: 10.1002/ejp.670.

Quantitative meta-analysis of grey matter anomalies in neuropathic pain.

Pan PL¹, Zhong JG, Shang HF, Zhu YL, Xiao PR, Dai ZY, Shi HC.

Author information

Abstract

BACKGROUND:

Increasing neuroimaging studies have revealed grey matter (GM) anomalies of several brain regions by voxel-based morphometry (VBM) studies in patients with neuropathic pain. The changes have been suggested to be related to central sensitization. Our aim was to investigate concurrence across VBM studies to identify whether different subtypes of neuropathic pain share a common pathophysiological basis revealed by structural abnormalities.

METHODS:

A systematic search of VBM studies of patients with neuropathic pain and healthy controls published in PubMed and Embase databases from January 2000 to March 2014 was conducted. A quantitative meta-analysis of whole-brain VBM studies in patients with neuropathic pain compared with healthy controls was performed by means of effect-size signed differential mapping.

RESULTS:

Ten studies comprising 240 patients with neuropathic pain and 263 healthy subjects were systematically included in the present study. Compared to healthy controls, the patients showed consistent decreased GM in bilateral anterior insula and thalamus, right superior frontal gyrus and left postcentral gyrus, and increased GM in right medial frontal gyrus and right posterior insula. The results remained largely unchanged in the following jackknife sensitivity analysis.

CONCLUSIONS:

This meta-analysis shows strong evidence of brain GM anomalies within the pain matrix in patients with neuropathic pain compared with healthy subjects. Further studies are needed to determine whether the reported changes are specific to neuropathic pain or whether they may be common to other chronic pain.

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PMID:25708697

SM and pain experience

Eur J Pain. 2015 Feb 17. doi: 10.1002/ejp.662.

Attitudes and emotions towards pain and sensitivity to painful stimuli among people routinely engaging in masochistic behaviour.

Defrin R¹, Arad M, Ben-Sasson MP, Ginzburg K.
Author information

Abstract

BACKGROUND:

People engaged in masochistic behaviour (MB) seek to experience pain and the pleasure it evokes in sadomasochistic (S&M) sessions. The sensitivity and attitude to pain in these individuals has hardly been tested. We evaluated pain perception among these individuals and tested whether their experiences and attitudes towards pain are context-related.

METHODS:

Thirty-four healthy subjects participated; 17 routinely engaged in MB and 17 controls. Pressure pain threshold (PPT) was measured in two body regions. A structured questionnaire on S&M activities and context-related pain experiences and emotions was completed, as well as the pain catastrophizing (CAT) and fear of pain (FOP) questionnaires.

RESULTS:

PPT was significantly higher among MB individuals and positively correlated with the frequency of S&M sessions. MB individuals also had lower levels of CAT, and FOP correlated negatively with the frequency of MB and the number of body regions involved. Pleasure evoked during S&M sessions correlated positively with pain intensity and number of body regions involved. Pain in everyday life correlated negatively with MB activities. However, the emotional attitude to everyday pain was ambivalent: MB individuals perceived pain intensity and unpleasantness similar to the controls, but simultaneously gained pleasure from the pain.

CONCLUSIONS:

MB individuals exhibited pain hyposensitivity, presumably resulting from frequent engagement in MB. Alternatively, these subjects may have a predisposition which enables this engagement. Attitudes towards pain in MB individuals are complex. They appear to be context-related with pain experienced as pleasurable and rewarding during S&M sessions, and negative but still pleasurable in everyday life.

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PMID:25690315

COMPLEX REGIONAL PAIN**Unaffected side**

Eur J Pain. 2015 Feb 17. doi: 10.1002/ejp.668.

Intended and unintended (sensory-)motor coupling between the affected and unaffected upper limb in complex regional pain syndrome.

Bank PJ¹, Peper CE, Marinus J, van Hilten JJ, Beek PJ.
Author information

Abstract

BACKGROUND:

Motor dysfunction in complex regional pain syndrome (CRPS) has been associated with bilateral malfunction of sensory and motor circuits, which hints at abnormal coupling between the affected and the contralateral unaffected limb. In addition, clinical observations suggest that motor performance may depend on the (voluntary or automatic) context in which movements are executed. The present study aimed to examine the role of voluntary and automatic aspects of interlimb coupling in CRPS.

METHODS:

Twenty patients with unilateral chronic CRPS and 40 healthy controls performed a set of unimanual and bimanual motor tasks that differed in the degree to which intended bilateral planning, intended afference-based error correction and unintended reflex-like entrainment were involved.

RESULTS:

Stability of interlimb coordination was reduced in CRPS patients compared to controls, especially for tasks involving active control of the affected side. In CRPS patients, intended coupling between the hands (planning, error correction) was markedly impaired, whereas unintended coupling between the hands (entrainment) appeared normal.

CONCLUSIONS:

Impaired motor control of the affected limb interfered with bimanual coordination, in particular for tasks involving voluntary (intended) as opposed to automatic (unintended) interlimb coupling. Our findings suggest inappropriate functioning of higher order centres involved in motor control of the affected limb, probably due to pain-related processes and impaired processing of proprioceptive information. Motor function of the affected limb may benefit from intended synchronization with movements of the unaffected contralateral limb, suggesting that bilateral training may be useful in patients with unilateral CRPS.

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PMID:25690558

FIBROMYALGIA

NUTRITION/VITAMINS

PHARMACOLOGY

ELECTROTHERAPY

NEUROLOGICAL CONDITIONS