

## FMT FEBRUARY 2013 ABSTRACTS

### Neuropathic pain

Health Qual Life Outcomes. 2013 Jan 18;11(1):8. [Epub ahead of print]

#### **Are treatment benefits in neuropathic pain reflected in the self assessment of treatment questionnaire?**

Wiklund I, Holmstrom S, Stoker M, Wyrwich KW, Devine M.

#### **Abstract**

##### **ABSTRACT:**

Background/objective: The Self Assessment of Treatment (SAT) questionnaire was developed to reflect key patient reported outcomes of Neuropathic Pain (NP) treatments. This study aimed to understand how patients perceived the relevance and ease of understanding of the questions in the SAT and to recommend modifications based on patient and clinician interviews.

##### **METHODS:**

Semi-structured interviews were conducted with clinicians and NP patients to provide information regarding treatment attributes and the impact of pain. Patients were debriefed on the SAT, a 5-item scale evaluating pain, activity level, quality of life (QoL) and satisfaction with treatment (recommend treatment and undergo treatment again). The SAT has a recall period reflecting back to the start of treatment. The qualitative analysis software ATLAS.ti 5.0 was used to analyze patient transcripts. Changes to the SAT were integrated into the questionnaire for a second round of debriefing interviews.

##### **RESULTS:**

Three NP clinicians and 44 patients (20 painful diabetic neuropathy, 16 HIV-associated neuropathy and 8 post herpetic neuralgia) with a mean age of 60.3 (12.3) years and an even gender distribution were interviewed. Patient treatment experience included anticonvulsants (73%), antidepressants (34%), opioids (25%), and topical medications (41%). Pain descriptors and treatment attributes were similar across the three NP groups. Pain relief was judged the most important treatment attribute, followed by ability to undertake activities. Sleep improvement was another important attribute. Activity limitations and QOL were perceived as too broad and non-specific, and were split into 3 concepts each (activity limitations was split into self care, daily and physical activities and QOL was split into sleep, emotions, and social function). A 7-day recall period was introduced. The item stem and response options were made consistent, and a baseline and follow-up questionnaires were developed (except for the satisfaction items) to enable monitoring onset of treatment benefit and change over time.

##### **CONCLUSIONS:**

The content validity of the revised SAT was improved by the qualitative research, and NP treatment benefits are reflected in a more consistent fashion by the changes. Baseline and follow-up versions make it possible to perform assessments of change over time

## Chronic pain/neural changes

*Psychosom Med.* 2013 Jan 29. [Epub ahead of print]

### **Neural Correlates of Deficits in Pain-Related Affective Meaning Construction in Patients With Chronic Pain Disorder.**

Noll-Hussong M, Otti A, Wohlschlaeger AM, Zimmer C, Henningsen P, Lahmann C, Ronel J, Subic-Wrana C, Lane RD, Decety J, Guendel H.

#### **Source**

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#### **Abstract**

Objective Psychological and neural mechanisms of the affective dimension of pain are known to be disturbed in patients with chronic pain disorder. The aim of this functional magnetic resonance imaging study was to assess the neurofunctional and behavioral measures underlying the ability to construct pain-related affective meaning in a painful situation by comparing 21 clinically and psychometrically well-characterized patients with persistent non-nociceptive somatoform pain with 19 healthy controls.

Methods The functional magnetic resonance imaging task involved viewing pictures depicting human hands and feet in different painful and nonpainful situations. Participants were asked to estimate the perceived pain intensity. These data were correlated with behavioral measures of depression, alexithymia, and general cognitive and emotional empathy.

Results In a hypothesis-driven region-of-interest analysis, the healthy control group exhibited greater activation of the left perigenual anterior cingulate cortex than patients with pain (Montreal Neurological Institute coordinates (x y z) = -8 38 0; cluster extent = 54 voxels; T = 4.28; p = .006 corrected for multiple comparisons at cluster level). No group differences in the activation of the anterior insular cortex were found. Scores on self-assessment instruments (Beck Depression Inventory I, Interpersonal Reactivity Index, and 20-item Toronto Alexithymia Scale) did not influence neuroimaging results.

Conclusions Our results suggest that patients with chronic medically unexplained pain have an altered neural pain perception process owing to decreased activation of empathetic-affective networks, which we interpret as a deficit in pain-related affective meaning construction. These findings may lead to a more specific and detailed neurobiological understanding of the clinical impression of disturbed affect in patients with chronic pain disorder.

PMID: 23362496 [PubMed - as supplied by publisher]

## Pain/mental health

### **The association of pain severity and pain interference levels with abuse experiences and mental health symptoms among 300 mothers: baseline data analysis for a 7-year prospective study** □

**Issues in Mental Health Nursing, 02/05/2013 Clinical Article**

Symes L et al. –

Women who experience interpersonal violence are at increased risk for anxiety, depression, posttraumatic stress symptoms, and chronic pain and other physical disorders. Although the effects of mental health disorders on women's functioning and well-being are well established, less is known about the effects of pain. Authors examined participants' (n = 300 mothers) experiences of pain severity and pain interference. Higher levels of pain severity and pain interference were significantly associated with anxiety, PTSD, and depression symptoms. Mental health symptoms compounded by pain, may leave abused women less able to access resources or practice safety behaviors to protect themselves and their children.

Read more: <http://www.mdlinx.com/pain-management/news-article.cfm/4408387/mental-health#ixzz2K7HgJgie>

## Pain/performance

*J Behav Ther Exp Psychiatry*. 2013 Jun;44(2):240-7. doi: 10.1016/j.jbtep.2012.07.009. Epub 2012 Aug 10.

### **Goals, mood and performance duration on cognitive tasks during experimentally induced mechanical pressure pain.**

Karsdorp PA, Ranson S, Nijst S, Vlaeyen JW.

#### **Source**

Department of Clinical Psychological Science, Research Group Behavioral Medicine, Maastricht University, P.O. Box 616, 6200 MD Maastricht, The Netherlands; Department of Clinical Health Psychology, Utrecht University, P.O. Box 80140, 3508 TC Utrecht, The Netherlands. Electronic address: P.Karsdorp@maastrichtuniversity.nl.

#### **Abstract**

##### **BACKGROUND:**

The present study tested the hypothesis that the affective and motivational context influences performance duration in the presence of pain. More specifically, the Mood-as-Input model (MAI) proposes that the interaction between goals and moods affects performance duration. When people adopt achievement goals, negative, as opposed to positive moods, signal that not enough progress has been made leading to task continuance. Negative as opposed to positive moods lead to task disengagement when adopting hedonic goals.

##### **METHODS:**

Participants completed three open-ended cognitive tasks while being exposed to mechanical pressure pain to a finger. Before each task, mood (positive versus negative) and goal pursuit (hedonic versus achievement) were manipulated, with mood as between-subjects and goal pursuit as within-subjects factor. Performance duration was the dependent variable and goal order and performance duration during a no-goal task were the covariates.

##### **RESULTS:**

In line with common theories on goals and mood, but in contrast to the MAI model, only main effects were found of mood and goal pursuit. Participants showed greater performance duration in an achievement than in a hedonic goal context. Moreover, they showed greater performance duration in relative positive than negative moods.

##### **LIMITATIONS:**

Pain may have decreased participants' mood below a certain threshold, which in turn may have obscured the MAI interaction effect.

##### **CONCLUSIONS:**

This study demonstrates that affective and motivational factors influence performance duration in a pain context.

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## Knee/Patella/quality of life

PM R. 2013 Jan 29. pii: S1934-1482(12)01776-5. doi: 10.1016/j.pmrj.2012.12.007. [Epub ahead of print]

### **Different Relationships Between the Level of Patellofemoral Pain and Quality of Life in Professional and Amateur Athletes.**

Cheung RT, Zhang Z, Ngai SP.

#### **Source**

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#### **Abstract**

##### **BACKGROUND:**

Patellofemoral pain is a common orthopedic condition in the athletic population. Previous investigators focused on exploring the etiology and investigating the effectiveness of different treatment approaches for patellofemoral pain. However, the severity of symptoms and its corresponding impact on quality of life (QOL) in athletes at different elite levels have not been explored. Such information may help in formulating rehabilitation strategies targeting different levels of athletes.

##### **OBJECTIVE:**

To compare the perception of patellofemoral symptoms and its impact on QOL between professional and amateur athletes with patellofemoral pain.

##### **DESIGN:**

Cross-sectional study.

##### **PARTICIPANTS:**

Thirty-eight athletes with patellofemoral pain: 19 professional athletes from the Chinese national track and field team and 19 matched amateur participants recruited from a local track and field club.

##### **MAIN OUTCOME MEASURES:**

All participants completed the Chinese version of Kujala scale and Medical Outcomes Study 36-Item Short Form Health Survey (SF-36), which we used to quantify the severity of patellofemoral symptoms and QOL, respectively.

##### **RESULTS:**

Professional athletes demonstrated a significantly higher level of patellofemoral symptoms ( $P < .001$ ) and lower physical functioning subscore of SF-36 ( $P < .014$ ) than did the amateur athletes. We also found a trend of a lower mental health subscore of SF-36 in professional athletes than in the amateurs ( $P = .07$ ). The Kujala scale score was positively correlated with the subscore of "physical functioning" in both professional athletes ( $r(s) = 0.688$ ,  $P = .001$ ) and amateurs ( $r(s) = 0.751$ ,  $P < .001$ ). We also observed a trend of correlation between the subscore in the mental health domain and the severity of patellofemoral symptoms in professional athletes.

##### **CONCLUSIONS:**

Athletes at different elite levels might have varied perceptions of patellofemoral pain and the corresponding impact on physical aspects of quality of life. The results of this study may highlight the necessity of addressing psychosocial factors when formulating rehabilitation strategies in the athletic population with patellofemoral pain.

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## Alexithymia/chronic pain

Gen Hosp Psychiatry. 2013 Jan 17. pii: S0163-8343(12)00345-3. doi: 10.1016/j.genhosppsych.2012.11.011. [Epub ahead of print]

### Alexithymia and depression in a chronic pain patient sample.

Saariaho AS, Saariaho TH, Mattila AK, Karukivi MR, Joukamaa MI.

#### Source

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#### Abstract

##### OBJECTIVE:

The aim of the present study was to assess the prevalence of alexithymia in a sample of general chronic pain patients, to explore possible differences in depression and pain variables between alexithymic and nonalexithymic chronic pain patients and to analyze if depression is a mediator between alexithymia and pain disability.

##### METHODS:

Two hundred and seventy-one patients making their first visit to a pain clinic completed the study questionnaire including various pain measures, the Beck Depression Inventory-II (BDI-II) and the 20-item Toronto Alexithymia Scale (TAS-20). The sample was dichotomized to alexithymic and nonalexithymic groups. The means of the study variables were compared between the groups. The correlation analysis of the variables was carried out separately in both groups. Path analysis was done to ascertain the mediation effect of BDI-II between the TAS-20 and pain disability.

##### RESULTS:

Every fifth chronic pain patient was alexithymic. The BDI-II and pain variable scores were significantly higher in the alexithymic group than in the nonalexithymic group. Pain variables were not associated with alexithymia when BDI-II was controlled for. BDI-II worked as a full mediator between TAS-20 and pain disability.

##### CONCLUSION:

The alexithymic patient group was more morbid than the nonalexithymic group. The results suggest that depression is the main factor in pain conditions of alexithymic chronic pain patients. The authors recommend screening and treatment of depression in alexithymic chronic pain patients.

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**Alexithymia** (pron.: /,eɪlɛksəˈθaɪmiə/) is a personality construct characterized by the sub-clinical inability to identify and describe emotions in the self.[1] The core characteristics of alexithymia are marked dysfunction in emotional awareness, social attachment, and interpersonal relating.[2] Furthermore, individuals suffering from alexithymia also have difficulty in distinguishing and appreciating the emotions of others, which is thought to lead to unempathic and ineffective emotional responding.[2] Alexithymia is prevalent in approximately 10% of the general population and is known to be comorbid with a number of psychiatric conditions.[3] The term alexithymia was coined by psychotherapist Peter Sifneos in 1973.[4][5] The word comes from the Ancient Greek words ἀλέξω (*alexo*, "repel") and θυμός (*thumos*, "soul, as the seat of emotion, feeling, and thought"), literally meaning "pushing away emotions".

## Hypnosis/pain

*J Craniomaxillofac Surg.* 2012 Dec 14. pii: S1010-5182(12)00224-7. doi: 10.1016/j.jcms.2012.10.009. [Epub ahead of print]

### **Effect of hypnosis on induction of local anaesthesia, pain perception, control of haemorrhage and anxiety during extraction of third molars: A case-control study.**

Abdeshahi SK, Hashemipour MA, Mesgarzadeh V, Shahidi Payam A, Halaj Monfared A.

#### **INTRODUCTION:**

Systemic conditions are considered limiting factors for surgical procedures under local anaesthesia in the oral cavity. All the pharmacological methods to control pain in patients have some disadvantages, such as side effects and extra costs for rehabilitation. Therefore, in such cases alternative treatment modalities are considered, such as hypnosis in dentistry. The aim of the present study was to evaluate the effect of hypnosis on haemorrhage, pain and anxiety during the extraction of third molars.

#### **MATERIALS AND METHODS:**

In this case-control study, 24 female and male volunteers were included. The subjects had been referred to the Department of Oral and Maxillofacial Surgery, Kerman University of Medical Sciences, for extraction of third molars. Demographic data for all the subjects were recorded. Patients with chronic medical conditions were excluded. The patients were used as their own controls, with the third molars on one side being removed under hypnosis and on the opposite side under local anaesthetic. Hypnosis was induced by one of the two methods, either fixing the gaze on one point or Chiasson's technique; both these methods are appropriate for patients in the dental chair. The Spielberger State-Trait Anxiety Inventory was used to determine patient anxiety levels before hypnosis and anaesthesia. Pain was scored using VAS (visual analogue scale). After surgery the patient was asked to bite on a sterile gauze pad over the surgical site for 30 min when haemorrhage from the area was evaluated. If there was no haemorrhage the patient was discharged. If haemorrhage persisted, the gauze pad was left in place for another 30 min and the area was re-evaluated. Any active oozing from the area after 30 min was considered haemorrhage. Haemorrhage, anxiety and pain were compared between the two groups. Data was analyzed using the t-test, McNemar's test and Wilcoxon's signed rank test using SPSS 18 statistical software.

#### **RESULTS:**

Twenty-four patients were evaluated; there were 14 males (58.3%) and 10 females (41.7%). The mean age of the subjects was  $24.1 \pm 2.7$  years (age range = 18-30 years). A total of 48 third molars were extracted. In each patient, one-third molar was extracted under hypnosis and the other under local anaesthesia. All the patients were in the ASA 1 category (normal) with no significant medical history. Of the subjects who underwent hypnosis, only two subjects (8.3%) reported pain after induction of hypnosis. In the local anaesthetic group, 8 subjects (33.3%) reported pain. There was a significant difference between the two groups. The results of the study showed that patients in the hypnosis group had less pain during the first few hours post-operatively. Anxiety scores in the two groups were very close to each other and no statistically significant differences were observed in general and when each person was compared with himself or herself. Pain intensity in the two groups at 5- and 12-h post-operatively exhibited significant differences. In the hypnosis group, 10 patients (41.7%) took analgesic medication; in the local anaesthesia group, 22 patients (91.7%) took the analgesic medication ( $P = 0.0001$ ). In other words, patients reported less pain when they were under hypnosis.

#### **CONCLUSION:**

The results of the study showed that hypnosis can effectively reduce anxiety, haemorrhage and pain. More studies are necessary to collect data on the effect of hypnosis on oral and maxillofacial surgeries.

## Pelvic Pain

**Continence Coach: Pelvic Floor Pain Syndrome in Chronic Pelvic Pain** *Full Text* □  
Ostomy Wound Management, 02/08/2013 Review Article

Muller N –

In the genitourinary world, chronic pelvic pain (CPP) is one of the most complex and difficult conditions to diagnose and treat. The pain is rarely limited to one organ; it often involves multiple systems and is further complicated by the subjectivity of pain and individual variation in pain tolerance. Definitions of the condition vary. The American College of Obstetricians and Gynecologists<sup>1</sup> defines CPP as “noncyclic pain of at least 6 months’ duration that localizes to the anatomic pelvis, lumbosacral back, buttocks, or anterior abdominal wall at or below the umbilicus and that is severe enough to cause functional disability or lead to medical care.” Although CPP is typically attributed to a pathologic process in peripheral (somatic or visceral) as opposed to central systems of the body, it is not known whether some permanent central nervous system dysfunction or psychogenic mechanism is at work. This is especially true in cases of trauma to the pelvic region and with respect to the body’s cumulative inflammatory response. More research about causal factors is needed to improve diagnostic accuracy and thus treatment.<sup>2</sup> Today’s clinician must approach patient symptoms via differential diagnosis, systematically comparing clinical findings. CPP is believed to be more common than is generally recognized or documented. A UK study<sup>3</sup> of nearly 300,000 women ages 12 to 70 years found a prevalence of 38.3 per 1,000. However, pain due to chronic inflammatory bowel diseases or pain that occurred only during menstruation or sexual intercourse was excluded, so many think these findings are greatly underestimated. A US Gallup® study<sup>4</sup> found 16% of women ages 18 to 50 years self-reported CPP. Several other surveys estimate much higher prevalence but do not constitute level-A evidence. About one fifth of diagnoses are considered gynecological; cyclical endometriosis is the number one causal disorder or associated condition.<sup>5</sup>

Pelvic floor pain syndrome, a musculoskeletal system disorder also referred to as *pelvic tension myalgia* or *levator ani syndrome*, is a noncyclical condition. It is described as spasms induced by stressed pelvic floor muscles (the levator ani muscles that support pelvic viscera, the coccygeus muscle that aids in raising and supporting the pelvic floor, and the piriformis muscle that rotates the thigh laterally). Symptoms may include CPP, including pain in the perineum, vagina, or buttocks and down the back of the leg not unlike sciatica; dyspareunia; pain during intercourse; inability to fully empty the bowels; and urinary frequency with urgency. Causes include past trauma such as rape, interstitial cystitis, chronic constipation, vulvodynia, untreated urinary tract infections, and trauma and damage to the pelvic floor muscles during labor and vaginal delivery. The syndrome often is accompanied by irritable bowel syndrome, endometriosis, and vulvar vestibulitis. Although most patients are women, clinicians should remember men have pelvic floor muscles and therefore may experience this syndrome (and thus CPP) for nonobstetrical reasons.

Pelvic floor pain syndrome treatment involves behavioral therapy techniques and technologies. A specially trained physical therapist typically addresses neuromuscular re-education of the pelvic floor muscles using computerized feedback to reduce the spasms and pain, not unlike bladder retraining used to address classic symptoms of overactive bladder, including urgency and frequency. Transcutaneous electrical nerve stimulation may be used, as well as manual therapies using a lubricant and dilator to stretch the stressed, tense muscles. A patient’s sexual partner may be invited to assist in therapy. On her own, a patient is encouraged to perform breathing exercises to relax and perform pelvic floor muscle exercises at home to supplement clinic protocol.

## CRP/injection

Neuromodulation. 2013 Jan 30. doi: 10.1111/ner.12024. [Epub ahead of print]

### **Spinal Cord Stimulation for Complex Regional Pain Syndrome Type I: A Prospective Cohort Study With Long-Term Follow-Up.**

Geurts JW, Smits H, Kemler MA, Brunner F, Kessels AG, van Kleef M.

#### **Source**

Department of Anesthesiology and Pain Management, Maastricht University Medical Centre, Maastricht, the Netherlands.

#### **Abstract**

##### **OBJECTIVES:**

Spinal cord stimulation (SCS) is an effective treatment for intractable complex regional pain syndrome type I pain. Long-term data are scarce on effectiveness, degree of pain relief, predictors, and complications.

##### **MATERIALS AND METHODS:**

From 1997 to 2008, 84 consecutive patients who received an implanted SCS system after positive test stimulation were included in the prospective study. Treatment effectiveness was assessed annually as measured by mean visual analog scale pain scores and with the Patients Global Impression of Change scale. Treatment success was defined as at least 30% mean pain relief at end point and treatment failure as explantation of the system. A Cox regression determined if baseline factors were associated with both these outcomes.

##### **RESULTS:**

During 11 years, 41% (95% CI: 27-55) of the patients experience at least 30% pain relief at assessment end point. During 12 years of follow-up 63% (95%CI: 41-85) of the implanted patients still use their SCS device at measured end point. Pain relief of at least 50% one week following test stimulation is associated with a higher probability of long-term treatment success. In 51 patients, 122 reinterventions were performed over 12 years; 13 were due to complications, 44 to battery changes, and 65 reinterventions were equipment related.

##### **CONCLUSION:**

SCS provides an effective long-term pain treatment for 63% (95%CI: 41-85) of implanted patients. Forty-one percent (95%CI: 27-55) of SCS treated patients have at least 30% pain reduction at measurement end point. The number of reinterventions after implantation due to equipment-related problems, battery changes, and complications is 122 over 12 years of follow-up. Sixty-one percent (N = 51) of the patients had at least one reintervention. Mean pain relief of at least 50% (visual analog scale) one week after the test stimulation is associated with long-term treatment success.

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## Manipulation/Cavitation's

*BMC Musculoskelet Disord.* 2013 Jan 15;14:24. doi: 10.1186/1471-2474-14-24.

### **Bilateral and multiple cavitation sounds during upper cervical thrust manipulation.**

Dunning J, Mourad F, Barbero M, Leoni D, Cescon C, Butts R.

#### **Source**

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jamesdunning@hotmail.com.

#### **Abstract**

ABSTRACT:

#### **BACKGROUND:**

The popping produced during high-velocity, low-amplitude (HVLA) thrust manipulation is a common sound; however to our knowledge, no study has previously investigated the location of cavitation sounds during manipulation of the upper cervical spine. The primary purpose was to determine which side of the spine cavitates during C1-2 rotatory HVLA thrust manipulation. Secondary aims were to calculate the average number of pops, the duration of upper cervical thrust manipulation, and the duration of a single cavitation.

#### **METHODS:**

Nineteen asymptomatic participants received two upper cervical thrust manipulations targeting the right and left C1-2 articulation, respectively. Skin mounted microphones were secured bilaterally over the transverse process of C1, and sound wave signals were recorded. Identification of the side, duration, and number of popping sounds were determined by simultaneous analysis of spectrograms with audio feedback using custom software developed in Matlab.

#### **RESULTS:**

Bilateral popping sounds were detected in 34 (91.9%) of 37 manipulations while unilateral popping sounds were detected in just 3 (8.1%) manipulations; that is, cavitation was significantly ( $P < 0.001$ ) more likely to occur bilaterally than unilaterally. Of the 132 total cavitation's, 72 occurred ipsilateral and 60 occurred contralateral to the targeted C1-2 articulation. In other words, cavitation was no more likely to occur on the ipsilateral than the contralateral side ( $P = 0.294$ ). The mean number of pops per C1-2 rotatory HVLA thrust manipulation was 3.57 (95% CI: 3.19, 3.94) and the mean number of pops per subject following both right and left C1-2 thrust manipulations was 6.95 (95% CI: 6.11, 7.79). The mean duration of a single audible pop was 5.66 ms (95% CI: 5.36, 5.96) and the mean duration of a single manipulation was 96.95 ms (95% CI: 57.20, 136.71).

#### **CONCLUSIONS:**

Cavitation was significantly more likely to occur bilaterally than unilaterally during upper cervical HVLA thrust manipulation. Most subjects produced 3-4 pops during a single rotatory HVLA thrust manipulation targeting the right or left C1-2 articulation; therefore, practitioners of spinal manipulative therapy should expect multiple popping sounds when performing upper cervical thrust manipulation to the atlanto-axial joint. Furthermore, the traditional manual therapy approach of targeting a single ipsilateral or contralateral facet joint in the upper cervical spine may not be realistic.

PMID: 23320608 [PubMed - in process]

## C spine/yoga

Clin J Pain. 2013 Mar;29(3):216-23. doi: 10.1097/AJP.0b013e318251026c.

### **Randomized-controlled Trial Comparing Yoga and Home-based Exercise for Chronic Neck Pain.**

Cramer H, Lauche R, Hohmann C, Lütke R, Haller H, Michalsen A, Langhorst J, Dobos G.

#### **Source**

\*Chair of Complementary and Integrative Medicine, University of Duisburg-Essen †Karl and Veronica Carstens Foundation, Essen ‡Immanuel Hospital Berlin, Department of Internal and Complementary Medicine §Institute of Social Medicine, Epidemiology and Health Economics, Charité University Medical Centre, Berlin, Germany.

#### **Abstract**

##### **OBJECTIVES:**

: Chronic neck pain is a significant public health problem with only very few evidence-based treatment options. There is growing evidence for the effectiveness of yoga for relieving musculoskeletal disorders. The aim of this study was to evaluate the effect of Iyengar yoga compared with exercise on chronic nonspecific neck pain.

##### **METHODS:**

: Patients were randomly assigned to either yoga or exercise. The yoga group attended a 9-week yoga course and the exercise group received a self-care manual on home-based exercises for neck pain relief. The main outcome measure was the present neck pain intensity (100 mm visual analog scale). Secondary outcome measures included functional disability (Neck Disability Index), pain at motion (visual analog scale), health-related quality of life (Short Form-36 questionnaire), cervical range of motion, proprioceptive acuity, and pressure pain threshold.

##### **RESULTS:**

: Fifty-one patients (mean age 47.8 y ; 82.4% female) were randomized to yoga (n=25) and exercise (n=26) intervention. After the study period, patients in the yoga group reported significantly less neck pain intensity compared with the exercise group [mean difference: -13.9 mm (95% CI, -26.4 to -1.4), P=0.03]. The yoga group reported less disability and better mental quality of life. Range of motion and proprioceptive acuity were improved and the pressure pain threshold was elevated in the yoga group.

##### **DISCUSSION:**

: Yoga was more effective in relieving chronic nonspecific neck pain than a home-based exercise program. Yoga reduced neck pain intensity and disability and improved health-related quality of life. Moreover, yoga seems to influence the functional status of neck muscles, as indicated by improvement of physiological measures of neck pain.

PMID: 23249655 [PubMed - in process]

## Hip/Knee/OA/manual therapy

*Osteoarthritis Cartilage*. 2013 Jan 8. pii: S1063-4584(13)00003-4. doi: 10.1016/j.joca.2012.12.014. [Epub ahead of print]

### **Manual therapy, exercise therapy, or both, in addition to usual care, for osteoarthritis of the hip or knee: a randomized controlled trial. 1: clinical effectiveness.**

Abbott JH, Robertson MC, Chapple C, Pinto D, Wright AA, Leon de la Barra S, Baxter GD, Theis JC, Campbell AJ; On behalf of the MOA Trial team.

#### **Source**

Centre for Musculoskeletal Outcomes Research, Department of Surgical Sciences, Dunedin School of Medicine, University of Otago, Dunedin, New Zealand. Electronic address: haxby.abbott@mac.com.

#### **Abstract**

##### **OBJECTIVE:**

To evaluate the clinical effectiveness of manual physiotherapy and/or exercise physiotherapy in addition to usual care for patients with osteoarthritis (OA) of the hip or knee.

##### **DESIGN:**

In this 2 × 2 factorial randomized controlled trial, 206 adults (mean age 66 years) who met the American College of Rheumatology criteria for hip or knee OA were randomly allocated to receive manual physiotherapy (n = 54), multi-modal exercise physiotherapy (n = 51), combined exercise and manual physiotherapy (n = 50), or no trial physiotherapy (n = 51). The primary outcome was change in the Western Ontario and McMaster osteoarthritis index (WOMAC) after 1 year. Secondary outcomes included physical performance tests. Outcome assessors were blinded to group allocation.

##### **RESULTS:**

Of 206 participants recruited, 193 (93.2%) were retained at follow-up. Mean (SD) baseline WOMAC score was 100.8 (53.8) on a scale of 0-240. Intention to treat analysis showed adjusted reductions in WOMAC scores at 1 year compared with the usual care group of 28.5 (95% confidence interval (CI) 9.2-47.8) for usual care plus manual therapy, 16.4 (-3.2 to 35.9) for usual care plus exercise therapy, and 14.5 (-5.2 to 34.1) for usual care plus combined exercise therapy and manual therapy. There was an antagonistic interaction between exercise therapy and manual therapy (P = 0.027). Physical performance test outcomes favoured the exercise therapy group.

##### **CONCLUSIONS:**

Manual physiotherapy provided benefits over usual care, that were sustained to 1 year. Exercise physiotherapy also provided physical performance benefits over usual care. There was no added benefit from a combination of the two therapies.

##### **TRIAL REGISTRATION NUMBER:**

Australian New Zealand Clinical Trials Registry ACTRN12608000130369.

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## TOS/SC/AC

Physiother Theory Pract. 2013 Jan 23. [Epub ahead of print]

### **Diagnosis and treatment of a patient with bilateral thoracic outlet syndrome secondary to anterior subluxation of bilateral sternoclavicular joints: A case report.**

Nichols D, Seiger C.

#### **Source**

Department of Physical and Occupational Therapy , Idaho State University , Pocatello, ID , USA.

#### **Abstract**

Thoracic outlet syndrome may result from a posterior sternoclavicular (SC) joint subluxation, or an anterior SC joint subluxation after surgical fixation. This case report presents the physical therapy management of a patient with bilateral thoracic outlet syndrome (TOS) secondary to bilateral idiopathic anterior SC joint subluxation. A 16-year-old female presented with a 2-year history of numbness, tingling, and coldness in bilateral upper extremities, and intermittent headaches with occasional vision loss. Ipsilateral upper extremity symptoms were reproduced with cervical rotation and shoulder flexion and abduction from 90° to end of the range. All TOS tests were positive. Passive horizontal abduction, through the plane of scaption, produced anterior subluxation of the ipsilateral SC joint. Sustained posterior glides to the medial clavicle relieved all symptoms during shoulder flexion and the Adson's test. Interventions consisted of manual therapy, therapeutic exercise, and the trial of two orthoses.

After 12 treatment sessions, the patient's symptoms resolved and she improved by 10 points on the Upper Extremity Functional Index. She had no reproduction of symptoms with the thoracic outlet special tests. She maintained a static hold for 90 sec at 90° shoulder flexion, 90° shoulder abduction, and full shoulder flexion without symptoms. The outcomes describe a successful intervention for a patient with bilateral TOS secondary to idiopathic bilateral anterior SC joint subluxation.

This case suggests that SC joint dysfunction should be considered as a cause of TOS and should be screened during the initial examination.

PMID: 23343034 [PubMed - as supplied by publisher]

## Migraines/shunts

Neurol Sci. 2013 Feb;34(2):205-8. doi: 10.1007/s10072-012-0986-0. Epub 2012 Feb 25.

### **Prevalence of cardiac right left shunts in migraine: a population-based case-control study.**

Küper M, Rabe K, Holle D, Savidou I, Dommès P, Frings M, Diener HC, Katsarava Z.

#### **Source**

Department of Neurology and Headache Center, University of Duisburg-Essen, Hufelandstr. 55, 45122, Essen, Germany, Michael.Kueper@uni-due.de.

#### **Abstract**

We aimed to investigate the prevalence of cardiac right left shunts (RLS) in population-based samples of subjects with migraine with aura (n = 42), migraine without aura (n = 44) and controls without headache (n = 41). Cardiac RLS was assessed with transcranial Doppler sonography with intravenous injection of saline. Prevalence of RLS was highest in migraineurs with aura (45.2%) compared to migraineurs without aura (34.1%) and controls (41.5%). Permanent as opposed to latent RLS was more common among patients with migraine with aura (40.5%) than in patients with migraine without aura (23.3%) or controls (24.4%). Differences did not reach statistical significance between the three groups (p = 0.564 for RLS prevalence, p = 0.349 for prevalence of permanent shunts).

Our data implicate a trend towards higher prevalence of RLS with larger shunts in subjects with migraine with aura.

PMID: 22367223 [PubMed - in process]

## LBP/depression

Prim Health Care Res Dev. 2013 Feb 6:1-10. [Epub ahead of print]

### **Depression and gender differences among younger immigrant patients on sick leave due to chronic back pain: a primary care study.**

Taloyan M, Löfvander M.

#### **Source**

1 Center for Family and Community Medicine, Department of Neurobiology, Caring Sciences and Society, Karolinska Institutet, Stockholm, Sweden.

#### **Abstract**

**BACKGROUND:** Mental ill-health and pain are major causes for disability compensation in female adults in Sweden. **Aims** The aims of this study were to (1) analyse gender differences in the prevalence of depression among immigrant patients with chronic back pain and (2) explore whether factors such as age, marital status, educational level, religious faith, number of children and number of diagnosed pain sites could explain these differences.

**METHODS:** The study sample consisted of 245 sick-listed primary care patients in consecutive order aged 18 through 45 years with a median duration of sick leave of 10 months for back pain and participating in a rehabilitation programme. Explanatory variables included physicians' diagnosed pain sites, age, marital status, education, number of children and religious affiliation. Predictive factors for depression were analysed using logistic regression.

**Findings** The women differed significantly from the men in three aspects: they were less educated, had more children and had more multiple pain sites, that is, 68% versus 45%. In the age-adjusted model, women were twice as likely to have depression (odds ratio (OR) 2.1). Regardless the gender, those with intermediate education of 9-11 years had the lowest odds of outcome compared with those with <0-8 years and ≥12 years education. Finally, after adjusting for all explanatory variables, the ORs of depression for women decreased to a non-significant level (OR 1.8; 95% confidence interval (CI) 0.94-3.43). Furthermore, regardless of the gender, those with multiple pain sites had twice higher odds (OR 2.04; 95% CI 1.11-3.74) of depression than those with fewer pain sites.

**Conclusion** Gender differences in odds of depression in our study could be explained by a higher prevalence of diagnosed multiple pain sites in women. This calls for tailor-made treatments that focus on the pain relief needs of immigrant women with low education and chronic back pain.

PMID: 23388495 [PubMed - as supplied by publisher]

## Knee/Patellofemoral

Med Sci Sports Exerc. 2013 Jan 30. [Epub ahead of print]

### **Effect of Patellofemoral Pain on Strength and Mechanics following an Exhaustive Run.**

Bazett-Jones DM, Cobb SC, Huddleston WE, O'Connor KM, Armstrong BS, Earl-Boehm JE.

#### **Source**

1Carroll University, Department of Movement Sciences, Waukesha, WI; 2University of Wisconsin-Milwaukee, Department of Kinesiology, Milwaukee, WI; 3University of Wisconsin-Milwaukee, Department of Engineering, Milwaukee, WI.

#### **Abstract**

##### **PURPOSE:**

To investigate the effects of an exhaustive run on trunk and lower extremity strength and mechanics in patients with and without patellofemoral pain (PFP). We hypothesized that strength would decrease and mechanics would change following the exhaustive run.

##### **METHODS:**

Nineteen persons with PFP and 19 controls participated (10 men, 9 women per group). Lower extremity and trunk mechanics during running, body-mass normalized strength, and pain assessments before and after an exhaustive run were quantified. A repeated measures ANOVA was utilized to assess group differences and exhaustion-related changes ( $p < 0.05$ ) with t-test posthoc analyses performed when significant interactions were identified ( $p < 0.0125$ ).

##### **RESULTS:**

Pain significantly increased with the exhaustive run in the PFP group ( $p = 0.021$ ). Hip strength was reduced following the exhaustive run, more so in those with PFP (abduction-pre:  $0.384 \pm 0.08$ , post:  $0.314 \pm 0.08$ ,  $p < 0.001$ ; external rotation-pre:  $0.113 \pm 0.02$ , post:  $0.090 \pm 0.02$ ,  $p < 0.001$ ). Persons with PFP also demonstrated increased knee flexion (pre:  $41.6^\circ \pm 5.5^\circ$ , post:  $46.9^\circ \pm 7.5^\circ$ ,  $p < 0.001$ ), hip flexion (pre:  $30.4^\circ \pm 6.8^\circ$ , post:  $42.5^\circ \pm 9.7^\circ$ ,  $p < 0.001$ ), and anterior pelvic tilt (pre:  $7.2^\circ \pm 5.1^\circ$ , post:  $13.3^\circ \pm 6.7^\circ$ ,  $p = 0.001$ ) following the exhaustive run compared to controls. Trunk flexion increased in both PFP (pre:  $13.09^\circ \pm 6.2$ , post:  $16.31^\circ \pm 5.3^\circ$ ,  $p < 0.001$ ) and control (pre:  $13.93^\circ \pm 4.7$ , post:  $15.99^\circ \pm 5.9^\circ$ ,  $p < 0.001$ ) groups. Hip extension (pre:  $-2.09 \pm 0.49$  Nm·kg, post:  $-2.49 \pm 0.54$  Nm·kg,  $p = 0.002$ ) moments increased only in persons with PFP.

##### **CONCLUSIONS:**

Exhaustive running results in reduced hip strength in persons with PFP; however, this did not result in changes to hip internal rotation or adduction kinematics. Kinematic and kinetic changes following the exhaustive run are more indicative of compensatory changes to reduce pain. Increasing trunk flexion during running might provide pain relief during running; however, reducing anterior pelvic tilt may also warrant attention during treatment.

PMID: 23377834 [PubMed - as supplied by publisher]

## Neuropathic pain

Exp Neurol. 2013 Feb;240:205-18. doi: 10.1016/j.expneurol.2012.11.013. Epub 2012 Nov 21.  
**Selectively reducing cytokine/chemokine expressing macrophages in injured nerves impairs the development of neuropathic pain.**

Echeverry S, Wu Y, Zhang J.

### Source

The Alan Edwards Centre for Research on Pain, McGill University, 740, Dr. Penfield Ave. Montreal, Quebec, Canada H3A 0G1; Department of Neurology and Neurosurgery, Faculty of Medicine, McGill University, Canada.

### Abstract

It has been well documented that Wallerian degeneration following nerve injury is associated with inflammatory reaction. Such local inflammation contributes to the development of chronic neuropathic pain. Macrophages are one of the major players in the process of either or both degeneration/regeneration and hypersensitivity. To elucidate whether cellular and molecular changes involved in Wallerian degeneration are simultaneously involved in the induction and maintenance of neuropathic pain, and to identify which subpopulation of macrophages can be responsible for the chronic pain following nerve injury, we investigated the peripheral effects of an anti-inflammatory cytokine TGF- $\beta$ 1 in neuropathic pain. Rat sciatic nerves were partially ligated. Macrophages accumulated in injured sciatic nerves displayed heterogeneity with two distinctive functional phenotypes. While MAC1(+) macrophages were able to express IL-6 and MIP-1 $\alpha$ , ED1(+) macrophages were always devoid of signals of inflammatory mediators. Intraneural injection of TGF- $\beta$ 1 resulted in delayed and attenuated neuropathic pain behaviour. In parallel, we observed that exposure of the nerve to TGF- $\beta$ 1 dramatically reduced the number of MAC1(+) macrophages. Consequently, the expression of IL-6 and MIP-1 $\alpha$  decreased in the injured nerve. Very interestingly, local TGF- $\beta$ 1 treatment had no effect on the population of ED1(+) phagocytic macrophages. In addition to its effect on selective subsets of macrophages, TGF- $\beta$ 1 also reduced T-lymphocyte infiltration.

Our results revealed the critical roles of cytokine/chemokine secreting MAC1(+) macrophages in the development of neuropathic pain, and highlighted the needs and benefits of targeting specific populations of macrophages in alleviating neuropathic pain without delaying nerve regeneration.

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PMID: 23178578 [PubMed - in process]

## Migraine/triggers

Eur J Neurol. 2013 Jan 28. doi: 10.1111/ene.12039. [Epub ahead of print]

### **Triggers of migraine and tension-type headache in China: a clinic-based survey.**

Wang J, Huang Q, Li N, Tan G, Chen L, Zhou J.

#### **Source**

Department of Neurology, The First Affiliated Hospital of Chongqing Medical University, Chongqing, China.

#### **Abstract**

##### **BACKGROUND AND PURPOSE:**

Identification of the trigger factors of headache could be an important aspect of preventive management, but the characteristics of primary headache triggers in China are unknown. This study was performed to estimate the frequencies of the putative headache triggers, which are endorsed by patients with migraine and tension-type headache (TTH).

##### **METHODS:**

From July 2011 to December 2011, a cross-sectional survey was conducted in the neurological clinic of a tertiary care hospital in Chongqing. All consecutive patients with the chief complaint of headache were interviewed by a board-certified headache specialist. The diagnoses were made according to International Classification of Headache Disorders - 2nd edition. Patients with migraine and TTH were recruited.

##### **RESULTS:**

The number of investigated patients was 1219, of whom 394 were migraine and 344 were TTH; and 80.2% migraineurs and 67.4% TTH patients reported trigger factors. The most common triggers for both migraine and TTH were sleep disturbance, negative affect and sunlight. Menstrual cycle (OR 3.6, 95%CI 1.2, 11.2), change of the weather (OR 3.1, 95%CI 1.9, 4.8), noise (OR 2.2, 95%CI 1.1, 4.4) and alcohol (OR 1.8, 95%CI 0.7, 1.8) were more associated with migraineurs. Negative affect was more associated with TTH (OR 2.0, 95%CI 1.3, 2.9).

##### **CONCLUSIONS:**

Trigger factors were frequent among both migraine and TTH patients. Avoidance of all headache triggers is impractical. Learning to cope with triggers is important to headache prevention.

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PMID: 23356519 [PubMed - as supplied by publisher]

## LBP/Employment

Int Arch Occup Environ Health. 2013 Feb;86(2):119-37. doi: 10.1007/s00420-012-0804-2. Epub 2012 Aug 9.

### **The influence of employment social support for risk and prognosis in nonspecific back pain: a systematic review and critical synthesis.**

Campbell P, Wynne-Jones G, Muller S, Dunn KM.

#### **Source**

Arthritis Research UK Primary Care Centre, Primary Care Sciences, Keele University, Keele, Staffordshire, ST5 5BG, UK, p.campbell@cphc.keele.ac.uk.

#### **Abstract**

##### **PURPOSE:**

To examine the influence of employment social support type (e.g. co-worker, supervisor, general support) on risk of occurrence of low back pain, and prognosis (e.g. recovery, return to work status) for those who have low back pain.

##### **METHODS:**

Systematic search of seven databases (MEDLINE, Embase, PsychINFO, CINAHL, IBSS, AMED and BNI) for prospective or case-control studies reporting findings on employment social support in populations with nonspecific back pain. Data extraction and quality assessment were carried out on included studies. A systematic critical synthesis was carried out on extracted data.

##### **RESULTS:**

Thirty-two articles were included that describe 46 findings on the effect of employment social support on risk of and prognosis of back pain. Findings show that there is no effect of co-worker, supervisor or general work support on risk of new onset back pain. Weak effects of employment support were found for recovery and return to work outcomes; greater levels of co-worker support and general work support were found to be associated with less time to recovery or return to work.

##### **CONCLUSIONS:**

The evidence suggests that the association between employment support and prognosis may be subject to influence from wider concepts related to the employment context. This review discusses these wider issues and offers directions for future research.

PMID: 22875173 [PubMed - in process] PMCID: PMC3555241

## Migraines

### **Peripheral endothelial function and arterial stiffness in patients with chronic migraine: a case-control study** *Full Text*

**The Journal of Headache and Pain, 02/14/2013 Clinical Article**

Jimenez Caballero PE et al. –

The aim of the present study was to test the hypothesis that chronic migraine is associated with ultrasonographic endothelial dysfunction and increase in arterial stiffness. These parameters were assessed using a novel plethysmograph by peripheral arterial tonometry. Patients with chronic migraine have ultrasonographic endothelial dysfunction and increase in the arterial stiffness. An improved understanding of the role in the endothelial system of migraine may provide a basis for preventive drugs in migraine and restore the endothelial function.

#### **Methods**

- Twenty-one patients with chronic migraine and twenty-one healthy controls matched by sex and gender were recruited.
- Measurement of the ultrasonographic endothelial function and augmentation index were made according to manufacturer's protocol.

#### **Results**

- The mean of patient's peripheral arterial tonometry ratios was  $1.93 \pm 0.39$  and for healthy control  $2.21 \pm 0.44$  ( $p=0.040$ ).
- The median of patients' augmentation index was -6,0 (IQR: 6.5 to -15) in healthy controls and 9.0 (IQR:4 to 12) in chronic migraine, ( $p=0.002$ ).

Read more: <http://www.mdlinx.com/pain-management/news-article.cfm/4448919/migraine-disorders-chronic-migraine-endothelial-dysfunction#ixzz2KvDyIB9G>

## Pain/muscle bias therapy

*J Pain Res.* 2013;6:7-22. doi: 10.2147/JPR.S37272. Epub 2013 Feb 4.

### **Effect of a single session of muscle-biased therapy on pain sensitivity: a systematic review and meta-analysis of randomized controlled trials.**

Gay CW, Alappattu MJ, Coronado RA, Horn ME, Bishop MD.

#### **Source**

Rehabilitation Science Doctoral Program, College of Public Health and Health Professions, Gainesville, FL.

#### **Abstract**

##### **BACKGROUND:**

Muscle-biased therapies (MBT) are commonly used to treat pain, yet several reviews suggest evidence for the clinical effectiveness of these therapies is lacking. Inadequate treatment parameters have been suggested to account for inconsistent effects across studies. Pain sensitivity may serve as an intermediate physiologic endpoint helping to establish optimal MBT treatment parameters. The purpose of this review was to summarize the current literature investigating the short-term effect of a single dose of MBT on pain sensitivity in both healthy and clinical populations, with particular attention to specific MBT parameters of intensity and duration.

##### **METHODS:**

A systematic search for articles meeting our prespecified criteria was conducted using Cumulative Index to Nursing and Allied Health Literature (CINAHL) and MEDLINE from the inception of each database until July 2012, in accordance with guidelines from the Preferred Reporting Items for Systematic reviews and Meta-Analysis. Relevant characteristics from studies included type, intensity, and duration of MBT and whether short-term changes in pain sensitivity and clinical pain were noted with MBT application. Study results were pooled using a random-effects model to estimate the overall effect size of a single dose of MBT on pain sensitivity as well as the effect of MBT, dependent on comparison group and population type.

##### **RESULTS:**

Reports from 24 randomized controlled trials (23 articles) were included, representing 36 MBT treatment arms and 29 comparative groups, where 10 groups received active agents, 11 received sham/inert treatments, and eight received no treatment. MBT demonstrated a favorable and consistent ability to modulate pain sensitivity. Short-term modulation of pain sensitivity was associated with short-term beneficial effects on clinical pain. Intensity of MBT, but not duration, was linked with change in pain sensitivity. A meta-analysis was conducted on 17 studies that assessed the effect of MBT on pressure pain thresholds. The results suggest that MBT had a favorable effect on pressure pain thresholds when compared with no-treatment and sham/inert groups, and effects comparable with those of other active treatments.

##### **CONCLUSION:**

The evidence supports the use of pain sensitivity measures by future research to help elucidate optimal therapeutic parameters for MBT as an intermediate physiologic marker.

##### **KEYWORDS:**

muscle-biased therapy, pain sensitivity, pressure pain threshold

PMID: 23403507 [PubMed - in process]

## Infamation

### Acute Painful Stress and Inflammatory Mediator Production

Neuroimmunomodulation 2013;20:127–133 (DOI: 10.1159/000346199)

Griffins C.A. · Crabb Breen E. · Compton P. · Goldberg A. · Witarama T. · Kotlerman J. · Irwin M.R.

#### Abstract

**Background:** Proinflammatory pathways may be activated under conditions of painful stress, which is hypothesized to worsen the experience of pain and place medically vulnerable populations at risk for increased morbidity.

**Objectives:** To evaluate the effects of pain and subjective pain-related stress on proinflammatory activity.

**Methods:** A total of 19 healthy control subjects underwent a single standard cold-pressor pain test (CPT) and a no-pain control condition. Indicators of pain and stress were measured and related to inflammatory immune responses [CD8+ cells expressing the integrin molecule CD11a (CD811a), interleukin (IL)-1 receptor agonist (IL-1RA), and IL-6] immediately following the painful stimulus and compared to responses under no-pain conditions. Heart rate and mean arterial pressure were measured as indicators of sympathetic stimulation.

**Results:** CPT was clearly painful and generated an activation of the sympathetic nervous system. CD811a increased in both conditions, but with no statistically significantly greater increase following CPT ( $p < 0.06$ ). IL-1RA demonstrated a non-statistically significant increase following CPT ( $p < 0.07$ ). The change in IL-6 following CPT differed significantly from the response seen in the control condition ( $p < 0.02$ ).

**Conclusions:** These findings suggest that CP acute pain may affect proinflammatory pathways, possibly through mechanisms related to adrenergic activation.

## LBP

*J Pain Res.* 2013;6:95-101. doi: 10.2147/JPR.S40740. Epub 2013 Feb 4.

### **Psychological factors: anxiety, depression, and somatization symptoms in low back pain patients.**

Bener A, Verjee M, Dafeeah EE, Falah O, Al-Juhaishi T, Schlogl J, Sedeeq A, Khan S.

#### **Source**

Department of Medical Statistics and Epidemiology, Hamad Medical Corporation, Doha, Qatar ; Department of Public Health, Weill Cornell Medical College, Doha, Qatar ; Department of Evidence for Population Health Unit, School of Epidemiology and Health Sciences, The University of Manchester, Manchester, UK.

#### **Abstract**

##### **AIM:**

To determine the prevalence of low back pain (LBP), investigate the sociodemographic characteristics of patients with LBP, and examine its association with psychological distress such as anxiety, depression, and somatization.

##### **SUBJECTS AND METHODS:**

Of the 2742 patients approached, 2180 agreed to participate in this cross-sectional study (79.5% response rate). The survey was conducted among primary health care visitors from March to October 2012 and collected sociodemographic details and LBP characteristics. General Health Questionnaire-12 was used to identify the probable cases. Anxiety was assessed with Generalized Anxiety Disorder-7, depression was assessed with Patient Health Questionnaire-9, and somatization was measured with Patient Health Questionnaire-15.

##### **RESULTS:**

The study sample consisted of 52.9% males and 47.1% females. The prevalence of LBP was 59.2%, comprising 46.1% men and 53.9% women. LBP was significantly higher in Qataris (57.9%), women (53.9%), housewives (40.1%), and individuals with higher monthly income (53.9%). Somatization (14.9%) was observed more in LBP patients, followed by depression (13.7%) and anxiety disorders (9.5%). The most frequently reported symptoms were "headaches" (41.1%) and "pain in your arms, legs, or joints" (38.5%) in LBP patients with somatization. The most frequent symptoms among depressed LBP patients were "thinking of suicide or wanting to hurt yourself" (51.4%) and "feeling down, depressed, or hopeless" (49.2%). "Not being able to stop or control worrying" (40.2%), "worrying too much about different things" (40.2%), and "feeling afraid as if something awful might happen" (40.2%) were the most common anxiety symptoms in LBP patients. Psychological distress such as anxiety (9.5% versus 6.2%), depression (13.7% versus 8.5%), and somatization (14.9% versus 8.3%) were significantly higher in LBP patients.

##### **CONCLUSION:**

The prevalence of LBP in this study sample was comparable with other studies. Furthermore, psychological distress such as anxiety, depression, and somatization were more prevalent in LBP patients compared to patients without LBP.

##### **KEYWORDS:**

anxiety, depression, low back pain, primary health care, somatization

PMID: 23403693 [PubMed - in process]

## Orthotics/elderly

Rheumatology (Oxford). 2012 Nov 28. [Epub ahead of print]

### **The effect of foot orthoses on balance, foot pain and disability in elderly women with osteoporosis: a randomized clinical trial.**

de Moraes Barbosa C, Barros Bértolo M, Marques Neto JF, Bellini Coimbra I, Davitt M, de Paiva Magalhães E.

#### **Source**

Department of Internal Medicine and Gerontology, Departments of Internal Medicine and Rheumatology, Faculty of Medical Sciences and Orthosis and Prosthetics Unit, Department of Orthopedics, State University of Campinas, Campinas, Brazil.

#### **Abstract**

**Objective.** To evaluate the effect of insoles with medial arch support and metatarsal pad on balance, foot pain and disability in elderly women with osteoporosis.

**Methods.** This was a randomized controlled clinical trial. Ninety-four elderly women (>60 years) with osteoporosis in treatment in the outpatient clinic of the Rheumatology Division of UNICAMP were randomly assigned to an intervention group (IG) with foot orthoses or to a control group (CG) without orthoses. The Berg Balance Scale (BBS), the Timed Up and Go test (TUG), the Manchester Foot Pain and Disability Index (MFPDI) and a numeric pain scale (NPS) were assessed at baseline and after 4 weeks. The chi-squared test, Fisher's exact test and Mann-Whitney test were applied to compare baseline values between the two groups. Repeated measures of analysis of variance followed by Tukey's test for multiple comparisons and the contrast profile test were used to compare the longitudinal measures. For numeric variable relationship analysis, the Spearman correlation coefficient was used.

**Results.** The groups were similar at baseline. Only subjects from the IG displayed improvements in balance (both BBS and TUG), foot pain (NPS) and disability (MFPDI) ( $P < 0.001$ ). Minor adverse effects were noted.

**Conclusion.** Foot orthoses were effective for improving balance and for reducing pain and disability in elderly women. Orthoses can be used as an adjuvant strategy to improve balance and to prevent falls in the elderly.

PMID: 23192905 [PubMed - as supplied by publisher]

## Complex regional pain syndrome

Rheumatology (Oxford). 2012 Nov 30. [Epub ahead of print]

### **Treatment of complex regional pain syndrome type I with neridronate: a randomized, double-blind, placebo-controlled study.**

Varennna M, Adami S, Rossini M, Gatti D, Idolazzi L, Zucchi F, Malavolta N, Sinigaglia L.

#### **Source**

Rheumatology Unit, Ospedale G. Pini, Milan, Rheumatology Unit, Department of Medicine, University of Verona, Verona and Rheumatology Unit, Ospedale Malpighi, Bologna, Italy.

#### **Abstract**

**Objective.** Complex regional pain syndrome type I (CRPS-I) is a severely disabling pain syndrome for which no definite treatment has been established. The aim of this multi-centre, randomized, double-blind placebo-controlled trial was to test the efficacy of the amino-bisphosphonate neridronate in patients with CRP-I.

**Methods.** Eighty-two patients with CRP-I at either hand or foot were randomly assigned to i.v. infusion of 100 mg neridronate given four times over 10 days or placebo. After 50 days the former placebo patients were given open label the same regimen of neridronate.

**Results.** Within the first 20 days, visual analogue scale (VAS) score decreased significantly more in the neridronate group. In the following 20 days, VAS remained unchanged in the placebo group and further decreased in the active group by 46.5 mm (95% CI -52.5, -40.5) vs 22.6 mm (95% CI -28.8, -16.3) for placebo group ( $P < 0.0001$ ). Significant improvements vs placebo were observed also for a number of other indices of pain and quality of life. During the open-extension phase in the formerly placebo group the results of treatment were superimposable on those seen during the blind phase in the active group. A year later none of the patients was referring symptoms linked to CRPS-I.

**Conclusion.** In patients with acute CRPS-I, four i.v. infusions of neridronate 100 mg are associated with clinically relevant and persistent benefits. These results provide conclusive evidence that the use of bisphosphonates, at appropriate doses, is the treatment of choice for CRPS-I. Trial registration: EU Clinical Trials Register,

<https://www.clinicaltrialsregister.eu/>, 2007-003372-18.

PMID: 23204550 [PubMed - as supplied by publisher]

LBP/Cortex

Cereb Cortex. 2012 Dec 17. [Epub ahead of print]

**Multivariate Classification of Structural MRI Data Detects Chronic Low Back Pain.**

Ung H, Brown JE, Johnson KA, Younger J, Hush J, Mackey S.

**Source**

Division of Pain Medicine, Department of Anesthesia.

**Abstract**

Chronic low back pain (cLBP) has a tremendous personal and socioeconomic impact, yet the underlying pathology remains a mystery in the majority of cases. An objective measure of this condition, that augments self-report of pain, could have profound implications for diagnostic characterization and therapeutic development. Contemporary research indicates that cLBP is associated with abnormal brain structure and function. Multivariate analyses have shown potential to detect a number of neurological diseases based on structural neuroimaging. Therefore, we aimed to empirically evaluate such an approach in the detection of cLBP, with a goal to also explore the relevant neuroanatomy. We extracted brain gray matter (GM) density from magnetic resonance imaging scans of 47 patients with cLBP and 47 healthy controls. cLBP was classified with an accuracy of 76% by support vector machine analysis. Primary drivers of the classification included areas of the somatosensory, motor, and prefrontal cortices—all areas implicated in the pain experience. Differences in areas of the temporal lobe, including bordering the amygdala, medial orbital gyrus, cerebellum, and visual cortex, were also useful for the classification.

Our findings suggest that cLBP is characterized by a pattern of GM changes that can have discriminative power and reflect relevant pathological brain morphology.

PMID: 23246778 [PubMed - as supplied by publisher]

## Acute pain/coping

*J Pain*. 2013 Jan 24. pii: S1526-5900(12)00963-7. doi: 10.1016/j.jpain.2012.12.005. [Epub ahead of print]

### **Acceptance, Cognitive Restructuring, and Distraction as Coping Strategies for Acute Pain.**

Kohl A, Rief W, Glombiewski JA.

#### **Source**

Department of Clinical Psychology and Psychotherapy, Philipps-University of Marburg, Marburg, Germany.

#### **Abstract**

Little is known about treatment mechanisms underlying acceptance strategies. Acceptance is a strategy that is expected to increase pain tolerance more than distraction, while distraction should lead to lower pain intensity. The effect of cognitive restructuring on experimental pain has not yet been investigated. The present study aimed to explore differential short-term effects of acceptance, distraction, and cognitive restructuring on pain tolerance and intensity. Pain was induced in a sample of 109 female students using a thermode. We conducted analyses of covariance with instruction as the independent variable and posttest scores on pain variables as dependent variables, covarying for pretest scores. In addition, adherence to instructions and credibility of instructions were included as covariates. Acceptance led to a higher increase in pain tolerance than did cognitive restructuring of pain-related thoughts. No differences were detected between either acceptance and distraction or distraction and cognitive restructuring with respect to pain tolerance. Distraction led to lower pain intensity compared to acceptance. Cognitive restructuring did not differ from either acceptance or distraction with respect to pain intensity. As a short-term strategy, cognitive restructuring was not as useful as acceptance in increasing pain tolerance. Further studies should evaluate the preconditions under which different strategies are most effective.

**PERSPECTIVE:** This study demonstrated that acceptance was superior to cognitive restructuring in increasing tolerance for experimentally induced pain, but was inferior to distraction with respect to decreasing pain intensity. Knowledge about the types of strategies that are useful in targeting diverse pain-related outcome measures is important for efforts to refine the treatment of chronic pain.

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## Pelvic pain/myofascial rx

J Urol. 2013 Jan;189(1 Suppl):S75-85. doi: 10.1016/j.juro.2012.11.018.

### **Randomized multicenter feasibility trial of myofascial physical therapy for the treatment of urological chronic pelvic pain syndromes.**

Fitzgerald MP, Anderson RU, Potts J, Payne CK, Peters KM, Clemens JQ, Kotarinos R, Fraser L, Cosby A, Fortman C, Neville C, Badillo S, Odabachian L, Sanfield A, O'Dougherty B, Halle-Podell R, Cen L, Chuai S, Landis JR, Mickelberg K, Barrell T, Kusek JW, Nyberg LM; Urological Pelvic Pain Collaborative Research Network.

#### **Source**

Loyola University Medical Center, Maywood, IL 60153, USA. mfitzg8@lumc.edu

#### **Abstract**

##### **PURPOSE:**

We determined the feasibility of conducting a randomized clinical trial designed to compare 2 methods of manual therapy (myofascial physical therapy and global therapeutic massage) in patients with urological chronic pelvic pain syndromes.

##### **MATERIALS AND METHODS:**

We recruited 48 subjects with chronic prostatitis/chronic pelvic pain syndrome or interstitial cystitis/painful bladder syndrome at 6 clinical centers. Eligible patients were randomized to myofascial physical therapy or global therapeutic massage and were scheduled to receive up to 10 weekly treatments of 1 hour each. Criteria to assess feasibility included adherence of therapists to prescribed therapeutic protocol as determined by records of treatment, adverse events during study treatment and rate of response to therapy as assessed by the patient global response assessment. Primary outcome analysis compared response rates between treatment arms using Mantel-Haenszel methods.

##### **RESULTS:**

There were 23 (49%) men and 24 (51%) women randomized during a 6-month period. Of the patients 24 (51%) were randomized to global therapeutic massage, 23 (49%) to myofascial physical therapy and 44 (94%) completed the study. Therapist adherence to the treatment protocols was excellent. The global response assessment response rate of 57% in the myofascial physical therapy group was significantly higher than the rate of 21% in the global therapeutic massage treatment group ( $p = 0.03$ ).

##### **CONCLUSIONS:**

We judged the feasibility of conducting a full-scale trial of physical therapy methods and the preliminary findings of a beneficial effect of myofascial physical therapy warrants further study.

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PMID: 23234638 [PubMed - indexed for MEDLINE]

## LBP/Multifidus

*Arch Phys Med Rehabil.* 2012 Dec 7. pii: S0003-9993(12)01208-7. doi: 10.1016/j.apmr.2012.12.001. [Epub ahead of print]

### **Lumbar Multifidus Muscle Thickness Does Not Predict Patients With Low Back Pain Who Improve With Trunk Stabilization Exercises.**

Zielinski KA, Henry SM, Ouellette-Morton RH, Desarno MJ.

#### **Source**

Department of Rehabilitation and Movement Science, University of Vermont, Burlington, VT.

#### **Abstract**

##### **OBJECTIVE:**

To understand lumbar multifidus (LM) muscle activation as a clinical feature to predict patients with low back pain (LBP) who are likely to benefit from stabilization (STB) exercises.

##### **DESIGN:**

Prospective, cohort study.

##### **SETTING:**

Outpatient physical therapy clinics.

##### **PARTICIPANTS:**

Persons with LBP were recruited for this study. Subjects (N=25) were classified as either eligible to receive STB exercises or ineligible on the basis of current clinical prediction rules.

##### **INTERVENTIONS:**

Six weeks of STB treatment.

##### **MAIN OUTCOME MEASURES:**

Before and after treatment, subjects underwent rehabilitative ultrasound imaging to quantify LM-muscle activation and completed disability and pain questionnaires. Analyses were performed to examine the (1) relation between LM-muscle activation and current clinical features used to predict patients with LBP likely to benefit from STB exercises, (2) LM-muscle activation between the STB-eligible and STB-ineligible groups before and after STB treatment, and (3) relation between LM-muscle activation before STB treatment and (a) disability and (b) pain outcomes after treatment for both groups.

##### **RESULTS:**

No relation was found between LM-muscle activation and the number of clinical features. Before STB treatment, LM-muscle activation between the STB-eligible and STB-ineligible groups did not differ. After STB treatment, LM-muscle activation differed between the groups; however, this interaction was because the LM-muscle activation for the STB-eligible group decreased after treatment while that for the STB-ineligible group increased after treatment. Finally, only the STB-eligible group had a significant reduction in disability following treatment; however, no relation was found between LM-muscle activation before treatment and (a) disability or (b) pain outcomes after treatment in the STB-eligible group.

##### **CONCLUSIONS:**

LM-muscle activation does not appear to be a clinical feature that predicts patients with LBP likely to benefit from STB exercises.

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PMID: 23228626 [PubMed - as supplied by publisher]

## Knee/quads

Arthritis Care Res (Hoboken). 2013 Feb 11. doi: 10.1002/acr.21965. [Epub ahead of print]

### **Thigh muscle cross-sectional areas and strength in advanced versus early painful osteoarthritis-An exploratory between-knee, within-person comparison in osteoarthritis initiative participants.**

Ruhdorfer A, Dannhauer T, Wirth W, Hitzl W, Kwoh CK, Guermazi A, Hunter DJ, Benichou O, Eckstein F.

#### **Source**

Institute of Anatomy and Musculoskeletal Research, Paracelsus Medical University, Salzburg, Austria. anja.ruhdorfer@pmu.ac.at.

#### **Abstract**

##### **OBJECTIVE:**

To compare cross-sectional and longitudinal side-differences in thigh muscle anatomical cross-sectional areas (ACSAs), strength, and specific strength (strength/ACSA) between knees with painful early vs. painful advanced radiographic osteoarthritis in the same person.

##### **METHODS:**

44 of 2678 Osteoarthritis Initiative participants (31 women; 13 men) met inclusion criteria of bilateral frequent knee pain, medial joint space narrowing (mJSN) in one knee, and no medial (or lateral) JSN in the contralateral knee. Thigh muscle ACSAs of the quadriceps, hamstrings, adductors, and individual quadriceps heads at consistent locations were determined using MRI. Isometric muscle strength was determined in extension/flexion (Good Strength Chair, MetiturOy, Finland). Baseline quadriceps ACSA and strength were considered primary, and longitudinal changes of these secondary endpoints (paired t-tests).

##### **RESULTS:**

No significant side-differences in quadriceps (or other thigh muscles) ACSAs, strength, or specific strength were observed between mJSN vs. no-JSN knees, nor between specific mJSN strata and contra-lateral no-JSN knees, neither in men nor women. Two-year longitudinal changes in thigh muscle ACSA, and strength were small ( $\leq 5.2\%$ ) and did not differ significantly between mJSN and no-JSN knees.

##### **CONCLUSION:**

In the context of previous findings that side differences in pain are associated with side differences in quadriceps ACSAs, the current results suggest that quadriceps (and other thigh muscle) properties are not independently associated with radiographic disease status (JSN), once knees have reached frequent pain status. Further, our longitudinal findings indicate that a more advanced radiographic stage of knee osteoarthritis is not necessarily associated with a longitudinal decline in muscle function.

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PMID: 23401316 [PubMed - as supplied by publisher]

## Fibromyalgia/exercise

Arthritis Care Res (Hoboken). 2013 Feb 11. doi: 10.1002/acr.21980. [Epub ahead of print]

### **Moderate-vigorous physical activity improves long-term clinical outcomes without worsening pain in fibromyalgia.**

Kaleth AS, Saha CK, Jensen MP, Slaven JE, Ang DC.

#### **Source**

Department of Kinesiology, Indiana University-Purdue University Indianapolis, IN, USA.  
akaleth@iupui.edu.

#### **Abstract**

##### **OBJECTIVE:**

To evaluate the relationship between long-term maintenance of moderate-vigorous physical activity (MVPA) and clinical outcomes in fibromyalgia (FM).

##### **METHODS:**

Patients with FM (n=170) received individualized exercise prescriptions and completed baseline and follow-up physical activity assessments using the Community Health Activities Model Program for Seniors (CHAMPS) questionnaire at weeks 12, 24, and 36. The primary outcome was the change in the Fibromyalgia Impact Questionnaire-Physical Impairment (FIQ-PI) score. Secondary outcomes included improvements in overall well-being (FIQ-Total), pain severity ratings, and depression.

##### **RESULTS:**

Using a threshold increase in MVPA of  $\geq 10$  metabolic equivalent hours per week (MET h/wk) above usual activities, 27 subjects (15.9%) increased and sustained (SUS-PA), 68 (40%) increased, but then declined (UNSUS-PA), and 75 (44.1%) did not achieve this benchmark (LO-PA). Compared to LO-PA subjects, both SUS-PA and UNSUS-PA subjects reported greater improvement in FIQ-PI ( $p < 0.01$ ) and FIQ-Total ( $p < 0.05$ ). Additionally, the SUS-PA group reported greater improvement in pain severity compared to the LO-PA group ( $p < 0.05$ ). However, there were no significant group differences between SUS-PA and UNSUS-PA for any primary or secondary outcome measure.

##### **CONCLUSION:**

Increased participation in MVPA for at least 12 weeks improves physical function and overall well-being in patients with FM. Although sustained physical activity was not associated with greater clinical benefit compared to unsustained physical activity, these findings also suggest that performing greater volumes of physical activity is not associated with worsening pain in FM. Future research is needed to determine the relationship between sustained MVPA participation and subsequent improvement in patient outcomes.

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PMID: 23401486 [PubMed - as supplied by publisher]

## Hip abductor strengthening

### Which Exercises Target the Gluteal Muscles While Minimizing Activation of the Tensor Fascia Lata? Electromyographic Assessment Using Fine-Wire Electrodes

David M. Selkowitz, George J. Beneck, Christopher M. Powers

DOI: 10.2519/jospt.2013.4116

**STUDY DESIGN:** Controlled laboratory study, repeated-measures design.

**OBJECTIVES:** To compare hip abductor muscle activity during selected exercises using fine-wire electromyography, and to determine which exercises are best for activating the gluteus medius and the superior portion of the gluteus maximus, while minimizing activity of the tensor fascia lata (TFL).

**BACKGROUND:** Abnormal hip kinematics (ie, excessive hip adduction and internal rotation) has been linked to certain musculoskeletal disorders. The TFL is a hip abductor, but it also internally rotates the hip. As such, it may be important to select exercises that activate the gluteal hip abductors while minimizing activation of the TFL.

**METHODS:** Twenty healthy persons participated. Electromyographic signals were obtained from the gluteus medius, superior gluteus maximus, and TFL muscles using fine-wire electrodes as subjects performed 11 different exercises. Normalized electromyographic signal amplitude was compared among muscles for each exercise, using multiple 1-way repeated-measures analyses of variance. A descriptive gluteal-to-TFL muscle activation index was used to identify preferred exercises for recruiting the gluteal muscles while minimizing TFL activity.

**RESULTS:** Both gluteal muscles were significantly ( $P < .05$ ) more active than the TFL in unilateral and bilateral bridging, quadruped hip extension (knee flexed and extending), the clam, sidestepping, and squatting. The gluteal-to-TFL muscle activation index ranged from 18 to 115 and was highest for the clam (115), sidestep (64), unilateral bridge (59), and both quadruped exercises (50).

**CONCLUSION:** If the goal of rehabilitation is to preferentially activate the gluteal muscles while minimizing TFL activation, then the clam, sidestep, unilateral bridge, and both quadruped hip extension exercises would appear to be the most appropriate.

*J Orthop Sports Phys Ther* 2013;43(2):54-64. Epub 16 November 2012.

doi:10.2519/jospt.2013.4116

**KEY WORDS:** EMG, gluteus maximus, gluteus medius, hip

**The authors compare hip abductor muscle activity during selected exercises using fine-wire electromyography, and to determine which exercises are best for activating the gluteus medius and the superior portion of the gluteus maximus, while minimizing activity of the tensor fascia lata (TFL).**

## Hip abductors continued

### Strengthening Your Hip Muscles: Some Exercises May Be Better Than Others

DOI: 10.2519/jospt.2013.0501

*J Orthop Sports Phys Ther* 2013;43(2):65. doi:10.2519/jospt.2013.0501

**Weak hip muscles lead to poor hip motion, and poor hip motion can cause knee, hip, and back pain.** By exercising to strengthen the hip muscles that control how your hip moves, you can reduce your pain in these parts of your body. The 2 key muscles to include in your exercise program are the gluteus maximus (the chief muscle on the back of your hip—your buttocks) and the gluteus medius (the main muscle on the side of your hip). However, it is often difficult to strengthen these muscles without also strengthening a muscle called the tensor fascia lata, which is located toward the front of the hip. Too much activation of that muscle may create unwanted hip motion that may worsen knee, hip, or back pain. A study published in the February 2013 issue of *JOSPT* provides information intended to help physical therapists and their patients select exercises that target the buttock muscles without causing other unwanted muscle actions.

#### NEW INSIGHTS

In this study, the researchers had 20 healthy people perform 11 different hip exercises commonly used for both fitness and rehabilitation. While the participants performed the exercises, fine wires were used to record the amount of electrical activity within the 3 muscles. This indicated how much each muscle was working. The researchers' goal was to discover which exercises used the gluteus maximus and gluteus medius muscles the most, while minimizing the action of the tensor fascia lata. They found that 5 specific exercises worked best: the clam, the single-leg bridge, hip extension while on both hands and knees (with the knee bent or straight), and the sidestep.

#### PRACTICAL ADVICE

Patients with certain types of knee, hip, or back pain may benefit from focusing on the 5 exercises recommended by these researchers. Your physical therapist can help determine which of these exercises are best for you and customize a treatment program based on your diagnosis, your level of pain, and your current and desired hip function. Even if you do not have any pathology or pain, you may want to incorporate these 5 exercises in your general fitness or strength program.

This *JOSPT* Perspectives for Patients is based on an article by Selkowitz et al, titled "Which Exercises Target the Gluteal Muscles While Minimizing Activation of the Tensor Fascia Lata? Electromyographic Assessment Using Fine-Wire Electrodes," *J Orthop Sports Phys Ther* 2013;43(2):54-64. doi:10.2519/jospt.2013.4116.

This Perspectives article was written by a team of *JOSPT*'s editorial board and staff, with Deydre S. Teyhen, PT, PhD, Editor, and Jeanne Robertson, Illustrator.

## C spine/whiplash

### **Risk Factors for Persistent Problems Following Acute Whiplash Injury: Update of a Systematic Review and Meta-analysis**

David M. Walton, Joy C. MacDermid, Anthony A. Giorgianni, Joanna C. Mascarenhas, Stephen C. West, Caroline A. Zammit

DOI: 10.2519/jospt.2013.4507

**STUDY DESIGN:** Systematic review and meta-analysis.

**OBJECTIVE:** To update a previous review and meta-analysis on risk factors for persistent problems following whiplash secondary to a motor vehicle accident.

**BACKGROUND:** Prognosis in whiplash-associated disorder (WAD) has become an active area of research, perhaps owing to the difficulty of treating chronic problems. A previously published review and meta-analysis of prognostic factors included primary sources up to May 2007. Since that time, more research has become available, and an update to that original review is warranted.

**METHODS:** A systematic search of international databases was conducted, with rigorous inclusion criteria focusing on studies published between May 2007 and May 2012. Articles were scored, and data were extracted and pooled to estimate the odds ratio for any factor that had at least 3 independent data points in the literature.

**RESULTS:** Four new cohorts (n = 1121) were identified. In combination with findings of a previous review, 12 variables were found to be significant predictors of poor outcome following whiplash, 9 of which were new (n = 2) or revised (n = 7) as a result of additional data. The significant variables included high baseline pain intensity (greater than 5.5/10), report of headache at inception, less than postsecondary education, no seatbelt in use during the accident, report of low back pain at inception, high Neck Disability Index score (greater than 14.5/50), preinjury neck pain, report of neck pain at inception (regardless of intensity), high catastrophizing, female sex, WAD grade 2 or 3, and WAD grade 3 alone. Those variables robust to publication bias included high pain intensity, female sex, report of headache at inception, less than postsecondary education, high Neck Disability Index score, and WAD grade 2 or 3. Three existing variables (preaccident history of headache, rear-end collision, older age) and 1 additional novel variable (collision severity) were refined or added in this updated review but showed no significant predictive value.

**CONCLUSION:** This review identified 2 additional prognostic factors and refined the estimates of 7 previously identified factors, bringing the total number of significant predictors across the 2 reviews to 12. These factors can be easily identified in a clinical setting to provide estimates of prognosis following whiplash.

**LEVEL OF EVIDENCE:** Prognosis, level 1a.

*J Orthop Sports Phys Ther* 2013;43(2):31-43. Epub 14 January 2013.

doi:10.2519/jospt.2013.4507

**KEY WORDS:** cervical spine, neck, prognosis, WAD

**The authors update a previous review and meta-analysis on risk factors for persistent problems following whiplash secondary to a motor vehicle accident.**

## Abdominal pain

### Abdominal Pain in Physical Therapy Practice: 3 Patient Cases

Jason R. Rodeghero, Thomas R. Denninger, Michael D. Ross

DOI: 10.2519/jospt.2013.4408

**STUDY DESIGN:** Resident's case problem.

**BACKGROUND:** Abdominal pain is a common symptom, but not a common diagnosis, of patients referred to physical therapists for examination and intervention. For patients with primary symptoms of abdominal pain, a thorough evaluation must be performed to determine if symptoms are musculoskeletal in nature or of a nonmusculoskeletal origin that would warrant a referral to a different healthcare provider. This report describes the management of 3 adults with primary complaints of abdominal pain who were referred for physical therapy evaluation and treatment.

**DIAGNOSIS:** Two of the patients had secondary symptoms of hip and/or low back pain and had previously undergone extensive medical testing for their chronic abdominal pain, without a definitive diagnosis having been determined. A physical therapy evaluation was conducted, and treatment, including manual physical therapy and exercise, was administered to address all relative impairments, once the physical therapist had determined that the patients' symptoms were of musculoskeletal origin. The third patient included in this series was referred to a physical therapist with a diagnosis of greater trochanteric versus iliopsoas bursitis. However, the patient had abdominal pain that was more acute in nature and a history and physical examination findings that were concerning for abdominal pain of nonmusculoskeletal origin. Both patients with abdominal pain of musculoskeletal origin showed marked improvement in pain and disability after 7 treatment sessions. The third patient was referred to her primary care physician, and ultrasound examination of the abdomen revealed several intrauterine masses that were consistent with uterine fibroids. Following uterine fibroid embolization, the patient was symptom free.

**DISCUSSION:** Although not routinely managed by physical therapists, abdominal pain is a relatively common patient symptom that can have several causes, both musculoskeletal and nonmusculoskeletal. This paper emphasizes the importance of physical therapists having the necessary differential diagnostic skills to determine if patients with primary symptoms of abdominal pain require physician referral or physical therapist intervention.

**LEVEL OF EVIDENCE:** Differential diagnosis, level 4.

*J Orthop Sports Phys Ther 2013;43(2):44-53. Epub 14 January 2013.*

*doi:10.2519/jospt.2013.4408*

**KEY WORDS:** abdominal examination, differential diagnosis, hip, low back pain, manual physical therapy

**This report describes the management of 3 adults with primary complaints of abdominal pain who were referred for physical therapy evaluation and treatment.**

## **Knee/Total**

### **Single-Step Test for Unilateral Limb Ability Following Total Knee Arthroplasty**

Adam Rubin Marmon, Jodie A. McClelland, Jennifer E. Stevens-Lapsley, Lynn Snyder-Mackler  
DOI: 10.2519/jospt.2013.4372

**STUDY DESIGN:** Secondary analysis of a cohort enrolled in a prospective, randomized, longitudinal clinical trial.

**OBJECTIVES:** The single-step test (SST) was evaluated to assess its intertester reliability, validity as a test of activity limitation, and responsiveness to change for patients after unilateral total knee arthroplasty (TKA). The SST was also examined to determine whether it could differentiate between the surgical and nonsurgical lower limbs of patients after unilateral TKA and between the surgical limbs of patients after TKA and the limbs of healthy controls.

**BACKGROUND:** Tests of functional ability for patients recovering from TKA cannot differentiate the contribution of each limb to performance outcome. A test of unilateral limb ability would provide a metric for assessing the surgical lower extremity, without the confounder of the status of the contralateral lower extremity.

**METHODS:** Intertester reliability was assessed between clinicians and between a clinician and a switch mat. Patients who underwent unilateral TKA were tested at initial outpatient physical therapy evaluation, at 3 months after TKA, and at 1 year after TKA.

**RESULTS:** The assessment of function with the SST was determined to be reliable between testers when using a stopwatch. SST times were significantly correlated with other measures of lower extremity functional performance, providing evidence of its validity in patients after TKA. The SST was responsive to treatment in patients after TKA, with improvements in time for test completion. Performance on the SST also differed between limbs of patients after TKA and when comparing the limbs of healthy controls to those of patients after TKA.

**CONCLUSION:** The SST is a reliable measure between testers and a valid and responsive test of activity limitations when assessing unilateral lower extremity impairments in patients after TKA.

*J Orthop Sports Phys Ther 2013;43(2):66-73. Epub 16 November 2012.*

*doi:10.2519/jospt.2013.4372*

**KEY WORDS:** function, joint replacement, knee, osteoarthritis

**The single-step test (SST) was evaluated to assess its intertester reliability, validity as a test of activity limitation, and responsiveness to change for patients after unilateral total knee arthroplasty (TKA). The SST was also examined to determine whether it could differentiate between the surgical and nonsurgical lower limbs of patients after unilateral TKA and between the surgical limbs of patients after TKA and the limbs of healthy controls.**

Psoas/quadriatus

## Changes in Regional Activity of the Psoas Major and Quadratus Lumborum With Voluntary Trunk and Hip Tasks and Different Spinal Curvatures in Sitting

Rachel J. Park, Henry Tsao, Andrew Claus, Andrew G. Cresswell, Paul W. Hodges

DOI: 10.2519/jospt.2013.4292

**STUDY DESIGN:** Cross-sectional controlled laboratory study.

**OBJECTIVES:** To investigate the function of discrete regions of psoas major (PM) and quadratus lumborum (QL) with changes in spinal curvature and hip position.

**BACKGROUND:** Anatomically discrete regions of PM and QL may have differential function on the lumbar spine, based on anatomical and biomechanical differences in their moment arms between fascicles within each muscle.

**METHODS:** Fine-wire electrodes were inserted with ultrasound guidance into PM fascicles arising from the transverse process (PM-t) and vertebral body (PM-v) and anterior (QL-a) and posterior (QL-p) layers of QL. Recordings were made on 9 healthy participants, who performed 7 tasks with maximal voluntary efforts and adopted 3 sitting postures that involved different spinal curvatures and hip angles.

**RESULTS:** Activity of PM-t was greater during trunk extension than flexion, whereas activity of PM-v was greater during hip flexion than trunk efforts. Activity of QL-p was greater during trunk extension and lateral flexion, whereas QL-a showed greater activity during lateral flexion. During sitting tasks, PM-t was more active when sitting with a short lordosis than a flat (less extended) lumbar spine posture, whereas PM-v was similarly active in both sitting postures.

**CONCLUSION:** Activity of PM-t was more affected by changes in position of the lumbar spine than the hip, whereas PM-v was more actively involved in the movement of the hip rather than that of the lumbar spine. Moreover, from its anatomy, PM-t has a combined potential to extend/lordose the lumbar spine and flex the hip, at least in a flexed-hip position.

*J Orthop Sports Phys Ther 2013;43(2):74-82. Epub 5 September 2012.*

*doi:10.2519/jospt.2013.4292*

**KEY WORDS:** fine-wire electromyography, lumbar spine, postural control, respiration

**The authors investigate the function of discrete regions of psoas major (PM) and quadratus lumborum (QL) with changes in spinal curvature and hip position.**

## Lumbar stabilization

### The Interrater Reliability of Physical Examination Tests That May Predict the Outcome or Suggest the Need for Lumbar Stabilization Exercises

Alon Rabin, Anat Shashua, Koby Pizem, Gali Dar

DOI: 10.2519/jospt.2013.4310

**STUDY DESIGN:** Interrater reliability.

**OBJECTIVES:** (1) To examine the interrater reliability of an existing clinical prediction rule (CPR) to predict the success of lumbar stabilization exercises (LSE), and (2) to examine the interrater reliability of 4 clinical tests that may be useful in determining the need for LSE.

**BACKGROUND:** Physical therapists commonly use LSE to manage patients with low back pain. The clinical efficacy of LSE is unclear. A CPR has been previously suggested to identify patients most likely to benefit from LSE. The passive lumbar extension test, lumbar extension load test, active straight leg raise test, and active hip abduction test are 4 clinical tests that may also suggest the need for LSE. The reliability of these tests has not been established sufficiently.

**METHODS:** Thirty patients with low back pain, who participated in a larger randomized clinical trial, underwent all tests by 2 independent examiners. Kappa coefficients with 95% confidence intervals (CIs) were calculated to establish the interrater reliability of the CPR and individual tests.

**RESULTS:** The interrater reliability of the CPR was excellent ( $\kappa = 0.86$ ; 95% CI: 0.65, 1.00). The interrater reliability of the individual items making up the CPR, as well as that of the passive lumbar extension test, was substantial ( $\kappa = 0.64$ - $0.73$  and  $\kappa = 0.76$ , respectively; 95% CI: 0.46, 1.00). The interrater reliability of the active straight leg raise test ( $\kappa = 0.53$ ; 95% CI: 0.20, 0.84) and lumbar extension load test ( $\kappa = 0.47$ ; 95% CI: 0.14, 0.78) was moderate. The interrater reliability of the active hip abduction test was poor ( $\kappa = -0.09$ ; 95% CI:  $-0.35$ , 0.27).

**CONCLUSION:** With the exception of the active hip abduction test, all other clinical tests can be considered sufficiently reliable for clinical use. The relatively small sample size likely contributed to the fairly wide confidence intervals around some of the reliability indices.

*J Orthop Sports Phys Ther 2013;43(2):83-90. Epub 14 January 2013.*

*doi:10.2519/jospt.2013.4310*

**KEY WORDS:** clinical prediction rule, low back pain, lumbar segmental instability

**The authors examine the interrater reliability of an existing clinical prediction rule (CPR) for predicting success with lumbar stabilization exercises (LSE) and examine the interrater reliability of 4 clinical tests that may be useful in determining the need for LSE.**

## LBP/Disability

### Variables Associated With Level of Disability in Working Individuals With Nonacute Low Back Pain: A Cross-sectional Investigation

D. Scott Davis, Corrie A. Mancinelli, John J. Petronis, Calvin Bensenhaver, Travis McClintic, George Nelson

DOI: 10.2519/jospt.2013.4382

**STUDY DESIGN:** Single-site, exploratory, cross-sectional design.

**OBJECTIVE:** To identify variables associated with disability related to low back pain (LBP), as measured by the modified Oswestry Low Back Pain Disability Questionnaire (mOSW), in a sample of working adults with nonacute LBP.

**BACKGROUND:** Compared to acute LBP, there is little information available in the literature to identify variables associated with LBP-related disability in working individuals with stage 2 and stage 3 LBP.

**METHODS:** Data analyzed were from working individuals with nonacute LBP ( $n = 235$ ). The response variable was dichotomized by mOSW score (less than 20 or 20 or greater), and the regressor variables included 27 self-report, sociodemographic, impairment-based, and kinematic measures used to assess individuals with LBP. Logistic regression was used to identify variables associated with mOSW.

**RESULTS:** One hundred eleven subjects had a mOSW score of 20 or greater, and 124 subjects had a mOSW score of less than 20. Logistic regression analysis identified 4 variables associated with LBP-related disability (mOSW): duration of LBP ( $P = .006$ ), numeric pain rating ( $P < .0001$ ), Fear-Avoidance Beliefs Questionnaire physical activity subscale ( $P = .0007$ ), and limits of stability movement velocity in the forward direction ( $P = .02$ ). The best model had an  $R^2_{(u)}$  of 0.25.

**CONCLUSION:** The odds of LBP-related disability (mOSW) in this sample of nonacute working individuals were found to increase with longer duration of LBP, higher numeric pain rating scores, higher Fear-Avoidance Beliefs Questionnaire physical activity subscale scores, and slower limits of stability movement velocity in the forward direction. The identification of limits of stability movement velocity is a novel finding that may support a link between sensorimotor balance deficits and disability in working individuals with nonacute LBP.

*J Orthop Sports Phys Ther* 2013;43(2):97-104. Epub 22 October 2012.

doi:10.2519/jospt.2013.4382

**KEY WORDS:** chronic LBP, lumbosacral region, occupational health, subacute LBP

**The authors aim to identify variables associated with disability related to low back pain (LBP), as measured by the modified Oswestry Low Back Pain Disability Questionnaire (mOSW), in a sample of working adults with nonacute LBP.**

## **Neuropathic pain/music**

Pain Manag Nurs. 2013 Jan 31. pii: S1524-9042(12)00174-9. doi: 10.1016/j.pmn.2012.10.006.  
[Epub ahead of print]

### **The Effects of Music Therapy on Pain in Patients with Neuropathic Pain.**

Korhan EA, Uyar M, Eyigör C, Hakverdioğlu Yönt G, Celik S, Khorshid L.

#### **Source**

İzmir Katip Çelebi University, Çiğli-İzmir, Turkey. Electronic address: akinesra80@hotmail.com.

#### **Abstract**

The aim of this study was to investigate the effect of relaxing music on pain intensity in patients with neuropathic pain. A quasi-experimental study, repeated measures design was used. Thirty patients, aged 18-70 years, with neuropathic pain and hospitalized in an Algology clinic were identified as a convenience sample. Participants received 60 minutes of music therapy. Classical Turkish music was played to patients using a media player (MP3) and headphones. Participants had pain scores taken immediately before the intervention and at the 30th and 60th minutes of the intervention. Data were collected over a 6-month period in 2012. The patients' mean pain intensity scores were reduced by music, and that decrease was progressive over the 30th and 60th minutes of the intervention, indicating a cumulative dose effect. The results of this study implied that the inclusion of music therapy in the routine care of patients with neuropathic pain could provide nurses with an effective practice for reducing patients' pain intensity.

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PMID: 23375348 [PubMed - as supplied by publisher]

## Opioid use/pain

Addiction. 2012 Jul 6. doi: 10.1111/j.1360-0443.2012.04005.x. [Epub ahead of print]

### **Development of dependence following treatment with opioid analgesics for pain relief: a systematic review.**

Minozzi S, Amato L, Davoli M.

#### **Source**

Department of Epidemiology, Lazio Regional Health Service, Cochrane Drugs and Alcohol Group, Rome, Italy.

#### **Abstract**

##### **AIMS:**

To assess the incidence or prevalence of opioid dependence syndrome in adults (with and without previous history of substance abuse) following treatment with opioid analgesics for pain relief.

##### **METHODS:**

Medline, Embase, CINAHL and the Cochrane Library were searched up to January 2011. Systematic reviews and primary studies were included if they reported data about incidence or prevalence of opioid dependence syndrome (as defined by DSM-IV or ICD-10) in patients receiving strong opioids (or opioid-type analgesics) for treatment of acute or chronic pain due to any physical condition. The data were abstracted, and the methodological quality was assessed using validated checklists.

##### **RESULTS:**

Data were extracted from 17 studies involving a total of 88 235 participants. The studies included three systematic reviews, one randomized controlled trial, eight cross-sectional studies and four uncontrolled case series. Most studies included adult patients with chronic non-malignant pain; two also included patients with cancer pain; only one included patients with a previous history of dependence. Incidence ranged from 0 to 24% (median 0.5%); prevalence ranged from 0 to 31% (median 4.5%).

##### **CONCLUSIONS:**

The available evidence suggests that opioid analgesics for chronic pain conditions are not associated with a major risk for developing dependence.

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PMID: 22775332 [PubMed - as supplied by publisher]

## Opioid use

*Addict Behav.* 2013 Mar;38(3):1776-81. doi: 10.1016/j.addbeh.2012.11.005. Epub 2012 Nov 23.

### **Prescription opioid use among addictions treatment patients: Nonmedical use for pain relief vs. other forms of nonmedical use.**

Bohnert AS, Eisenberg A, Whiteside L, Price A, McCabe SE, Ilgen MA.

#### **Source**

VA National Serious Mental Illness Treatment Resource and Evaluation Center and VA Health Services Research and Development, North Campus Research Complex, 2800 Plymouth Road, Building 14, Ann Arbor, MI, 48109, USA; Department of Psychiatry, University of Michigan Medical School, North Campus Research Complex, 2800 Plymouth Road, Building 14, Ann Arbor, MI, 48109, USA. Electronic address: amybohne@med.umich.edu.

#### **Abstract**

##### **BACKGROUND:**

Differences between those who engage in nonmedical prescription opioid use for reasons other than pain relief and those who engage in nonmedical use for reasons related to pain only are not well understood.

##### **METHODS:**

Adults in a residential treatment program participated in a cross-sectional self-report survey. Participants reported whether they used opioids for reasons other than pain relief (e.g., help sleep, improve mood, or relieve stress). Within those with past-month nonmedical opioid use (n=238), logistic regression tested differences between those who reported use for reasons other than pain relief and those who did not.

##### **RESULTS:**

Nonmedical use of opioids for reasons other than pain relief was more common (66%) than nonmedical use for pain relief only (34%), and those who used for reasons other than pain relief were more likely to report heavy use (43% vs. 11%). Nonmedical use for reasons other than pain relief was associated with having a prior overdose (odds ratio [OR]=2.54, 95% CI: 1.36-4.74) and use of heroin (OR=4.08, 95% CI: 1.89-8.79), barbiturates (OR=6.44, 95% CI: 1.47, 28.11), and other sedatives (OR=5.80, 95% CI: 2.61, 12.87). Individuals who reported nonmedical use for reasons other than pain relief had greater depressive symptoms (13.1 vs. 10.5) and greater pain medication expectancies across all three domains (pleasure/social enhancement, pain reduction, negative experience reduction).

##### **CONCLUSIONS:**

Among patients in addictions treatment, individuals who report nonmedical use of prescription opioids for reasons other than pain relief represent an important clinical sub-group with greater substance use severity and poorer mental health functioning.

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PMID: 23254228 [PubMed - in process]

## LBP/Stretching

Pain Manag Nurs. 2012 Dec 21. pii: S1524-9042(12)00171-3. doi: 10.1016/j.pmn.2012.10.003.  
[Epub ahead of print]

### **Effectiveness of a Stretching Exercise Program on Low Back Pain and Exercise Self-Efficacy Among Nurses in Taiwan: A Randomized Clinical Trial.**

Chen HM, Wang HH, Chen CH, Hu HM.

#### **Source**

Chung Hwa University of Medical Technology, Tainan, Taiwan, Doctoral Candidate of College of Nursing, Kaohsiung Medical University, Kaohsiung, Taiwan.

#### **Abstract**

The purpose of this study was to examine the effectiveness of a stretching exercise program (SEP) on low back pain (LBP) and exercise self-efficacy among nurses in Taiwan. A total of 127 nurses, who had been experiencing LBP for longer than 6 months and had LBP with pain scores greater than 4 on the Visual Analogue Scale for Pain (VASP), were randomly assigned to an experimental group and a control group. The experimental group (n = 64) followed an SEP, whereas the control group (n = 63) was directed to perform usual activities for 50 minutes per time, three times a week. Data were collected at four time points: at baseline, and 2, 4, and 6 months after the intervention. During the 6-month follow-up, the experimental group had significantly lower VASP scores than did the control group at the second, fourth, and sixth months. In addition, the experimental group showed significantly higher exercise self-efficacy than did the control group at the fourth and sixth months.

A total of 81% of the participants in the experimental group reported a moderate to high level of LBP relief. The findings can be used to enhance self-care capabilities with SEP for nurses that experience LBP or are vulnerable to such work-related pain. SEP is an effective and safe nonpharmacological intervention for the management of LBP.

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PMID: 23266331 [PubMed - as supplied by publisher]

## Manipulation/balance

Chiropr Man Therap. 2013 Feb 4;21(1):9. [Epub ahead of print]

### **Does postural sway change in association with manual therapeutic interventions? A review of the literature.**

Ruhe A, Fejer R, Walker B.

#### **Abstract**

#### **ABSTRACT:**

Study design: Literature Review

Objectives: The objective of this literature review was to determine if postural sway changes in association with manual therapeutic interventions and to investigate whether any changes occur in healthy individuals or in association with pain intensity.

Summary of Background data: Improving postural stability has been proposed as a goal of manual therapeutic interventions. So far, no literature review has addressed whether there is supportive evidence for this and if so, what factors may be associated or causative for observed sway alterations.

Search methods: Seven online databases (PubMed, MEDLINE, EMBASE, CINAHL, Web of Science, Science Direct and the Cochrane library) were systematically searched followed by a manual search of the retrieved papers. Selection criteria: Studies comparing postural sway derived from bipedal force plate measurements in association with a manual therapeutic intervention, ideally compared to a control group. Data collection and analysis: Two reviewers independently screened titles and abstracts for relevance, conducted the data extraction and the risk of bias assessment which was conducted using the RTI item bank. A descriptive analysis was conducted as the heterogeneous study designs prevented pooling of data.

#### **RESULTS:**

Nine studies of varying methodological quality met the inclusion criteria. No direct comparison of data across the studies was possible. There was no evidence that manual interventions lead to a change in postural sway in healthy individuals regardless of the body regions addressed by the intervention. There was some indication that postural sway may change at follow-up measurements in pain sufferers; however, this may be due to variations in pain intensity rather than resulting from the intervention itself.

#### **CONCLUSIONS:**

There is no conclusive scientific evidence that manual therapeutic interventions may exhibit any immediate or long-term effect on COP excursions. Any changes in sway may be attributable to decreases in pain intensity.

PMID: 23374610 [PubMed - as supplied by publisher]

## LBP/muscles

lin J Pain. 2013 Mar;29(3):187-94. doi: 10.1097/AJP.0b013e31824ed170.

### **Lumbar Muscle Dysfunction During Remission of Unilateral Recurrent Nonspecific Low-back Pain: Evaluation With Muscle Functional MRI.**

D'hooge R, Cagnie B, Crombez G, Vanderstraeten G, Achten E, Danneels L.

#### **Source**

Departments of \*Rehabilitation Sciences and Physiotherapy †Experimental Clinical and Health Psychology ‡Physical and Rehabilitation Medicine §Radiology and Nuclear Medicine, Ghent University, Ghent, Belgium.

#### **Abstract**

##### **OBJECTIVES:**

After cessation of a low-back pain (LBP) episode, alterations in trunk muscle behavior, despite recovery from pain, have been hypothesized to play a pathogenic role in the recurrence of LBP. This study aimed to identify the presence of lumbar muscle dysfunction during the remission of recurrent LBP, while performing a low-load trunk-extension movement.

##### **METHODS:**

Thirteen participants with unilateral recurrent LBP were tested at least 1 month after cessation of the previous LBP episode and were compared with a healthy control group without any history of LBP (n=13). Also, differences between previously painful and nonpainful sides were examined. Muscle functional magnetic resonance imaging, based on quantitative T2-imaging, was used to examine muscle tissue characteristics (T2 rest) and muscle recruitment (T2 shift) during prone trunk extension. The lumbar multifidus, erector spinae, quadratus lumborum, and psoas were bilaterally visualized on 2 lumbar levels using a T2-weighted (spin-echo multicontrast) magnetic resonance imaging sequence.

##### **RESULTS:**

Linear mixed model analysis revealed a significantly lower T2 rest ( $P=0.044$ ) and a significantly higher T2 shift ( $P=0.034$ ) solely for the multifidus in the LBP group compared with the control group. No significant differences between pain sides were found.

##### **DISCUSSION:**

Lower T2-rest values have been suggested to correlate with a conversion of the multifidus' fiber typing toward the glycolytic muscle spectrum. Elevated T2 shifts correspond with increased levels of metabolic activity in the multifidus in the LBP group, for which several hypotheses can be put forward. Taken together, these findings provide evidence of concurrent alterations in the multifidus structure and activity in individuals with unilateral recurrent LBP, despite being pain free and functionally recovered.

PMID: 23369927 [PubMed - in process]

## Pelvic girdle/CS therapy

*Acta Obstet Gynecol Scand.* 2013 Jan 31. doi: 10.1111/aogs.12096. [Epub ahead of print]

### **Effects of craniosacral therapy as adjunct to standard treatment for pelvic girdle pain in pregnant women: A multicentre, single blind, randomised controlled trial.**

Elden H, Ostgaard HC, Glantz A, Marciniak P, Linnér AC, Olsén MF.

#### **Source**

Institute of Health and Care Sciences, Sahlgrenska Academy, University of Gothenburg, Gothenburg.

#### **Abstract**

##### **OBJECTIVE:**

Pelvic girdle pain (PGP) is a disabling condition affecting 30% of pregnant women. The aim of this study was to investigate the efficacy of craniosacral therapy as an adjunct to standard treatment compared to standard treatment alone for PGP during pregnancy.

##### **DESIGN:**

Randomised, multicentre, single blind, controlled trial.

##### **SETTING:**

University hospital, a private clinic and 26 maternity care centres in Gothenburg, Sweden.

##### **POPULATION:**

123 pregnant women with PGP.

##### **METHODS:**

Participants were randomly assigned to standard treatment (control group, n=60) or standard treatment plus craniosacral therapy (intervention group, n=63).

##### **MAIN OUTCOME MEASURES:**

Primary outcome measures: Pain intensity (Visual Analogue Scale 0-100mm) and sick leave. Secondary outcomes: function (Oswestery Disability Index), health-related quality of life (European Quality of Life measure), unpleasantness of pain (Visual Analogue Scale), and assessment of the severity of PGP by an independent examiner.

##### **RESULTS:**

Between-group differences for morning pain, symptom-free women and function in the last treatment week were in favor of the intervention group. Visual Analogue Scale median was 27 mm (95% confidence interval 24.6-35.9) vs. 35 mm (95% confidence interval 33.5-45.7)(p=0.017) and the function disability index was 40 (range 34-46) vs. 48 (range 40-56)(p=0.016).

##### **CONCLUSIONS:**

Lower morning pain intensity and lesser deteriorated function was seen after craniosacral therapy in conjunction with standard treatment compared to standard treatment alone, but no effects regarding evening pain and sick-leave. Treatment effects were small and clinically questionable and conclusions should be drawn carefully. Further studies are warranted before recommending craniosacral therapy for pelvic girdle pain. © 2013 The Authors *Acta Obstetrica et Gynecologica Scandinavica* © 2013 Nordic Federation of Societies of Obstetrics and Gynecology.

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PMID: 23369067 [PubMed - as supplied by publisher]

## Single leg loading

*Man Ther.* 2013 Jan 23. pii: S1356-689X(12)00239-1. doi: 10.1016/j.math.2012.10.010. [Epub ahead of print]

### **Symmetry of trunk and femoro-pelvic movement responses to single leg loading tests in asymptomatic females.**

Edmondston S, Leo Y, Trant B, Vatna R, Kendell M, Smith A.

#### **Source**

Physiotherapy Program, School of Exercise and Health Sciences, Edith Cowan University, 270 Joondalup Drive, Joondalup, Perth, Western Australia 6027, Australia. Electronic address: s.edmondston@ecu.edu.au.

#### **Abstract**

Single leg loading tests are used clinically to examine balance and loading strategies in individuals with lower limb pain. Interpretation of these tests is through pain responses and comparisons with the asymptomatic leg. The purpose of this study was to examine normal differences in trunk and pelvic movement between legs during the single leg stand, single leg squat, hip hitch and hip drop tests, and to compare observational and quantitative assessments of trunk movement during the single leg squat test. Thirty-one asymptomatic females (age =  $21.7 \pm 3.1$  years) performed each test in a random sequence and quantitative analysis of coronal plane trunk lean (magnitude and direction), and femoro-pelvic angle was conducted using photographic image analysis. Within- and between-side minimal significant differences (MD) for femoro-pelvic angle were defined for each test. All tests had excellent within-side reliability (intra-class correlation coefficients (ICC) = 0.87-0.97, standard error of measurement (SEM) = 0.6-1.2°). The between-side MD for femoro-pelvic angle was 6.3, 6.5, 9.7, and 6.7° for the single leg stand, single leg squat, hip hitch and hip drop tests respectively. The magnitude of trunk lean was small, increased with test complexity and was not consistent in relation to the stance leg.

Excellent agreement (87-93%) for the direction of trunk movement between observers, and between observational and quantitative analysis (80-96%) was established for the single leg squat test. The patterns of trunk motion, and thresholds for significant difference in femoro-pelvic angle established in this study, will assist the interpretation of single leg loading tests in individuals with lower limb pain disorders.

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PMID: 23352179 [PubMed - as supplied by publisher]

## C spine/level rotation

### In vivo three-dimensional kinematics of the cervical spine during maximal axial rotation

Walid Salem<sup>a, d,  </sup>, Cyrille Lenders<sup>b</sup>, Jacques Mathieu<sup>c</sup>, Nicole Hermanus<sup>c, †</sup>, Paul Klein<sup>a</sup>

Manual Therapy Available online 29 January 2013

#### Abstract

The cervical spine exhibits considerable mobility, especially in axial rotation. Axial rotation exerts stress on anatomical structures, such as the vertebral artery, which is commonly assessed during clinical examination. The literature is rather sparse concerning the in vivo three-dimensional segmental kinematics of the cervical spine. This study aimed at investigating the three-dimensional kinematics of the cervical spine during maximal passive head rotation with special emphasis on coupled motion. Twenty healthy volunteers participated in this study. Low-dose CT scans were conducted in neutral and in maximum axial rotation positions. Each separated vertebra was segmented semi automatically in these two positions. The finite helical-axis method was used to describe 3D motion between discrete positions. The mean ( $\pm$ SD) maximum magnitude of axial rotation between C0 and C1 was  $2.5 \pm 1.0^\circ$  coupled with lateral flexion to the opposite side ( $5.0 \pm 3.0^\circ$ ) and extension ( $12.0 \pm 4.5^\circ$ ). At the C1–C2 level, the mean axial rotation was  $37.5 \pm 6.0^\circ$  associated with lateral flexion to the opposite side ( $2.5 \pm 6.0^\circ$ ) and extension ( $4.0 \pm 6.0^\circ$ ). For the lower levels, axial rotation was found to be maximal at C4–C5 level ( $5.5 \pm 1.0^\circ$ ) coupled with lateral flexion to the same side ( $-4.0 \pm 2.5^\circ$ ). Extension was associated at levels C2–C3, C3–C4 and C4–C5, whereas flexion occurred between C5–C6 and C6–C7. Coupled lateral flexion occurred to the opposite side at the upper cervical spine and to the same side at the lower cervical spine.

#### Keywords

3D kinematics; Cervical spine; Coupled motion; Axial rotation

## Back and Neck/centralization

Man Ther. 2012 Dec;17(6):497-506. doi: 10.1016/j.math.2012.05.003. Epub 2012 Jun 12.

### **Centralization and directional preference: a systematic review.**

May S, Aina A.

#### **Source**

Faculty of Health and Wellbeing, Collegiate Crescent Campus, Sheffield Hallam University, Sheffield S10 2BP, UK. s.may@shu.ac.uk

#### **Abstract**

Centralization is a symptom response to repeated movements that can be used to classify patients into sub-groups, determine appropriate management strategies, and prognosis. The aim of this study was to systematically review the literature relating to centralization and directional preference, and specifically report on prevalence, prognostic validity, reliability, loading strategies, and diagnostic implications. Search was conducted to June 2011; multiple study designs were considered. 62 studies were included in the review; 54 related to centralization and 8 to directional preference. The prevalence of centralization was 44.4% (range 11%-89%) in 4745 patients with back and neck pain in 29 studies; it was more prevalent in acute (74%) than sub-acute or chronic (42%) symptoms. The prevalence of directional preference was 70% (range 60%-78%) in 2368 patients with back or neck pain in 5 studies. Twenty-one of 23 studies supported the prognostic validity of centralization, including 3 high quality studies and 4 of moderate quality; whereas 2 moderate quality studies showed evidence that did not support the prognostic validity of centralization. Data on the prognostic validity of directional preference was limited to one study. Centralization and directional preference appear to be useful treatment effect modifiers in 7 out of 8 studies. Levels of reliability were very variable (kappa 0.15-0.9) in 5 studies. Findings of centralization or directional preference at baseline would appear to be useful indicators of management strategies and prognosis, and therefore warrant further investigation.

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PMID: 22695365 [PubMed - in process]

## Red flags/premanipulative hold

*Man Ther.* 2012 Nov 3. pii: S1356-689X(12)00201-9. doi: 10.1016/j.math.2012.09.009. [Epub ahead of print]

### **Diagnostic accuracy of premanipulative vertebrobasilar insufficiency tests: A systematic review.**

Hutting N, Verhagen AP, Vijverman V, Keesenberg MD, Dixon G, Scholten-Peeters GG.

#### **Source**

Department of Manual Therapy, Faculty of Medicine and Pharmacology, Vrije Universiteit Brussel, Brussels, Belgium; HAN University of Applied Sciences, Nijmegen, The Netherlands; Het Centrum Physical therapy & Manual therapy, Rijen, The Netherlands. Electronic address: nhutting@fysiotherapiehetcentrum.nl.

#### **Abstract**

##### **STUDY DESIGN:**

A systematic review of diagnostic accuracy studies.

##### **OBJECTIVE:**

To evaluate the diagnostic accuracy of the premanipulative vertebrobasilar insufficiency (VBI) tests.

##### **SUMMARY OF BACKGROUND DATA:**

The aim of premanipulative vertebrobasilar testing is to evaluate the adequacy of blood supply to the brain, by compressing the vertebral artery and examining for the onset of signs and symptoms of cerebrovascular ischemia. Although clinicians consider pre-manipulative testing important before applying spinal manipulations, the diagnostic accuracy has not been systematically reviewed.

##### **METHODS:**

A search was made in PUBMED, CINAHL and EMBASE databases from their date of inception until 2nd May 2012. Studies were included if they compared a VBI test with a reference test, and sensitivity and specificity were reported or could be calculated. The methodological quality of the studies was evaluated using QUADAS. Agreement between reviewers was calculated and expressed as a percentage and quantified by kappa statistics.

##### **RESULTS:**

Of the 1677 potential citations only 4 studies were included, all of questionable quality. Sensitivity was low and ranged from 0 to 57%, specificity from 67 to 100%, positive predictive value from 0% to 100%, and negative predictive value from 26 to 96%. The positive likelihood ratio ranged from 0.22 to 83.25 and the negative likelihood ratio from 0.44 to 1.40.

##### **CONCLUSION:**

Based on this systematic review of only 4 studies it was not possible to draw firm conclusions about the diagnostic accuracy of premanipulative tests. However, data on diagnostic accuracy indicate that the premanipulative tests do not seem valid in the premanipulative screening procedure. A surplus value for premanipulative tests seems unlikely.

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PMID: 23127991 [PubMed - as supplied by publisher]

## Headache/LBP

### Chronic migraine and chronic tension-type headache are associated with concomitant low back pain: Results of the German Headache Consortium study

- [Min-Suk Yoon](#), [Aubrey Manack](#) , [Sara Schramm](#), [Guenther Fritsche](#), [Mark Obermann](#), [Hans-Christoph Diener](#), [Susanne Moebus](#), [Zaza Katsarava](#)
- *Pain, Jan 2013*

#### Summary

Frequent low back pain is associated with chronic migraine and chronic tension-type headache, contributing to understanding of chronic pain and developing prevention strategies.

#### Abstract

The objective of this study was to evaluate the association between low and frequent low back pain and chronic migraine (CM) and chronic tension-type headache (CTTH) in a large, German population-based sample. Headaches were diagnosed according to International Classification of Headache Disorders-2 criteria and categorized according to frequency (episodic 1–14 days/month or chronic  $\geq$  15 days/month) and headache type (migraine or TTH). We defined frequent low back pain as self-reported low back pain on  $\geq$  15 days/month. We calculated odds ratios and 95% confidence intervals (CI) using logistic regression analyses, adjusting for sociodemographic covariates. There were 5605 respondents who reported headache in the previous year, of whom 255 (4.5%) had Chronic Headache. Migraine was diagnosed in 2933 respondents, of whom 182 (6.2%) had CM. TTH was diagnosed in 1253 respondents, of whom 50 (4.0%) had CTTH. Among 9944 respondents, 6030 reported low back pain, of whom 1267 (21.0%) reported frequent low back pain. In adjusted models, the odds of having frequent low back pain were between 2.1 (95% CI 1.7-2.6) and 2.7 (95% CI 2.3-3.2) times higher in all episodic headache subtypes when compared to No Headache. The odds of having frequent low back pain were between 13.7 (95% CI 7.4-25.3) and 18.3 (95% CI 11.9-28.0) times higher in all chronic headache subtypes when compared to No Headache. Low and frequent low back pain was associated with CM and CTTH. Multiple explanations may contribute to the association of headache and back pain, including the notion that the neurobiology of chronic headache, independent of primary headache type, not only involves the trigeminal pain pathway, but is also a part of abnormal general pain processing.

**Keywords:** [Chronic migraine](#), [Chronic tension-type headache](#), [Low back pain](#), [Chronic pain](#)

## Pain/topical

Mayo Clin Proc. 2013 Feb;88(2):195-205. doi: 10.1016/j.mayocp.2012.11.015.

### **Topical analgesics in the management of acute and chronic pain.**

Argoff CE.

#### **Source**

Department of Neurology, Albany Medical College, Albany, NY. Electronic address: argoffc@mail.amc.edu.

#### **Abstract**

Oral analgesics are commonly prescribed for the treatment of acute and chronic pain, but these agents often produce adverse systemic effects, which sometimes are severe. Topical analgesics offer the potential to provide the same analgesic relief provided by oral analgesics but with minimal adverse systemic effects.

This article describes the results of a systematic review of the efficacy of topical analgesics in the management of acute and chronic pain conditions. A literature search of MEDLINE/PubMed was conducted using the keywords topical analgesic AND chronic pain OR acute pain OR neuropathic pain and focused only on individual clinical trials published in English-language journals. The search identified 92 articles, of which 65 were eligible for inclusion in the review.

The most commonly studied topical analgesics were nonsteroidal anti-inflammatory drugs (n=27), followed by lidocaine (n=9), capsaicin (n=6), amitriptyline (n=5), glyceryl trinitrate (n=3), opioids (n=2), menthol (n=2), pimecrolimus (n=2), and phenytoin (n=2). The most common indications were acute soft tissue injuries (n=18), followed by neuropathic pain (n=17), experimental pain (n=6), osteoarthritis and other chronic joint-related conditions (n=5), skin or leg ulcers (n=5), and chronic knee pain (n=2).

Strong evidence was identified for the use of topical diclofenac and topical ibuprofen in the treatment of acute soft tissue injuries or chronic joint-related conditions, such as osteoarthritis. Evidence also supports the use of topical lidocaine in the treatment of postherpetic neuralgia and diabetic neuropathy. Currently, limited evidence is available to support the use of other topical analgesics in acute and chronic pain.

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PMID: 23374622 [PubMed - in process]

CRP/heat and cold

Exp Neurol. 2013 Jan 26. pii: S0014-4886(13)00030-7. doi: 10.1016/j.expneurol.2013.01.017.  
[Epub ahead of print]

**Cutaneous noradrenaline measured by microdialysis in complex regional pain syndrome during whole-body cooling and heating.**

Terkelsen AJ, Gierthmühlen J, Petersen LJ, Knudsen L, Christensen NJ, Kehr J, Yoshitake T, Madsen CS, Wasner G, Baron R, Jensen TS.

**Source**

Danish Pain Research Center and Department of Neurology, Aarhus University Hospital, Aarhus, Denmark. Electronic address: a.terkelsen@dadlnet.dk.

**Abstract**

Complex regional pain syndrome (CRPS) is characterised by autonomic, sensory, and motor disturbances. The underlying mechanisms of the autonomic changes in CRPS are unknown. However, it has been postulated that sympathetic inhibition in the acute phase with locally reduced levels of noradrenaline is followed by an up-regulation of alpha-adrenoceptors in chronic CRPS leading to denervation supersensitivity to catecholamines. This exploratory study examined the effect of cutaneous sympathetic activation and inhibition on cutaneous noradrenaline release, vascular reactivity, and pain in CRPS patients and in healthy volunteers. Seven patients and nine controls completed whole-body cooling (sympathetic activation) and heating (sympathetic inhibition) induced by a whole-body thermal suit with simultaneous measurement of the skin temperature, skin blood flow, and release of dermal noradrenaline. CRPS pain and the perceived skin temperature were measured every 5min during thermal exposure, while noradrenaline was determined from cutaneous microdialysate collected every 20min throughout the study period. Cooling induced peripheral sympathetic activation in patients and controls with significant increases in dermal noradrenaline, vasoconstriction, and reduction in skin temperature.

The main findings were that the noradrenaline response did not differ between patients and controls or between the CRPS hand and the contralateral unaffected hand, suggesting that the evoked noradrenaline release from the cutaneous sympathetic postganglionic fibres is preserved in chronic CRPS patients.

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PMID: 23357619 [PubMed - as supplied by publisher]

## Pain/hypermobility

*Arthritis Care Res (Hoboken)*. 2013 Feb 11. doi: 10.1002/acr.21979. [Epub ahead of print]  
**Joint hypermobility is modestly associated with disabling and limiting musculoskeletal pain: Results from a large scale general population based survey.**

Mulvey MR, Macfarlane GJ, Beasley M, Symmons DP, Lovell K, Keeley P, Woby S, McBeth J.  
**Source**

Arthritis Research UK Epidemiology Unit, Manchester Academic Health Sciences Centre, University of Manchester, UK.

### **Abstract**

#### **OBJECTIVE:**

The aim of this study was to determine the population prevalence of joint hypermobility (JH) and to test the hypothesis that JH would be associated with reporting musculoskeletal pain.

#### **METHODS:**

We conducted a cross-sectional population survey in Aberdeen city and Cheshire. 45949 questionnaires were mailed which assessed JH and the presence, distribution, duration and severity of musculoskeletal pain. Based on their pain reports, participants were classified as having chronic widespread pain (CWP), some pain, or no pain. Multinomial logistic regression tested the relationship between JH and pain status. Associations were adjusted for age, sex and other putative confounders. Participants with no pain were the referent category. Results are presented as relative risk ratios (RRR), 95% confidence intervals (CI).

#### **RESULTS:**

12,853 (29.3%) participants returned a questionnaire with complete data. 2,354 (18.3%) participants were classified as hypermobile. 2,094 participants (16.3%) had CWP and 5,801 (45.1%) had some pain and 4,958 participants (38.6%) reported no pain. JH participants were significantly more likely to report CWP than non-JH participants (18.5% vs. 15.8%,  $p < 0.001$ ). After adjusting for age and sex, hypermobile participants were 40% more likely to report the most severe CWP (1.4 (1.1-1.7),  $p < 0.00$ ). After further adjustments for employment status, smoking, alcohol and physical activity, JH remained significantly associated with the most severe CWP (1.6 (1.3-2.1),  $p < 0.000$ ) and some pain (1.3 (1.02-1.6),  $p = 0.03$ ).

#### **CONCLUSION:**

JH was associated with severe pain; however this relationship was not specific to CWP. The relationship was relatively modest and may be explained by unmeasured confounding factors such as psychological distress. © 2013 by the American College of Rheumatology.

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PMID: 23401475 [PubMed - as supplied by publisher]

## C spine/dizziness/manipulation

Chiropr Man Therap. 2013 Jan 7;21(1):3. doi: 10.1186/2045-709X-21-3.

### **Comparison of outcomes in neck pain patients with and without dizziness undergoing chiropractic treatment: a prospective cohort study with 6 month follow-up.**

Humphreys BK, Peterson C.

#### **Source**

University of Zürich and Orthopaedic University Hospital Balgrist, Forchstrasse 340, 8008, Zürich, Switzerland. kim.humphreys@balgrist.ch.

#### **Abstract**

##### **BACKGROUND:**

The symptom 'dizziness' is common in patients with chronic whiplash related disorders. However, little is known about dizziness in neck pain patients who have not suffered whiplash. Therefore, the purposes of this study are to compare baseline factors and clinical outcomes of neck pain patients with and without dizziness undergoing chiropractic treatment and to compare outcomes based on gender.

##### **METHODS:**

This prospective cohort study compares adult neck pain patients with dizziness (n = 177) to neck pain patients without dizziness (n = 228) who presented for chiropractic treatment, (no chiropractic or manual therapy in the previous 3 months). Patients completed the numerical pain rating scale (NRS) and Bournemouth questionnaire (BQN) at baseline. At 1, 3 and 6 months after start of treatment the NRS and BQN were completed along with the Patient Global Impression of Change (PGIC) scale. Demographic information was also collected. Improvement at each follow-up data collection point was categorized using the PGIC as 'improved' or 'not improved'. Differences between the two groups for NRS and BQN subscale and total scores were calculated using the unpaired Student's t-test. Gender differences between the patients with dizziness were also calculated using the unpaired t-test.

##### **RESULTS:**

Females accounted for 75% of patients with dizziness. The majority of patients with and without dizziness reported clinically relevant improvement at 1, 3 and 6 months with 80% of patients with dizziness and 78% of patients without dizziness being improved at 6 months. Patients with dizziness reported significantly higher baseline NRS and BQN scores, but at 6 months there were no significant differences between patients with and without dizziness for any of the outcome measures. Females with dizziness reported higher levels of depression compared to males at 1, 3 and 6 months (p = 0.007, 0.005, 0.022).

##### **CONCLUSIONS:**

Neck pain patients with dizziness reported significantly higher pain and disability scores at baseline compared to patients without dizziness. A high proportion of patients in both groups reported clinically relevant improvement on the PGIC scale. At 6 months after start of chiropractic treatment there were no differences in any outcome measures between the two groups.

PMID: 23295018 [PubMed] PMCID: PMC3565928

[PT/publications](#)

J Clin Epidemiol. 2013 Jan;66(1):78-84. doi: 10.1016/j.jclinepi.2012.08.004.

**Language of publication has a small influence on the quality of reports of controlled trials of physiotherapy interventions.**

Shiwa SR, Moseley AM, Maher CG, Pena Costa LO.

**Source**

Universidade Cidade de São Paulo, Rua Cesário Galeno 448, 03071000 São Paulo, São Paulo, Brazil.

**Abstract**

**OBJECTIVES:**

To investigate whether the methodological quality is influenced by language of publication in reports of randomized controlled trials and controlled clinical trials of physiotherapy interventions.

**STUDY DESIGN AND SETTING:**

Bibliometric and methodological quality data from all reports of trials indexed on the Physiotherapy Evidence Database (PEDro) up to February 2011 were extracted. Descriptive statistics on the total PEDro score and the 11 individual PEDro items were calculated for each language of publication and for all non-English-language reports combined. Regression models were calculated to predict the total PEDro score and the presence of each of the 11 items of the PEDro scale using the language of publication as an independent variable.

**RESULTS:**

A total of 13,392 reports of trials were used for this study, 12,532 trials published in English and 860 published in other languages. Overall methodological quality was better for English reports than reports written in other languages ( $\beta = 0.15$ , 95% confidence interval = 0.04, 0.25). Specifically, reporting was better for items relating to random allocation, concealed allocation, and blinding of assessors, worse for more than 85% follow-up and intention-to-treat analysis, and no different for eligibility criteria and source specified, baseline comparability, blinding of subjects and therapists, reporting of between-group statistical comparisons, and reporting of point measures and measures of variability.

**CONCLUSION:**

Language of publication is associated with the methodological quality of reports of physiotherapy trials. Although English reports are more likely to have better methodological quality than reports written in other languages, the magnitude of this influence is small.

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PMID: 23177897 [PubMed - indexed for MEDLINE]

## Stroke/Mirror therapy

Stroke. 2013 Jan;44(1):e1-2.

### **Mirror therapy for improving motor function after stroke.**

Thieme H, Mehrholz J, Pohl M, Behrens J, Dohle C.

#### **Abstract**

#### **OBJECTIVES:**

This systematic review summarizes the effectiveness of mirror therapy for improving motor function, activities of daily living, pain, and visuospatial neglect in patients after stroke.

#### **METHODS:**

We searched the Cochrane Stroke Group's Trials Register (June 2011), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2011, Issue 2), MEDLINE (1950 to June 2011), EMBASE (1980 to June 2011), CINAHL (1982 to June 2011), AMED (1985 to June 2011), PsycINFO (1806 to June 2011), and PEDro (June 2011). We also handsearched relevant conference proceedings, trials, and research registers; checked reference lists; and contacted trialists, researchers, and experts in our field of study. We included randomized controlled trials and randomized crossover trials comparing mirror therapy with any control intervention for patients after stroke. Two review authors independently selected trials based on the inclusion criteria, documented the methodological quality of studies, and extracted data. The primary outcome was motor function. We analyzed the results as standardized mean differences (SMDs) for continuous variables.

#### **RESULTS:**

We included 14 studies with a total of 567 participants, which compared mirror therapy with other interventions. When compared with all other interventions, mirror therapy was found to have a significant effect on motor function (postintervention data: SMD 0.61; 95% CI 0.22 to 1.0;  $P=0.002$ ; change scores: SMD 1.04; 95% CI 0.57 to 1.51;  $P<0.0001$  ; Figure). However, effects on motor function are influenced by the type of control intervention. Additionally, mirror therapy was found to improve activities of daily living (SMD 0.33; 95% CI 0.05 to 0.60;  $P=0.02$ ). We found a significant positive effect on pain (SMD  $-1.10$ ; 95% CI  $-2.10$  to  $-0.09$ ;  $P=0.03$ ), which is influenced by patient population. We found limited evidence for improving visuospatial neglect (SMD 1.22; 95% CI 0.24 to 2.19;  $P=0.01$ ). The effects on motor function were stable at follow-up assessment after 6 months.

PMID: 23390640 [PubMed - indexed for MEDLINE]

## LBP/Inflammatory prevalence

Ann Rheum Dis. 2013 Mar;72(3):369-73. doi: 10.1136/annrheumdis-2012-201403. Epub 2012 Jul 11.

### **The prevalence of inflammatory back pain: population-based estimates from the US National Health and Nutrition Examination Survey, 2009-10.**

Weisman MH, Witter JP, Reveille JD.

#### **Source**

Correspondence to Michael H Weisman, Cedars-Sinai Medical Center, Division of Rheumatology, Los Angeles, California 3556, USA; michael.weisman@cshs.org.

#### **Abstract**

##### **OBJECTIVE:**

To estimate the current US inflammatory back pain (IBP) prevalence using four published case definitions.

##### **METHODS:**

Analysis of an IBP data collection instrument specifically designed for the 2009-10 National Health and Nutrition Examination Survey. Subjects were 5103 US adults ages 20-69 with complete data. IBP prevalence as determined by Calin et al criteria, European Spondylarthropathy Study Group (ESSG) criteria, and Berlin criteria 8a and 7b.

##### **RESULTS:**

Age-adjusted US prevalence of IBP by Calin criteria was 5.0% (95% CI 4.2% to 5.8%). Prevalence of IBP was 5.6% (95% CI 4.7% to 6.5%) by ESSG criteria, and 5.8% (95% CI 5.2% to 6.4%) and 6.0% (95% CI 4.9% to 7.1%) by Berlin Criteria 8a and 7b, respectively. IBP prevalence did not differ significantly by age groups or between men and women. IBP prevalence was significantly lower among non-Hispanic black persons compared with non-Hispanic white persons for the Calin and ESSG IBP criteria. For the ESSG and Berlin 7b criteria, non-Hispanic white persons had significantly higher IBP prevalences compared with Mexican Americans.

##### **CONCLUSIONS:**

IBP is associated with spondyloarthritis. Awareness of the prevalence of IBP may be useful for planning future epidemiological studies as well as development and validation of diagnostic and classification criteria for specific clinically defined diseases.

PMID: 22791746 [PubMed - in process]

## LBP

*Phys Ther.* 2013 Feb 7. [Epub ahead of print]

### **The STarT Back Screening Tool and Individual Psychological Measures: Evaluation of Prognostic Capabilities for Low Back Pain Clinical Outcomes in Outpatient Physical Therapy Settings.**

Beneciuk JM, Bishop MD, Fritz JM, Robinson ME, Asal NR, Nisenzon AN, George SZ.

#### **Source**

#### **BACKGROUND:**

Psychologically informed practice emphasizes routine identification of modifiable psychological risk factors being highlighted.

#### **OBJECTIVE:**

The purpose of this study was to test the predictive validity of the STarT Back Screening Tool (SBT) in comparison with single-construct psychological measures for 6-month clinical outcomes.

#### **DESIGN:**

This was an observational, prospective cohort study.

#### **METHODS:**

Patients (n=146) receiving physical therapy for low back pain were administered the SBT and a battery of psychological measures (Fear-Avoidance Beliefs Questionnaire physical activity scale and work scale [FABQ-PA and FABQ-W, respectively], Pain Catastrophizing Scale [PCS], 11-item version of the Tampa Scale of Kinesiophobia [TSK-11], and 9-item Patient Health Questionnaire [PHQ-9]) at initial evaluation and 4 weeks later. Treatment was at the physical therapist's discretion. Clinical outcomes consisted of pain intensity and self-reported disability. Prediction of 6-month clinical outcomes was assessed for intake SBT and psychological measure scores using multiple regression models while controlling for other prognostic variables. In addition, the predictive capabilities of intake to 4-week changes in SBT and psychological measure scores for 6-month clinical outcomes were assessed.

#### **RESULTS:**

Intake pain intensity scores ( $\beta=.39$  to  $.45$ ) and disability scores ( $\beta=.47$  to  $.60$ ) were the strongest predictors in all final regression models, explaining 22% and 24% and 43% and 48% of the variance for the respective clinical outcome at 6 months. Neither SBT nor psychological measure scores improved prediction of 6-month pain intensity. The SBT overall scores ( $\beta=.22$ ) and SBT psychosocial scores ( $\beta=.25$ ) added to the prediction of disability at 6 months. Four-week changes in TSK-11 scores ( $\beta=-.18$ ) were predictive of pain intensity at 6 months. Four-week changes in FABQ-PA scores ( $\beta=-.21$ ), TSK-11 scores ( $\beta=-.20$ ) and SBT overall scores ( $\beta=-.18$ ) were predictive of disability at 6 months.

#### **LIMITATIONS:**

Physical therapy treatment was not standardized or accounted for in the analysis.

#### **CONCLUSIONS:**

Prediction of clinical outcomes by psychology-based measures was dependent upon the clinical outcome domain of interest. Similar to studies from the primary care setting, initial screening with the SBT provided additional prognostic information for 6-month disability and changes in SBT overall scores may provide important clinical decision-making information for treatment monitoring.

PMID: 23125279 [PubMed - as supplied by publisher]

## Acupuncture

Acupunct Med. 2013 Feb 2. [Epub ahead of print]

### **Sympathetic nervous system responses to acupuncture and non-penetrating sham acupuncture in experimental forearm pain: a single-blind randomised descriptive study.**

Paulson KL, Shay BL.

#### **Source**

Department of Physical Therapy, University of Manitoba, , Winnipeg, Manitoba, Canada.

#### **Abstract**

##### **OBJECTIVE:**

To quantify the sympathetic nervous system response to acupuncture and non-penetrating sham acupuncture in volunteers with pain.

##### **METHODS:**

A single-blind, randomised controlled study of 36 healthy adults with no recent participation in forearm strengthening or occupations involving repeated forceful wrist motion was carried out. A fatiguing wrist extension exercise protocol was completed to induce delayed onset muscle soreness. Group 1 received no treatment, group 2 a single session of acupuncture and group 3 a single session of sham acupuncture. Outcomes included skin conductance, skin temperature and perfusion measured for 20 min before treatment, during the 15 min treatment and for 10 min after treatment.

##### **RESULTS:**

The acupuncture group showed a significant increase from baseline in ipsilateral perfusion (135%) and bilateral skin conductance (144 and 146%) and a significant decrease from baseline in bilateral distal skin temperature (98%). The acupuncture and sham acupuncture groups showed decreased ipsilateral proximal skin temperature.

##### **CONCLUSIONS:**

Acupuncture appears to activate the sympathetic nervous system, indicated by a bilateral increase in skin conductance and a bilateral decrease in distal skin temperature after needle insertion. The unilateral increase in perfusion near the needle site seen with acupuncture treatment may be due to local circulatory, rather than systemic, control.

PMID: 23376998 [PubMed - as supplied by publisher]

## Fibromyalgia/opioid use

*J Clin Rheumatol.* 2013 Mar;19(2):72-7. doi: 10.1097/RHU.0b013e3182863447.

### **Chronic opioid use in fibromyalgia syndrome: a clinical review.**

Painter JT, Crofford LJ.

#### **Source**

From the \*VA HSRD Center for Mental Healthcare and Outcomes Research, Central Arkansas Veterans Healthcare System, and the University of Arkansas for Medical Sciences, Division of Pharmaceutical Evaluation and Policy, Little Rock, AR; and †Division of Rheumatology & Women's Health College of Medicine, Department of Internal Medicine, University of Kentucky, Lexington, KY.

#### **Abstract**

##### **ABSTRACT:**

Chronic opioid therapy in the treatment of chronic nonmalignant pain has increased drastically over the past decade. This is a worrisome trend in general, but specifically, given pathophysiologic characteristics seen in fibromyalgia (FM) syndrome patients, the use of this class of medication deserves special scrutiny. We first describe the current understanding of the etiology and pathophysiology of FM, including the role of genetic and environmental factors in the development of this syndrome. We then discuss the biologic effects of opioid use. Next, we review the pharmaceutical treatment options for FM, including 3 Food and Drug Administration-approved medications, and the evolution of treatment guidelines since 2004. We then highlight the various consequences associated with the mechanism of action of opioids and the specific concerns for FM patients. Finally, summarizing the existing literature, we make the case that chronic opioid use is inappropriate in the treatment of FM because of the interaction of unique pathophysiologic characteristics of the patients and effects associated with chronic opioid use.

PMID: 23364665 [PubMed - in process]

## Osteoarthritis/central sensitization

Phys Ther. 2013 Feb 7. [Epub ahead of print]

### **Pain Treatment for Patients With Osteoarthritis and Central Sensitization.**

Lluch Girbés E, Nijs J, Torres-Cueco R, López Cubas C.

#### **Source**

E. Lluch Girbés, Department of Rehabilitation, University of Valencia, Gascó Oliag 5, 46010 Valencia, Spain.

#### **Abstract**

Osteoarthritis is one of the most frequent, disabling and costly pathologies of modern society. One of the main aims of osteoarthritis management is pain control and functional ability improvement. The exact cause of osteoarthritis pain remains unclear. In addition to the pathological changes in articular structures, changes in central pain processing or central sensitization appear to be involved in osteoarthritis pain. The latter calls for a broader approach to the management of patients with osteoarthritis. Yet the scientific literature offers few information addressing the treatment of central sensitization specifically in osteoarthritis patients. Interventions like cognitive behavioral therapy and neuroscience education potentially target cognitive-emotional sensitization (and descending facilitation), while centrally acting drugs and exercise therapy can improve endogenous analgesia (descending inhibition) in patients with osteoarthritis. Future studies should assess these new treatment avenues.

PMID: 23392185 [PubMed - as supplied by publisher]

## Hyaluronic acid/Knee

PM R. 2013 Feb 12. pii: S1934-1482(13)00007-5. doi: 10.1016/j.pmrj.2013.01.004. [Epub ahead of print]

### "Functional Pain," Functional Outcomes, and Quality of Life After Hyaluronic Acid Intra-articular Injection for Knee Osteoarthritis.

Vincent HK, Montero C, Conrad BP, Horodyski M, Connelly J, Martenson M, Seay AN, Vincent KR.

#### Abstract

##### **OBJECTIVE:**

To compare the effect of hyaluronic acid (HA) intra-articular knee injections on pain and functional outcomes in persons with knee osteoarthritis (OA) over 6 months, and to determine whether or not changes in functional pain are related to improvements in quality of life.

##### **DESIGN:**

A prospective cohort study.

##### **SETTING:**

A research laboratory in an academic medical center.

##### **PARTICIPANTS:**

Patients with knee OA (N = 53) who were receiving medical care for OA.

##### **INTERVENTIONS:**

Intra-articular knee injections of HA (3 injections, each separated by 1 week) and a comparative noninjection group.

##### **MAIN OUTCOME MEASUREMENTS:**

Functional pain and outcomes assessments during chair rise, stair climbing, and a 6-minute walking test (by using 0-10 point numerical pain ratings during each test); gait parameters; Medical Outcomes Short Form-36 (SF-36) scores and subscores; the Western Ontario McMaster University Osteoarthritis Index (WOMAC).

##### **RESULTS:**

Six months after HA, the completion times for the chair rise and stair climb tasks, and the distance covered during the 6-minute walk were not different between the groups. However, functional pain ratings during stair climbing decreased in the HA-treated group (P = .05). Six-month changes in gait velocity, cadence, stride length, step length, and the percentage of the gait cycle spent in single support were all higher after HA injection at month 6 (all P < .05). Significant group-by-time interactions existed for total WOMAC scores. SF-36 Vitality subscores improved by 13%, and Role Physical scores were higher in patients treated with HA injection compared with participants in the noninjection group (P < .05). Regression analyses revealed that changes in the functional pain measures did not correspond with SF-36 scores.

##### **CONCLUSIONS:**

HA is associated with lower functional pain severity, with minimal impact on functional test scores. We interpreted this finding to represent an increase in the quality of the movement and functional activity. The change in functional pain did not correspond to changes in SF-36 quality-of-life scores.

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PMID: 23416148 [PubMed - as supplied by publisher]

## LBP/Psychology

BMC Musculoskelet Disord. 2013 Feb 19;14(1):65. [Epub ahead of print]

### **Biopsychosocial care and the physiotherapy encounter: physiotherapists' accounts of back pain consultations.**

Sanders T, Foster NE, Bishop A, Ong BN.

#### **Abstract**

##### **ABSTRACT:**

**BACKGROUND:** The physiotherapy profession has undergone a paradigmatic shift in recent years, where a 'biopsychosocial' model of care has acquired popularity in response to mounting research evidence indicating better patient outcomes when used alongside traditional physiotherapy. However, research has not examined how this new dimension to traditional physical therapy is implemented within the therapeutic consultation.

##### **METHODS:**

The study aimed to investigate physiotherapists' reported approaches to back pain care in the context of increasing pressure to address patients' psychosocial concerns. A secondary analysis of semi-structured qualitative interviews with 12 UK physiotherapists was conducted. Respondents were sampled from a national survey, to include a broad mix of physiotherapists. Data were analysed thematically, adopting the constant comparative methodology.

##### **RESULTS:**

The combination of traditional physical therapy with a broader biopsychosocial approach presented significant challenges. Physiotherapists responded by attempting to navigate patients' biopsychosocial problems through use of various strategies, such as setting boundaries around their clinical role and addressing lay health beliefs of patients through the provision of reassurance and lifestyle advice.

##### **CONCLUSIONS:**

As psychosocial issues, alongside biomechanical factors, command a prominent place within the back pain consultation, physiotherapists may benefit from further specific training and mentoring support in identifying specific strategies for combining the best of traditional physiotherapy approaches with greater focus on patients' beliefs, fears and social context.

PMID: 23421415 [PubMed - as supplied by publisher]

## C spine/fatigue

*Arch Phys Med Rehabil.* 2012 Dec 26. pii: S0003-9993(12)01282-8. doi: 10.1016/j.apmr.2012.12.013. [Epub ahead of print]

### **Construct Validity and Test-Retest Reliability of the Fatigue Severity Scale in People With Chronic Neck Pain.**

Takasaki H, Treleaven J.

#### **Abstract**

#### **OBJECTIVE:**

To investigate an appropriate scoring system and unidimensionality using Rasch analysis, discriminant validity, and reliability of the Fatigue Severity Scale (FSS) in people with chronic neck pain.

#### **DESIGN:**

Cross-sectional.

#### **SETTING:**

Tertiary institution.

#### **PARTICIPANTS:**

Patients with chronic neck pain (n=100) and asymptomatic controls (n=40).

#### **INTERVENTIONS:**

Not applicable.

#### **MAIN OUTCOME MEASURE:**

The FSS.

#### **RESULTS:**

Twenty-six of the 100 participants with chronic neck pain agreed to complete the FSS again within 1 week after the first administration for the assessment of the test-retest reliability. Two items obviously threatening unidimensionality were eliminated, and the 7-item FSS was developed through Rasch analyses. The 7-item FSS demonstrated the appropriateness of its 7-point scale and adequate internal consistency (Rasch-generated reliability, .83-.91). The 7-item FSS had a negligible floor effect (1%) and ceiling effect (2%). The item-person map demonstrated limited distribution of item difficulty in comparison with the distribution of person ability. The chronic neck pain group demonstrated significantly ( $P<.001$ ) higher scores in the 7-item FSS than the control group, indicating discriminant validity. The 7-item FSS also demonstrated adequate test-retest reliability with a mean interval of 4.1 days (n=26) for each item (quadratic-weighted  $\kappa=.83-.94$ ), and as a whole (intraclass correlation coefficient=.95). A 0-to-100 scale table reflecting Rasch scores was developed, and the minimum detectable change was 9.5 in the 0 to 100 scale.

#### **CONCLUSION:**

The 7-item FSS appears unidimensional and reliable, and can be used quickly in clinical practice to gain a basic understanding of fatigue symptoms in people with chronic neck pain. Further, it is possible to modify the 7-item FSS to enhance discriminant ability within people with chronic neck pain by adding additional items, enlarging the distribution of item difficulty.

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PMID: 23274223 [PubMed - as supplied by publisher]

## Unilateral Headaches

Eur Neurol. 2013 Feb 22;69(5):289-291. [Epub ahead of print]

### **Diagnostic Distribution of 100 Unilateral, Side-Locked Headaches Consulting a Specialized Clinic.**

Ramón C, Mauri G, Vega J, Rico M, Para M, Pascual J.

#### **Source**

Neuroscience Area, Service of Neurology, University Hospital Central de Asturias, Oviedo, Spain.

#### **Abstract**

**Objectives:** We analyzed the diagnoses of patients consulting due to strictly unilateral headaches.

**Methods:** We prospectively collected data from 100 consecutive patients. Diagnosis followed the ICHD-II criteria.

**Results:** They accounted for 18.9% of the 528 patients seen in the study period. They were more frequent in males (58%). Age ranged from 19 to 81 years. Diagnostic distribution was: cluster headache (38 cases), a variety of secondary headaches (14 cases), migraine (11 cases), cervicogenic headaches (9 cases), hemicrania continua (8 cases), nummular headache (6 cases), psychiatric headache (5 cases), paroxysmal hemicranias (4 cases), short-lasting unilateral neuralgiform headache attacks syndrome (3 cases), stabbing headache (1 case), and hypnic headache (1 case). Mean ages at onset fell between 47 and 58 years for several diagnoses (cervicogenic, nummular, psychiatric, hemicrania continua and paroxysmal hemicrania headaches), and were 22 years for migraine, 32 for cluster and in general older than 55 years for secondary headaches.

**Conclusions:** Strictly unilateral headaches account for almost 20% of headaches in subjects attending a headache clinic. Trigeminal-autonomic cephalgias in general (52%) and cluster headache in particular (38%) are the most frequent diagnoses, but secondary headaches account for 1 of 5 cases. Age at onset can be of help in their presumptive diagnosis.

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PMID: 23445663 [PubMed - as supplied by publisher]

## Tibial pain/Hip

J Sports Med. 2013 Feb 8. [Epub ahead of print]

### **The role of hip abductor and external rotator muscle strength in the development of exertional medial tibial pain: a prospective study.**

Verrelst R, Willems TM, Clercq DD, Roosen P, Goossens L, Witvrouw E.

#### **Source**

Department of Rehabilitation Sciences and Physiotherapy, Faculty of Medicine and Health Sciences, Ghent University, Ghent, Belgium.

#### **Abstract**

##### **OBJECTIVE:**

To prospectively identify proximal risk factors contributing to the development of exertional medial tibial pain (EMTP).

##### **METHODS:**

Data were prospectively collected on healthy female students in physical education, who were freshmen in 2010-2011 and 2011-2012. 95 female students, aged  $18.15 \pm 0.84$ , were tested at the beginning of their first academic year. Testing included isokinetic hip strength measurements of the abductors, adductors, internal rotators and external rotators. The follow-up of the individuals was assessed using a weekly online questionnaire and a 3-monthly retrospective control questionnaire. EMTP was diagnosed by an experienced MD (Doctor of Medicine). Cox regression analysis was used to identify the potential risk factors for the development of EMTP.

##### **RESULTS:**

21 individuals were diagnosed with EMTP during follow-up. The results of this study identified that decreased hip abductor concentric strength is a predictive parameter for the development of EMTP in females. More specifically, total work ( $p=0.010$ ) and average power ( $p=0.045$ ) for concentric abduction strength were found to be significant predictors for this lower leg overuse injury.

##### **CONCLUSIONS:**

Hip abductor weakness is a significant predictor for EMTP in women. Preventive screening methods for EMTP should therefore include this proximal contributing factor.

PMID: 23396233 [PubMed - as supplied by publisher]

Headaches/C 1 & 2

[Ann Neurol](#). 2013 Feb 19. doi: 10.1002/ana.23869. [Epub ahead of print]

**Pain referral patterns of the C1-C3 nerves: Implications for headache disorders.**

[Johnston MM](#), [Jordan SE](#), [Charles AC](#).

### Source

Department of Neurology, David Geffen School of Medicine at UCLA.

### Abstract

The cervical nerves may play a significant role in primary headache disorders. We reviewed the patterns of pain evoked by stimulation of the first 3 cervical nerves (;C1-C3) in 10 patients with chronic occipital pain, 6 of whom also had migraine. Stimulation at the C1 level evoked periorbital and frontal pain in 6/6 patients with migraine but evoked occipital or cervical pain in those without migraine. C2 and C3 stimulation resulted in occipital or cervical pain in all patients. The C1 nerve may have an important sensory function in headache disorders that have orbital and frontal pain as a prominent feature. *Ann Neurol* 2013.

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PMID 23424170 [PubMed - as supplied by publisher]

## Fibromyalgia/headaches

[Clin Rheumatol](#). 2013 Feb 27. [Epub ahead of print]

### **The prevalence of fibromyalgia and its relation with headache characteristics in episodic migraine.**

[Küçükşen S](#), [Genç E](#), [Yılmaz H](#), [Sallı A](#), [Gezer IA](#), [Karahan AY](#), [Salbaş E](#), [Cingöz HT](#), [Nas O](#), [Uğurlu H](#).

#### **Source**

Department of Physical Medicine and Rehabilitation, Meram Medical School, Necmettin Erbakan University, Yunus Emre Mh, 42080, Konya, Turkey, samikucuksen@hotmail.com.

#### **Abstract**

The objective of this study was to assess the prevalence of fibromyalgia (FM) in patients with episodic migraine and to evaluate the relationship between migraine characteristics and FM. One hundred and eighteen consecutive patients (mean age = 38 years, 75 % women) fulfilling the International Classification of Headache Disorders-II criteria for migraine with (n = 22) and without (n = 96) aura from an outpatient headache clinic of a university hospital were evaluated. The diagnosis of FM was made based on the 1990 American College of Rheumatology classification criteria. Participants completed some self-administered questionnaires ascertaining sociodemographics, headache severity, frequency and duration, headache-related disability (Headache Impact Test [HIT-6]) and Migraine Disability Assessment Scale, widespread musculoskeletal pain (visual analog scale), depression (Beck depression inventory), anxiety (Beck anxiety inventory), sleep quality (Pittsburgh Sleep Quality Index), fatigue (Multidimensional Assessment of Fatigue), and quality of life (Short Form-36 Health Survey [SF-36]). In patients with FM, the tender point count and the Fibromyalgia Impact Questionnaire were employed. FM was diagnosed in 37 (31.4 %) of the patients. FM comorbidity was equally distributed across patients with and without aura. Severity of migraine headache, HIT-6, and anxiety were especially associated with FM comorbidity. Patients suffering from migraine plus FM reported lower scores on all items of the SF-36. This study indicates that the assessment and management of coexisting FM should be taken into account in the assessment and management of migraine, particularly when headache is severe or patients suffer from widespread musculoskeletal pain.

PMID:23443337 [PubMed - as supplied by publisher]

## LBP/Manipulation

[Phys Ther.](#) 2013 Feb 21. [Epub ahead of print]

### **Immediate Effects of Region-Specific and Non-Region-Specific Spinal Manipulative Therapy in Patients With Chronic Low Back Pain: A Randomized Controlled Trial.**

[de Oliveira RF](#), [Liebano RE](#), [Costa LD](#), [Rissato LL](#), [Costa LO](#).

#### ***BACKGROUND:***

Manual therapists typically advocate the need for a detailed clinical examination in order to decide which vertebral level should be manipulated in patients with low back pain. However, it is unclear if spinal manipulation needs to be specific to a vertebral level.

#### ***OBJECTIVES:***

To analyze the immediate effects of a single, region specific spinal manipulation defined during the clinical examination versus a single non region specific spinal manipulation (applied on a upper thoracic vertebrae) in patients with chronic nonspecific low back pain for the outcomes pain intensity and pressure pain threshold at the time of the assessment.

#### ***PARTICIPANTS:***

Patients with chronic non-specific low back pain (with pain duration of at least 12 weeks).

#### ***RANDOMIZATION:***

The randomization schedule was generated by an independent statistician and was concealed by using consecutive numbered sealed opaque envelopes.

#### ***INTERVENTIONS:***

A single high-velocity manipulation was administered to the upper thoracic region of the patients allocated to the "non region specific manipulation" group and to the painful lumbar levels of the patients allocated to the "region specific manipulation" group.

#### ***BLINDING:***

The assessor who collected the data was blinded to the group allocation. It was not possible to blind the therapist and patients.

#### ***RESULTS:***

A total of 148 patients participated in the study (74 in each group). There was no loss of follow up. Both groups improved in terms of immediate decrease of pain intensity, however no between-group differences were observed. The between-group difference for pain intensity and pressure pain threshold were 0.50 points (95% CI -0.10 to 1.10; p=0.10) and -1.78 points (95% CI - 6.40 to 2.82, p=0.44), respectively.

#### ***ADVERSE REACTIONS:***

No adverse reactions were observed.

#### ***CONCLUSIONS:***

The immediate changes in pain intensity and pressure pain threshold after a single high-velocity manipulation do not differ by region specific versus non- region specific manipulation techniques in patients with chronic low back pain.

PMID:23431209 [PubMed - as supplied by publisher]

## C spine/Manipulation

[Pain Med.](#) 2013 Feb 22. doi: 10.1111/pme.12041. [Epub ahead of print]

### **What Are the Clinical Criteria Justifying Spinal Manipulative Therapy for Neck Pain?- A Systematic Review of Randomized Controlled Trials.**

[Smith J](#), [Bolton PS](#).

#### **Source**

School of Biomedical Sciences and Pharmacy, Faculty of Health, University of Newcastle, Callaghan, New South Wales, Australia.

#### **Abstract**

##### **OBJECTIVE:**

Manipulation and mobilization are used to treat neck pain. However, little is known about the diagnostic criteria used to determine the need for manipulation in cases of neck pain. The primary aim of this study was to determine what diagnostic criteria are used to identify which neck pain sufferers should receive spinal manipulation or mobilization.

##### **DESIGN:**

We systematically reviewed randomized controlled trials (RCT) involving mobilization or manipulation for neck pain. A data extraction pro forma was developed and trialed before two independent assessors extracted data sets from each RCT. A descriptive analysis was undertaken.

##### **RESULTS:**

Thirty RCTs met the inclusion criteria. Acute and chronic "Mechanical" neck pain was the most common (43%) diagnosis at recruitment to the RCTs but some (10%) included patients with cervicogenic headache. Clinical criteria were used to determine the need for neck manipulation in over half (63%) of the RCTs. This usually involved exclusion of serious conditions, manual examination for tenderness on palpation, and/or altered vertebral motion in the neck or upper thoracic region which are known to lack validity. The remainder of the RCTs did not report a diagnostic strategy. All RCTs lacked detail descriptions of diagnostic criteria or interventions used.

##### **CONCLUSIONS:**

This systematic review highlights the absence of reliable and valid diagnostic protocols to determine the need for spinal manipulation in persons presenting with non-serious, idiopathic, or whiplash-associated (grade II) neck pain. Guidelines requiring the reporting of valid diagnostic criteria are needed to improve the quality of RCTs concerning manual therapy.

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PMID: 23432939[PubMed - as supplied by publisher]

## Back School/McKenzie

[Phys Ther.](#) 2013 Feb 21. [Epub ahead of print]

### **Effectiveness of Back School Versus McKenzie Exercises in Patients With Chronic Nonspecific Low Back Pain: A Randomized Controlled Trial.**

[Garcia AN](#), [Costa LD](#), [da Silva TM](#), [Gondo FL](#), [Cyrillo FN](#), [Costa RA](#), [Costa LO](#).

#### **Abstract**

##### **BACKGROUND:**

Back School and McKenzie methods are popular active treatment approaches that include both exercises and information for patients with chronic non-specific low back pain.

##### **OBJECTIVE:**

To compare the effectiveness of Back School and McKenzie methods in patients with chronic non-specific low back pain.

##### **DESIGN:**

Prospectively registered, two-arm, randomized controlled trial with a blinded assessor.

##### **SETTING:**

This study was conducted in the outpatient physical therapy clinic in São Paulo, Brazil.

##### **PATIENTS:**

148 patients with chronic non-specific low back pain.

##### **INTERVENTIONS:**

Four-week treatment program (one session/week) based upon the Back School (delivered in group) or McKenzie (delivered individually) principles. The participants were also instructed to perform a daily set of home exercises.

##### **MEASUREMENTS:**

Clinical outcomes were obtained at follow up appointments at 1, 3 and 6 months after randomization. Primary outcomes were pain intensity (measured by the 0-10 Pain Numerical Rating Scale) and disability (measured by the 24-item Roland Morris Disability Questionnaire) 1 month after randomization. Secondary outcomes were pain intensity and disability at 3 and 6 months after randomization; quality of life (measured by World Health Organization Quality of Life Bref) at 1, 3 and 6 months after randomization and trunk flexion range of motion measured by an inclinometer at 1 month after randomization. The data were collected by a blinded assessor.

##### **RESULTS:**

Patients allocated to the McKenzie group had greater improvements in disability at one month; mean effect 2.37 points (95% CI 0.76 to 3.99) but not for pain (0.66 points, 95% CI -0.29 to 1.62). No between-group differences were observed for all secondary outcomes.

##### **LIMITATIONS:**

It was not possible to monitor the home exercises program. Therapists and patients were not blinded.

##### **CONCLUSIONS:**

The McKenzie method (a more resource intensive intervention) was slightly more effective than Back School for disability, but not for pain intensity immediately after treatment in patients with chronic low back pain.

PMID:23431213[PubMed - as supplied by publisher]

## **LBP/Military**

### **Prevalence of low back pain among soldiers at an army base** *Full Text*

#### **Chinese Medical Journal, 02/27/2013 Clinical Article**

Zhen-hai H et al. - The aim of this study is to investigate the prevalence of Low back pain (LBP) among soldiers and evaluate the possible causative factors in military training. The results may provide an insight into changes needed in military training that will reduce the occurrence of LBP among soldiers. The relatively high incidence of LBP among soldiers was related to night training, 5 km racing, and grenade throwing. Modifications in these training methods should enhance the health of recruits and lower the incidence of LBP.

#### **Methods**

- A cross-sectional survey was conducted in a group of young soldiers in China to estimate the prevalence of LBP and evaluate possible causative factors in military training.
- The survey was distributed to 1659 soldiers, of whom 1624 responded.
- LBP was reported by 425 of the 1624 (26.2%) soldiers.

#### **Results**

- The prevalence of LBP was higher in the armored force (51.3%) than in the artillery (27.5%) or infantry (11.9%).
- A multivariate logical regression analysis identified night training, 5 km cross-country race, and grenade-throwing training as military training risk factors for LBP.

**Impulsivity but not sensation seeking is associated with opioid analgesic misuse risk in patients with chronic pain**

Addictive Behaviours, 02/27/2013 **Clinical Article**

Marino EN et al.

Read more: <http://www.mdlinx.com/pain-management/news-article.cfm/4476517/pain-opioid-misuse-impulsivity-sensation-seeking#ixzz2MReJbYkm>

Abstract

Impulsivity and sensation seeking have been associated with substance use disorders, including opioid use disorders. This pilot study sought to examine whether impulsivity and sensation seeking, as measured by the Barratt Impulsiveness Scale (BIS) and Sensation Seeking Scale (SSS), were associated with opioid analgesic misuse risk in chronic, low-back pain patients prescribed opioid analgesics. Participants were 42 chronic, low-back pain patients enrolled in a larger study examining problematic opioid analgesic use. Impulsivity was assessed using the BIS, sensation seeking was measured using the SSS, and opioid analgesic misuse risk was assessed using the Current Opioid Misuse Measure (COMM). Significant bivariate associations were found between the COMM and the following predictor variables: age and the three BIS subscales: Attentional Impulsiveness, Non-planning Impulsiveness, and Motor Impulsiveness. Using a multivariate linear regression, after controlling for age, the BIS subscales accounted for 29.0% of the variance in the COMM. Attentional Impulsiveness was the only significant BIS subscale.

These results suggest a potential relationship between impulsivity, but not sensation seeking, and risk for opioid analgesic misuse. Impulsivity is not a prominent trait observed in chronic pain patients; however, it may be an important risk factor for opioid analgesic misuse for a subset of individuals with chronic pain. As such, these findings suggest that additional exploration of this potential risk factor is warranted.

## Kinesiotape

[Clin Rehabil.](#) 2013 Feb 20. [Epub ahead of print]

**A randomized controlled trial of a mixed Kinesio taping-compression technique on venous symptoms, pain, peripheral venous flow, clinical severity and overall health status in postmenopausal women with chronic venous insufficiency.**

[Aguilar-Ferrández ME](#), [Castro-Sánchez AM](#), [Matarán-Peñarrocha GA](#), [Guisado-Barrilao R](#), [García-Ríos MC](#), [Moreno-Lorenzo C](#).

### Source

1Department of Physical Therapy, University of Granada (UGR), Spain.

### Abstract

**Objectives:** To investigate the effect of a mixed Kinesio taping treatment in women with chronic venous insufficiency.

**Design:** A double-blinded randomized clinical trial.

**Setting:** Clinical setting.

**Participants:** One hundred and twenty postmenopausal women with mild-moderate chronic venous insufficiency were randomly assigned to an experimental group receiving standardized Kinesio taping treatment for gastrocnemius muscle enhancement and ankle functional correction, or to a placebo control group for simulated Kinesio taping

**Main outcomes variables:** Venous symptoms, pain, photoplethysmographic measurements, bioelectrical impedance, temperature, severity and overall health were recorded at baseline and after four weeks of treatment.

**Results:** The  $2 \times 2$  mixed model ANCOVA with repeated measurements showed statistically significant group \* time interaction for heaviness ( $F = 22.99$ ,  $p = 0.002$ ), claudication ( $F = 8.57$ ,  $p = 0.004$ ), swelling ( $F = 22.58$ ,  $p = 0.001$ ), muscle cramps ( $F = 7.14$ ,  $p = 0.008$ ), venous refill time (right:  $F = 9.45$ ,  $p = 0.023$ ; left:  $F = 14.86$ ,  $p = 0.001$ ), venous pump function (right:  $F = 35.55$ ,  $p = 0.004$ ; left:  $F = 17.39$ ,  $p = 0.001$ ), extracellular water (right:  $F = 35.55$ ,  $p = 0.004$ ; left:  $F = 23.84$ ,  $p = 0.001$ ), severity ( $F = 18.47$ ,  $p = 0.001$ ), physical function ( $F = 9.15$ ,  $p = 0.003$ ) and body pain ( $F = 3.36$ ,  $p = 0.043$ ). Both groups reported significant reduction in pain.

**Conclusion:** Mixed Kinesio taping-compression therapy improves symptoms, peripheral venous flow and severity and slightly increases overall health status in females with mild chronic venous insufficiency. Kinesio taping may have a placebo effect on pain.

PMID: 23426563[PubMed - as supplied by publisher]

## CRP/INFLAMMATION

[BMC Neurol](#). 2013 Feb 6;13:14. doi: 10.1186/1471-2377-13-14.

### **Morphological macrovascular alterations in complex regional pain syndrome type I demonstrated by increased intima-media thickness.**

[Derenthal N](#), [Maecken T](#), [Krumova E](#), [Germing A](#), [Maier C](#).

#### **Source**

Department of Pain Medicine, Berufsgenossenschaftliches Universitätsklinikum Bergmannsheil GmbH, Ruhr University Bochum, Bochum, Germany. Christoph.Maier@rub.de.

#### **Abstract**

ABSTRACT:

#### **BACKGROUND:**

Although intima-media thickness (IMT) was increased in several inflammatory diseases, studies investigating whether the inflammatory processes lead to macrovascular alteration with increased IMT in complex regional pain syndrome (CRPS) lack.

#### **METHODS:**

Using ultrasound (high-resolution B-mode), we compared bilaterally the IMT of the common carotid artery (CCA-IMT), the radial artery (RA-IMT), the brachial artery (BRA-IMT) and the quotient QRA/CCA, in CRPS type I (n=17), peripheral nerve injury (PNI, n=17) and pain-free controls (PFC, n=22, matched to CRPS by gender, age and traditional cardiovascular risk factors). Statistics: Spearman's correlation, paired t-test, ANOVA (p<0.05).

#### **RESULTS:**

Compared to PFC, RA-IMT were significantly increased in both patient groups bilaterally (mean±standard deviation, CRPS affected side vs. PFC dominant side: 0.32±0.08 mm vs. 0.19±0.08 mm, p<0.001; PNI affected side vs. PFC dominant side: 0.27±0.09 mm vs. 0.19±0.08 mm, p<0.05; CRPS non-affected side vs. PFC non-dominant side: 0.30±0.10 mm vs. 0.19±0.09 mm, p<0.001; PNI non-affected side vs. PFC non-dominant side: 0.25±0.10 mm vs. 0.19±0.09 mm, p<0.05) and QRA/CCA (CRPS affected-side vs. PFC dominant side: 0.49±0.12 vs. 0.30±0.11, p<0.001; PNI affected side vs. PFC dominant side: 0.41±0.10 vs. 0.30±0.11, p<0.05; CRPS non-affected side vs. PFC non-dominant side: 0.43±0.19 vs. 0.30±0.13, p<0.001; PNI non-affected side vs. PFC non-dominant side: 0.39±0.14 vs. 0.30±0.13, p<0.05), and BRA-IMT - only on the affected side in CRPS (CRPS: 0.42±0.06 mm vs. PFC: 0.35±0.08 mm; p<0.05). In CRPS, QRA/CCA was significantly higher on the affected side compared to PNI (p<0.05). However, only CRPS displayed within-group side-to-side differences with a significantly increased RA-IMT and QRA/CCA on the affected side (p<0.05). The CCA-IMT was comparable between all groups and sides.

#### **CONCLUSIONS:**

The increased IMT of peripheral arteries in CRPS suggests ongoing inflammatory process. Until now, only endothelial dysfunction has been reported. The presented morphological macrovascular alterations might explain the treatment resistance of some CRPS patients.

PMID: 23383716[PubMed - in process] PMCID:PMC3570292

## Pain/twin study

### **Five-factor personality traits and pain sensitivity. A twin study**

**Pain, 02/18/2013 Clinical Article**

Vassend O et al.

#### Summary

Significant phenotypic and genetic correlations between personality traits and pain sensitivity are demonstrated, with more consistent associations shown for cold-pressor pain than for heat pain.

#### Abstract

Factors underlying individual differences in pain responding are incompletely understood, but are likely to include genetic influences on basal pain sensitivity in addition to demographic characteristics such as age, sex, and ethnicity, and psychological factors including personality. This sought to explore the relationship between personality traits and experimental pain sensitivity, and to determine to what extent the covariances between these phenotypes are mediated by common genetic and environmental factors. A sample composed of 188 twins, ages 23 to 35 years, was included in the study. Heat pain intensity (HPI) and cold-pressor pain intensity (CPI) ratings were obtained using standardized pain testing procedures, and personality traits were assessed with the NEO Personality Inventory, Revised. Associations between personality and the pain sensitivity indices were examined using zero-order correlations and generalized estimating equations. Bivariate Cholesky models were used in the biometric analyses. The most robust finding was a significant phenotypic association between CPI and the personality facets Impulsiveness (a facet of Neuroticism) and Excitement-Seeking (a facet of Extraversion), and estimates of the genetic correlation were .37 ( $P < .05$ ) and .43 ( $P < .05$ ), respectively. In contrast, associations between HPI and personality seemed weak and unstable, but a significant effect of Angry Hostility (a facet of Neuroticism) emerged in generalized estimating equations analysis. Although the genetic correlation between these phenotypes was essentially zero, a weak but significant individual-specific environmental correlation emerged ( $r_e = .21$ ,  $P < .05$ ). Taken together, these findings suggest that CPI is more consistently related to personality dispositions than HPI, both phenotypically and genetically.

## Chronic pain/depression

[Pain Manag Nurs](#). 2012 Dec 27. pii: S1524-9042(12)00045-8. doi: 10.1016/j.pmn.2012.02.006.

[Epub ahead of print]

### **Cognitive Behavioral Therapy, Self-Efficacy, and Depression in Persons with Chronic Pain.**

[Nash VR](#), [Ponto J](#), [Townsend C](#), [Nelson P](#), [Bretz MN](#).

#### **Source**

Department of Psychiatry and Psychology, Pain Rehabilitation Center, Mayo Clinic, Rochester, Minnesota. Electronic address: [nash.virginia@mayo.edu](mailto:nash.virginia@mayo.edu).

#### **Abstract**

Chronic pain is a complex and often disabling condition compounded by depression and poor self-efficacy. The purpose of this evidence-based project was to explore the relationship of cognitive behavioral therapy (CBT)-focused groups with self-efficacy and depression in persons with chronic pain at an intensive interdisciplinary 3-week pain rehabilitation center (PRC). The project sample consisted of 138 persons admitted to a PRC and scoring  $\geq 27$  on the Center for Epidemiological Study Depression Scale (CES-D) and then completing the Pain Self-Efficacy Questionnaire (PSEQ). After completing the PRC program, including CBT-focused groups, discharge CES-D and PSEQ scores were analyzed. A comparison group of CES-D scores from 134 persons admitted to the PRC from a 9-month time period preceding the addition of the CBT-focused groups was also examined. There was a significant increase in self-efficacy after participation in the intensive pain rehabilitation program including CBT-focused groups.

Patient groups both before and after introduction of CBT-focused groups showed the same rate of improvement on the depression scores, suggesting that persons who participated in CBT-focused groups improved equally compared with persons who did not participate in these groups. Ninety-three percent of the participants expressed satisfaction with the CBT groups. This evidence-based practice is well supported in the literature and can be implemented with knowledgeable staff and engaged stakeholders.

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PMID: 23273826 [PubMed - as supplied by publisher]

## Pain/neurocognitive dysfunction

### **The extent of neurocognitive dysfunction in a multidisciplinary pain centre population. Is there a relation between reported and tested neuropsychological functioning?**

Pain, 02/15/2013 **Clinical Article**

Landro NI et al. –

#### Summary

A substantial proportion of severe chronic pain patients exhibit impaired neuropsychological function. In the future, this aspect of chronic pain syndromes should be systematically assessed.

#### Abstract

Patients with chronic nonmalignant pain syndromes frequently report cognitive dysfunction, in particular with respect to concentration and attention. Such complaints have, in general, been attributed to depressive symptoms. In this study we showed that cognitive complaints in chronic pain patients are significantly associated with objective test performance in the area of inhibitory control after partialling out degree of depressive symptoms. Furthermore, about 20% of the patients performed below cut-off for clinically significant impairment on tests of basic neurocognitive functioning. A larger proportion of patients with generalized and neuropathic pain performed below this cut-off, whereas patients with localized pain exhibited impaired function to a lesser degree. Chronic pain patients receiving opioids did not perform worse than patients off opioid treatment. Systematic assessment of basic neurocognitive functions in centres treating chronic pain patients is warranted.

**Keywords:** [Neurocognitive function](#), [Subjective complaints](#), [Chronic pain](#), [Pain centre](#)

## LBP/Physical Therapy

*Arch Phys Med Rehabil.* 2013 Jan 18. pii: S0003-9993(13)00029-4. doi: 10.1016/j.apmr.2013.01.008. [Epub ahead of print]

### **Initial Management Decisions After a New Consultation for Low Back Pain: Implications of the Usage of Physical Therapy for Subsequent Health Care Costs and Utilization.**

Fritz JM, Brennan GP, Hunter SJ, Magel JS.

#### **Source**

Department of Physical Therapy, University of Utah, Salt Lake City, UT; Physical Therapy Division, Intermountain Healthcare, Salt Lake City, UT. Electronic address: julie.fritz@hsc.utah.edu.

#### **Abstract**

##### **OBJECTIVES:**

To describe the utilization of physical therapy following a new primary care consultation for low back pain (LBP) and to examine the relations between physical therapy utilization and other variables with health care utilization and costs in the year after consultation.

##### **DESIGN:**

Retrospective cohort obtained from electronic medical records and insurance claims data.

##### **SETTING:**

Single health care delivery system.

##### **PARTICIPANTS:**

Individuals (N=2184) older than 18 years with a new consultation for LBP from 2004 to 2008.

##### **INTERVENTIONS:**

Patients were categorized as receiving initial physical therapy management if care occurred within 14 days after consultation.

##### **MAIN OUTCOME MEASURES:**

Total health care costs for all LBP-related care received in the year after consultation were calculated from claims data. Predictors of utilization of emergency care, advanced imaging, epidural injections, specialist visits, and surgery were identified using multivariate logistic regression. The generalized linear model was used to compare LBP-related costs based on physical therapy utilization and identify other cost determinants.

##### **RESULTS:**

Initial physical therapy was received by 286 of the 2184 patients (13.1%), and was not a determinant of LBP-related health care costs or utilization of specific services in the year after consultation. Older age, mental health, or neck pain comorbidity and initial management with opioids were determinants of cost and several utilization outcomes.

##### **CONCLUSIONS:**

Initial physical therapy management was not associated with increased health care costs or utilization of specific services following a new primary care LBP consultation. Additional research is needed to examine the cost consequences of initial management decisions made following a new consultation for LBP.

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PMID: 23337426 [PubMed - as supplied by publisher]

## LBP/Facet

PM R. 2012 Nov 2. pii: S1934-1482(12)00432-7. doi: 10.1016/j.pmrj.2012.09.002. [Epub ahead of print]

### **Are Facet Joint Bone Marrow Lesions and Other Facet Joint Features Associated With Low Back Pain? A Pilot Study.**

Suri P, Dharamsi AS, Gaviola G, Isaac Z.

#### **Abstract**

#### **OBJECTIVE:**

To determine the frequency of facet joint (FJ) bone marrow lesions, high FJ periarticular signal intensity, and FJ effusions in a convenience sample of patients with axial low back pain (LBP).

#### **DESIGN:**

A cross-sectional pilot study with retrospective data collection.

#### **SETTING:**

Outpatient spine clinics.

#### **PATIENTS:**

Sixty-four adults with axial LBP scheduled to receive an FJ intra-articular corticosteroid injection.

#### **METHODS:**

Clinical data were abstracted from the medical record by 1 physician, who was blinded to results of the magnetic resonance imaging evaluations. A musculoskeletal radiologist blinded to clinical information performed standardized assessments of the L1-S1 spinal levels for FJ bone marrow lesions, effusions, and high periarticular signal intensity on lumbar magnetic resonance imaging, including short tau inversion recovery sequences. We calculated the frequency of these FJ features and used generalized estimating equations to examine side-specific associations between the location of FJ features and the side on which LBP was experienced.

#### **RESULTS:**

The sample included 64 participants with a mean (standard deviation) age of  $59.9 \pm 14.5$  years. FJ bone marrow lesions were present in 64.1%, effusions in 70.3%, and high periarticular signal intensity in 65.6% of participants. All the features were most common at the L4-L5 level. These FJ features showed significant associations with the side on which LBP was experienced or statistical trends toward an association, with or without adjustment for age, gender, and body mass index. The strongest side-specific associations were seen for the number of bone marrow lesions (odds ratio [OR] 1.60 [95% confidence interval {CI}, 1.05-2.43]), any FJ effusion (OR 2.23 [95% CI, 1.02-4.85]), and the number of joints with high periarticular signal intensity (OR 1.75 [95% CI, 1.16-2.63]).

#### **CONCLUSIONS:**

FJ bone marrow lesions, effusions, and high periarticular signal intensity were common in this sample of patients with axial LBP and substantially more frequent than in prior reports from unselected samples of patients with or without radicular pain. These FJ features demonstrate side-specific associations with LBP. Further study of associations between these FJ features and LBP are warranted.

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PMID: 23122893 [PubMed - as supplied by publisher]

## Total Knee/psychology

Rheumatology (Oxford). 2013 Jan 15. [Epub ahead of print]

### **Medical and psychological comorbidity predicts poor pain outcomes after total knee arthroplasty.**

Singh JA, Lewallen DG.

#### **Source**

Medicine Service and Center for Surgical Medical Acute Care Research and Transitions (C-SMART), Birmingham VA Medical Center, Department of Medicine, School of Medicine, University of Alabama, Division of Epidemiology, School of Public Health, University of Alabama, Birmingham, AL and Department of Orthopedic Surgery, Mayo Clinic College of Medicine, Rochester, MN, USA.

#### **Abstract**

**Objective.** To study comorbidity correlates of moderate to severe pain after total knee arthroplasty (TKA).

**Methods.** We analysed prospectively collected Total Joint Registry data to examine whether medical (heart disease, peripheral vascular disease, renal disease, chronic obstructive pulmonary disease, diabetes and CTD) and psychological (anxiety and depression) comorbidity is associated with moderate to severe pain after primary or revision TKA. Multivariable-adjusted logistic regression simultaneously adjusted for all comorbidities, age, sex, BMI, underlying diagnosis, American Society of Anesthesiologist (ASA) class, distance from medical centre and implant fixation (only for primary TKA) was used to analyse primary and revision TKA separately.

**Results.** The primary TKA cohort consisted of 7139 and 4234 TKAs (response rates 65% and 57%) and the revision TKA cohort consisted of 1533 and 881 TKAs at 2 and 5 years (response rates 57% and 48%), respectively. In the primary TKA cohort, anxiety was associated with 1.4 higher odds (95% CI 1.0, 2.0) of moderate to severe index knee pain at 2 years; at 5 years, heart disease (OR 1.7; 95% CI 1.1, 2.6), depression (OR 1.7; 95% CI 1.1, 2.5) and anxiety (OR 1.9; 95% CI 1.2, 3.1) were significantly associated with moderate to severe pain. For revision TKA, CTD (OR 0.5; 95% CI 0.2, 0.9) and depression (OR 1.8; 95% CI 1.1, 3.1) were significantly associated with moderate to severe pain.

**Conclusion.** This study identified medical and psychological comorbidity risk factors for moderate to severe pain after primary and revision TKA. This information can be used to provide realistic outcome expectations for patients before undergoing primary or revision TKA.

PMID: 23325037 [PubMed - as supplied by publisher]

## Fibromyalgia/RA

### **Painful effects of auditory startle, forehead cooling and psychological stress in patients with fibromyalgia or rheumatoid arthritis** □ *Journal of Psychosomatic Research*,

02/26/2013 **Clinical Article**

Drummond PD et al. –

Abstract

Objective

The aim of this study was to determine whether the clinical pain associated with rheumatoid arthritis or fibromyalgia would increase during standard laboratory tasks and, if so, whether these increases were linked with individual differences in psychological distress.

Methods

Twenty-three patients with fibromyalgia and 16 patients with rheumatoid arthritis rated changes in clinical pain after an acoustic startle stimulus, during painful forehead cooling, and during stressful mental arithmetic. In addition, pain tolerance was assessed during a submaximal effort tourniquet test, and patients provided ratings of distress on a standard Depression, Anxiety and Stress Inventory.

Results

Pain at rest was associated with depression scores in patients with rheumatoid arthritis, and was associated with stress scores in the fibromyalgia group. However, pain tolerance was unrelated to individual differences in psychological distress in either group. In patients with fibromyalgia, clinical pain increased after the acoustic startle stimulus and painful forehead cooling, and increased during stressful mental arithmetic. Arthritic pain also increased during forehead cooling and mental arithmetic in association with indices of psychological distress.

Conclusions

These findings suggest that processes linked with individual differences in distress aggravate pain in rheumatoid arthritis, whereas some other mechanism (e.g., failure of stress-related pain modulation processes or an aberrant interaction between nociceptive afferent and sympathetic efferent fibers) triggers stress-induced pain in fibromyalgia

## Pain/Gender

Effects of ethnicity and gender role expectations of pain on experimental pain: A cross-cultural study. *European journal of pain*. Oct 16 2012.

Gender role expectations of pain (GREP) have been shown to mediate sex differences in experimental pain. Few studies have investigated the role of ethnicity in shaping GREP. The aim of this study was to examine interactions between ethnicity and GREP on experimentally induced pressure and ischemic pain in Libyan and white British students in their respective countries. □

**METHODS:** Libyan (n = 124) and white British (n = 51) students completed a GREP questionnaire and their response to experimental pain was measured. Blunt pressure pain threshold (PPT) was measured over the 1st interosseous muscle using algometry. Pain intensity and pain unpleasantness (100 mm visual analogue scale) were measured at 1-min intervals during a sub-maximal effort tourniquet test on the forearm.

**RESULTS:** Multivariate analysis of variance detected significant effects for Sex and Ethnicity on pain measurements. Men had higher PPTs than women ( $p < 0.001$ ). Libyans had higher PPTs than white British participants ( $p < 0.001$ ). There were significant effects for Sex and Ethnicity for pain intensity ratings ( $p < 0.01$ ) but no significant differences between the sexes in pain unpleasantness ( $p > 0.05$ ). Libyan participants had higher pain intensity ( $p < 0.01$ ) and pain unpleasantness ( $p < 0.05$ ) ratings compared with white British participants. There were effects for Sex and Ethnicity for all GREP dimensions. Libyan participants exhibited stronger stereotypical views in GREP than white British participants ( $p < 0.001$ ).

**CONCLUSIONS:** GREP was the mediator of sex but not ethnic differences in pain report, suggesting that gender stereotypical attitudes to pain account for differences in pain expression between men and women.

## Chronic pain

Gender role affects experimental pain responses: a systematic review with meta-analysis. *European journal of pain*. Oct 2012;16(9):1211-1223.

Gender role refers to the culturally and socially constructed meanings that describe how women and men should behave in certain situations according to feminine and masculine roles learned throughout life. The aim of this meta-analysis was to evaluate the relationship between gender role and experimental pain responses in healthy human participants. We searched computerized databases for studies published between January 1950 and May 2011 that had measured gender role in healthy human adults and pain response to noxious stimuli. Studies were entered into a meta-analysis if they calculated a correlation coefficient ( $r$ ) for gender role and experimental pain. Searches yielded 4465 'hits' and 13 studies were eligible for review. Sample sizes were 67-235 participants and the proportion of female participants was 45-67%. Eight types of gender role instrument were used. Meta-analysis of six studies (406 men and 539 women) found a significant positive correlation between masculine and feminine personality traits and pain threshold and tolerance, with a small effect size ( $r = 0.17$ ,  $p = 0.01$ ). Meta-analysis of four studies (263 men and 297 women) found a significant negative correlation between gender stereotypes specific to pain and pain threshold and tolerance, with a moderate effect size ( $r = -0.41$ ,  $p < 0.001$ ).

In conclusion, individuals who considered themselves more masculine and less sensitive to pain than the typical man showed higher pain thresholds and tolerances. Gender stereotypes specific to pain scales showed stronger associations with sex differences in pain sensitivity response than masculine and feminine personality trait scales.

## Pain/ethnicity

Ethnicity and the pain experience. *SocSci Med.* 1984;19(12):1279-1298.

The first objective of this investigation was to examine interethnic differences and similarities in the reported pain experience of Black, Irish, Italian, Jewish and Puerto Rican facial pain patients. Responses, attitudes and descriptions were found to be relatively similar after controlling for most variables shown by previous studies to influence reported pain experience. These variables include symptom history, signs elicited on physical, radiographic and laboratory examination, as well as social, cultural and psychological data. A thirty-five item scale was employed to measure patients' pain experience. Using analysis of variance and covariance, no significant interethnic differences were found for twenty-three (65.7%) of the items. The majority of the twelve items for which interethnic differences were found concerned the patients' emotionality (stoicism vs. expressiveness) in response to pain, and interference in daily functioning attributed to pain. The pain experiences reported by the Black, Italian and Jewish patients were found most similar as measured by the twelve items. Irish and Puerto Rican patients appeared relatively distinct from the other groups as well as from each other. The second objective of this study was to identify particular variables that influence intra-ethnic variation in the pain experience. These were determined by multiple regression analysis of two summary indices previously derived by factor analysis of the thirty-five items. The specific variables which were most influential differed according to ethnicity, as follows: degree of medical acculturation for Black patients; degree of social assimilation for Irish patients; duration of pain for Italian patients; and level of psychological distress for Jewish and Puerto Rican patients. Thus, it appears that, in our study population, interethnic homogeneity is present for most aspects of the pain experience, while intra-ethnic heterogeneity exists for factors that may influence that experience.

That is, the five ethnic groups were generally found to be similar in their reported responses to pain. Yet, each group was quite different with regard to factors which influence the responses.

## Pain//ethnic

A quantitative review of ethnic group differences in experimental pain response: do biology, psychology, and culture matter? *Pain medicine*.

Apr 2012;13(4):522-540.

**OBJECTIVE:** Pain is a subjectively complex and universal experience. We examine research investigating ethnic group differences in experimental pain response and factors contributing to group differences. **METHOD:** We conducted a systematic literature review and analysis of studies using experimental pain stimuli to assess pain sensitivity across multiple ethnic groups. Our search covered the period from 1944 to 2011, and used the PubMed bibliographic database; a reference source containing over 17 million citations. We calculated effect sizes; identified ethnic/racial group categories, pain stimuli, and measures; and examined findings regarding bio-psycho-socio-cultural factors contributing to ethnic/racial group differences.

**RESULTS:** We found 472 studies investigating ethnic group differences and pain. Twenty-six of these met our review inclusion criteria of investigating ethnic group differences in experimental pain. The majority of studies included comparisons between African Americans (AA) and non-Hispanic Whites (NHW). There were consistently moderate to large effect sizes for pain tolerance across multiple stimulus modalities; AA demonstrated lower pain tolerance. For pain threshold, findings were generally in the same direction, but effect sizes were small to moderate across ethnic groups. Limited data were available for supra-threshold pain ratings. A subset of studies comparing NHW and other ethnic groups showed a variable range of effect sizes for pain threshold and tolerance.

**CONCLUSION:** There are potentially important ethnic/racial group differences in experimental pain perception. Elucidating ethnic group differences has translational merit for culturally competent clinical care and for addressing and reducing pain treatment disparities among ethnically/racially diverse groups.

## Pain/ethnic

Do ethnicity and gender have an impact on pain thresholds in minor dermatologic procedures? A study on thermal pain perception thresholds in Asian ethnic groups. *Skin Res Technol.* Feb 2004;10(1):38-42.

The perception of pain is a personal experience influenced by many factors, including genetic, ethnic and cultural issues. Understanding these perceptions is especially important in dermatologic patients undergoing minor surgical operations and who often differ in their pain response to surgical treatments. Little is known about how these differences affect the perception of experimental pain. The purpose of this study was to determine experimental pain perception differences in three distinct East Asian ethnic populations.

**METHODS:** Pain thresholds were examined with a psychophysical computerized quantitative thermal sensory testing device (TSA 2001) in healthy volunteers recruited from three different Asian ethnic groups. Using the methods of limits, experimental pain perception threshold was measured on the forehead and volar aspect of the forearm in 49 healthy subjects. The measurements were then repeated after skin barrier perturbation with adhesive tape stripping of the stratum corneum. All three ethnic groups were analyzed separately with respect to age, gender educational level and skin type.

**RESULTS:** A total of 20 Chinese, 14 Malay and 15 Indian subjects completed the study. Thermal pain thresholds were similar in all three ethnic groups before and after tape strippings. No significant differences were noted between genders.

□ **CONCLUSIONS:** Using quantitative sensory thermal testing, we demonstrated that no significant differences in pain occur between different races and genders.

## Pain/Smoking

**Smoking Cessation Related to Improved Patient-Reported Pain Scores Following Spinal Care** J Bone Joint Surg Am; 2012 Dec 05; 94 (23): 2161-2166

Smoking is associated with low back pain, intervertebral disc disease, inferior patient outcomes following surgical interventions, and increased rates of postoperative complications. The purpose of the present study was to examine the effect of smoking and smoking cessation on pain and disability in patients with painful spinal disorders.

**Methods:** We examined a prospectively maintained database of records for 5333 patients with axial or radicular pain from a spinal disorder with regard to smoking history and the patient assessment of pain on four visual analog scales during the course of care. Confounding factors, including secondary gain, sex, age, and body mass index, were also examined. The mean duration of follow-up was eight months. Multivariate statistical analysis was performed with variables including smoking status, secondary gain status, sex, depression, and age as predictors of pain and disability.

**Results:** Compared with patients who had never smoked, patients who were current smokers reported significantly greater pain in all visual analog scale pain ratings ( $p < 0.001$ ). The mean improvement in reported pain over the course of care was significantly different between nonsmokers and current smokers ( $p < 0.001$ ). Compared with patients who had continued to smoke, those who had quit smoking during the course of care reported significantly greater improvement in pain in visual analog scale pain ratings for worst ( $p = 0.013$ ), current ( $p < 0.05$ ), and average weekly pain ( $p = 0.024$ ). The mean improvement in the visual analog scale pain ratings was clinically important in patients in all three groups of nonsmokers. As a group, those who had continued smoking during treatment had no clinically important improvement in reported pain.

**Conclusions:** Given a strong association between improved patient-reported pain and smoking cessation, this study supports the need for smoking cessation programs for patients with a painful spinal disorder.

## Pain/Metaphors

**A Randomized-controlled Trial of Using a Book of Metaphors to Reconceptualize Pain and Decrease Catastrophizing in People With Chronic Pain.** 2013;29(1) pg. 20-25, Clinical Journal of Pain.

**Objectives:** Reconceptualization of pain and reduction of pain-related catastrophizing are primary objectives in chronic pain rehabilitation. Teaching people about the underlying biology of pain has been shown to facilitate these objectives. The objective of this study was to investigate whether written metaphor and story can be used to increase knowledge of the biology of pain and reduce pain-related catastrophizing.

**Methods:** In this randomized single-blind partial cross-over controlled trial, 79 people with chronic pain received either a booklet of metaphors and stories conveying key pain biology concepts or a booklet containing advice on how to manage chronic pain according to established cognitive-behavioral principles. The primary outcome variables, pain biology knowledge and catastrophizing, were measured before randomization, at 3 weeks and at 3 months, at which time the control group was crossed over to receive the metaphors and stories booklet. Pain and disability were secondary outcome variables.

**Results:** The Metaphors group showed larger changes in both variables (time x group interactions:  $P < 0.01$ , effect size Cohen  $d = 0.7$  for catastrophizing and  $1.7$  for pain biology knowledge). Gains were maintained for at least 3 months. Changes were replicated in the Advice group when crossed over. There was no change in pain or self-reported disability in either group.

**Discussion:** We conclude that providing educational material through metaphor and story can assist patients to reconceptualize pain and reduce catastrophizing. Metaphor and story could be used as a precursor to other interventions that target functional capacity.

## Massage/Neck and shoulder pain

### Massage Therapy for Neck and Shoulder Pain: A Systematic Review and Meta-Analysis *Full Text*

Evidence-based Complementary and Alternative Medicine , 03/04/2013 Evidence Based Medicine Review Article Clinical Article

Kong LJ et al. – The purpose of this study is to evaluate the effectiveness of massage therapy (MT) for neck and shoulder pain. MT may provide immediate effects for neck and shoulder pain. However, MT does not show better effects on pain than other active therapies. No evidence suggests that MT is effective in functional status.

#### Methods

- Seven English and Chinese databases were searched until December 2011 for randomized controlled trials (RCTs) of MT for neck and shoulder pain.
- The methodological quality of RCTs was assessed based on PEDro scale.
- The meta-analyses of MT for neck and shoulder pain were performed.

#### Results

- Twelve high-quality studies were included.
- In immediate effects, the meta-analyses showed significant effects of MT for neck pain (standardised mean difference, SMD, 1.79; 95% confidence intervals, CI, 1.01 to 2.57; ) and shoulder pain (SMD, 1.50; 95% CI, 0.55 to 2.45; ) versus inactive therapies.
- And MT showed short-term effects for shoulder pain (SMD, 1.51; 95% CI, 0.53 to 2.49; ).
- But MT did not show better effects for neck pain (SMD, 0.13; 95% CI, -0.38 to 0.63; ) or shoulder pain (SMD, 0.88; 95% CI, -0.74 to 2.51; ) than active therapies.
- In addition, functional status of the shoulder was not significantly affected by MT.

## LBP/MRI upright

[J Orthop Traumatol](#). 2013 Mar;14(1):15-22. doi: 10.1007/s10195-012-0213-z. Epub 2012 Sep 16.

### **Lumbar spine MRI in upright position for diagnosing acute and chronic low back pain: statistical analysis of morphological changes.**

[Tarantino U](#), [Fanucci E](#), [Iundusi R](#), [Celi M](#), [Altobelli S](#), [Gasbarra E](#), [Simonetti G](#), [Manenti G](#).

#### **Source**

Department of Orthopedics and Traumatology, "Tor Vergata" University of Rome, "Policlinico Tor Vergata" Foundation, V.le Oxford 81, 00133, Rome, Italy.

#### **Abstract**

##### **BACKGROUND:**

Patients with low back pain frequently demonstrate recumbent magnetic resonance imaging (MRI) alterations not always related to homogeneous clinical symptoms. The purpose of this study was to evaluate and quantify the statistical significance of variations of some anatomical parameters of the lumbosacral spine and reveal occult disc pathologies from recumbent to upright position in patients with acute and chronic low back pain.

##### **MATERIALS AND METHODS:**

Fifty-seven patients complaining of low back pain (27 women, 30 men) underwent dynamic lumbosacral MRI with a 0.25-T tilting system (G-scan Esaote). We settled five parameters for which variations have been evaluated: lumbosacral angle, lordosis angle, L3-L4 intersomatic disc height, L3-L4 interspinous processes distance, and widest anteroposterior dural sac diameter. Images were obtained in both recumbent and upright positions.

##### **RESULTS:**

Statistically significant differences [one-way analysis of variance (ANOVA),  $p = 0.0043$ ] were found between each pair of values of parameters sampled in recumbent and upright positions. In 70 % of patients, on visual qualitative analysis only, an increment of disc protrusions and/or spondylolisthesis was found in the upright position; in three cases, in the upright position only, an interarticular pseudocyst was found.

##### **CONCLUSIONS:**

Dynamic MRI with an open-configuration, low-field tilting MRI system is a feasible and promising tool to study degenerative pathology of the spine. Moreover, in cases of low back pain with negative MRI in the recumbent position or in patients with pain in the upright position only, tilting MRI permits visualization of occult spine and disc pathologies in patients with acute or chronic low back pain.

PMID:22983676 [PubMed - in process]

## Knee/Pain/Quadriceps

[Clin J Sport Med](#). 2013 Jan;23(1):19-24. doi: 10.1097/JSM.0b013e3182717b7b.

### **Induced anterior knee pain immediately reduces involuntary and voluntary quadriceps activation.**

[Park J](#), [Hopkins JT](#).

#### **Source**

Sports Science Research Centre, Department of Physical Education, Kyungpook National University, Bukgu, Daegu, Korea. jihongpark@knu.ac.kr

#### **Abstract**

##### **OBJECTIVE:**

To examine the immediate effects of experimentally induced anterior knee pain (AKP) on involuntary and voluntary quadriceps strength and activation.

##### **DESIGN:**

Crossover 3 × 3 randomized controlled laboratory study with repeated measures.

##### **SETTING:**

Human Performance Research Center, Brigham Young University.

##### **PARTICIPANTS:**

Thirteen neurologically sound volunteers (age, 21.9 ± 3.2 years).

##### **INTERVENTIONS:**

Subjects underwent 3 different conditions (pain, sham, and control). To induce AKP and sham condition, 5% sodium chloride and 0.9% sodium chloride (total volume of 1.0 mL for each condition), respectively, were injected into the infrapatellar fat pad on the dominant leg. No injection was performed for the control condition.

##### **MAIN OUTCOME MEASURES:**

The vastus medialis peak Hoffmann reflex normalized by the peak motor response (H:M ratio) was used to measure involuntary quadriceps activation. Quadriceps central activation ratio (CAR) using maximal isometric knee extension torque (N·m) was calculated to assess voluntary quadriceps activation. The visual analog scale was used to measure pain perception.

##### **RESULTS:**

Our pain model increased perceived pain immediately after the 5% hypertonic saline injection and pain lasted for 12 minutes on average ( $F_{40,743} = 16.85$ ,  $P < 0.001$ ). During the pain condition, subjects showed a 12% decrease in H:M ratio ( $F_{2,59} = 8.64$ ,  $P < 0.001$ ), a 34% decrease in maximal isometric knee extension torque ( $F_{2,59} = 5.89$ ,  $P < 0.01$ ), and a 5% decrease in CAR ( $F_{2,59} = 3.83$ ,  $P = 0.03$ ).

##### **CONCLUSIONS:**

Our data showed that joint pain may be an independent factor to alter function of the muscles surrounding the painful joint. Both involuntary and voluntary inhibitory pathways may play a role in an immediate reduction of muscle activation.

PMID:23103783[PubMed - in process]

## Mobilization

### **The relative effectiveness of segment specific level and non-specific level spinal joint mobilization on pain and range of motion: results of a systematic review and meta-analysis**

Journal of Manual & Manipulative Therapy, 03/05/2013 Evidence Based Medicine

#### **Review Article**

Slaven EJ et al. –

Read more: <http://www.mdlinx.com/pain-management/news-article.cfm/4480643/pain-spinal-mobilization-specific-level#ixzz2Mg4koOqA>

#### **Abstract:**

**Study design:** Systematic literature review and meta-analysis.

**Objective:** In symptomatic subjects to: (1) examine the effects of a single session of joint mobilization on pain at rest and with most painful movement, and (2) compare the effects when joint mobilization is provided to a specific or non-specific spinal level.

**Background:** Joint mobilization is routinely used for treating spinal pain in conjunction with other interventions, but its unique effect is not well understood. Further, there is controversy about the role of 'specific level' techniques in producing benefit.

**Methods:** Searches were performed for randomized controlled trials (RCTs) using electronic databases (MEDLINE, CINAHL, and PEDro) from 1966 through November 2010. Methodological quality was assessed using previously detailed criteria. Meta-analysis and meta-regression were conducted on eligible studies.

**Results:** Eight RCTs with a mean methodological score of 10/12 were included. Significant heterogeneity ( $P = 0.075$ ) was found in the overall meta-analysis estimate. When stratified by body location, no significant individual effect was found for pain at rest. However, there was a statistical mean difference [0.71 (95% confidence interval: 0.13-1.28)] between pain at rest for the cervical and lumbar individual means.

**Conclusions:** We found multiple studies which provided evidence that a single session of joint mobilization can lead to a reduction of pain at rest and with most painful movement. When using joint mobilization, the need for specific versus non-specific level mobilization may be influenced by anatomical region; the direction of effect in the cervical spine was toward specific mobilization and in the lumbar spine towards non-specific mobilization.

## **Pain/Depression**

### **Thresholds and Perception of Cold Pain, Heat Pain, and the Thermal Grill Illusion in Patients With Major Depressive Disorder**

**Psychosomatic Medicine, 03/05/2013 Clinical Article**

Boettger MK et al. – The aim of this study was to use this technique to gain further insights into the altered pain perception in major depressive disorder (MDD). Cold and heat pain thresholds (CPT/HPT) and temperature differentials for the perception of the thermal grill illusion (TGI), were increased in patients with MDD as compared with controls. Pain intensity, however, was rated differently for CPT and HPT, where patients indicated higher ratings in tendency, and for the TGI stimulation, where pain was perceived less intense.

#### **Methods**

- In 18 unmedicated patients with MDD, cold and heat pain thresholds (CPT/HPT) as well as the perception of the TGI were examined and compared with 18 matched controls.

#### **Results**

- CPT and HPT were significantly increased in patients (7.9°C and 47.5°C) compared with controls (15.9°C and 45.2°C, respectively;  $p < .05$ ).
- In the range of TGI stimuli that were perceived painful by controls, the patients did not indicate painful sensations, thereby indicating a shift of the stimulus–response curve of TGI pain perception toward higher stimulus intensities, that is, greater temperature differentials between cold and warm bars (11.5°C for controls, 16.7°C for patients).
- The patients rated the pain intensity perceived at the respective pain thresholds (CPT and HPT) in tendency higher than did the controls, whereas they perceived the TGI less painful despite increased stimulus intensities.
- Unpleasantness ratings were similar between groups.

## T and C spine/Manipulation

Short-Term Combined Effects of Thoracic Spine Thrust Manipulation and Cervical Spine Nonthrust Manipulation in Individuals With Mechanical Neck Pain: A Randomized Clinical Trial  
Michael Masaracchio, Joshua A. Cleland, Madeleine Hellman, Marshall Hagins

DOI: 10.2519/jospt.2013.4221

**STUDY DESIGN:** Randomized clinical trial.

**OBJECTIVE:** To investigate the short-term effects of thoracic spine thrust manipulation combined with cervical spine nonthrust manipulation (experimental group) versus cervical spine nonthrust manipulation alone (comparison group) in individuals with mechanical neck pain.

**BACKGROUND:** Research has demonstrated improved outcomes with both nonthrust manipulation directed at the cervical spine and thrust manipulation directed at the thoracic spine in patients with neck pain. Previous studies have not determined if thoracic spine thrust manipulation may increase benefits beyond those provided by cervical nonthrust manipulation alone.

**METHODS:** Sixty-four participants with mechanical neck pain were randomized into 1 of 2 groups, an experimental or comparison group. Both groups received 2 treatment sessions of cervical spine nonthrust manipulation and a home exercise program consisting of active range-of-motion exercises, and the experimental group received additional thoracic spine thrust manipulations. Outcome measures were collected at baseline and at a 1-week follow-up, and included the numeric pain rating scale, the Neck Disability Index, and the global rating of change.

**RESULTS:** Participants in the experimental group demonstrated significantly greater improvements ( $P < .001$ ) on both the numeric pain rating scale and Neck Disability Index at the 1-week follow-up compared to those in the comparison group. In addition, 31 of 33 (94%) participants in the experimental group, compared to 11 of 31 participants (35%) in the comparison group, indicated a global rating of change score of +4 or higher at the 1-week follow-up, with an associated number needed to treat of 2.

**CONCLUSION:** Individuals with neck pain who received a combination of thoracic spine thrust manipulation and cervical spine nonthrust manipulation plus exercise demonstrated better overall short-term outcomes on the numeric pain rating scale, the Neck Disability Index, and the global rating of change.

**LEVEL OF EVIDENCE:** Therapy, level 1b.

*J Orthop Sports Phys Ther* 2013;43(3):118-127. Epub 7 December 2012.

doi:10.2519/jospt.2013.4221

**KEY WORDS:** manipulative therapy, manual therapy, mobilization

## Hip/Impingement

### Ice Hockey Goaltender Rehabilitation, Including On-Ice Progression, After Arthroscopic Hip Surgery for Femoroacetabular Impingement

Casey M. Pierce, Robert F. LaPrade, Michael Wahoff, Luke O'Brien, Marc J. Philippon

DOI: 10.2519/jospt.2013.4430

**SYNOPSIS:** Ice hockey goaltenders, especially those who employ the butterfly technique, are a specialized population of athletes because of the unique physical demands that the position places on their lower extremities, specifically at the hip. It is no surprise that hip injuries are a common occurrence among goalies. A review of the biomechanical literature has demonstrated that stresses on the hip while in flexion and end-range internal rotation, the position goaltenders commonly use, put the hip at risk for injury and are likely a major contributing factor to overuse hip injuries. The stress on a goaltender's hip can potentially be further intensified by the presence of bony deformities, such as cam- or pincer-type femoroacetabular impingement, which can lead to chondrolabral junction and articular cartilage injuries. There have been few published reports of goaltenders' functional outcomes following femoroacetabular impingement surgery, and, to our knowledge, no studies have yet identified the specific challenges presented in the rehabilitation of goaltenders following femoroacetabular impingement surgery. The present clinical commentary describes a 6-phase return-to-skating program developed as part of a rehabilitation protocol to aid hockey goaltenders recovering from surgery.

**LEVEL OF EVIDENCE:** Therapy, level 5.

*J Orthop Sports Phys Ther* 2013;43(3):129-141. Epub 12 February 2013.

doi:10.2519/jospt.2013.4430

**KEY WORDS:** butterfly position, FAI, impingement, injury, return to play, skating

**The present clinical commentary describes a 6-phase return-to-skating program developed as part of a rehabilitation protocol to aid ice hockey goaltenders recovering from surgery.**

## Shoulder/Rotator Cuff

### Surgical Repair and Rehabilitation of a Combined 330° Capsulolabral Lesion and Partial-Thickness Rotator Cuff Tear in a Professional Quarterback: A Case Report

Kevin E. Wilk, Leonard C. Macrina, Adrian J. Yenchak, E. Lyle Cain, James R. Andrews

DOI: 10.2519/jospt.2013.3726

**STUDY DESIGN:** Case report.

**BACKGROUND:** Traumatic glenohumeral dislocations with concomitant rotator cuff and capsular injuries present a unique and challenging surgical and rehabilitative condition, particularly in the overhead-throwing athlete. Multiple injuries of the shoulder complex create the potential for complications in the course of recovery and place a full return to high-level sport at risk. The purpose of this case report is to present the multiphased rehabilitation approach of an elite professional quarterback after an acute 330° capsulolabral reconstruction and rotator cuff repair as a result of a luxatio erecta injury.

**CASE DESCRIPTION:** A 26-year-old male professional football player, a quarterback, sustained a right luxatio erecta shoulder dislocation while trying to recover a fumble during a regular-season game. The injury occurred when he was hit in the back of his throwing shoulder, which was in an abducted and externally rotated position, while lying on the ground. Five days postinjury, he underwent a 330° capsulolabral repair, with concomitant rotator cuff repair and subacromial decompression. He completed 28 weeks of a multiphased rehabilitation program.

**OUTCOMES:** The patient returned to play in the National Football League (NFL) 8 months later, for the start of the next season, during which he had his most productive year as a professional quarterback, leading the league in passing yards and finishing third in the league for the number of touchdowns. Since the injury, the patient has played 6 consecutive seasons, starting over 96 consecutive, regular-season games and maintaining a very high level of play.

**DISCUSSION:** This case report highlights the clinical decision-making process and management of this rare, severe injury.

**LEVEL OF EVIDENCE:** Therapy, level 4.

*J Orthop Sports Phys Ther 2013;43(3):142-153. Epub 12 February 2013.  
doi:10.2519/jospt.2013.3726*

**KEY WORDS:** dislocation, luxatio erecta, shoulder, SLAP

**The purpose of this case report is to present the multiphased rehabilitation approach of an elite professional quarterback after an acute 330° capsulolabral reconstruction and rotator cuff repair as a result of a luxatio erecta injury.**

## LBP/TA

### Clinimetric Analysis of Pressure Biofeedback and Transversus Abdominis Function in Individuals With Stabilization Classification Low Back Pain

Dustin R. Grooms, Terry L. Grindstaff, Theodore Croy, Joseph M. Hart, Susan A. Saliba

DOI: 10.2519/jospt.2013.4397

**STUDY DESIGN:** Descriptive laboratory study.

**OBJECTIVE:** To determine if a proposed clinical test (pressure biofeedback) could detect changes in transversus abdominis (TrA) muscle thickness during an abdominal drawing-in maneuver.

**BACKGROUND:** Pressure biofeedback may be used to assess abdominal muscle function and TrA activation during an abdominal drawing-in maneuver but has not been validated.

**METHODS:** Forty-nine individuals (18 men, 31 women) with low back pain who met stabilization classification criteria underwent ultrasound imaging to quantify changes in TrA muscle thickness while a pressure transducer was used to measure pelvic and spine position during an abdominal drawing-in maneuver. A paired *t* test was used to compare differences in TrA activation ratios between groups (able or unable to maintain pressure of  $40 \pm 5$  mmHg). The groups were further dichotomized based on TrA activation ratio (high, greater than 1.5; low, less than 1.5). Sensitivity, specificity, and likelihood ratios were calculated.

**RESULTS:** There was not a significant difference ( $P = .57$ ) in TrA activation ratios (able to maintain pressure,  $1.59 \pm 0.28$ ; unable to maintain pressure,  $1.54 \pm 0.24$ ) between groups. The pressure biofeedback test had low sensitivity of 0.22 (95% confidence interval [CI]: 0.10, 0.42) but moderate specificity of 0.77 (95% CI: 0.58, 0.89), a positive likelihood ratio of 0.94 (95% CI: 0.33, 2.68), and a negative likelihood ratio of 1.02 (95% CI: 0.75, 1.38).

**CONCLUSION:** Successful completion on pressure biofeedback does not indicate high TrA activation. Unsuccessful completion on pressure biofeedback may be more indicative of low TrA activation, but the correlation and likelihood coefficients indicate that the pressure test is likely of minimal value to detect TrA activation. This study was registered with ClinicalTrials.gov (NCT01015846).

*J Orthop Sports Phys Ther 2013;43(3):184-193. Epub 16 November 2012.*

*doi:10.2519/jospt.2013.4397*

**KEY WORDS:** lumbar stabilization, sonography, trunk control

**The authors determine if a proposed clinical test (pressure biofeedback) could detect changes in transversus abdominis (TrA) muscle thickness during an abdominal drawing-in maneuver.**

## Lumbar/Fusion

*Spine J.* 2013 Feb;13(2):99-109. doi: 10.1016/j.spinee.2012.10.001. Epub 2012 Nov 3.

### **Spinal fusion for chronic low back pain: systematic review on the accuracy of tests for patient selection.**

Willems PC, Staal JB, Walenkamp GH, de Bie RA.

#### **Abstract**

#### **BACKGROUND CONTEXT:**

Spinal fusion is a common but controversial treatment for chronic low back pain (LBP) with outcomes similar to those of programmed conservative care. To improve the results of fusion, tests for patient selection are used in clinical practice.

#### **PURPOSE:**

To determine the prognostic accuracy of tests for patient selection that are currently used in clinical practice to identify those patients with chronic LBP who will benefit from spinal fusion.

#### **STUDY DESIGN:**

Systematic review of the literature.

#### **SAMPLE:**

Studies that compared the results of magnetic resonance imaging (MRI), provocative discography, facet joint blocks, orthosis immobilization, and temporary external fixation with the clinical outcome of patients who underwent spinal fusion for chronic LBP.

#### **OUTCOME MEASURES:**

To determine the prognostic accuracy of tests to predict the clinical outcome of spinal fusion in terms of sensitivity, specificity, and likelihood ratios (LRs).

#### **METHODS:**

Data sources PubMed (1966 to November 2010), EMBASE (1974 to November 2010), and reference lists were searched without restriction by language or publication status. Two reviewers independently selected studies for inclusion, extracted data for analysis, and assessed the risk of bias with the Quality Assessment of Diagnostic Accuracy Studies checklist, modified for prognostic studies. Discrepancies were resolved by consensus.

#### **RESULTS:**

Ten studies met the eligibility criteria. Immobilization by an orthosis (median [range] positive LR, 1.10 [0.94-1.13] and negative LR, 0.92 [0.39-1.12]), provocative discography (median [range] positive LR, 1.18 [0.70-1.71] and negative LR, 0.74 [0.24-1.40]), and temporary external fixation (median [range] positive LR, 1.22 [1.02-1.74] and negative LR, 0.58 [0.15-0.94]) failed to show clinically useful prognostic accuracy. Statistical pooling was not feasible because of different test protocols, variability in outcome assessment, and heterogeneous patient populations. No studies reporting on facet joint blocks or MRI could satisfy the inclusion criteria. Obscure patient selection, high risk of verification bias, and outcome assessment with poorly validated instruments precluded strong conclusions for all tests.

#### **CONCLUSIONS:**

No subset of patients with chronic LBP could be identified for whom spinal fusion is a predictable and effective treatment. Best evidence does not support the use of current tests for patient selection in clinical practice.

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PMID: 23127364 [PubMed - in process]

## LBP/PT

Phys Ther. 2013 Feb 28. [Epub ahead of print]

### **The Therapeutic Alliance Between Clinicians and Patients Predicts Outcome in Chronic Low Back Pain.**

Ferreira PH, Ferreira ML, Maher CG, Refshauge KM, Latimer J, Adams RD.

#### **Source**

P.H. Ferreira, BPT, MSc, PhD, Faculty of Health Sciences, Discipline of Physiotherapy, University of Sydney, PO Box 170, Lidcombe, Sydney, New South Wales 1825, Australia.

#### **Abstract**

##### **BACKGROUND:**

The impact of the relationship (therapeutic alliance) between patients and physical therapists on treatment outcome in the rehabilitation of patients with chronic low back pain (LBP) has not been previously investigated.

##### **OBJECTIVE:**

The purpose of this study was to investigate whether the therapeutic alliance between physical therapists and patients with chronic LBP predicts clinical outcomes.

##### **DESIGN:**

This was a retrospective observational study nested within a randomized controlled trial.

##### **METHODS:**

One hundred eighty-two patients with chronic LBP who volunteered for a randomized controlled trial that compared the efficacy of exercises and spinal manipulative therapy rated their alliance with physical therapists by completing the Working Alliance Inventory at the second treatment session. The primary outcomes of function, global perceived effect of treatment, pain, and disability were assessed before and after 8 weeks of treatment. Linear regression models were used to investigate whether the alliance was a predictor of outcome or moderated the effect of treatment.

##### **RESULTS:**

The therapeutic alliance was consistently a predictor of outcome for all the measures of treatment outcome. The therapeutic alliance moderated the effect of treatment on global perceived effect for 2 of 3 treatment contrasts (general exercise versus motor control exercise, spinal manipulative therapy versus motor control exercise). There was no treatment effect modification when outcome was measured with function, pain, and disability measures.

##### **LIMITATIONS:**

Therapeutic alliance was measured at the second treatment session, which might have biased the interaction during initial stages of treatment. Data analysis was restricted to primary outcomes at 8 weeks.

##### **CONCLUSIONS:**

Positive therapeutic alliance ratings between physical therapists and patients are associated with improvements of outcomes in LBP. Future research should investigate the factors explaining this relationship and the impact of training interventions aimed at optimizing the alliance.

PMID: 23139428 [PubMed - as supplied by publisher]

## LBP/Gait

[Spine \(Phila Pa 1976\)](#). 2013 Mar 1;38(5):E286-92. doi: 10.1097/BRS.0b013e318281de28.

### **Coordination of spinal motion in the transverse and frontal planes during walking in people with and without recurrent low back pain.**

[Crosbie J](#), [de Faria Negrão Filho R](#), [Nascimento DP](#), [Ferreira P](#).

#### Source

\*Clinical & Rehabilitation Sciences Research Group, Faculty of Health Sciences, The University of Sydney, Sydney, New South Wales, Australia †Faculdade de Ciências e Tecnologia-Unesp, Campus de Presidente Prudente, Laboratório de Fisioterapia Aplicada ao Movimento Humano, Departamento de Fisioterapia, Sao Paulo, Brazil; and ‡Faculdade de Medicina da Universidade de São Paulo, FMUSP, Sao Paulo, Brazil.

#### Abstract

STUDY DESIGN.: Observational cohort study.

OBJECTIVE.: To investigate spinal coordination during preferred and fast speed walking in pain-free subjects with and without a history of recurrent low back pain (LBP).

SUMMARY OF BACKGROUND DATA.: Dynamic motion of the spine during walking is compromised in the presence of back pain (LBP), but its analysis often presents some challenges. The coexistence of significant symptoms may change gait because of pain or adaptation of the musculoskeletal structures or both. A history of LBP without the overlay of a current symptomatic episode allows a better model in which to explore the impact on spinal coordination during walking.

METHODS.: Spinal and lower limb segmental motions were tracked using electromagnetic sensors. Analyses were conducted to explore the synchrony and spatial coordination of the segments and to compare the control and subjects with LBP.

RESULTS.: We found no apparent differences between the groups for either overall amplitude of motion or most indicators of coordination in the lumbar region; however, there were significant postural differences in the mid-stance phase and other indicators of less phase locking in controls compared with subjects with LBP. The lower thoracic spinal segment was more affected by the history of back pain than the lumbar segment.

CONCLUSION.: Although small, there were indicators that alterations in spinal movement and coordination in subjects with recurrent LBP were due to adaptive changes rather than the presence of pain.

PMID:23238492[PubMed - in process]

LBP/Vit. D

**Vitamin D levels appear to be normal in Danish patients attending secondary care for low back pain and a weak positive correlation between serum level Vitamin D and Modic changes was demonstrated: a cross-sectional cohort study of consecutive patients with non-specific low back pain** *Full Text*

BMC Musculoskeletal Disorders, 03/06/2013 **Clinical Article**

Johansen JV et al. –

Read more: <http://www.mdlinx.com/pain-management/news-article.cfm/4490906/back-pain-vitamin-d#ixzz2Mm3HLNzz>

### *Background*

Hypovitaminosis D has previously been reported in both the general population, in people with chronic musculoskeletal pain, and in people with low back pain (LBP). Myopathy-related symptoms such as diffuse bone and muscle pain, weakness and paresthesia in the legs, have also been observed in people with non-specific LBP and associations with low levels of Vitamin D have been suggested. The objectives of this study were to investigate (1) Vitamin D levels in patients seeking care for LBP in a Danish out-patient secondary care setting, and (2) their possible relationship with myopathy-related symptoms, Body Mass Index (BMI), and Modic changes.

### *Methods*

A total of 152 consecutive patients with non-specific LBP participated in a cross-sectional study. Participants were recruited at The Spine Centre of Southern Denmark during springtime 2011. Individual serum levels of 25-Hydroxyvitamin-D were determined using Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS). Information about symptoms, height, and weight were collected from electronic questionnaires completed by the participants. All patients had an MRI from which Modic changes were identified. Correlations between Vitamin D level and pain, paresthesia, weakness in the legs, BMI or Modic changes were described using correlation coefficients and odds ratios obtained from logistic regression.

### *Results*

Two-thirds of the included patients with LBP had normal Vitamin D levels of >50 nmol/L. No correlations were seen between Vitamin D deficiency and gender, age, back pain intensity, leg pain intensity, and duration of pain. Statistically significant, but low, correlation coefficients were found between Vitamin D levels and BMI as well as Modic changes. Low Vitamin D levels and Modic changes were statistically significantly associated with an odds ratio of 0.30 (95% CI 0.12;0.75) while weakness, paresthesia and widespread pain were not.

### *Conclusions*

In patients seeking care for low back pain in a Danish outpatient clinic, Vitamin D deficiency was not common. Whether patients who are overweight or who have Modic changes might represent subgroups of people for whom their LBP may be associated with Vitamin D levels, needs further investigation.

## Chronic pain/brain

[Brain](#). 2013 Mar;136(Pt 3):815-27. doi: 10.1093/brain/aws371.

### **The stress model of chronic pain: evidence from basal cortisol and hippocampal structure and function in humans.**

[Vachon-Preseau E](#), [Roy M](#), [Martel MO](#), [Caron E](#), [Marin MF](#), [Chen J](#), [Albouy G](#), [Plante I](#), [Sullivan MJ](#), [Lupien SJ](#), [Rainville P](#).

#### **Source**

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#### **Abstract**

Recent theories have suggested that chronic pain could be partly maintained by maladaptive physiological responses of the organism facing a recurrent stressor. The present study examined the associations between basal levels of cortisol collected over seven consecutive days, the hippocampal volumes and brain activation to thermal stimulations administered in 16 patients with chronic back pain and 18 healthy control subjects. Results showed that patients with chronic back pain have higher levels of cortisol than control subjects. In these patients, higher cortisol was associated with smaller hippocampal volume and stronger pain-evoked activity in the anterior parahippocampal gyrus, a region involved in anticipatory anxiety and associative learning. Importantly, path modelling—a statistical approach used to examine the empirical validity of propositions grounded on previous literature—revealed that the cortisol levels and phasic pain responses in the parahippocampal gyrus mediated a negative association between the hippocampal volume and the chronic pain intensity.

These findings support a stress model of chronic pain suggesting that the sustained endocrine stress response observed in individuals with a smaller hippocampus induces changes in the function of the hippocampal complex that may contribute to the persistent pain states.

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## Muscle fatigue

[Clin Radiol](#). 2012 Nov 9. pii: S0009-9260(12)00478-3. doi: 10.1016/j.crad.2012.08.030. [Epub ahead of print]

### **Exertional muscle pain in familial Mediterranean fever patients evaluated by MRI and (31)P magnetic resonance spectroscopy.**

[Kushnir T](#), [Eshed I](#), [Heled Y](#), [Livneh A](#), [Langevitz P](#), [Ben Zvi I](#), [Konen E](#), [Lidar M](#).

#### **Source**

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#### **Abstract**

##### **AIM:**

To evaluate the effect of physical activity on the structural, morphological, and metabolic characteristics of the gastrocnemius muscle in familial Mediterranean fever (FMF) patients, utilizing quantitative (31)P magnetic resonance spectroscopy (MRS), in order to elucidate the mechanism of their exertional leg pain.

##### **MATERIALS AND METHODS:**

Eleven FMF patients suffering from exertional leg pain (eight male, three female; mean age 33 years) and six healthy individuals (three male, three female; mean age 39 years) constituted the control group. All of the participants underwent magnetic resonance imaging (MRI) and non-selective (31)P MRS (3 T) of the leg muscles before and after graded exercise on a treadmill. Phosphocreatine (PCr):inorganic phosphate (Pi), PCr:adenosine triphosphate (ATP) ratios and the intracellular pH of the leg muscles were measured using (31)P MRS.

##### **RESULTS:**

For both groups, normal muscle mass with no signal alterations was observed on the MRI images after exercise. The normal range of pre- and post- exercise MRS muscle parameters was observed in both groups. However, the intracellular pH post-exercise, was significantly higher (less acidic) in the FMF group compared to the control group [pH (FMF) =  $7.03 \pm 0.02$ ; pH (control)  $7.00 \pm 0.02$ ;  $p < 0.0006$ ].

##### **CONCLUSIONS:**

The finding of a less prominent, post-exercise acidification of the gastrocnemius muscle in this FMF patient group suggests a forme fruste of glycogenosis. This preliminary observation should be further investigated in a future, larger-scale study.

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