

FMT ABSTRACTS MARCH 2013

Shoulder/MWM

Man Ther. 2013 Feb 4. pii: S1356-689X(13)00002-7. doi: 10.1016/j.math.2013.01.001. [Epub ahead of print]

One-week time course of the effects of Mulligan's Mobilisation with Movement and taping in painful shoulders.

Teys P, Bisset L, Collins N, Coombes B, Vicenzino B.

Source

Griffith Health Institute, Griffith University, Gold Coast Campus, Queensland, Australia;
Australian Catholic University, Brisbane, Queensland, Australia.

Abstract

Previous research suggests that Mulligan's Mobilisation-with-Movement (MWM) technique for the shoulder produces an immediate improvement in movement and pain.

The aims of this study were to investigate the time course of the effects of a single MWM technique and to ascertain the effects of adding tape following MWM in people with shoulder pain.

Twenty-five participants (15 males, 10 females), who responded positively to an initial application of MWM, were randomly assigned to MWM or MWM-with-Tape. Range of movement (ROM), pressure pain threshold (PPT) and current pain severity (PVAS) were measured pre- and post-intervention, 30-min, 24-h and one week follow-up. Following a one-week washout period, participants were crossed over to receive a single session of the opposite intervention with follow-up measures repeated. ROM significantly improved with MWM-with-Tape and was sustained over one week follow-up ($p < 0.001$; 18.8° , 95% confidence intervals (CI) 7.3-30.4), and in PVAS up to 30-min follow-up (38.4 mm, 95% CI 20.6-56.1 mm). MWM demonstrated an improvement in ROM (11.8° , 95% CI 1.9-21.7) and PVAS (40.4 mm, 95% CI 27.8-53.0 mm), but only up to 30-min follow-up.

There was no significant improvement in PPT for either intervention at any time point. MWM-with-Tape significantly improved ROM over the one-week follow-up compared to MWM alone (15.9° , 95% CI 7.4-24.4). Both MWM and MWM-with-Tape provide a short-lasting improvement in pain and ROM, and MWM-with-Tape also provides a sustained improvement in ROM to one-week follow-up, which is superior to MWM alone.

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ELBOW

JAMA. 2013 Feb 6;309(5):461-9. doi: 10.1001/jama.2013.129.

Effect of corticosteroid injection, physiotherapy, or both on clinical outcomes in patients with unilateral lateral epicondylalgia: a randomized controlled trial.

Coombes BK, Bisset L, Brooks P, Khan A, Vicenzino B.

IMPORTANCE:

Corticosteroid injection and physiotherapy, common treatments for lateral epicondylalgia, are frequently combined in clinical practice. However, evidence on their combined efficacy is lacking.

OBJECTIVE:

To investigate the effectiveness of corticosteroid injection, multimodal physiotherapy, or both in patients with unilateral lateral epicondylalgia.

DESIGN, SETTING, AND PATIENTS:

A 2 × 2 factorial, randomized, injection-blinded, placebo-controlled trial was conducted at a single university research center and 16 primary care settings in Brisbane, Australia. A total of 165 patients aged 18 years or older with unilateral lateral epicondylalgia of longer than 6 weeks' duration were enrolled between July 2008 and May 2010; 1-year follow-up was completed in May 2011.

INTERVENTIONS:

Corticosteroid injection (n = 43), placebo injection (n = 41), corticosteroid injection plus physiotherapy (n = 40), or placebo injection plus physiotherapy (n = 41).

MAIN OUTCOME MEASURES:

The 2 primary outcomes were 1-year global rating of change scores for complete recovery or much improvement and 1-year recurrence (defined as complete recovery or much improvement at 4 or 8 weeks, but not later) analyzed on an intention-to-treat basis (P < .01). Secondary outcomes included complete recovery or much improvement at 4 and 26 weeks.

RESULTS:

Corticosteroid injection resulted in lower complete recovery or much improvement at 1 year vs placebo injection (83% vs 96%, respectively; relative risk [RR], 0.86 [99% CI, 0.75-0.99]; P = .01) and greater 1-year recurrence (54% vs 12%; RR, 0.23 [99% CI, 0.10-0.51]; P < .001). The physiotherapy and no physiotherapy groups did not differ on 1-year ratings of complete recovery or much improvement (91% vs 88%, respectively; RR, 1.04 [99% CI, 0.90-1.19]; P = .56) or recurrence (29% vs 38%; RR, 1.31 [99% CI, 0.73-2.35]; P = .25). Similar patterns were found at 26 weeks, with lower complete recovery or much improvement after corticosteroid injection vs placebo injection (55% vs 85%, respectively; RR, 0.79 [99% CI, 0.62-0.99]; P < .001) and no difference between the physiotherapy and no physiotherapy groups (71% vs 69%, respectively; RR, 1.22 [99% CI, 0.97-1.53]; P = .84). At 4 weeks, there was a significant interaction between corticosteroid injection and physiotherapy (P = .01), whereby patients receiving the placebo injection plus physiotherapy had greater complete recovery or much improvement vs no physiotherapy (39% vs 10%, respectively; RR, 4.00 [99% CI, 1.07-15.00]; P = .004). However, there was no difference between patients receiving the corticosteroid injection plus physiotherapy vs corticosteroid alone (68% vs 71%, respectively; RR, 0.95 [99% CI, 0.65-1.38]; P = .57).

CONCLUSION AND RELEVANCE: Among patients with chronic unilateral lateral epicondylalgia, the use of corticosteroid injection vs placebo injection resulted in worse clinical outcomes after 1 year, and physiotherapy did not result in any significant differences.

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TMJ/C spine/HA

Man Ther. 2013 Feb 13. pii: S1356-689X(12)00271-8. doi: 10.1016/j.math.2012.12.005. [Epub ahead of print]

Orofacial manual therapy improves cervical movement impairment associated with headache and features of temporomandibular dysfunction: A randomized controlled trial.

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Source

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Abstract

There is evidence that temporomandibular disorder (TMD) may be a contributing factor to cervicogenic headache (CGH), in part because of the influence of dysfunction of the temporomandibular joint on the cervical spine.

The purpose of this randomized controlled trial was to determine whether orofacial treatment in addition to cervical manual therapy, was more effective than cervical manual therapy alone on measures of cervical movement impairment in patients with features of CGH and signs of TMD. In this study, 43 patients (27 women) with headache for more than 3-months and with some features of CGH and signs of TMD were randomly assigned to receive either cervical manual therapy (usual care) or orofacial manual therapy to address TMD in addition to usual care. Subjects were assessed at baseline, after 6 treatment sessions (3-months), and at 6-months follow-up. 38 subjects (25 female) completed all analysis at 6-months follow-up. The outcome criteria were: cervical range of movement (including the C1-2 flexion-rotation test) and manual examination of the upper 3 cervical vertebra.

The group that received orofacial treatment in addition to usual care showed significant reduction in all aspects of cervical impairment after the treatment period. These improvements persisted to the 6-month follow-up, but were not observed in the usual care group at any point.

These observations together with previous reports indicate that manual therapists should look for features of TMD when examining patients with headache, particularly if treatment fails when directed to the cervical spine.

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RA/Red flags

Man Ther. 2013 Feb 12. pii: S1356-689X(13)00007-6. doi: 10.1016/j.math.2013.01.006. [Epub ahead of print]

Physiotherapy co-management of rheumatoid arthritis: Identification of red flags, significance to clinical practice and management pathways.

Briggs AM, Fary RE, Slater H, Ranelli S, Chan M.

Source

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Abstract

Rheumatoid arthritis (RA) is a chronic, systemic, autoimmune disease.

Physiotherapy interventions for people with RA are predominantly targeted at ameliorating disability resulting from articular and peri-articular manifestations of the disease and providing advice and education to improve functional capacity and quality of life. To ensure safe and effective care, it is critical that physiotherapists are able to identify potentially serious articular and peri-articular manifestations of RA, such as instability of the cervical spine. Additionally, as primary contact professionals, it is essential that physiotherapists are aware of the potentially serious extra-articular manifestations of RA.

This paper provides an overview of the practice-relevant manifestations associated with RA that might warrant further investigation by a medical practitioner (red flags), their relevance to physiotherapy practice, and recommended management pathways.

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LBP/subgrouping

Orthopade. 2013 Feb;42(2):90-9. doi: 10.1007/s00132-012-2041-5.

[Subgroup-specific therapy of low back pain : Description and validity of two classification systems].

[Article in German]

Schäfer A, Gärtner-Tschacher N, Schöttker-Königer T.

Source

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Abstract

BACKGROUND:

In spite of profound advances in the diagnosis and therapy, low back pain (LBP) remains one of the main challenges for health systems in western industrialized countries. Clinical trials and meta-analyses typically show heterogeneous evidence and small effect sizes. One explanation for this phenomenon is the heterogeneous nature of the population of patients with LBP, not adequately considered in clinical practice and research. Recent studies and one meta-analysis show that therapy which is specifically directed at well defined subgroups leads to improved effectiveness of interventions, especially for non-surgical interventions such as manual therapy or physiotherapy.

AIM:

This article aims to describe the process of classification and to critically evaluate the underlying evidence.

METHODS:

Two validated and commonly used classification systems were selected and their reliability and validity were critically appraised.

RESULTS:

The treatment-based classification system was primarily developed and validated for patients with acute LBP. Based on prognostic factors and clinical prediction rules, patients are classified into one of four treatment based categories: traction, manipulation, specific exercises and stabilization. The movement and motor control impairment classification system is based on movement-related, cognitive and psychosocial factors and was developed for patients with chronic LBP. Maladaptive movement and motor control impairments are considered as underlying mechanisms. Three broad subgroups are proposed: firstly, a group with specific pathologies, such as spinal stenosis or disc prolapse with radiculopathy, secondly a group with dominant psychosocial factors and thirdly a group with maladaptive motor control patterns that drive the disorder with either movement impairments or motor control impairments.

CONCLUSION:

The reliability of the described classification systems is moderate to good, aspects of validity have been shown. Their implementation in clinical practice seems recommendable.

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RA/Headaches

Man Ther. 2013 Feb 12. pii: S1356-689X(13)00006-4. doi: 10.1016/j.math.2013.01.005. [Epub ahead of print]

Upper cervical instability associated with rheumatoid arthritis: What to 'know' and what to 'do'

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Source

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Abstract

This case report describes a patient who presented with cervical spinal pain and headaches associated with atlanto-axial subluxation (AAS) secondary to rheumatoid arthritis (RA). For physiotherapists, especially less experienced clinicians, the significant risks associated with using manual assessment and treatment techniques in such a patient require careful consideration right at the start of a consultation. The focus of the case is therefore on the recognition of AAS in this patient with RA, highlighting the clinical findings that alert clinicians to this possibility and explaining the requisite knowledge and skills required to safely and effectively manage this patient. The use of screening tools to help clinicians identify possible RA in its pre-diagnosis stage and the clinical signs and symptoms that raise the index of suspicion for AAS, are discussed.

The relevant contraindications and precautions associated with manual treatments directed at the upper cervical spine, and which may have potentially serious negative consequences, including quadriplegia and mortality, are addressed. Finally, the implications for the use of manual assessment and treatment of patients with RA and co-morbid AAS are addressed.

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Palpation/validation

Man Ther. 2013 Feb 12. pii: S1356-689X(12)00269-X. doi: 10.1016/j.math.2012.12.003. [Epub ahead of print]

Validity of palpation techniques for the identification of the spinous process L5.

Merz O, Wolf U, Robert M, Gesing V, Rominger M.

Source

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Abstract

For spinal diagnosis and treatment it is important to be able to identify spinal levels by palpation. The objective of this diagnostic study was to examine the validity of four palpation techniques to detect the fifth lumbar vertebra (L5). A physiotherapist examined 66 low back pain patients using first three techniques. Motion palpation (MP), palpation via the posterior superior iliac spines (PSIS technique) and palpation via the iliac crests (CI technique) were deployed in random order. The spinous processes identified using these techniques were marked using an UV marker. The fourth technique was the motion palpation using the previously visible marked landmarks PSIS and CI (MP+). X-rays were taken as a reference standard through replacing the markings by radio-opaque markers. The accuracy of the single techniques ranged from 45% to 61%. There was no significant difference between the individual techniques. If two techniques were in agreement the accuracy ranged from 58% to 78%. If three techniques were in agreement the accuracy ranged from 69% to 83%.

This was a significant to highly significant improvement compared to single techniques. If there is agreement between palpation techniques, the accuracy can be significantly improved. This illustrates the need to combine techniques and to relate them to each other. Future studies should investigate combined techniques using marker for further anatomical structures.

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Chronic pain

Pain Pract. 2013 Mar 6. doi: 10.1111/papr.12050. [Epub ahead of print]

The Costs and Consequences of Adequately Managed Chronic Non-Cancer Pain and Chronic Neuropathic Pain.

Andrew R, Derry S, Taylor RS, Straube S, Phillips CJ.

Source

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Abstract

BACKGROUND:

Chronic pain is distressing for patients and a burden on healthcare systems and society. Recent research demonstrates different aspects of the negative impact of chronic pain and the positive impact of successful treatment, making an overview of the costs and consequences of chronic pain appropriate.

OBJECTIVE:

To examine recent literature on chronic noncancer and neuropathic pain prevalence, impact on quality and quantity of life, societal and healthcare costs, and impact of successful therapy.

METHODS:

Systematic reviews (1999 to February 2012) following PRISMA guidelines were conducted to identify studies reporting appropriate outcomes.

RESULTS:

Chronic pain has a weighted average prevalence in adults of 20%; 7% have neuropathic pain, and 7% have severe pain. Chronic pain impeded activities of daily living, work and work efficiency, and reduced quality and quantity of life. Effective pain therapy (pain intensity reduction of at least 50%) resulted in consistent improvements in fatigue, sleep, depression, quality of life, and work.

CONCLUSION:

Strenuous efforts should be put into obtaining good levels of pain relief for people in chronic pain, including the opportunity for multiple drug switching, using reliable, validated, and relatively easily applied patient-centered outcomes. Detailed, thoughtful and informed decision analytic policy modeling would help understand the key elements in organizational change or service reengineering to plan the optimum pain management strategy to maximize pain relief and its stream of benefits against budgetary and other constraints. This paper contains the information on which such models can be based.

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UE pain/exercise

Eur J Pain. 2013 Mar 3. doi: 10.1002/j.1532-2149.2013.00298.x. [Epub ahead of print]

Physical exercise, body mass index and risk of chronic arm pain: Longitudinal data on an adult population in Norway.

Mork PJ, Holtermann A, Nilsen TI.

Source

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Abstract

AIM:

The aim of this study was to prospectively investigate the association between leisure time physical exercise, body mass index (BMI) and risk of chronic arm pain.

METHODS:

The study population comprises 14,041 women and 13,674 men in the Norwegian HUNT Study without musculoskeletal pain or physical impairment at baseline in 1984-86. Chronic arm pain was assessed at follow-up in 1995-97. A generalized linear model was used to calculate adjusted relative risks (RRs).

RESULTS:

At follow-up, 2205 women and 1458 men reported chronic arm pain. Level of physical exercise was inversely associated with risk of chronic arm pain (P-trend, ≤ 0.03 for both sexes). Compared with inactive persons, women and men who exercised ≥ 2 h/week had adjusted RRs of 0.84 [95% confidence interval (CI), 0.73-0.96] and 0.74 (95% CI, 0.63-0.87), respectively. BMI was positively associated with risk of chronic arm pain (P-trend, ≤ 0.002 for both sexes). Compared with normal-weight persons, women and men classified as obese (BMI ≥ 30 kg/m²) had adjusted RRs of 1.26 (95% CI, 1.11-1.44) and 1.29 (95% CI, 1.07-1.57), respectively. Combined analysis showed that obese women and men who exercised ≥ 1 h/week had a RR of 1.20 (95% CI 0.97-1.48) compared with normal-weight women and men with a similar activity level, whereas the RR was 1.41 (95% CI 1.21-1.65) for obese women and men who were physically inactive.

CONCLUSION:

Regular physical exercise reduces risk of chronic arm pain while high BMI increases the risk. Exercise can to some extent compensate for the adverse effect of obesity on risk of chronic arm pain.

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Fibromyalgia/fear/learning deficits

Eur J Pain. 2013 Mar 7. doi: 10.1002/j.1532-2149.2013.00300.x. [Epub ahead of print]

Fear-learning deficits in subjects with fibromyalgia syndrome?

Jenewein J, Moergeli H, Sprott H, Honegger D, Brunner L, Ettlin D, Grillon C, Bloch K, Brügger M, Schwegler K, Schumacher S, Hasler G.

Source

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Abstract

BACKGROUND:

Fibromyalgia syndrome (FMS) is frequently associated with psychiatric conditions, particularly anxiety. Deficits in contingency learning during fear conditioning have been hypothesized to increase anxiety and, consequently, pain sensation in susceptible individuals. The goal of this study was to examine the relationship between contingency learning and pain experience in subjects with FMS and rheumatoid arthritis (RA).

METHODS:

Fourteen female FMS subjects, 14 age-matched female RA subjects and 14 age-matched female healthy controls (HCs) were included in a fear-conditioning experiment. The conditioned stimulus (CS) consisted of visual signs, the unconditioned stimulus (US) of thermal stimuli. CS- predicted low-temperature exposure (US), while CS+ was followed by low or high temperature.

RESULTS:

In the FMS group, only 50% of the subjects were aware of the US-CS contingency, whereas 86% of the RA subjects and all of the HCs were aware of the contingency. CS+ induced more anxiety than CS- in RA subjects and HCs. As expected, low-temperature exposure was experienced as less painful after CS- than after CS+ in these subjects. FMS subjects did not show such adaptive conditioning. The effects of the type of CS on heart rate changes were significant in the HCs and the aware FMS subjects, but not in the unaware FMS subjects.

CONCLUSIONS:

Contingency learning deficits represent a potentially promising and specific, but largely unstudied, psychopathological factor in FMS. Deficits in contingency learning may increase anxiety and, consequently, pain sensation. These findings have the potential to contribute to the development of novel therapeutic approaches for FMS.

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Headaches/sexual activity

[Cephalalgia](#). 2013 Feb 19. [Epub ahead of print]

The impact of sexual activity on idiopathic headaches: An observational study.

[Hambach A](#), [Evers S](#), [Summ O](#), [Husstedt IW](#), [Frese A](#).

Source

Department of Neurology, University of Münster, Germany.

Abstract

Background Headache associated with sexual activity is a well-known primary headache disorder. In contrast, some case reports in the literature suggest that sexual activity during a migraine or cluster headache attack might relieve the pain in at least some patients. We performed an observational study among patients of a tertiary headache clinic.

Methods A questionnaire was sent to 800 unselected migraine patients and 200 unselected cluster headache patients. We asked for experience with sexual activity during a headache attack and its impact on headache intensity. The survey was strictly and completely anonymous.

Results In total, 38% of the migraine patients and 48% of the patients with cluster headache responded. In migraine, 34% of the patients had experience with sexual activity during an attack; out of these patients, 60% reported an improvement of their migraine attack (70% of them reported moderate to complete relief) and 33% reported worsening. In cluster headache, 31% of the patients had experience with sexual activity during an attack; out of these patients, 37% reported an improvement of their cluster headache attack (91% of them reported moderate to complete relief) and 50% reported worsening. Some patients, in particular male migraine patients, even used sexual activity as a therapeutic tool.

Conclusions The majority of patients with migraine or cluster headache do not have sexual activity during headache attacks. Our data suggest, however, that sexual activity can lead to partial or complete relief of headache in some migraine and a few cluster headache patients.

PMID:23430983 [PubMed - as supplied by publisher]

[Acta Obstet Gynecol Scand](#). 2013 Mar 6. doi: 10.1111/aogs.12131. [Epub ahead of print]

Psychological determinants of pregnancy-related lumbopelvic pain: prospective cohort study.

[Bakker EC](#), [van Nimwegen-Matzinger CW](#), [van der Voorden WE](#), [Nijkamp MD](#), [Völlink T](#).

Abstract

OBJECTIVE:

To study whether pregnancy-related lumbopelvic pain outcomes at 36 weeks gestation can be predicted by psychological determinants earlier in pregnancy.

DESIGN:

Prospective cohort study.

SETTING:

Nine midwifery practices in different regions of the Netherlands.

POPULATION:

A cohort of 223 low-risk pregnant women in the Netherlands was followed from the 12th week of gestation until 36 weeks of gestation.

METHODS:

Both psychological determinants and lumbopelvic pain symptoms were investigated with a set of questionnaires at 12, 24, and 36 weeks of pregnancy. Psychological determinants were measured with the Perceived Stress Scale (PSS), the Symptom Checklist-90-Revised (SCL-90), the Pregnancy-related Anxiety Questionnaire (PRAQ), and the Utrecht Coping List (UCL). Lumbopelvic pain outcomes were measured with the Pregnancy Mobility Index (PMI) and the Overall Complaints Index (OCI).

MAIN OUTCOME MEASURES:

Lumbopelvic pain symptoms and their impact at 36 weeks of pregnancy.

RESULTS:

There was a significant increase in scores on both the PMI and OCI across the three moments in pregnancy. Lumbopelvic pain outcomes showed significant associations with the psychological determinants perceived stress and recently perceived psychological and physical distress at all three moments during pregnancy. Pregnancy-related anxiety was not a significant predictor of lumbopelvic pain outcomes, neither was coping.

CONCLUSIONS:

Lumbopelvic pain symptoms and their impact on daily activities at 36 weeks of gestation can be predicted by psychological determinants earlier in pregnancy; the combination of perceived stress and physical disability at 24 weeks of pregnancy seems to be the best predictor of disability in later pregnancy. © 2013 The Authors Acta Obstetrica et Gynecologica Scandinavica © 2013 Nordic Federation of Societies of Obstetrics and Gynecology.

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Pain/cognitive control

Eur J Pain. 2013 Mar 8. doi: 10.1002/j.1532-2149.2013.00299.x. [Epub ahead of print]

After-effects of cognitive control on pain.

Silvestrini N, Rainville P.

Source

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Abstract

BACKGROUND:

The higher order processes involved in self-regulation are generally thought to depend on cognitive (attentional/executive) functions with limited resources. Experimental studies further show that exerting self-control in a first task results in decreased performance in other following self-control tasks, which may be interpreted as the consequence of either effective or perceived resource depletion outlasting the first task. Given that higher order cognitive/attentional processes are also considered to be involved in pain modulatory mechanisms, we tested the idea that pain could be influenced by prior mobilization of cognitive resources.

METHODS:

The present study investigated the consequences of performing a cognitively demanding task on subsequent pain (ratings) and spinal nociceptive responses (nociceptive flexion reflex, NFR) elicited by noxious electrical stimulations in healthy volunteers. Participants received four noxious stimulations immediately after each of six successive blocks (2 min each) of a numerical Stroop task in a neutral condition (low cognitive demand) and six successive blocks in an interference condition (high cognitive demand).

RESULTS:

Results revealed that pain was rated higher following the condition requiring higher cognitive control. A similar effect was observed on the NFR.

CONCLUSIONS:

These findings suggest that pain regulation mechanisms including the descending pain modulatory system may be less efficient after the performance of tasks requiring high cognitive control resulting in stronger pain experience.

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PMID: 23475816 [PubMed - as supplied by publisher]

Headaches/Vit. D

The relationship between serum levels of vitamin D and migraine □ **Journal of Research in Medical Sciences, 03/12/2013 Evidence Based Medicine Clinical Article**

Mottaghi T et al. –

Migraine is common worldwide. In recent years, vitamin D deficiency has been determined as a global health problem. A few studies have shown inverse relationship between serum vitamin D levels and headache. Thus, in this study, authors assessed relationship between serum vitamin D levels with migraine. High levels of serum 25–OH–D3 was related to higher headache diary result. After adjustment for confounding variables, this significant association remained. No significant relationship was shown between serum vitamin D and migraine severity.

Methods

- The present study was a cross–sectional.
- Seventy–six migraine patients aged 10–61 years were included.
- The multiple linear regression was used to show association between serum 25–OH–D3 and migraine.
- Adjustments were performed for age, sex, waist circumference, body mass index (BMI), number of chronic diseases, and education level.

Results

- The positive weak relationship was observed between serum vitamin D and headache diary result (P=0.042, r=0.19).
- But, no significant relationship was observed between serum vitamin D and migraine severity (P=0.741).

Read more: <http://www.mdlinx.com/family-medicine/news-article.cfm/4494560/vitamin-d#ixzz2NLCGNKKy>

Back pain/Psoriasis

Ann Rheum Dis. 2013 Apr;72(4):566-71. doi: 10.1136/annrheumdis-2012-201610. Epub 2012 Jun 7.

Psoriasis and phenotype of patients with early inflammatory back pain.

Richette P, Tubach F, Breban M, Viguier M, Bachelez H, Bardin T, Dougados M.

Source

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Abstract

BACKGROUND:

Psoriasis is an important clinical feature in spondyloarthritis. However, the influence of psoriasis on the clinical, functional and imaging features of patients with inflammatory back pain (IBP) related to spondyloarthritis is not known.

OBJECTIVES:

To determine the prevalence of psoriasis and its impact in patients with recent IBP suggestive of spondyloarthritis.

METHODS:

The prevalence of psoriasis was determined in 692 patients (mean age 33.3±8.5 years, 53.8% female, 58.3% human leucocyte antigen B27 positive) included in the DESIR cohort. Demographic characteristics, imaging features and blood tests of patients with and without psoriasis were compared.

RESULTS:

The prevalence of psoriasis was 16.6%. Patients with rather than without psoriasis more often presented with enthesitis (59.1% vs 47.5%; $p=0.02$) and had more active disease (BASDAI 4.8±1.8 vs 4.4±2.0; $p=0.05$) and poorer functional status (BASFI 3.6±2.2 vs 3.0±2.3; $p=0.006$; SF-36 (physical function) 61.9±24.4 vs 66.9±24.9; $p=0.04$). Patients with psoriasis showed higher levels of C-reactive protein ($p=0.02$), total cholesterol ($p=0.01$) and triglycerides ($p=0.02$). The two groups did not differ in structural changes as assessed by standard x-rays or MRI at the spinal and sacroiliac levels. However, ultrasonography of the Achilles tendon revealed psoriasis associated with bone erosions ($p=0.0003$) and abnormal vascularisation ($p=0.04$). Multivariate regression analysis revealed BASFI score ($p=0.03$), cholesterol level ($p=0.02$), dactylitis ($p=0.0006$) and family history of psoriasis ($p<0.0001$) as independent predictors of psoriasis.

CONCLUSIONS:

In patients with recent IBP suggestive of spondyloarthritis, psoriasis is associated with active axial disease and frequent concomitant enthesopathy and dactylitis.

PMID: 22679307 [PubMed - in process]

Ankylosing spondylitis/neuropathic pain

Arthritis Rheum. 2013 Mar 4. doi: 10.1002/art.37920. [Epub ahead of print]

Neuropathic pain in ankylosing spondylitis - a psychophysics and brain imaging study.

Wu Q, Inman RD, Davis KD.

Source

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Abstract

OBJECTIVE:

This study was undertaken to determine whether there is a neuropathic component in ankylosing spondylitis (AS) back pain and to delineate gray matter (GM) brain abnormalities associated with AS.

PATIENTS AND METHODS:

Seventeen patients with back pain secondary to AS, not on biologic agents and 17 age- and sex-matched controls consented to the study and were assessed with the PainDETECT (scores ≤ 12 indicating low probability of neuropathic pain) and McGill Pain Questionnaires. Mechanical and thermal thresholds were determined for all subjects, and 3T MRI used to assess brain GM.

RESULTS:

The painDETECT scores were >12 in 11/17 AS patients. The patients had decreased mechanical and cold sensitivity on their dorsal feet but did not have altered pain thresholds. Compared to controls, the AS patients showed a) cortical thinning in the primary sensory (S1), insular, anterior cingulate (ACC) and anterior mid-cingulate cortices (aMCC) and supplemental motor area, b) increased grey matter volume in the thalamus and putamen, and c) a correlation between painDETECT scores and decreased GM in S1 and increased GM in the motor cortex, ACC, prefrontal cortex, thalamus and striatum.

CONCLUSIONS:

These findings indicate that AS patients have signs of neuropathic pain. Furthermore, abnormal brain gray matter and neural correlates of neuropathy are concordant with the clinical picture of AS having sensorimotor and mood deficits as well as neuropathic pain symptoms. These data suggest that back pain in AS is a mixed pain condition that includes a neuropathic pain component. © 2013 American College of Rheumatology.

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PMID: 23460087 [PubMed - as supplied by publisher]

LBP

[Primary Care Research Priorities in Low Back Pain: An Update.](#)

Costa, Lucíola da Cunha Menezes; Koes, Bart W. MD; Pransky, Glenn MD; Borkan, Jeffrey; Maher, Christopher G; Smeets, Rob J. E. M.

Spine, 15 January 2013

Abstract

Study Design. Survey report.

Objective. To reassess an existing list of research priorities in primary care low back pain (LBP) and to develop a new research agenda.

Summary of Background Data. Primary care LBP researchers developed an agenda of research priorities in 1997 at an international conference. In 2009, a survey was conducted to re-evaluate the 1997 research priorities and to develop a new research agenda.

Methods. Two-phase, Internet-based survey of participants in one of the LBP primary care research fora. The first phase collected information on importance, feasibility, and progress for the 1997 priorities; during this phase, the respondents were also asked to list the 5 most important current primary care-relevant LBP research questions. The second phase ranked these current research priorities.

Results. A total of 179 persons responded to the first phase, representing 30% of those surveyed. Rankings of the 1997 priorities were somewhat similar compared with 2009, although research on beliefs and expectations and improving the quality of LBP research became more important, and research on guidelines and psychosocial interventions became less important. Organizing more effective primary care for LBP, implementing best practices, and translating research to practice were ranked higher compared with 1997. Most priorities were also ranked as relatively feasible. The new agenda was similar, and included subgroup-based treatment and studies on causes and mechanisms of LBP as new top priorities.

Conclusion. Changes in research priorities seem to reflect recent advances, new opportunities, and limitations in our ability to improve care.

LBP

Cochrane Database Syst Rev. 2013 Feb 28;2:CD008686. doi: 0.1002/14651858.CD008686.pub2.

Red flags to screen for malignancy in patients with low-back pain.

Henschke N, Maher CG, Ostelo RW, de Vet HC, Macaskill P, Irwig L.

BACKGROUND:

The identification of serious pathologies, such as spinal malignancy, is one of the primary purposes of the clinical assessment of patients with low-back pain (LBP). Clinical guidelines recommend awareness of "red flag" features from the patient's clinical history and physical examination to achieve this. However, there are limited empirical data on the diagnostic accuracy of these features and there remains very little information on how best to use them in clinical practice.

OBJECTIVES:

To assess the diagnostic performance of clinical characteristics identified by taking a clinical history and conducting a physical examination ("red flags") to screen for spinal malignancy in patients presenting with LBP.

SEARCH METHODS:

We searched electronic databases for primary studies (MEDLINE, EMBASE, and CINAHL) and systematic reviews (PubMed and Medion) from the earliest date until 1 April 2012. Forward and backward citation searching of eligible articles was also performed. We considered studies if they compared the results of history taking and physical examination on patients with LBP with those of diagnostic imaging (magnetic resonance imaging, computed tomography, myelography).

DATA COLLECTION AND ANALYSIS:

Two review authors independently assessed the quality of each included study with the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) tool and extracted details on patient characteristics, study design, index tests, and reference standard. Diagnostic accuracy data were presented as sensitivities and specificities with 95% confidence intervals for all index tests.

MAIN RESULTS:

We included eight cohort studies of which six were performed in primary care (total number of patients; n = 6622), one study was from an accident and emergency setting (n = 482), and one study was from a secondary care setting (n = 257). In the six primary care studies, the prevalence of spinal malignancy ranged from 0% to 0.66%. Overall, data from 20 index tests were extracted and presented, however only seven of these were evaluated by more than one study. Because of the limited number of studies and clinical heterogeneity, statistical pooling of diagnostic accuracy data was not performed. There was some evidence from individual studies that having a previous history of cancer meaningfully increases the probability of malignancy. Most "red flags" such as insidious onset, age > 50, and failure to improve after one month have high false positive rates. All of the tests were evaluated in isolation and no study presented data on a combination of positive tests to identify spinal malignancy.

AUTHORS' CONCLUSIONS:

For most "red flags," there is insufficient evidence to provide recommendations regarding their diagnostic accuracy or usefulness for detecting spinal malignancy. The available evidence indicates that in patients with LBP, an indication of spinal malignancy should not be based on the results of one single "red flag" question. Further research to evaluate the performance of different combinations of tests is recommended. PMID: 23450586 [PubMed - in process]

C spine/PT/Surgery

Spine (Phila Pa 1976). 2013 Feb 15;38(4):300-307.

Physical Function Outcome in Cervical Radiculopathy Patients After Physiotherapy Alone Compared With Anterior Surgery Followed by Physiotherapy: A Prospective Randomized Study With a 2-Year Follow-up.

Peolsson A, Söderlund A, Engquist M, Lind B, Löfgren H, Vavruch L, Holtz A, Winström-Christersson A, Isaksson I, Oberg B.

Source

*Department of Physiotherapy, Faculty of Health Sciences, Linköping University, Linköping, Sweden †School of Health, Care and Social Welfare, Mälardalen University, Västerås, Sweden ‡Department of Orthopedics, Ryhov Hospital, Jönköping, Sweden §Department of Orthopedics, Institute of Clinical Sciences at Sahlgrenska Academy, University of Gothenburg, Sweden ¶Spine Center, Gothenburg, Sweden ‖Neuro-Orthopedic Center, Ryhov Hospital, Jönköping, Sweden **Department of Neuroscience, Uppsala University Hospital, Uppsala, Sweden ††Department of Physiotherapy, Ryhov Hospital, Jönköping, Sweden.

Abstract

STUDY DESIGN.: Prospective randomized study.

OBJECTIVE.: To investigate differences in physical functional outcome in patients with radiculopathy due to cervical disc disease, after structured physiotherapy alone (consisting of neck-specific exercises with a cognitive-behavioral approach) versus after anterior cervical decompression and fusion (ACDF) followed by the same structured physiotherapy program.

SUMMARY OF BACKGROUND DATA.: No earlier studies have evaluated the effectiveness of a structured physiotherapy program or postoperative physical rehabilitation after ACDF for patients with magnetic resonance imaging-verified nerve compression due to cervical disc disease.

METHODS.: Our prospective randomized study included 63 patients with radiculopathy and magnetic resonance imaging-verified nerve root compression, who were randomized to receive either ACDF in combination with physiotherapy or physiotherapy alone. For 49 of these patients, an independent examiner measured functional outcomes, including active range of neck motion, neck muscle endurance, and hand-related functioning before treatment and at 3-, 6-, 12-, and 24-month follow-ups.

RESULTS.: There were no significant differences between the 2 treatment alternatives in any of the measurements performed ($P = 0.17-0.91$). Both groups showed improvements over time in neck muscle endurance ($P \leq 0.01$), manual dexterity ($P \leq 0.03$), and right-handgrip strength ($P = 0.01$).

CONCLUSION.: Compared with a structured physiotherapy program alone, ACDF followed by physiotherapy did not result in additional improvements in neck active range of motion, neck muscle endurance, or hand-related function in patients with radiculopathy. We suggest that a structured physiotherapy program should precede a decision for ACDF intervention in patients with radiculopathy, to reduce the need for surgery. Level of Evidence: 2.

PMID: 23407407 [PubMed - as supplied by publisher]

LBP/Core exercises

J Back Musculoskelet Rehabil. 2013 Jan 1;26(1):37-43. doi: 10.3233/BMR-2012-0348.

Effect of core stabilization exercises versus conventional exercises on pain and functional status in patients with non-specific low back pain: A randomized clinical trial.

Inani SB, Selkar SP.

Source

MIP College of Physiotherapy, Latur, Maharashtra, India.

Abstract

BACKGROUND AND OBJECTIVES:

Low Back Pain (LBP) results in significant level of disability, producing significant restriction on usual activity such as an inability to work. Nearly two third of the adults are affected by non-specific low back pain at some point in their lives. The purpose of the study was to determine the effect of core stabilization exercises in comparison with conventional exercises on pain, functional status in patients with non-specific LBP.

MATERIAL AND METHODS:

Thirty patients diagnosed with non-specific LBP participated with age group between 20-50 years and divided in to 2 groups, one with core stabilization exercises and other conventional exercises, 15 subjects each. Three months study, pre and post treatment outcome measures used were VAS for pain intensity and Modified Oswestry Low Back Pain Disability Index for functional status (disability).

RESULTS:

Data were analyzed using student 't' test (paired and unpaired). Whereas both groups improved significantly from the initiation of treatment, a between-group comparison revealed significantly greater ($p < 0.001$) improvements regarding pain and functional status for experimental group compared to control group.

CONCLUSION:

Core stabilization exercises were found to be more effective in reducing pain and improving functional status by decreasing disability of patients with non-specific low back pain in comparison with conventional exercises.

PMID: 23411647 [PubMed - in process]

C spine/whiplash

Content not quantity is a better measure of muscle degeneration in whiplash

James M. Elliott^{a, b,}  , Roger Kerry^c, Timothy Flynn^d, Todd B. Parrish^{e, f}

Manual Therapy March 2013

Abstract

Whiplash associated disorder (WAD) represents an enormous economic, social and personal burden. Five out of 10 people with WAD never fully recover and up to 25% continue to have moderate to severe pain-related disability. Unfortunately, clear and definitive reasons as to why half of individuals with WAD recover uneventfully and the other half do not, remain elusive. Identifying the factors that can reliably predict outcome holds considerable importance for not only WAD, but arguably for other acute musculoskeletal traumas. The precise pathology present in WAD has been controversial and often biased by outdated models. Fortunately, a combination of new measurement technology that illuminates pain processing, physical and social functioning and post-traumatic stress responses (and possibly markers of altered muscle size/shape/physiology) is providing a clearer picture of the multisystem pathophysiology in individuals with persistent WAD. The aim of this professional issues paper is to illuminate the clinical and research communities with regards to the growing body of knowledge for determining the trajectory of a patient with whiplash.

LBP/Motor Control

Spine:

01 March 2013 - Volume 38 - Issue 5 - p 375–384

doi: 10.1097/BRS.0b013e318270a12d Randomized Trial

Neuromuscular Exercise and Counseling Decrease Absenteeism Due to Low Back Pain in Young Conscripts: A Randomized, Population-Based Primary Prevention Study

Suni, Jaana H. PT, PhD^{*}; Taanila, Henri BM^{†,‡,§}; Mattila, Ville M. MD, PhD^{‡,§}; Ohrankämmen, Olli MSc[¶]; Vuorinen, Petteri Captain^{||}; Pihlajamäki, Harri MD, PhD[‡]; Parkkari, Jari MD, PhD^{†,§}

Abstract

Study Design. Controlled intervention with group randomization.

Objective. To investigate the effectiveness of a 6-month neuromuscular exercise and counseling program for reducing the incidence of low back pain (LBP) and disability in young conscripts, with a healthy back at the beginning of their compulsory military service.

Summary of Background Data. Basic military training is physically demanding on the back and requires adequate physical fitness. LBP causes significant morbidity and absence from military service.

Methods. Participants were conscripts of 4 successive age cohorts (n = 1409). In the prestudy year, before adoption of the intervention, 2 successive cohorts of conscripts of 4 companies (n = 719) were followed prospectively for 6 months to study the baseline incidence of different categories of LBP. In the intervention year, conscripts (n = 690) of 2 new cohorts of the same companies (intervention group: antitank, engineer; control group: signal, mortar) were followed for 6 months. The intervention program aimed to improve conscripts' control of their lumbar neutral zone and specifically to avoid full lumbar flexion in all daily tasks.

Results. Total number and incidence of off-duty days due to LBP were significantly decreased in the intervention companies compared with controls (adjusted hazard ratio = 0.42, 95% confidence interval = 0.18–0.94, *P* = 0.035). The number of LBP cases, number of health clinic visits due to LBP, and number of the most severe cases showed a similar decreasing trend but without statistical significance.

Conclusion. These findings provide evidence that exercise and education to improve control of the lumbar neutral zone have a prophylactic effect on LBP-related off-duty service days in the military environment when implemented as part of military service among young healthy men.

Hip/dislocation

Clin Orthop Relat Res. 2013 Feb 20. [Epub ahead of print]

Femoroacetabular Impingement Predisposes to Traumatic Posterior Hip Dislocation.

Steppacher SD, Albers CE, Siebenrock KA, Tannast M, Ganz R.

Source

Department of Orthopaedic Surgery, Inselspital, University of Bern, Freiburgstrasse, 3010, Bern, Switzerland.

Abstract

BACKGROUND:

Traumatic posterior hip dislocation in adults is generally understood to be the result of a high-energy trauma. Aside from reduced femoral antetorsion, morphologic risk factors for dislocation are unknown. We previously noticed that some hips with traumatic posterior dislocations had evidence of morphologic features of femoroacetabular impingement (FAI), therefore, we sought to evaluate that possibility more formally.

QUESTIONS/PURPOSES:

We asked whether hips with a traumatic posterior hip dislocation present with (1) a cam-type deformity and/or (2) a retroverted acetabulum.

METHODS:

We retrospectively compared the morphologic features of 53 consecutive hips (53 patients) after traumatic posterior hip dislocation with 85 normal hips (44 patients) based on AP pelvic and crosstable axial radiographs. We measured the axial and the lateral alpha angle for detection of a cam deformity and the crossover sign, ischial spine sign, posterior wall sign, retroversion index, and ratio of anterior to posterior acetabular coverage to describe the acetabular orientation.

RESULTS:

Hips with traumatic posterior traumatic dislocation were more likely to have cam deformities than were normal hips, in that the hips with dislocation had increased axial and lateral alpha angles. Hips with posterior dislocation also were more likely to be retroverted; dislocated hips had a higher prevalence of a positive crossover sign, ischial spine sign, and posterior wall sign, and they had a higher retroversion index and increased ratio of anterior to posterior acetabular coverage.

CONCLUSIONS:

Hips with posterior traumatic dislocation typically present with morphologic features of anterior FAI, including a cam-type deformity and retroverted acetabulum. An explanation for these findings could be that the early interaction between the aspherical femoral head and the prominent acetabular rim acts as a fulcrum, perhaps making these hips more susceptible to traumatic dislocation.

LEVEL OF EVIDENCE:

Level III, prognostic study. See Guidelines for Authors for a complete description of levels of evidence.

PMID: 23423625 [PubMed - as supplied by publisher]

Hip/Impingement

PM R. 2013 Feb 16. pii: S1934-1482(13)00086-5. doi: 10.1016/j.pmrj.2013.02.005. [Epub ahead of print]

Nonoperative Treatment for Femoroacetabular Impingement: A Systematic Review of the Literature.

Wall PD, Fernandez M, Griffin D, Foster N.

Source

Clinical Sciences Research Institute, University of Warwick, Clinical Sciences Building, University Hospital, Clifford Bridge Road, Coventry, CV2 2DX, United Kingdom. . Electronic address: pdhwall@gmail.com.

Abstract

OBJECTIVE:

Femoroacetabular impingement (FAI) has been identified as a common cause of hip pain in young adults. However, it is not known whether an effective nonoperative treatment exists and whether there is any evidence to support such a treatment. TYPE: A systematic review.

PURPOSE:

To establish whether nonoperative treatments exist for FAI in the published literature and whether there is any evidence to support their use.

LITERACY SURVEY:

PubMed, Medline, EMBASE, CINAHL, AMED, and Cochrane Library databases were searched by using the following terms: femoroacetabular impingement, femoro-acetabular impingement, and hip impingement. The search was limited to English only but with no time constraints.

METHODOLOGY:

The review was undertaken at 2 academic institutions within the United Kingdom; any article that described or provided evidence that related to a nonoperative treatment for FAI was included.

SYNTHESIS:

Five articles summarized primary experiments that described or evaluated nonoperative treatment, of which, 3 reported favorable outcomes. Fifty-three articles met our criteria, of which, 48 were review and/or discussion based. Many review and/or discussion articles (31 [65%]) indicated that a trial of conservative care was appropriate. Activity modification was most frequently recommended (39 [81%]), and nearly half promoted physical therapy as a treatment (23 [48%]).

CONCLUSION:

The review literature appears to promote initial nonoperative treatment for FAI. Although the available literature with experimental data is limited, there is a suggestion that physical therapy and activity modification confer some benefit to patients. Nonoperative treatment regimens, particularly physical therapy, need to be evaluated more extensively and rigorously, preferably against operative care, to determine the true clinical effectiveness.

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PMID: 23419746 [PubMed - as supplied by publisher]

Knee/ACL/Open kinetic chain

Am J Sports Med. 2013 Feb 19. [Epub ahead of print]

Open Kinetic Chain Exercises in a Restricted Range of Motion After Anterior Cruciate Ligament Reconstruction: A Randomized Controlled Clinical Trial.

Fukuda TY, Fingerhut D, Moreira VC, Camarini PM, Scodeller NF, Duarte A Jr, Martinelli M, Bryk FF.

Source

Physical Therapy Sector, Irmandade da Santa Casa de Misericórdia, São Paulo, Brazil.

Abstract

BACKGROUND: Recent studies have shown that an early start of open kinetic chain (OKC) exercises for quadriceps strengthening in a full range of motion (ROM) could increase anterior knee laxity after anterior cruciate ligament (ACL) reconstruction with flexor tendons. However, there are no clinical trials that evaluated outcomes of OKC exercises in a restricted ROM for pain, function, muscle strength, and anterior knee laxity at 1 year after surgery.

PURPOSE: To determine if an early start of OKC exercises for quadriceps strength in a restricted ROM would promote a clinical improvement without causing increased anterior knee laxity in patients after ACL reconstruction.

STUDY DESIGN: Randomized controlled clinical trial; Level of evidence, 1.

METHODS: A total of 49 patients between 16 and 50 years of age who underwent ACL reconstruction with semitendinosus and gracilis autografts were randomly assigned to an early start OKC (EOKC) exercise group or a late start OKC (LOKC) exercise group. The EOKC group (n = 25; mean age, 26 years) received a rehabilitation protocol with an early start of OKC (fourth week postoperatively) within a restricted ROM between 45° and 90°. The LOKC group (n = 24; mean age, 24 years) performed the same protocol with a late start of OKC exercises between 0° and 90° (12th week postoperatively). Quadriceps and hamstring muscle strength, 11-point numerical pain rating scale (NPRS), Lysholm knee scoring scale, single-legged and crossover hop tests, and anterior knee laxity were measured to assess outcomes at the 12-week, 19-week, 25-week, and 17-month postoperative follow-up (range, 13-24 months).

RESULTS: No difference (P < .05) was noted between groups with respect to demographic data. Both groups (EOKC and LOKC) had a higher level of function and less pain at the 19-week, 25-week, and 17-month assessments when compared with 12 weeks postoperatively (P < .05). The EOKC group had improved quadriceps muscle strength at the 19-week, 25-week, and 17-month follow-up when compared with 12 weeks postoperatively (P < .05); the LOKC group showed improvement only at the 17-month postoperative assessment. However, the analysis between groups showed no difference for all pain and functional assessments, including anterior knee laxity (P > .05).

CONCLUSION: An early start of OKC exercises for quadriceps strengthening in a restricted ROM did not differ from a late start in terms of anterior knee laxity. The EOKC group reached the same findings in relation to pain decrease and functional improvement when compared with the LOKC group but showed a faster recovery in quadriceps strength. The nonweightbearing exercises seem appropriate for patients who have undergone ACL reconstruction, when utilized in a specific ROM. The magnitude of difference in quadriceps strength between the 2 rehabilitation protocols was around 5%; however, this difference was not clinically significant, especially because both groups had equal function on the hop tests.

PMID: 23423316 [PubMed - as supplied by publisher]

Neural tension/bilateral effects

J Physiother. 2013;59(1):25-30. doi: 10.1016/S1836-9553(13)70143-7.

Radial nerve mobilisation had bilateral sensory effects in people with thumb carpometacarpal osteoarthritis: a randomised trial.

Villafañe JH, Bishop MD, Fernández-de-Las-Peñas C, Langford D.

Source

Department of Physical Therapy, Residenza Sanitaria Assistenziale 'A. Maritano', Sangano, Italy; Shiatsu Orbassano, Turin, Italy. Electronic address: mail@Villafane.it.

Abstract

QUESTION:

In people with thumb carpometacarpal osteoarthritis, does radial nerve mobilisation to the affected hand reduce pressure pain sensitivity in the contralateral hand?

DESIGN:

Secondary analysis of data from a randomised trial with concealed allocation, assessor blinding, and intention-to-treat analysis.

PARTICIPANTS:

Sixty people with thumb CMC osteoarthritis in the dominant hand aged 70-90 years.

INTERVENTIONS:

The experimental group received sliding mobilisation of the radial nerve and the control group received a non-therapeutic dose of intermittent ultrasound, on the affected side for six sessions over four weeks.

OUTCOME MEASURES:

On the contralateral side, pressure pain thresholds at the lateral epicondyle, thumb CMC joint, tubercle of the scaphoid bone, and hamate bone were assessed before and after the intervention with follow-up at 1 and 2 months.

RESULTS:

No important baseline differences were noted between groups. At the end of the intervention period, the experimental group had significantly a higher (ie, better) pressure pain threshold than the control group at the lateral epicondyle by 1.5kg/cm(2) (95% CI 0.2 to 2.2), CMC joint by 1.2kg/cm(2) (95% CI 0.5 to 2.0), scaphoid bone by 1.0kg/cm(2) (95% CI 0.2 to 1.8) and hamate bone by 1.9kg/cm(2) (95% CI 1.0 to 2.7). Although mean values in the experimental group remained better than the control group at all sites at both follow-up assessments, these differences were not statistically significant.

CONCLUSION:

Radial nerve gliding applied to the symptomatic hand induced hypoalgesic effects on the contralateral hand in people with CMC osteoarthritis, suggesting bilateral hypoalgesic effects of the intervention.

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PMID: 23419912 [PubMed - in process]

Gait/shoes

Clin Biomech (Bristol, Avon). 2013 Feb 12. pii: S0268-0033(13)00010-7. doi: 10.1016/j.clinbiomech.2013.01.009. [Epub ahead of print]

Effects of toning shoes on lower extremity gait biomechanics.

Horsak B, Baca A.

Source

Department of Physiotherapy, St. Poelten University of Applied Sciences, Austria; Institute for Sciences and Services in Health, St. Poelten University of Applied Sciences, Austria. Electronic address: brian.horsak@fhstp.ac.at.

Abstract

BACKGROUND:

The Reebok Easy Tone shoe concept was developed to induce instability during walking and standing with the primary purpose of increasing muscle activity of the lower extremity muscles. To the authors' knowledge, no scientific work has been published, which analyzed neuromuscular and biomechanical effects when walking and standing with Reebok Easy Tone shoes. Therefore, the purpose of this study was to investigate the immediate effects of using such footwear on gait biomechanics for the lower extremity in healthy participants.

METHODS:

Five healthy female and seven healthy male participants volunteered to participate in this study. During quiet standing, centre of pressure excursion was determined. 3D gait analyses were performed with simultaneously collecting surface electromyography data of the leg muscles when walking with regular shoes and with Reebok Easy Tone shoes.

FINDINGS:

Centre of pressure excursion did not show any significant differences. For walking, only slight differences were found in kinematics and kinetics. When walking with Reebok Easy Tone shoes, the first vertical peak of the ground reaction force was significantly increased as well as the maximum plantarflexion moment during initial contact and loading response. Mean muscle activation for vastus medialis and lateralis showed an increase during the second half of stance, but failed to reach significance.

INTERPRETATION:

Results of this study did not show any increased instability during standing and only a slight increase of vastii activity during stance. Thus, the marketing claims that "toning shoes" could serve as a sort of training devices for lower limb muscles during walking, cannot be supported.

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PMID: 23414941 [PubMed - as supplied by publisher]

Knee/OA

Clin Biomech (Bristol, Avon). 2013 Feb 11. pii: S0268-0033(13)00011-9. doi: 10.1016/j.clinbiomech.2013.01.010. [Epub ahead of print]

Correlations among measures of knee stiffness, gait performance and complaints in individuals with knee osteoarthritis.

Oatis CA, Wolff EF, Lockard MA, Michener LA, Robbins SJ.

Source

Department of Physical Therapy, Arcadia University, Glenside, PA, United States. Electronic address: oatis@arcadia.edu.

Abstract

BACKGROUND:

Stiffness is a common complaint in individuals with knee osteoarthritis and is a component of the osteoarthritis diagnosis. Yet the relationship between stiffness and function is poorly understood and methods to quantify stiffness are limited.

METHODS:

Using a cross-sectional observational design with 66 subjects with knee osteoarthritis, stiffness and damping coefficients were calculated from a relaxed knee oscillation procedure. Gait parameters were measured using an electronic walkway. Self-reported pain, stiffness, and function were measured with the Western Ontario and McMaster Osteoarthritis Index. Correlation and Alexander's normalized-t approximation analyses were used to assess associations among the variables. Subset analysis was performed on subjects with and without tibiofemoral joint crepitus.

FINDINGS:

Slight to moderate correlations existed between stiffness and damping coefficients and most gait parameters ($|r| = 0.30-0.56$; $P < .05$) and between Western Ontario and McMaster Osteoarthritis Index scores and all gait parameters ($|r| = 0.35-0.62$; $P < .05$). The damping coefficient was only slightly associated with patient-rated Western Ontario and McMaster Osteoarthritis Index stiffness subscale scores. Subset analysis revealed significant correlations that differed between those with and without crepitus.

INTERPRETATION:

These findings suggest that laboratory measured stiffness and damping coefficients, Western Ontario and McMaster Osteoarthritis Index scores and gait-related measurements assess different aspects related to movement in individuals with knee osteoarthritis. Stiffness and damping coefficients may offer the ability to explain gait changes in the knee that are independent of a person's perceptions particularly in the early stages of the disease.

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PMID: 23410554 [PubMed - as supplied by publisher]

LBP/Manipulation

Spine:

01 February 2013 - Volume 38 - Issue 3 - p E158–E177

doi: 10.1097/BRS.0b013e31827dd89d

Cochrane Collaboration

Spinal Manipulative Therapy for Acute Low Back Pain: An Update of the Cochrane Review

Rubinstein, Sidney M. PhD^{*}; Terwee, Caroline B. PhD^{*}; Assendelft, Willem J. J. MD, PhD^{†,‡}; de Boer, Michiel R. PhD[§]; van Tulder, Maurits W. PhD^{*,§}

Abstract

Study Design. Systematic review of interventions.

Objective. To assess the effects of spinal manipulative therapy (SMT) for acute low back pain.

Summary of Background Data. SMT is one of many therapies for the treatment of low back pain, which is a worldwide, extensively practiced intervention.

Methods. An experienced librarian searched for randomized controlled trials (RCTs) in multiple databases up to March 13, 2011. RCTs that examined manipulation or mobilization in adults with acute low back pain (<6-week duration) were included. The primary outcomes were pain, functional status and perceived recovery. Secondary outcomes were return-to-work and quality of life. Two authors independently conducted the study selection, risk of bias assessment and data extraction. GRADE (*grading of recommendations assessment, development, and evaluation*) was used to assess the quality of the evidence. The effects were examined for SMT *versus* (1) inert interventions, (2) sham SMT, (3) other interventions, and (4) SMT as adjunct therapy.

Results. We identified 20 RCTs (total participants = 2674), 12 (60%) of which were not included in the previous review. In total, 6 trials (30% of all included studies) had a low risk of bias. In general, for the outcomes of pain and functional status, there is low- to very low-quality evidence suggesting no difference in effect for SMT when compared with inert interventions, sham SMT or as adjunct therapy. There was varying quality of evidence (from very low to moderate) suggesting no difference in effect for SMT when compared with other interventions. Data were particularly sparse for recovery, return-to-work, quality of life, and costs of care. No serious complications were observed with SMT.

Conclusion. SMT is no more effective for acute low back pain than inert interventions, sham SMT or as adjunct therapy. SMT also seems to be no better than other recommended therapies. Our evaluation is limited by the few numbers of studies; therefore, future research is likely to have an important impact on these estimates. Future RCTs should examine specific subgroups and include an economic evaluation.

C spine/T spine manip

Disabil Rehabil. 2013 Jan 23. [Epub ahead of print]

The effect of thoracic spine manipulation on pain and disability in patients with non-specific neck pain: a systematic review.

Huisman PA, Speksnijder CM, de Wijer A.

Source

Paramedical Centre Katwijk-Rijnsburg , Rijnsburg , the Netherlands .

Abstract

Abstract Purpose: The aim of this systematic review was to determine the efficacy of thoracic spine manipulation (TSM) in reducing pain and disability in patients diagnosed with non-specific neck pain. **Methods:** An extensive literature search of PubMed, The Cochrane Library, CINAHL and EMBASE was conducted in February 2012. Randomized controlled trials (RCTs) or controlled clinical trials evaluating the effect of TSM in patients aged 18 to 65 years with non-specific neck pain were eligible. Methodological quality of the studies was assessed according to the Physiotherapy Evidence Database scale (PEDro). Qualitative analyses were conducted by means of the best evidence synthesis of van Peppen et al. **Results:** The methodological quality of the 10 included RCTs (677 patients) varied between four and eight points. Eight studies reported significant reduction in pain and/or disability by TSM. Overall, according to the best evidence synthesis, there is insufficient evidence that TSM is more effective than control interventions in reducing pain and disability in patients with non-specific neck pain. **Conclusions:** TSM has a therapeutic benefit to some patients with neck pain, when compared to the effect of interventions such as electrotherapy/thermal programme, infrared radiation therapy, spinal mobilization and exercises. However, in comparison to cervical spine manipulation, no evidence is found that TSM is more effective in reducing pain and disability. **Implications for Rehabilitation** TSM is often used in the treatment of non-specific neck pain, which is a major health problem in the Western society. There is insufficient evidence that TSM is more effective in reducing pain and disability than control treatments in patients with non-specific neck pain. Despite the insufficient evidence that TSM is more effective than control treatments, TSM has a therapeutic benefit to some patients with neck pain. Therefore, TSM alone or in combination with other interventions is a suitable intervention to use in the treatment of non-specific neck pain.

PMID: 23339721 [PubMed - as supplied by publisher]

LBP/Manipulation

J Back Musculoskelet Rehabil. 2013 Jan 1;26(1):33-6. doi: 10.3233/BMR-2012-0347.

Manipulation and selective exercises decrease pelvic anteversion and low-back pain: A pilot study.

Barbosa AC, Martins FL, Barbosa MC, Dos Santos RT.

Source

Department of Physiotherapy, Federal University of Valleys of Jequitinhonha and Mucuri, Diamantina, Brazil Department of Health Education, Federal University of Valleys of Jequitinhonha and Mucuri, Diamantina, Brazil.

Abstract

OBJECTIVES:

To study the effect of a protocol involving joint manipulation and specific exercises for pelvic stability to influence proprioceptive input to the spinal tissues and to observe the effects on sensorimotor function.

METHODS:

Seven patients with pelvic anteversion and low back pain participated in an eight-week protocol (three sessions per week/nonconsecutive days). At each session, a high-velocity, low-amplitude manipulative thrust was applied to the sacroiliac joint, followed by quadriceps eccentric and hamstring concentric contractions. The perceived pain symptoms, pelvic anteversion as determined by photogrammetry analysis, and the electromyographic activity of the rectus femoris and lateral and medial hamstrings during flexion and extension exercises were assessed before and after treatment. Non-parametric tests were used to compare the groups before and after treatment with $\alpha=0.05$.

RESULTS:

Perceived pain symptoms decreased after treatment ($p=0.0007$). The differences in the pelvis angles ($p=0.0130$) suggested significant differences between the assessments, and the electromyographic activities of all the muscles during isometric voluntary contraction increased.

CONCLUSION:

The eight-week manipulation/exercise protocol was effective for these subjects' needs. Further research should include a greater sample size to confirm the results and to determine the lead factors of pelvic stability.

PMID: 23411646 [PubMed - in process]

LBP adolescents/PT

[Physical therapy treatments for low back pain in children and adolescents: a meta-analysis.](#) Julio Sánchez-Meca. BMC Musculoskeletal Disorders, 2 Feb 2013

Abstract

Background

Low back pain (LBP) in adolescents is associated with LBP in later years. In recent years treatments have been administered to adolescents for LBP, but it is not known which physical therapy treatment is the most efficacious. By means of a meta-analysis, the current study investigated the effectiveness of the physical therapy treatments for LBP in children and adolescents.

Methods

Studies in English, Spanish, French, Italian and Portuguese, and carried out by March 2011, were selected by electronic and manual search. Two independent researchers coded the moderator variables of the studies, and performed the effect size calculations. The mean effect size index used was the standardized mean change between the pretest and posttest, and it was applied separately for each combination of outcome measures, (pain, disability, flexibility, endurance and mental health) and measurement type (self-reports, and clinician assessments).

Results

Eight articles that met the selection criteria enabled us to define 11 treatment groups and 5 control groups using the group as the unit of analysis. The 16 groups involved a total sample of 334 subjects at the posttest (221 in the treatment groups and 113 in the control groups). For all outcome measures, the average effect size of the treatment groups was statistically and clinically significant, whereas the control groups had negative average effect sizes that were not statistically significant.

Conclusions

Of all the physical therapy treatments for LBP in children and adolescents, the combination of therapeutic physical conditioning and manual therapy is the most effective. The low number of studies and control groups, and the methodological limitations in this meta-analysis prevent us from drawing definitive conclusions in relation to the efficacy of physical therapy treatments in LBP.

Keywords: Physical therapy; Effectiveness; Low back pain; Children; Adolescents; Meta-analysis

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 trialled 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.

Wiley Periodicals, Inc.

PMID: 23432939 [PubMed - as supplied by publisher]

LBP/Quadratus/Cricket

Clin J Sport Med. 2013 Jan 31. [Epub ahead of print]

Cricket Fast Bowlers Without Low-Back Pain Have Larger Quadratus Lumborum Asymmetry Than Injured Bowlers.

Kountouris A, Portus M, Cook J.

Source

*Cricket Australia, Melbourne, Victoria, Australia †Praxis Sport Science, Brisbane, Queensland, Australia ‡Department of Physiotherapy, School of Primary Health Care, Faculty of Medicine, Nursing and Health Sciences, Monash University, Frankston, Victoria, Australia.

Abstract

OBJECTIVE:: The objective of the study was to determine the magnitude and side of quadratus lumborum (QL) asymmetries in elite, adult, cricket fast bowlers and the relationship with lumbar spine injury.

STUDY DESIGN:: Cohort study.

SETTING:: Cricket fast bowlers had magnetic resonance (MR) scans at the start of a cricket season and their injury characteristics over the next cricket season were compared with the amount of QL asymmetry.

PARTICIPANTS:: Twenty-three elite, asymptomatic, adult, cricket fast bowlers.

ASSESSMENT OF RISK FACTORS:: The cross-sectional area (CSA) of QL was measured using MR imaging. The association between side-to-side differences in CSA (asymmetry) was evaluated as a possible risk factor for development of lumbar spine injury.

MAIN OUTCOME MEASURES:: The main outcome measurements were QL CSA and asymmetry in relation to lumbar spine injury in cricket fast bowlers.

RESULTS:: There were a greater proportion of dominant (bowling arm) side asymmetries (65%). Asymmetry magnitudes that favored the dominant side were not significantly larger than those on the nondominant side. Four participants who had bone oedema on MR imaging preseason went on to develop symptomatic lumbar stress fractures. Participants with no lumbar spine injury had significantly larger QL asymmetries than those who sustained lumbar spine injury.

CONCLUSIONS:: Cricket fast bowlers demonstrated asymmetrical QL development, which may be related to the trunk positions adopted in the fast bowling technique. Uninjured bowlers had larger asymmetries than those who developed lumbar spine injury, which is contrary to some previous research.

PMID: 23377354 [PubMed - as supplied by publisher]

Ankle/stiffness

Passive dorsiflexion stiffness is poorly correlated with passive dorsiflexion range of motion.

J.W. Whittinga, J.R. Steeleb, D.E. McGheeb, B.J. Munrob.

Journal of Science and Medicine in Sport. March 2013

Objectives

The purpose of this study was to determine the relationships among passive measures of weight-bearing dorsiflexion range of motion, non-weight-bearing dorsiflexion range of motion and dorsiflexion stiffness, thereby establishing whether they assess similar mechanical characteristics, as each measure has been implicated in injury risk during landings.

Design

Cross-sectional study.

Methods

Passive weight-bearing dorsiflexion range of motion, non-weight-bearing dorsiflexion range of motion and dorsiflexion stiffness were quantified for 42 males (22.8 ± 5.0 years). The relationship between each data set was calculated using Pearson product-moment correlation coefficients.

Results

Although weight-bearing dorsiflexion range of motion and non-weight-bearing dorsiflexion range of motion were significantly correlated, the strength of the relationship was poor ($r^2 = 0.18$; $p = 0.004$). Weight-bearing dorsiflexion range of motion (mean = $43.0 \pm 5.0^\circ$) was significantly greater than non-weight-bearing dorsiflexion range of motion ($29.8 \pm 5.9^\circ$; $p < 0.001$) and weight-bearing dorsiflexion range of motion and non-weight-bearing dorsiflexion range of motion were also poorly correlated with passive dorsiflexion stiffness ($1.48 \pm 0.55 \text{ Nm}^{-1}$; $r^2 = 0.04$ and $r^2 = 0.14$, respectively), despite the latter relationship being significant ($p = 0.017$).

Conclusions

Passive dorsiflexion stiffness was not strongly associated with dorsiflexion range of motion, despite the significant correlation in the non-weight-bearing condition. It must be acknowledged that passive dorsiflexion stiffness was weakly associated with dorsiflexion range of motion, although the strength of the association suggests that it may not necessarily determine dorsiflexion range of motion. Furthermore, the functional dorsiflexion limits of the ankle during weight-bearing tasks may be underestimated or misrepresented by non-weight-bearing measures of dorsiflexion range of motion. Therefore, although ankle dorsiflexion range of motion and dorsiflexion stiffness have been implicated in injury risk during weight-bearing tasks such as landings, it may be due to different mechanisms.

Keywords Ankle; Achilles tendon; Flexibility; Athletic injuries

Stretching/exercise

[Effect of single bout versus repeated bouts of stretching on muscle recovery following eccentric exercise.](#)

Rui Torresa, Francisco Pinhoa, José Alberto Duarte, Jan M.H. Cabrid.

Journal of Science and Medicine in Sport, 8 Feb 2013

Abstract

Objectives

To analyze the effects of a single bout and repeated bouts of stretching on indirect markers of exercise-induced muscle damage.

Design

A randomized controlled clinical trial at a university human research laboratory was conducted.

Methods

Fifty-six untrained males were randomly divided into four groups. (I) a single stretching group underwent a single bout of stretching on the quadriceps muscle; (II) an eccentric exercised group underwent eccentric quadriceps muscle contractions until exhaustion; (III) an eccentric exercise group followed by a single bout of stretching; (IV) an eccentric exercised group submitted to repeated bouts of stretching performed immediately and 24, 48, and 72 h post-exercise. Muscle stiffness, muscle soreness, maximal concentric peak torque, and plasma creatine kinase activity were assessed before exercise and 1, 24, 48, 72, and 96 h post-exercise.

Results

All exercised groups showed significant reduction in maximal concentric peak torque and significant increases in muscle soreness, muscle stiffness, and plasma creatine kinase. There were no differences between these groups in all assessed variables, with the exception of markers of muscle stiffness, which were significantly lower in the eccentric exercise group followed by single or repeated bouts. The single stretching group showed no change in any assessed variables during the measurement period.

Conclusions

Muscle stretching performed after exercise, either as single bout or as repeated bouts, does not influence the levels of the main markers of exercise-induced muscle damage; however, repeated bouts of stretching performed during the days following exercise may have favorable effects on muscle stiffness.

Keywords Exercise-induced muscle damage; Delayed onset muscle soreness; Stiffness; Range of motion; Muscle stretch

Knee/Meniscus

Effect of Meniscal and Focal Cartilage Lesions on Patient-Reported Outcome After Anterior Cruciate Ligament Reconstruction A Nationwide Cohort Study From Norway and Sweden of 8476 Patients With 2-Year Follow-up

The American Journal of Sports Medicine, March 2013

- Jan Harald Røtterud, MD^{*,†‡}, Einar A. Sivertsen, MD, PhD^{*,§}, Magnus Forssblad, MD, PhD[¶], Lars Engebretsen, MD, PhD^{#,**,††} and Asbjørn Årøen, MD, PhD^{*,#}

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Abstract

Background: The effect of concomitant intra-articular injury on patient-reported outcome after anterior cruciate ligament (ACL) reconstruction is debated.

Purpose: To evaluate the effect of meniscal and articular cartilage lesions on patient-reported outcome 2 years after ACL reconstruction.

Study Design: Cohort study (prognosis); Level of evidence, 2.

Methods: The study included all patients with primary, unilateral ACL reconstruction registered in the Norwegian and the Swedish National Knee Ligament Registry from 2005 through 2008 who had completed the Knee Injury and Osteoarthritis Outcome Score (KOOS) Knee-Related Quality of Life subscale at a 2-year follow-up (mean \pm SD, 2.1 \pm 0.2 years) after surgery (n = 8476). Multiple linear regression analyses were used to evaluate the associations between each KOOS subscale (Pain, Other Symptoms, Activities of Daily Living, Sport and Recreation Function, Knee-Related Quality of Life) as the measure for patient-reported outcome and meniscal and cartilage lesions.

Results: A total of 3674 (43%) patients had meniscal lesion(s), 1671 (20%) had partial-thickness (International Cartilage Repair Society [ICRS] grades 1-2) cartilage lesion(s), and 551 (7%) had full-thickness (ICRS grades 3-4) cartilage lesion(s). Multiple linear regression analyses detected no significant associations between meniscal lesions or partial-thickness cartilage lesions and the scores in any of the KOOS subscales at the 2-year follow-up. Full-thickness cartilage lesions were significantly associated with decreased scores in all of the KOOS subscales.

Conclusion: Patients with concomitant full-thickness cartilage lesions reported worse outcome in all of the KOOS subscales compared with patients without cartilage lesions 2 years after ACL reconstruction. Meniscal lesions and partial-thickness cartilage lesions did not impair patient-reported outcome 2 years after ACL reconstruction

Knee/ACL

Cumulative Incidence of ACL Reconstruction After ACL Injury in Adults Role of Age, Sex, and Race

The American Journal of Sports Medicine, March 2013

- Jamie E. Collins, MA^{*,†‡}, Jeffrey N. Katz, MD, MSc^{†§}, Laurel A. Donnell-Fink, MPH[†],
Scott D. Martin, MD[†] and Elena Losina, PhD^{†‡}

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Abstract

Background: Anterior cruciate ligament (ACL) injuries are common and potentially disabling and frequently prompt surgical reconstruction. The utilization of ACL reconstruction among ACL-injured patients has not been examined rigorously.

Purpose: This study reports the 3-year cumulative incidence of ACL reconstruction among adults with ACL injury and compares demographic and clinical characteristics of ACL-injured patients who do and do not go on to undergo ACL reconstruction.

Study Design: Cohort study; Level of evidence, 3.

Methods: A tertiary health care system patient data repository was used to identify patients diagnosed with an ACL injury between January 1, 2001, and December 31, 2007. Follow-up data were obtained to determine how many patients with ACL injury underwent ACL reconstruction within 3 years of ACL injury diagnosis. Stratified analyses were used to examine incidence rates separately by sex, age, race, primary language, socioeconomic status (SES), and health insurance status. Multivariable logistic regression models were built to examine the association of patient characteristics with utilization of ACL reconstruction.

Results: There were 2304 patients, with a mean age of 47 years, diagnosed with an ACL injury between 2001 and 2007. The 3-year cumulative incidence of ACL reconstruction after ACL injury diagnosis was 22.6% (95% CI, 20.9%-24.3%). Eighty-six percent of patients undergoing reconstruction did so within 6 months of injury diagnosis, while 94% underwent reconstruction within 1 year. In multivariable models, several patient features were independently associated with a higher adjusted odds of undergoing ACL reconstruction, including male sex (adjusted odds ratio [aOR], 1.4; 95% CI, 1.1-1.7), younger age (aOR per decade, 1.8; 95% CI, 1.7-2.0), white race (aOR, 1.4; 95% CI, 0.94-1.9), higher SES (aOR, 1.4; 95% CI, 1.04-1.8 for high vs low SES; aOR, 1.3; 95% CI, 1.02-1.8 for medium vs low SES), and private health insurance versus self-pay (aOR, 1.9; 95% CI, 1.04-3.5).

Conclusion: Less than a quarter of patients with a diagnosed ACL injury underwent ACL reconstruction in the 3 years after diagnosis. The odds of having surgery were higher for men, whites, younger patients, patients with higher SES, and patients with private health insurance.

Knee/ACL/Cartilage

Cartilage Status in Relation to Return to Sports After Anterior Cruciate Ligament Reconstruction

- Ans Van Ginckel, PT, MSc^{*,†‡}, Peter Verdonk, MD, PhD[§], Jan Victor, MD, PhD[§] and Erik Witvrouw, PT, PhD^{‡||}
- The American Journal of Sports Medicine, March 2013

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Abstract

Background: Osteoarthritis after anterior cruciate ligament (ACL) reconstruction receives much attention in orthopaedic science. Anterior cruciate ligament reconstruction is related to increased joint fluid volumes, bone marrow edema, and cartilage biochemical and morphological changes believed to cause fragile joint conditions. These joint conditions may not be able to adequately counter the imposed loads during sports.

Hypothesis: At 6 months after surgery, knee cartilage displays inferior quality in ACL-reconstructed knees when compared with controls. This inferior quality is influenced by the time to return to sports and/or by the time to surgery.

Study Design: Cross-sectional study; Level of evidence, 3.

Methods: Fifteen patients treated with isolated ACL reconstruction were compared with 15 matched controls. In all participants, a 3-T magnetic resonance imaging cartilage evaluation was performed entailing quantitative morphological characteristics (3-dimensional volume/thickness), biochemical composition (T2/T2* mapping), and function (after a 30-minute run: in vivo deformation including recovery). Nonparametric statistics were executed reporting median (95% CI).

Results: No volume and thickness between-group differences existed. In patients, medial femur (FM) T2 was higher (45.44 ms [95% CI, 40.64-51.49] vs 37.19 ms [95% CI, 34.67-40.39]; P = .028), whereas T2* was lower in the FM (21.81 ms [95% CI, 19.89-22.74] vs 24.29 ms [95% CI, 22.70-26.26]; P = .004), medial tibia (TM) (13.81 ms [95% CI, 10.26-16.78] vs 17.98 ms [95% CI, 15.95-18.90]; P = .016), and lateral tibia (TL) (14.69 ms [95% CI, 11.71-16.72] vs 18.62 ms [95% CI, 17.85-22.04]; P < .001). Patients showed diminished recovery at 30 minutes after a 30-minute run in the FM (-1.60% [95% CI, -4.82 to -0.13] vs 0.01% [95% CI, -0.34 to 1.23]; P = .040) and at 30 (-3.76% [95% CI, -9.29 to -1.78] vs 0.04% [95% CI, -1.52 to -0.72]; P = .004) and 45 minutes after exercise (-1.86% [95% CI, -4.66 to -0.40] vs 0.43% [95% CI, -0.91 to 0.77]; P = .024) in the TL. Eight patients returned to sports at 6 months or earlier. Return before 5 months (3/8 patients) was associated with increased cartilage thickness (in TM, TL, and lateral femur [FL]), deformation (in FL), and delayed recovery after running (in FL and FM). Median surgical delay was 10 weeks (range, 5-17 weeks). Surgery within 10 weeks (9/15 patients) was also associated with delayed cartilage recovery (in FL and FM). For the other parameters, no significant relationships could be established for either return to sports or surgical delay.

Conclusion: At 6 months after surgery, cartilage in patients with ACL reconstruction shows diminished quality and in vivo resiliency compared with controls. Caution is advised in an early return to sports especially when dealing with patients who received prompt surgery. Possibly, high impacts on this qualitatively diminished cartilage might play a role in the development of osteoarthritis in ACL reconstruction. Replication in larger samples and follow-up are warranted.

Knee/Patella/Instability

Predictors of Recurrent Instability After Acute Patellofemoral Dislocation in Pediatric and Adolescent Patients

- Laura W. Lewallen, MD*, Amy L. McIntosh, MD*,† and Diane L. Dahm, MD*
- The American Journal of Sports Medicine, March 2013

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Abstract

Background: Patellofemoral instability is common in the pediatric and adolescent population, yet prognosis after the first dislocation has been difficult to determine.

Purpose: To describe the demographics of pediatric and adolescent patients with a first-time patellofemoral dislocation and to determine predictors of recurrent instability.

Study Design: Case-control study; Level of evidence, 3.

Methods: A search of the Mayo Medical Index database between 1998 to 2010 was performed, and 2039 patients were identified. Inclusion criteria were (1) age 18 years or younger, (2) no history of patellofemoral subluxation/dislocation of the affected knee, (3) radiographs within 4 weeks of the initial instability episode, and (4) a dislocated patella requiring reduction or convincing history/findings suggestive of acute patellar dislocation (effusion/hemarthrosis, tenderness along medial parapatellar structures, and apprehension with lateral patellar translation). Radiographs were evaluated for trochlear dysplasia (Dejour classification) and patella alta (Caton-Deschamps and Insall-Salvati indices). Skeletal maturity was graded based on the distal femoral and proximal tibial physes (open, closing, or closed).

Results: A total of 222 knees (120 male [54.1%] and 102 female [45.9%]) in 210 patients with an average age of 14.9 years (range, 9-18 years), met the inclusion criteria. Twenty-four patients (10.8%) underwent early surgery. All others were initially treated nonoperatively. Of the 198 patients in this group, 76 (38.4%) had recurrent instability, and 39 (51.3%) of these required surgical treatment. Recurrent instability was associated with trochlear dysplasia ($P < .01$). Patients with both immature physes and trochlear dysplasia had a recurrence rate of 69% (33/48), with a hazard ratio of 3.3. Age, sex, body mass index, and patella alta were not statistically associated with recurrent instability.

Conclusion: Nonoperative treatment for first-time patellofemoral dislocation resulted in a 62% success rate. However, skeletally immature patients with trochlear dysplasia had only a 31% success rate with nonoperative management. Nearly half of patients with recurrent instability required surgical intervention to gain stability.

Knee/ACL

Comparison of Drop Jumps and Sport-Specific Sidestep Cutting Implications for Anterior Cruciate Ligament Injury Risk Screening

• Eirik Kristianslund^{*,†} and Tron Krosshaug, PhD[†]
The American Journal of Sports Medicine, March 2013

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Abstract

Background: Anterior cruciate ligament (ACL) injuries are a serious problem, with a high incidence and serious consequences. Published clinical screening tests are based on 2-legged and controlled drop jumps, but ACL injuries are known to occur in single-legged landings and sidestep cutting, where the load is predominantly distributed to a single leg.

Purpose: To describe knee kinematics and kinetics in drop jumps and sidestep cutting and investigate the rank correlation of knee valgus angles and knee abduction moments between and within these movements.

Study Design: Controlled laboratory study.

Methods: A total of 120 elite female handball players (mean \pm SD: age, 22.4 ± 7.1 years; height, 171 ± 7 cm; weight, 67 ± 7 kg), each performed 3 drop jumps and 3 sport-specific sidestep cuts to each side. Kinematics and kinetics were calculated from high-speed 3-dimensional motion analysis.

Results: Knee kinematics and kinetics were significantly different between drop jumps and sidestep cutting. The knee abduction moment was 6 times higher in sidestep cutting (1.58 ± 0.60 Nm/kg vs 0.25 ± 0.16 Nm/kg). There was a poor correlation between knee abduction moments ($\rho = 0.135$) in the 2 tasks, but a moderate correlation ($\rho = 0.706$) for knee valgus angles. There was a poor correlation between knee valgus angles in drop jumps and knee abduction moments in sidestep cuts ($\rho = 0.238$).

Conclusion: Motion patterns are different between drop jumps and sidestep cutting. There is a moderate correlation for knee abduction moments between the 2 tasks, but knee abduction moments are less consistent across tasks.

Clinical Relevance: Knee valgus angles during drop jumps do not predict knee abduction moments during sidestep cutting. The moderate correlation of knee valgus angles in drop jumps and sidestep cutting indicates that this measure may be more relevant for screening efforts

LBP/Leg Pain

J Back Musculoskelet Rehabil. 2013 Jan 1;26(1):55-61. doi: 10.3233/BMR-2012-00350.

Chronic low back pain patients with accompanying leg pain: The relationship between pain extent and pain intensity, disability and health status.

Prins MR, van der Wurff P, Groen GJ.

Source

Research and Development, Military Rehabilitation Centre Aardenburg, Doorn, The Netherlands
Department of Physiotherapy, HU University of Applied Sciences, Utrecht, The Netherlands.

Abstract

Accompanying leg pain is commonly observed in patients with chronic low back pain (CLBP) and is assumed to be an indicator for the disorder severity. However, it is still unknown whether it is possible to estimate a patient's functional status by the extent of leg pain present. In a post rehabilitation cohort of 132 patients with CLBP (mean age 44.3 years) the relationship between pain extent and functional status was determined using pain drawings scored for pain extent by a simplified scoring system (Lower Extremity Region: LER) and several function related questionnaires. Primary outcomes were pain extent, pain intensity ratings (Visual Analog Scale: VAS), disability status (Oswestry Disability Index: ODI) and physical and mental health (Short Format 12: SF-12). Statistically significant differences between patients with low (1-2) and high (≥ 3) LER scores were found in VAS, ODI and SF-12 physical health scores, however, the LER score has a poor diagnostic accuracy in predicting desirable versus undesirable VAS, ODI and SF-12 scores.

Pain intensity (VAS), back disability (ODI) and physical health are worse in CLBP patients with high LER scores. However LER scores cannot be used to predict elevated VAS, ODI and SF-12 scores in an individual patient.

PMID: 23411649 [PubMed - in process]

The Journal of Pain

Volume 14, Issue 2 , Pages 172-181, February 2013

Fear of Injury Predicts Self-Reported and Behavioral Impairment in Patients With Chronic Low Back Pain

- [Michel A. Thibodeau](#) , [Mathew G. Fetzner](#), [R. Nicholas Carleton](#), [Shane S. Kachur](#), [Gordon J.G. Asmundson](#)

Received 5 June 2012; received in revised form 19 September 2012; accepted 31 October 2012.
published online 26 December 2012.

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Abstract

Fear of injury has been posited as crucial in pain-related anxiety and in the development of chronic pain; however, research has only measured fear of injury indirectly through other constructs (eg, fear of illness and fear of movement). The current study tested fear of injury as an independent contributor to pain-related anxiety and impairment. Patients ($n = 78$; 37% women) in a work-hardening treatment program for chronic low back pain completed self-report measures of pain-related anxiety, anxiety sensitivity, fear of injury, current pain, and impairment. Behavioral measures of impairment included lifting capacity, treatment outcomes, and days absent from treatment. Structural equation modeling tested the role of fear of injury within contemporary theory. Fit for the theoretical model was excellent and superior to an alternative model. Variance accounted for in pain-related anxiety by fear of injury, anxiety sensitivity, and current pain was 64%, while pain-related anxiety and current pain predicted 49% of variance in latent impairment. Fear of injury directly predicted pain-related anxiety ($\beta = .42$) and indirectly predicted impairment through pain-related anxiety ($\beta = .19$). Fear of injury may warrant theoretical and clinical consideration as an important contributor to pain-related anxiety and impairment; however, research is needed to explore how it may be causally related with other constructs.

Perspective

Fear of injury directly predicts pain-related anxiety and indirectly predicts self-reported and behavioral impairment. Fear of injury may warrant inclusion in contemporary theories of chronic pain. Clinicians may benefit from considering the construct in interventions for chronic pain.

Key words: [Fear of injury](#), [chronic pain](#), [fear-avoidance](#), [pain-related anxiety](#), [anxiety sensitivity](#)

Ankle/Mobilization/pain

Ankle Joint Mobilization Affects Postoperative Pain Through Peripheral and Central Adenosine A₁ Receptors

- Daniel F. Martins, Leidiane Mazzardo-Martins, Francisco J. Cidral-Filho, Juliana Stramosk and Adair R.S. Santos
- Physical Therapy, March 2013

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Abstract

Background Physical therapists frequently use joint mobilization therapy techniques to treat people with musculoskeletal dysfunction and pain. Several studies suggest that endogenous adenosine may act in an analgesic fashion in various pain states.

Objective The purpose of this study was to investigate the contribution of the adenosinergic system on the antihyperalgesic effect of ankle joint mobilization (AJM).

Design This was an experimental study.

Methods To test the hypothesis that the adenosinergic system is involved in the antihyperalgesic effect of AJM, mice (25–35 g) submitted to plantar incision surgery were used as a model of acute postoperative pain. The mice were subjected to AJM for 9 minutes. Withdrawal frequency to mechanical stimuli was assessed 24 hours after plantar incision surgery and 30 minutes after AJM, adenosine, clonidine, or morphine treatments. The adenosinergic system was assessed by systemic (intraperitoneal), central (intrathecal), and peripheral (intraplantar) administration of caffeine. The participation of the A₁ receptor was investigated using a selective adenosine A₁ receptor subtype antagonist. In addition, previous data on the involvement of the serotonergic and noradrenergic systems in the antihyperalgesic effect of AJM were confirmed.

Results Ankle joint mobilization decreased mechanical hyperalgesia, and this effect was reversed by pretreatment of the animals with caffeine given by intraperitoneal, intraplantar, and intrathecal routes. In addition, intraplantar and intrathecal administrations of 1,3-dipropyl-8-cyclopentylxanthine (DPCPX, a selective adenosine A₁ subtype receptor antagonist) or systemic administration of yohimbine or ρ -chlorophenylalanine methyl ester hydrochloride (PCPA) blocked the antihyperalgesia induced by AJM.

Limitations The results are limited to animal models and cannot be generalized to acute pain in humans.

Conclusions This study demonstrated the involvement of the adenosinergic system in the antihyperalgesic effect of AJM in a rodent model of pain and provides a possible mechanism basis for AJM-induced relief of acute pain.

Pain

[Site-specific visual feedback reduces pain perception.](#)

Martin Diers, Walter Zieglgänsberger, Jörg Trojan, Annika Mira Drevensek, Gertrud Erhardt-Raum, Herta Flor.

Pain, March 2013

Abstract

One of the most common forms of chronic pain is back pain. Until now nothing is known about the influence of visualizing one's own back on pain perception at this site. We tested 17 patients with chronic back pain and 17 healthy controls by implementing online video feedback of the back during painful pressure and subcutaneous electrical stimuli over the trapezius muscle. Pain threshold and pain tolerance were assessed. Pressure pain stimulation intensity was set to 50% above pain threshold. Subcutaneous stimulation intensity was set to 70% above pain threshold. Subjects had to rate pain intensity and unpleasantness after each stimulation block on an 11-point numerical rating scale. Visual feedback of the back reduced perceived pain intensity compared to feedback of the hand in both patients and controls. These findings suggest novel intervention modes for chronic back pain based on visualization of body parts by augmented reality applications.

Pain/Fear

[Mere Intention to Perform Painful Movements Elicits Fear of Movement-Related Pain: An Experimental Study on Fear Acquisition Beyond Actual Movements.](#)

Ann Meulders, Johan W.S. Vlaeyen.

The Journal of Pain, March 2013

Abstract

Fresh empirical evidence supports the notion that fear of movement-related pain can be acquired through associative learning. In the context of these findings, 2 ideas are appealing, yet uninvestigated. The first is that merely the intention to perform a painful movement acts as a covert conditioned stimulus (CS) inducing defensive fear responses (ie, gaining excitatory properties following Pavlovian acquisition). The second idea is that after extinction, fear of movement-related pain can easily be reinstated after unexpected painful stimuli (ie, reinstatement). In a voluntary differential conditioning movement paradigm with movements as CSs and a painful electrocutaneous stimulus as the unconditioned stimulus (pain-US), 2 groups were included (Experimental/Control). One movement (CS+) was followed by the pain-US and another movement (CS-) was not during acquisition, while the CS+ was no longer reinforced during extinction. Next, the Experimental group received 2 reinstating pain-USs, whereas the Control group did not. The CS+ but not the CS- evoked fear of movement-related pain in self-reports and eye-blink startles. Intriguingly, the mere intention to perform the painful movement produced higher eye-blink startle responses than the intention to perform the nonpainful movement. We also demonstrated nondifferential reinstatement in the verbal fear ratings in the Experimental group only.

Perspective

This study demonstrates that the mere intention to perform a painful movement prior to the actual painful movement itself can come to elicit conditioned fear responses. These results suggest that actual movement may not be necessary to elicit pain-related fear responses, maintaining chronic pain-related fear, avoidance, and disability.

Efficacy and safety of tanezumab versus naproxen in the treatment of chronic low back pain

Pain, 03/14/2013 Clinical Article

Kivitz AJ et al. –

This phase IIB study investigated the efficacy and safety of tanezumab for chronic low back pain vs placebo and naproxen. Tanezumab provided significantly greater improvement in pain, function, and global scores vs placebo and naproxen in patients with chronic low back pain.

Methods

- This phase IIB study investigated the efficacy and safety of tanezumab for chronic low back pain vs placebo and naproxen.
- Patients (N = 1347) received intravenous tanezumab (5, 10, or 20 mg every 8 weeks), naproxen (500 mg twice daily), or placebo.
- The primary efficacy endpoint was mean change in daily average low back pain intensity (LBPI) from baseline to Week 16.
- Secondary endpoints included mean change from baseline to Week 16 in the Roland Morris Disability Questionnaire (RMDQ) and Patient's Global Assessment (PGA) of low back pain.

Results

- Tanezumab 10 and 20 mg had similar efficacy profiles and significantly improved LBPI, RMDQ, and PGA scores vs both placebo and naproxen (P 0.05).
- Tanezumab 5 mg provided improvement of PGA scores vs placebo (P 0.05), and naproxen resulted in significant improvement of LBPI vs placebo (P 0.05).
- Adverse event incidence was comparable across tanezumab doses but higher than placebo or naproxen.
- Arthralgia, pain in extremity, headache, and paresthesia were the most commonly reported adverse events by tanezumab-treated patients.
- The most frequently reported adverse events resulting in discontinuation of tanezumab treatment were arthralgia and paresthesia; the highest frequency was observed with tanezumab 20 mg (both 1.4%).
- Serious adverse event incidence was similar across treatments.

Comparison of cervical range of motion in two seated postural conditions in adults 50 or older with cervical pain

Journal of Manual & Manipulative Therapy, 03/14/2013 Clinical Article

Dunleavy K et al. –

The influence of self-selected unsupported seated posture on cervical range of motion (ROM) has not been widely studied. Cervical ROM in habitual (HAB) compared to erect (ER) seated posture in adults 50 or older with cervical pain was investigated. ROM was significantly different between HAB and ER postures. The directions most likely to detect real change in neck mobility were rotation in both postures, and extension as well as total flexion/extension in ER. Flexion and lateral flexion should be regarded cautiously as measures of improvement. Erect posture maximizes available cervical ROM in individuals over 50 with chronic neck pain compared to habitual postures.

Methods

- Individuals 50 or older with chronic neck pain participated in this within-subject observational study.
- ROM and posture (sagittal distances from the nose to the occiput, C7, and thoracic width and relative to a projected laser plumb line) were measured with the CROM device in the two postures.
- Test-retest reliability, standard error of measurement (SEM) and minimum detectable change at the 95% confidence level (MDC95) were calculated.

Results

- Total planar ROM values were significantly different between HAB and ER postures.
- Extension, total rotation and lateral flexion, and R lateral flexion ROM were greater, while flexion decreased significantly in the ER posture.
- SEM% ranged from 4•0 to 9•5% and MDC95 values were lower in ER (5•8-11•6°) compared to HAB (6•6-17•7°).
- MDC95% was moderately low for both postures (11•2-26•2%).

Read more: <http://www.mdlinx.com/pain-management/news-article.cfm/4480646/minimum-detectable-change-postural-assessment-cervical#ixzz2NXbJ0ki8>

Migraine/childhood/Mother stress

Maternal stress and childhood migraine: a new perspective on management *Full Text*

Neuropsychiatric Disease and Treatment, 03/14/2013 **Clinical Article**

Esposito M et al. –

The aim of this study was to evaluate the prevalence of maternal stress in a large pediatric sample of individuals affected by migraine without aura. The parental stress, childhood migraine, migraine without aura, children study may be the first to highlight the presence of high levels of stress in parents of children affected by migraine without aura.

Methods

- The study population consisted of 218 children (112 boys, 106 girls) of mean age 8.32 ± 2.06 (range 6–13) years suffering from migraine without aura and a control group of 405 typical developing children (207 boys, 198 girls) of mean age 8.54 ± 2.47 years.
- Mothers of children in each group answered the Parent Stress Index–Short Form (PSI–SF) questionnaire to assess parental stress levels.

Results

- The two groups were matched for age ($P = 0.262$), gender ($P = 0.983$), and body mass index adjusted for age ($P = 0.106$).
- Mothers of children with migraine without aura reported higher mean PSI–SF scores related to the Parental Distress domain ($P < 0.001$), Dysfunctional Parent–Child Interaction domain ($P < 0.001$), Difficult Child subscale ($P < 0.001$), and Total Stress domain than mothers of controls ($P < 0.001$).
- No differences between the two groups were found for Defensive Responding subscale scores.

Read more: <http://www.mdlinx.com/pain-management/news-article.cfm/4509455/parental-stress-childhood-migraine-migraine-without#ixzz2NXi5CNBF>

Vit D/Pain/Sleep

[Clin J Pain](#). 2013 Apr;29(4):341-7. doi: 10.1097/AJP.0b013e318255655d.

Improvement of pain, sleep, and quality of life in chronic pain patients with vitamin d supplementation.

[Huang W](#), [Shah S](#), [Long Q](#), [Crankshaw AK](#), [Tangpricha V](#).

Source

*Physical Medicine and Rehabilitation ||Geriatrics, Extended Care Service Line, Atlanta VA Medical Center, Decatur †Department of Rehabilitation Medicine §Department of Medicine, Division of Endocrinology, Metabolism & Lipids, Emory University School of Medicine ‡Department of Biostatistics and Bioinformatics, Rollins School of Public Health, Emory University, Atlanta, GA.

Abstract

OBJECTIVES:

: To evaluate the effects of vitamin D supplementation in outpatient veterans with multiple areas of chronic pain.

METHODS:

: A case series was performed as an outpatient vitamin D supplementation quality improvement project. A total of 28 US veterans with multiple areas of chronic pain and low serum 25-hydroxyvitamin D [25(OH)D] (<30 ng/mL) concentrations at baseline were identified in a major Veterans Affairs Medical Center from May 2009 till November 2010. They were supplemented with vitamin D 1200 IU daily if serum 25(OH)D was in the insufficient range (20 to 29 ng/mL) or 50,000 IU weekly if serum 25(OH)D was in the deficient range (<20 ng/mL). Standardized outcome measures were assessed before and after supplementation, including pain assessed by the 0 to 10 pain score and the bodily pain domain score of the Veterans Rand 36 item, sleep by the Pittsburgh Sleep Quality Index, and quality of life (QoL) by the Veterans Rand 36 item.

RESULTS:

: Participants reported no side effects during the study. Relative to baseline, pain, sleep, and QoL all improved except for role-functioning emotional. The improvements remained significant in pain score (P<0.001), sleep latency (P=0.019), sleep duration (P=0.012), bodily pain (P=0.014), general health (P=0.006), vitality (P=0.048), and social functioning (P=0.017) after controlling for age, sex, race, body mass index, season, baseline serum 25(OH)D concentration subgroup, and whether or not participants received additional procedural intervention during the supplementation period.

CONCLUSIONS:

: Standardized vitamin D supplementation in veterans with multiple areas of chronic pain can be effective in improving their pain levels, sleep, and various aspects of QoL.

PMID:22699141 [PubMed - in process]

Chronic pain/memory

Evidence for working memory deficits in chronic pain. A systematic review and meta-analysis

Pain, 03/14/2013 Evidence Based Medicine Review Article

Berryman C et al. –

The objective of this study was to systematically evaluate and critically appraise the literature concerning working memory function in people with chronic pain. The study was conducted along Cochrane collaboration and PRISMA statement guidelines. Notwithstanding high heterogeneity, pooled results from behavioural outcomes reflected a consistent, significant moderate effect in favour of better performance by healthy controls and, with the exception of one study, pooled results from physiological outcomes reflected no evidence for an effect.

Methods

- The study was conducted along Cochrane collaboration and PRISMA statement guidelines.
- A sensitive search strategy was designed and conducted with the help of an expert librarian using six databases.
- Twenty four observational studies evaluating behavioural and/or physiological outcomes in both a chronic pain group and a control group met the inclusion criteria.

Results

- All studies had a high risk of bias, primarily due lack of assessor blinding to outcome.
- High heterogeneity within the field was found with the inclusion of 24 papers using 21 different working memory tests encompassing nine different working memory constructs and nine different chronic pain populations.

Migraine/ Meninges

[Ann Neurol](#). 2013 Feb 27. doi: 10.1002/ana.23873. [Epub ahead of print]

Vascular ERK mediates migraine-related sensitization of meningeal nociceptors.

[Zhang X](#), [Kainz V](#), [Zhao J](#), [Strassman AM](#), [Levy D](#).

Source

Departments of Anesthesia, Critical Care and Pain Medicine, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA 02115.

Abstract

OBJECTIVE:

To examine changes in the response properties of meningeal nociceptors that might lead to migraine pain and examine endogenous processes that could play a role in mediating them using a clinically relevant model of migraine triggering, namely infusion of the NO donor nitroglycerin (NTG).

METHODS:

Single unit recordings made in the trigeminal ganglion of rats were used to test changes in the activity and mechanosensitivity of meningeal nociceptors in response to administration of the migraine trigger NTG or another NO donor SNAP at doses relevant to the human model of migraine headache. Immunohistochemistry and pharmacological manipulations were used to investigate the possible role of meningeal vascular signaling in mediating the responses of meningeal nociceptors to NO.

RESULTS:

Infusion of NTG promoted a delayed and robust increase in the mechanosensitivity of meningeal nociceptors with a time course resembling the development of the delayed migraine headache. A similar sensitization was elicited by dural application of NTG and SNAP. NTG-evoked delayed meningeal nociceptor sensitization was associated with a robust ERK phosphorylation in meningeal arteries. Pharmacological blockade of meningeal ERK phosphorylation inhibited the development of NTG-evoked delayed meningeal nociceptor sensitization. **INTERPRETATION:** The development of delayed mechanical sensitization evoked by the migraine trigger NTG is potentially of great importance as the first finding of a neurophysiological correlate of migraine headache in meningeal nociceptors. The arterial ERK phosphorylation and its involvement in mediating the NTG-evoked delayed sensitization points to an important, yet unappreciated, role of the meningeal vasculature in the genesis of migraine pain. ANN NEUROL 2010.

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PMID:23447360[PubMed - as supplied by publisher]

Bile duct

Dynamic Changes of Common Bile Duct Diameter During an Episode of Biliary Colic, Documented by Ultrasonography

Annals of Emergency Medicine, 03/14/2013

Jafari D et al. –

The authors describe a case showing rapid fluctuations in common bile duct diameter during 72 hours in a patient presenting with epigastric pain and vomiting. Initial emergency bedside ultrasonography revealed a distended gallbladder, a dilated common bile duct (17 mm), and an obstructing stone.

Common bile duct stones frequently accompany gallstones and can be identified by a variety of imaging modalities. Little is known about the time course of dilatation of the common bile duct after acute obstruction or of normalization after spontaneous passage of an obstructing stone. We describe a case showing rapid fluctuations in common bile duct diameter during 72 hours in a patient presenting with epigastric pain and vomiting. Initial emergency bedside ultrasonography revealed a distended gallbladder, a dilated common bile duct (17 mm), and an obstructing stone. Five hours later, ultrasonography performed in the radiology suite showed a normal common bile duct diameter (4 mm) and no obstructing stone. The patient was admitted, and during the course of hospitalization different imaging modalities reported fluctuations in common bile duct measurements, ranging from 4 mm on computed tomography to 14 mm on endoscopic retrograde cholangiopancreatography. This case demonstrates disappearance of an obstructing stone with normalization of a highly distended common bile duct during 5 hours, highlighting that gallstone disease may be highly dynamic, with the possibility of rapid changes of common bile duct diameter. Emergency physicians, who frequently depend on ultrasonography to diagnose biliary disease, should be wary of the potential for rapid changes of sonographic findings in these patients.

Read more: <http://www.mdlinx.com/pain-management/news-article.cfm/4511746/ultrasonography#ixzz2NY7K6MNq>

Menopause/Pain

Menopause could be involved in the pathogenesis of muscle and joint aches in mid-aged women

Maturitas, 03/14/2013 Clinical Article

Blumel JE et al. –

This study aimed to analyze the relation between MJA and several variables related to the menopause. In this large mid-aged sample the prevalence of MJA was high, which was significantly associated to menopausal variables, especially vasomotor symptoms. This association may suggest a potential role of mid-life female hormonal changes in the pathogenesis of MJA.

Methods

- In this cross-sectional study, 8373 healthy women aged 40–59 years, accompanying patients to healthcare centers in 18 cities of 12 Latin American countries, were asked to fill out the Menopause Rating Scale (MRS) and a questionnaire containing personal data.

Results

- Mean age of the whole sample was 49.1 ± 5.7 years, 48.6% were postmenopausal and 14.7% used hormone therapy (HT).
- A 63.0% of them presented MJA, with a 15.6% being scored as severe to very severe according to the MRS (scores 3 or 4).
- Logistic regression model determined that vasomotor symptoms (OR: 6.16; 95% CI, 5.25–7.24), premature menopause (OR: 1.58; 95% CI, 1.02–2.45), postmenopausal status (OR: 1.43; 95% CI, 1.20–1.69), psychiatric consultation (OR: 1.93; 95% CI, 1.60–2.32) and the use of psychotropic drugs (OR: 1.35; 95% CI, 1.08–1.69) were significantly related to the presence of severe–very severe MJA.
- Other significant variables included: age, tobacco consumption and lower education.
- Self perception of healthiness (OR: 0.49; 95% CI, 0.41–0.59), private healthcare access (OR: 0.77; 95% CI, 0.67–0.88) and HT use (OR: 0.75; 95% CI, 0.62–0.91) were significantly related to a lower risk for the presence of severe–very severe MJA.

Read more: <http://www.mdlinx.com/obstetrics-gynecology/news-article.cfm/4512149/muscle-and-joint-aches-menopause-climacteric#ixzz2NY7nEMma>

The Colour of Pain: Can Patients Use Colour to Describe Osteoarthritis Pain
Musculoskeletal Care, 03/14/2013 Clinical Article

Abstract

Objective

The aim of the present study was to explore patients' views on the acceptability and feasibility of using colour to describe osteoarthritis (OA) pain, and whether colour could be used to communicate pain to healthcare professionals.

Methods

Six group interviews were conducted with 17 patients with knee OA. Discussion topics included first impressions about using colour to describe pain, whether participants could associate their pain with colour, how colours related to changes to intensity and different pain qualities, and whether they could envisage using colour to describe pain to healthcare professionals.

Results

The group interviews indicated that, although the idea of using colour was generally acceptable, it did not suit all participants as a way of describing their pain. The majority of participants chose red to describe high-intensity pain; the reasons given were because red symbolized inflammation, fire, anger and the stop signal in a traffic light system. Colours used to describe the absence of pain were chosen because of their association with positive emotional feelings, such as purity, calmness and happiness. A range of colours was chosen to represent changes in pain intensity. Aching pain was consistently identified as being associated with colours such as grey or black, whereas sharp pain was described using a wider selection of colours. The majority of participants thought that they would be able to use colour to describe their pain to healthcare professionals, although issues around the interpretability and standardization of colour were raised.

Conclusions

For some patients, using colour to describe their pain experience may be a useful tool to improve doctor–patient communication. Copyright © 2013 John Wiley & Sons, Ltd.

LBP/PT/Facet Injections

[Musculoskeletal Care](#). 2013 Mar 7. doi: 10.1002/msc.1045. [Epub ahead of print]

Physiotherapy and Lumbar Facet Joint Injections as a Combination Treatment for Chronic Low Back Pain. A Narrative Review of Lumbar Facet Joint Injections, Lumbar Spinal Mobilizations, Soft Tissue Massage and Lower Back Mobility Exercises.

[Chambers H.](#)

Source

Kent and Canterbury Hospital, Kent, UK.

Abstract

OBJECTIVES:

The aim of this study was to summarize the available evidence on lumbar facet joint injections and the physiotherapy treatments, land-based lower back mobility exercise, soft tissue massage and lumbar spinal mobilizations for chronic low back pain (CLBP). The plausibility of physiotherapy and lumbar facet joint injections as a combination treatment is discussed.

METHODS:

Using a systematic process, an online electronic search was performed using key words utilizing all available databases and hand searching reference lists. Using a critical appraisal tool from the Critical Appraisal Skills Programme (CASP), the literature was screened to include primary research. The main aspects of the research were summarized.

RESULTS:

The evidence for lumbar facet joint injections suggests an overall short-term positive effect on CLBP. Land-based lower back mobility exercise and soft tissue massage appear to have a positive effect on CLBP in the short term and possibly in the longer term. There is insufficient evidence to draw conclusions for lumbar spinal mobilizations.

CONCLUSION:

The review indicates that lumbar facet joint injections create a short period when pain is reduced. Physiotherapy treatments including land-based lower back mobility exercise and soft tissue massage may be of benefit during this time to improve the longer-term outcomes of patients with CLBP. It is not possible to make generalizations or firm conclusions. The current review highlights the need for further research. A randomized controlled trial is recommended to assess the impact of physiotherapy in combination with lumbar facet joint injections on CLBP.

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PMID:3468052 [PubMed - as supplied by publisher]

Knee/Patella

[Br J Sports Med.](#) 2013 Mar;47(4):227-33. doi: 10.1136/bjsports-2012-091696. Epub 2012 Dec 13.

Prognostic factors for patellofemoral pain: a multicentre observational analysis.

[Collins NJ](#), [Bierma-Zeinstra SM](#), [Crossley KM](#), [van Linschoten RL](#), [Vicenzino B](#), [van Middelkoop M](#).

Source

Department of Mechanical Engineering, Melbourne School of Engineering, The University of Melbourne, , Melbourne, Victoria, Australia.

Abstract

OBJECTIVES:

Describe proportions of individuals with patellofemoral pain (PFP) with an unfavourable recovery over 12 months; identify clinical predictors of poor recovery at 3 and 12 months; and determine baseline values of predictors that identify those with poor 12-month prognosis.

METHODS:

An observational analysis utilised data from 310 individuals with PFP enrolled in two randomised clinical trials. Thirteen baseline variables (participant, PFP, study characteristics) were investigated for their prognostic ability. Pain, function and global recovery were measured at 3 and 12 months. Multivariate backward stepwise regression analyses (treatment-adjusted, $p < 0.10$) were performed for each follow-up measure. Receiver operator characteristic curves identified cut-points associated with unfavourable recovery at 12 months.

RESULTS:

55% and 40% of participants had an unfavourable recovery at 3 and 12 months, respectively. Longer baseline pain duration was significantly associated with poor 3-month and 12-month recovery on measures of pain severity (β 11.36 to 24.94), Anterior Knee Pain (AKP) Scale (-4.44 to -11.33) and global recovery (OR: 2.32 to 6.11). Greater baseline pain severity and lower AKP Scale score were significantly associated with poor recovery on multiple measures ($p < 0.05$). Baseline duration > 2 months and AKP Scale score $< 70/100$ were associated with unfavourable 12-month recovery.

CONCLUSIONS:

A substantial number of individuals with PFP have an unfavourable recovery over 12 months, irrespective of intervention. Knee pain duration > 2 months is the most consistent prognostic indicator, followed by AKP Scale score < 70 . Sports medicine practitioners should utilise interventions with known efficacy in reducing PFP, and promote early intervention to maximise prognosis.

TRIAL REGISTRATION:

Australian study: Australian Clinical Trials Registry (ACTRN012605000463673), [ClinicalTrials.gov](#) (NCT00118521); Dutch study: International Standard Randomised Controlled Trial Number Register (ISRCTN83938749).

PMID:23242955 [PubMed - in process]

Knee/Gluteal/Patellofemoral

[Br J Sports Med.](#) 2013 Mar;47(4):207-14. doi: 10.1136/bjsports-2012-090953. Epub 2012 Sep 3.

Gluteal muscle activity and patellofemoral pain syndrome: a systematic review.

[Barton CJ](#), [Lack S](#), [Malliaras P](#), [Morrissey D](#).

Source

Centre for Sports and Exercise Medicine, Queen Mary University of London, London, UK.

Abstract

OBJECTIVE:

There is growing evidence to support the association of gluteal muscle strength deficits in individuals with patellofemoral pain syndrome (PFPS) and the effectiveness of gluteal strengthening when treating PFPS. In addition, an impressive body of work evaluating gluteal electromyography (EMG) has recently emerged, further supporting the importance of gluteal muscle function in PFPS. This systematic review synthesises these EMG findings in order to better understand the role of gluteal muscle activity in the aetiology, presentation and management of PFPS.

METHODS:

MEDLINE, EMBASE, CINAHL, Web of Knowledge and Google Scholar databases were searched in September 2011 for prospective and case-control studies evaluating the association of gluteal EMG with PFPS. Two independent reviewers assessed each paper for inclusion and quality. Means and SDs were extracted from each included study to allow effect size calculations and comparison of results.

RESULTS:

Ten case-control, but no prospective studies were identified. Moderate-to-strong evidence indicates gluteus medius (GMed) activity is delayed and of shorter duration during stair negotiation in PFPS sufferers. In addition, limited evidence indicates GMed activity is delayed and of shorter duration during running, and gluteus maximus (GMax) activity is increased during stair descent.

CONCLUSIONS:

Delayed and shorter duration of GMed EMG may indicate impaired ability to control frontal and transverse plane hip motion. Further research evaluating the value of gluteal muscle activity screening in identifying individuals most likely to develop PFPS, and the effectiveness of interventions targeting changes to gluteal muscle activation patterns is needed.

PMID:22945929 [PubMed - in process]

Gait/posture

[Gait Posture](#). 2013 Mar 5. pii: S0966-6362(13)00123-9. doi: 10.1016/j.gaitpost.2013.02.010.

[Epub ahead of print]

Center of pressure trajectories, trunk kinematics and trunk muscle activation during unstable sitting in low back pain patients.

[Willigenburg NW](#), [Kingma I](#), [van Dieën JH](#).

Source

Research Institute MOVE, Faculty of Human Movement Sciences, VU University, Amsterdam, The Netherlands.

Abstract

Trunk motor behavior has been reported to be altered in low-back pain. This may be associated with impaired lumbar proprioception, which could be compensated by trunk stiffening. We assessed trunk control by measuring center-of-pressure, lumbar kinematics and trunk muscle electromyography in 20 low-back pain patients and 11 healthy individuals during a seated balancing task, in conditions with and without disturbance of lumbar proprioception and occlusion of vision. We hypothesized that low-back pain patients show larger postural sway, but smaller thoraco-lumbar movements than healthy individuals. Repeated measures analyses of variance indicated that the effects of proprioception disturbance and vision occlusion were similar between groups. Interestingly, low-back pain patients grabbed the safety rail more often, while differences between groups in sway measures were rather subtle. This suggests that low-back pain patients were more cautious. Furthermore, low-back pain patients had an about 20 degrees less flexed lumbar posture than healthy individuals, and, in contrast to our hypothesis, made larger thoraco-lumbar movements in the sagittal plane, as indicated by higher SDs of thoraco-lumbar flexion and lower (more negative) correlations between pelvis and thorax movements. Activation of the intersegmental longissimus relative to the iliocostalis muscle, which spans all lumbar segments, was lower in low-back pain patients compared to healthy individuals. This difference in muscle activation may be causal for larger thoraco-lumbar movements, and may be causative of reduced control over segmental lumbar movement, but may also reflect the need for larger corrective movements to compensate balance impairments.

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PMID:23473809 [PubMed - as supplied by publisher]

Wrist/Hand

[Arch Phys Med Rehabil](#). 2013 Feb 14. pii: S0003-9993(13)00131-7. doi: 10.1016/j.apmr.2013.01.028. [Epub ahead of print]

Natural history and predictors of long-term pain and function among workers with hand symptoms.

[Descatha A](#), [Dale AM](#), [Franzblau A](#), [Evanoff B](#).

Source

Division of General Medical Sciences, Washington University School of Medicine, St. Louis, MO, USA(a); Université de Versailles St-Quentin-Inserm, UMRS 1018, Centre for Research in Epidemiology and Population Health, Population-Based Epidemiological Cohorts " Research Platform, Occupational health Unit, Garches, France.

Abstract

OBJECTIVE:

To evaluate predictors of hand symptoms and functional impairment after three years of follow-up among workers with different types of hand symptoms including carpal tunnel syndrome (CTS). Functional status and job limitations were also analyzed as key secondary objectives.

DESIGN:

Cohort design of 3-years duration SETTING: Working population-based study PARTICIPANTS: 1107 newly employed workers without a pre-existing diagnosis of CTS. Subjects were categorized into four groups at baseline examination: no hand symptoms, any hand symptoms but not CTS (recurring symptoms in hands, wrist or fingers without neuropathic symptoms), any hand symptoms of CTS (neuropathic symptoms in the fingers and normal nerve conduction study), or confirmed CTS (CTS symptoms and abnormal nerve conduction study). Among workers with hand pain at baseline, subject and job characteristics were assessed as prognostic factors for outcomes, using bivariate and multivariate regression models.

INTERVENTIONS:

Not applicable MAIN OUTCOME MEASURE: The primary outcome assessed by questionnaire at 3 years was "severe hand pain" in the past 30 days.

RESULTS:

At baseline, 155 workers (17.5% of 888 followed workers) reported hand symptoms, 21 had confirmed CTS. Presence of hand pain at baseline was a strong predictor of future hand pain and job impairment. Subjects with confirmed CTS at baseline were more likely to report severe hand pain, (adjusted prevalence ratios 1.98 [1.11 - 3.52]) and functional status impairment (adjusted prevalence ratios 3.37 [1.01 - 11.29]) than workers with other hand pain. Among subjects meeting our case definition for CTS at baseline, only 4 (19.1%) reported seeing a physician in the 3 year period.

CONCLUSIONS:

Hand symptoms persisted among many workers after 3 year follow-up, especially among those with CTS, yet few symptomatic workers had seen a physician.

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PMID: 23416766 [PubMed - as supplied by publisher]

Systematic review of prognostic factors predicting outcome in non-surgically treated patients with sciatica □

European Journal of Pain, 03/15/2013

Evidence Based Medicine Review Article Clinical Article

Verwoerd AJH et al. –

The authors aimed to systematically review prognostic factors predicting outcome in non-surgically treated patients with sciatica. Identification of prognostic factors for surgery in patients with sciatica is important to be able to predict surgery in an early stage. Identification of prognostic factors predicting persistent pain, disability and recovery are important for better understanding of the clinical course, to inform patient and physician and support decision making.

Methods

- A search of Medline, Embase, Web of Science and Cinahl, up to March 2012 was performed for prospective cohort studies on prognostic factors for non-surgically treated sciatica.
- Two reviewers independently selected studies for inclusion and assessed the risk of bias.
- Outcomes were pain, disability, recovery and surgery.
- A best evidence synthesis was carried out in order to assess and summarize the data.
- The initial search yielded 4392 articles of which 23 articles reporting on 14 original cohorts met the inclusion criteria.

Results

- High clinical, methodological and statistical heterogeneity among studies was found.
- Reported evidence regarding prognostic factors predicting the outcome in sciatica is limited.
- The majority of factors that have been evaluated, e.g., age, body mass index, smoking and sensory disturbance, showed no association with outcome.

The only positive association with strong evidence was found for leg pain intensity at baseline as prognostic factor for subsequent surgery.

LBP/Foot reflexology

Noninvasive Characterisation of Foot Reflexology Areas by Swept Source-Optical Coherence Tomography in Patients with Low Back Pain *Full Text* □

Evidence-based Complementary and Alternative Medicine ,
03/15/2013 **Clinical Article**

Dalal, K et al.

Read more: <http://www.mdlinx.com/pain-management/news-article.cfm/4506103/low-back-pain-pain#ixzz2NcutPoui>

Objective. When exploring the scientific basis of reflexology techniques, elucidation of the surface and subsurface features of reflexology areas (RAs) is crucial. In this study, the subcutaneous features of RAs related to the lumbar vertebrae were evaluated by swept source-optical coherence tomography (SS-OCT) in subjects with and without low back pain (LBP).

Methods. Volunteers without LBP ((male : female = 1 : 1)) and subjects with LBP ((male : female = 2 : 3)) were clinically examined in terms of skin colour (visual perception), localised tenderness (visual analogue scale) and structural as well as optical attributes as per SS-OCT. From each subject, 6 optical tomograms were recorded from equidistant transverse planes along the longitudinal axis of the RAs, and from each tomogram, 25 different spatial locations were considered for recording SS-OCT image attributes. The images were analysed with respect to the optical intensity distributions and thicknesses of different skin layers by using AxioVision Rel. 4.8.2 software. The SS-OCT images could be categorised into 4 pathological grades (i.e., 0, 1, 2, and 3) according to distinctness in the visible skin layers.

Results. Three specific grades for abnormalities in SS-OCT images were identified considering gradual loss of distinctness and increase in luminosity of skin layers. Almost 90.05% subjects were of mixed type having predominance in certain grades.

Conclusion. The skin SS-OCT system demonstrated a definite association of the surface features of healthy/unhealthy RAs with cutaneous features and the clinical status of the lumbar vertebrae.

Hum Brain Mapp. 2013 Mar 1. doi: 10.1002/hbm.22266. [Epub ahead of print]

Structural abnormalities in the thalamus of migraineurs with aura: A multiparametric study at 3 T.

Granziera C, Daducci A, Romascano D, Roche A, Helms G, Krueger G, Hadjikhani N.

Source

GRHAD, BMI, SV, EPFL, Lausanne, Switzerland; Laboratoire de Recherche en Neuroimagerie and Neuroimmunology Unit, Department of Clinical Neurosciences, Centre Hospitalier Universitaire Vaudois and University of Lausanne, Lausanne, Switzerland; Advanced Clinical Imaging Technology Group, Siemens-CIBM, EPFL, Lausanne, Switzerland.
cristina.granziera@chuv.ch.

Abstract

Background and objectives: The thalamus exerts a pivotal role in pain processing and cortical excitability control, and migraine is characterized by repeated pain attacks and abnormal cortical habituation to excitatory stimuli. This work aimed at studying the microstructure of the thalamus in migraine patients using an innovative multiparametric approach at high-field magnetic resonance imaging (MRI).

Design: We examined 37 migraineurs (22 without aura, MWoA, and 15 with aura, MWA) as well as 20 healthy controls (HC) in a 3-T MRI equipped with a 32-channel coil. We acquired whole-brain T1 relaxation maps and computed magnetization transfer ratio (MTR), generalized fractional anisotropy, and T2* maps to probe microstructural and connectivity integrity and to assess iron deposition. We also correlated the obtained parametric values with the average monthly frequency of migraine attacks and disease duration.

Results: T1 relaxation time was significantly shorter in the thalamus of MWA patients compared with MWoA ($P < 0.001$) and HC ($P \leq 0.01$); in addition, MTR was higher and T2* relaxation time was shorter in MWA than in MWoA patients ($P < 0.05$, respectively). These data reveal broad microstructural alterations in the thalamus of MWA patients compared with MWoA and HC, suggesting increased iron deposition and myelin content/cellularity. However, MWA and MWoA patients did not show any differences in the thalamic nucleus involved in pain processing in migraine.

Conclusions: There are broad microstructural alterations in the thalamus of MWA patients that may underlie abnormal cortical excitability control leading to cortical spreading depression and visual aura.

Hum Brain Mapp, 2013. © 2013 Wiley Periodicals, Inc.

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PMID: 23450507 [PubMed - as supplied by publisher]

Muscle pain/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] MCID:PMC3569047

LBP/Emotions

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

[J Pediatr Orthop.](#) 2013 Apr;33(3):282-8. doi: 10.1097/BPO.0b013e318287fffb.

Imaging modalities for low back pain in children: a review of spondylolysis and undiagnosed mechanical back pain.

[Miller R](#), [Beck NA](#), [Sampson NR](#), [Zhu X](#), [Flynn JM](#), [Drummond D](#).

Source

Division of Orthopaedic Surgery, Children's Hospital of Philadelphia, Philadelphia, PA.

Abstract

PURPOSE:

: Mechanical low back pain is common in the pediatric population; recent studies have shown that undiagnosed mechanical low back pain (UMLBP) is the most common cause of low back pain presenting in adolescents, accounting for up to 78% of cases. Spondylolysis/spondylolisthesis is the most common cause with diagnosed pathology observed in this age group. The goals of this study are to: determine the natural history of low back pain, evaluate the value of radiographic studies in establishing a diagnosis of spondylolysis, and determine the cost and radiation effective doses (EDs) associated with those studies with the associated risks radiation exposure.

METHODS:

: A retrospective review of patients records aged 10 to 19 years who presented to our institution with mechanical low back of undiagnosed etiology from January 1, 2000 to January 1, 2008 were identified. Patients with previous back surgery, high-energy trauma, congenital syndromes, or medical comorbidities were excluded. UMLBP was defined as back pain with etiology undetected by examination and imaging. We reviewed the following data: age at presentation, sex, the number of follow-up visits, the total length of follow-up, the type of imaging studies performed, and the results from imaging studies. Age-specific radiation EDs were calculated for 10 to 14.9 years, 15 to 18 years, and adults for plain films, fine cut 2-level L-spine computed tomography (CT) scans, and bone scans (BSs).

RESULTS:

: A total of 2846 patients (63% female) with average age of 14.3 years were identified. A total of 2159 (76%) patients had UMLBP, 61% of that had ≤ 2 follow-up visits. One hundred and ninety-four patients (7.8%) were diagnosed with spondylolysis; 119 (86%) by plain film, 56 (12.5%) by BSs, and 17 (1.5%) by CTs. Most patients (74%) with spondylolysis had a positive plain film study. There was no significant difference between 2-view (anterior-posterior, lateral) and 4-view (anterior-posterior, lateral, right oblique, left oblique) studies in sensitivity (78% vs. 72%, $P=0.39$). Advanced imaging was pursued in 90/354 (25%) patients with negative plain film studies. The sensitivity of BS for spondylolysis was 84% (73 of 88 BSs were positive). The sensitivity of CT for spondylolysis was 90% (44 of 49 CTs were positive). BSs exposed patients to much more radiation than CTs and plain film studies.

CONCLUSIONS:

: Mechanical low back pain is common in adolescents and in most cases is undiagnosed; most require no imaging and ≤ 2 office visits. For spondylolysis, 2-view plain films are often diagnostic and oblique views did not add significant value. Advanced imaging increases diagnostic accuracy, but adds to the cost and considerable radiation exposure. Because diagnosis of spondylolysis rarely changes clinical management, physicians should use ionizing radiation studies sparingly in children. PMID:23482264 [PubMed - in process]

LBP/MRI

[N Engl J Med](#). 2013 Mar 14;368(11):999-1007. doi: 10.1056/NEJMoa1209250.

Magnetic resonance imaging in follow-up assessment of sciatica.

[el Barzouhi A](#), [Vleggeert-Lankamp CL](#), [Lycklama à Nijeholt GJ](#), [Van der Kallen BF](#), [van den Hout WB](#), [Jacobs WC](#), [Koes BW](#), [Peul WC](#); [Leiden-The Hague Spine Intervention Prognostic Study Group](#).

Department of Neurosurgery, Leiden University Medical Center, Leiden, The Netherlands.

Abstract

BACKGROUND:

Magnetic resonance imaging (MRI) is frequently performed during follow-up in patients with known lumbar-disk herniation and persistent symptoms of sciatica. The association between findings on MRI and clinical outcome is controversial.

METHODS:

We studied 283 patients in a randomized trial comparing surgery and prolonged conservative care for sciatica and lumbar-disk herniation. Patients underwent MRI at baseline and after 1 year. We used a 4-point scale to assess disk herniation on MRI, ranging from 1 for "definitely present" to 4 for "definitely absent." A favorable clinical outcome was defined as complete or nearly complete disappearance of symptoms at 1 year. We compared proportions of patients with a favorable outcome among those with a definite absence of disk herniation and those with a definite, probable, or possible presence of disk herniation at 1 year. The area under the receiver-operating-characteristic (ROC) curve was used to assess the prognostic accuracy of the 4-point scores regarding a favorable or unfavorable outcome, with 1 indicating perfect discriminatory value and 0.5 or less indicating no discriminatory value.

RESULTS:

At 1 year, 84% of the patients reported having a favorable outcome. Disk herniation was visible in 35% with a favorable outcome and in 33% with an unfavorable outcome ($P=0.70$). A favorable outcome was reported in 85% of patients with disk herniation and 83% without disk herniation ($P=0.70$). MRI assessment of disk herniation did not distinguish between patients with a favorable outcome and those with an unfavorable outcome (area under ROC curve, 0.48).

CONCLUSIONS:

MRI performed at 1-year follow-up in patients who had been treated for sciatica and lumbar-disk herniation did not distinguish between those with a favorable outcome and those with an unfavorable outcome. (Funded by the Netherlands Organization for Health Research and Development and the Hoelen Foundation; Controlled Clinical Trials number, ISRCTN26872154.).

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[Destroy user interface controlReal help and red herrings in spinal imaging.](#) [N Engl J Med. 2013]

PMID:23484826[PubMed - in process]

Scoliosis/back pain

J Pediatr Orthop. 2013 Apr;33(3):289-92. doi: 10.1097/BPO.0b013e31827d0b43.

Predictors of back pain in adolescent idiopathic scoliosis surgical candidates.

Smorgick Y, Mirovsky Y, Baker KC, Gelfer Y, Avisar E, Anekstein Y.

Source

*The Spine Unit ‡Department of Orthopedic Surgery, Assaf Harofeh Medical Center, Zerifin, Israel †Sackler Faculty of Medicine, Tel-Aviv University, Tel-Aviv, Israel §Department of Orthopedic Research, William Beaumont Hospital, Royal Oak, MI.

Abstract

BACKGROUND:

: There are contradictory reports on the overall prevalence of back pain in the adolescent population compared with adolescent idiopathic scoliosis (AIS) patients. Most reports do not investigate pain in patients with AIS but try to identify in which subgroup of patients with AIS an underlying pathology should be excluded. The objective of this study was to find whether AIS in operative candidate patients is a painful condition and to try and find clinical and radiologic predisposing factors, which will help us to predict patients who are going to have pain.

METHODS:

: Candidates who had to undergo an operative treatment for AIS between October 2004 and October 2009 in our institution, were enrolled to the study. Pain was graded with the use of visual analogue scale (VAS) on a scale from 0 to 10. We recorded the age at presentation, sex, menarchal status, family history of scoliosis, brace treatment history, and neurological findings. Radiologic parameters recorded were: the type of curve according to the Lenke classification, Cobb angle, thoracic kyphosis angle, apex vertebra rotation, Risser grade, coronal balance, and curves flexibility.

RESULTS:

: Seventy patients with AIS were included in this study. Fifty patients (71%) reported of some kind of back pain with 34 patients (48%) grading their pain as ≥ 5 on the VAS. Patients in whom scoliosis was diagnosed in older age and patients with a more rigid lumbar curve had statistically significant higher VAS scores ($P=0.014$, $P=0.036$). Patients who were treated with a brace had a statistically significant lower VAS scores ($P=0.019$).

CONCLUSIONS:

: Back pain is common in patients with AIS who are candidates for operative treatment. The following parameters correlate with worse back pain: older age at diagnosis, no use of brace, and rigid lumbar curve.

LEVEL OF EVIDENCE:

: Type III.

PMID:23482265[PubMed - in process]

Migraines/Dreams

[Cephalalgia](#). 2013 Feb 25. [Epub ahead of print]

Dream-enacting behaviour is associated with impaired sleep and severe headache-related disability in migraine patients.

[Suzuki K](#), [Miyamoto T](#), [Miyamoto M](#), [Suzuki S](#), [Watanabe Y](#), [Takashima R](#), [Hirata K](#).

Source

Department of Neurology, Dokkyo Medical University, Japan.

Abstract

BACKGROUND:

Sleep disorders, nightmares and visual hallucinations have been reported in migraine patients, which may suggest the involvement of rapid eye movement (REM) sleep regulation in migraine. However, the relationship between migraine and REM sleep behaviour disorder (RBD) remains unclear.

METHODS:

To investigate the clinical correlates of dream-enacting behaviours (DEB) in migraine patients, we assessed episodic migraine patients (N = 161, mean age 33.1 years) and headache-free control subjects (N = 140, mean age 33.1 years) under 50 years of age in a cross-sectional, case-control study. The Japanese version of the RBD screening questionnaire was used, and subjects scoring 5 or higher were defined as having DEB.

RESULTS:

A significantly increased frequency of DEB was observed in migraine patients compared to controls (24.2% vs. 14.3%). Migraine patients with DEB presented higher scores on the Migraine Disability Assessment and Pittsburgh Sleep Quality Index and an increased rate of smoking compared to those without DEB. Duration of migraine and headache frequency and intensity were not different between migraine patients with or without DEB.

CONCLUSION:

DEB was associated with impaired sleep and severe headache-related disability in migraine patients and may reflect brainstem dysfunction and increased brain excitability in migraine patients.

PMID:23439573 [PubMed - as supplied by publisher]

C spine/

[J Eval Clin Pract.](#) 2013 Mar 19. doi: 10.1111/jep.12025. [Epub ahead of print]

Guideline-based development and practice test of quality indicators for physiotherapy care in patients with neck pain.

[Oostendorp RA](#), [Rutten GM](#), [Dommerholt J](#), [Nijhuis-van der Sanden MW](#), [Harting J](#).

Source

Allied Health Sciences, Scientific Institute for Quality of Health Care, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands.

Abstract

RATIONALE, AIMS AND OBJECTIVES:

Little is currently known about the quality of physiotherapy care for patients with musculoskeletal pain. Neck pain was used as an example. The aim is to develop a set of quality indicators, including a practice test.

METHODS:

A systematic method is used to develop potential process and outcome indicators. An expert and user panel is used to appraise the potential quality indicators regarding clarity, relevancy, feasibility, acceptability and improvement potential. An invitation to participate in the practice test was sent to physiotherapy practices. The resulting algorithm is used to calculate the degree to which physiotherapists met these indicators (0-100%). Differences in valid outcomes are tested for significance (Student's t-test; $\alpha = 0.05$) and compared with established values for clinical relevance [minimal clinically important change (MCIC)].

RESULTS:

A representative set of 40 quality indicators (28 process indicators and 12 outcome indicators) is selected from 44 initial guidelines and literature-based recommendations. The process indicators ($n = 28$) are classified per step of the clinical reasoning process of physiotherapy care. Of the 106 potential participants from 27 practices, 38 physiotherapists (35.8%) submitted data on 96 patients with non-specific neck pain. On average, the participating physiotherapists showed a 55.6% adherence to process indicators with a great variation in scores per step of the clinical reasoning process. The outcomes for 'pain', 'headache' and 'daily functioning' were significantly better compared with baseline, and the mean differences exceeded established values for MCICs.

CONCLUSION:

Guardedly, we can conclude that a systematic approach is a valuable means to develop a preliminary set of process and outcome indicators for physiotherapy care for patients with non-specific neck pain, and a practice test should be an intrinsic part of such a systematic approach as it provides valuable information on the key attributes of the set indicators.

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PMID:23510397[PubMed - as supplied by publisher]

Chronic pain/Childbirth

[Int J Obstet Anesth](#). 2013 Mar 8. pii: S0959-289X(13)00013-7. doi: 10.1016/j.ijoa.2013.01.008.

[Epub ahead of print]

Chronic pain after childbirth.

[Landau R](#), [Bollag L](#), [Ortner C](#).

Source

Department of Anesthesiology and Pain Medicine, University of Washington Medical Center, Seattle, WA, USA. Electronic address: rulandau@uw.edu.

Abstract

With over four million deliveries annually in the United States alone and a constant increase in cesarean delivery rate, childbirth is likely to have a huge impact on the occurrence of acute and possibly chronic postpartum pain. Recent awareness that chronic pain may occur after childbirth has prompted clinicians and researchers to investigate this topic. Current evidence points towards a relatively low incidence of chronic pain after cesarean delivery, with rates ranging between 1% and 18%. To provide a potential mechanistic explanation for the relatively low occurrence of chronic pain after cesarean delivery compared with that after other types of surgery, it has been proposed that endogenous secretion of oxytocin may confer specific protection. Clinical interventions to reduce the incidence and severity of chronic post-surgical pain have not been consistently effective. Likely explanations are that the drugs that have been investigated were truly ineffective or that the effect was too modest because with a low incidence of chronic pain, studies were likely to be underpowered and failed to demonstrate an effect. In addition, since not all women require preventive therapies, preoperative testing that may identify women vulnerable to pain may be highly beneficial. Further research is needed to identify valid models that predict persistent pain to allow targeted interventions to women most likely to benefit from more tailored anti-hyperalgesic therapies.

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PMID:23477888 [PubMed - as supplied by publisher]

LBP/Manipulation

[Ann Fam Med](#). 2013 Mar;11(2):122-9. doi: 10.1370/afm.1468.

Osteopathic manual treatment and ultrasound therapy for chronic low back pain: a randomized controlled trial.

[Licciardone JC](#), [Minotti DE](#), [Gatchel RJ](#), [Kearns CM](#), [Singh KP](#).

Source

The Osteopathic Research Center, University of North Texas Health Science Center, Fort Worth, Texas.

Abstract

PURPOSE We studied the efficacy of osteopathic manual treatment (OMT) and ultrasound therapy (UST) for chronic low back pain.

METHODS A randomized, double-blind, sham-controlled, 2 × 2 factorial design was used to study OMT and UST for short-term relief of nonspecific chronic low back pain. The 455 patients were randomized to OMT (n = 230) or sham OMT (n = 225) main effects groups, and to UST (n = 233) or sham UST (n = 222) main effects groups. Six treatment sessions were provided over 8 weeks. Intention-to-treat analysis was performed to measure moderate and substantial improvements in low back pain at week 12 (30% or greater and 50% or greater pain reductions from baseline, respectively). Five secondary outcomes, safety, and treatment adherence were also assessed.

RESULTS There was no statistical interaction between OMT and UST. Patients receiving OMT were more likely than patients receiving sham OMT to achieve moderate (response ratio [RR] = 1.38; 95% CI, 1.16-1.64; P <.001) and substantial (RR = 1.41, 95% CI, 1.13-1.76; P = .002) improvements in low back pain at week 12. These improvements met the Cochrane Back Review Group criterion for a medium effect size. Back-specific functioning, general health, work disability specific to low back pain, safety outcomes, and treatment adherence did not differ between patients receiving OMT and sham OMT. Nevertheless, patients in the OMT group were more likely to be very satisfied with their back care throughout the study (P <.001). Patients receiving OMT used prescription drugs for low back pain less frequently during the 12 weeks than did patients in the sham OMT group (use ratio = 0.66, 95% CI, 0.43-1.00; P = .048). Ultrasound therapy was not efficacious.

CONCLUSIONS The OMT regimen met or exceeded the Cochrane Back Review Group criterion for a medium effect size in relieving chronic low back pain. It was safe, parsimonious, and well accepted by patients.

PMID:23508598

J Orthop Sports Phys Ther. 2013 Mar 18. [Epub ahead of print]

Lower Mechanical Pressure Pain Thresholds in Female Adolescents With Patellofemoral Pain Syndrome.

Rathleff MS, Roos EM, Olesen JL, Rasmussen S, Arendt-Nielsen L.

Abstract

STUDY DESIGN:

Cross-sectional study.

OBJECTIVES:

To compare pressure pain thresholds (PPT) between adolescent females diagnosed with patellofemoral pain syndrome (PFPS) and gender- and age-matched controls without musculoskeletal pain.

BACKGROUND:

PFPS is prevalent among adolescents. PFPS may be associated with reduced PPT both locally and remotely from the site of reported pain. This may indicate altered central processing of nociceptive information. However this has never been investigated in adolescents with PFPS.

METHODS:

Adolescents with PFPS and a comparison group without musculoskeletal pain were recruited from a population-based cohort that consisted of students aged 15 to 19 years from 4 upper secondary schools. All 2846 students within that age range were invited to answer an online questionnaire regarding musculoskeletal pain. The students who reported knee pain were contacted by telephone and offered a clinical examination by an experienced rheumatologist who made a diagnosis. PPTs were measured at 4 sites around the knee and 1 site on the tibialis anterior in 57 female adolescents with PFPS and 22 female adolescents without musculoskeletal pain.

RESULTS:

At each of the 4 the sites around the knee, adolescents with PFPS had a significantly 26-37% (100-178 kPa) lower PPT (localised hyperalgesia) compared with controls. On the tibialis anterior, adolescents with PFPS had a 33% (159 kPa) lower PPT (distal hyperalgesia) compared with controls.

CONCLUSION:

These findings suggest that adolescent females with PFPS have localised and distal hyperalgesia. These findings may have implications for treating PFPS as both peripheral and central mechanisms may be driving the pain. J Orthop Sports Phys Ther, Epub 18 March 2013. doi:10.2519/jospt.2013.4383.

PMID:23508216

Fibromyalgia/upper traps

[BMC Musculoskelet Disord.](#) 2013 Mar 18;14(1):97. [Epub ahead of print]

Trapezius activity of fibromyalgia patients is enhanced in stressful situations, but is similar to healthy controls in a quiet naturalistic setting: a case-control study.

[Westgaard RH](#), [Mork PJ](#), [Lorås HW](#), [Riva R](#), [Lundberg U](#).

Abstract

BACKGROUND:

Muscle activity and pain development of fibromyalgia (FM) patients in response to mental stress show inconsistent results, when compared to healthy controls (HCs). A possible reason for the inconsistent results is the large variation in stress exposures in different studies. This study compares muscle responses of FM patients and HCs for different modes and levels of imposed stress, to elucidate features in stress exposures that distinguish stress responses of FM patients from HCs.

METHODS:

Upper trapezius (clavicular and acromial fibers), deltoid, and biceps surface electromyographic (sEMG) activity was recorded in FM patients (n=26) and HCs (n=25). Heart rate (HR) was recorded and used as indicator of autonomic activation. Tests included inspiratory breath holding (sympathetic activation procedure), mental stress tests (color-word test and backward counting; 28 min), instructed rest prior to stress test (30 min TV watching), and controlled arm movement. sEMG and HR was also recorded during an unrestrained evening stay at a patient hotel. The 5-min period with lowest trapezius muscle activity was determined. Pain (shoulder/neck, low back pain) and perceived tension were scored on VAS scales at the start and the end of the stress test and at bedtime.

RESULTS:

Trapezius sEMG responses of FM patients were significantly higher than HCs during sympathetic activation, mental stress, and instructed rest, but similar during arm movement and unrestrained evening activity. HR of FM patients and HCs was similar during mental stress and in the evening, including the 5-min period with lowest trapezius activity. Muscle activity of FM patients during the stress test (with shoulder/neck pain development) and the evening stay (no pain development) was similar.

CONCLUSIONS:

FM patients show elevated muscle activity (in particular trapezius activity) in situations with imposed stress, including sympathetic activation, and putative anticipatory stress. Muscle activity and HR were similar to HCs in instructed arm movement and in a situation approaching low-stress daily living. Pain development of FM patients during the stress test may be due to activation of several stress-associated physiological systems, and not obviously caused by muscle activity in isolation.

PMID:23506457

Pain/Cognitive control

[Eur J Pain](#). 2013 Mar 8. doi: 10.1002/j.1532-2149.2013.00299.x. [Epub ahead of print]

After-effects of cognitive control on pain.

[Silvestrini N](#), [Rainville P](#).

Source

Research Center of the Institut Universitaire de Gériatrie de Montréal, Université de Montréal, Montréal, Canada; Department of Psychology, University of Geneva, Geneva, Switzerland.

Abstract

BACKGROUND:

The higher order processes involved in self-regulation are generally thought to depend on cognitive (attentional/executive) functions with limited resources. Experimental studies further show that exerting self-control in a first task results in decreased performance in other following self-control tasks, which may be interpreted as the consequence of either effective or perceived resource depletion outlasting the first task. Given that higher order cognitive/attentional processes are also considered to be involved in pain modulatory mechanisms, we tested the idea that pain could be influenced by prior mobilization of cognitive resources.

METHODS:

The present study investigated the consequences of performing a cognitively demanding task on subsequent pain (ratings) and spinal nociceptive responses (nociceptive flexion reflex, NFR) elicited by noxious electrical stimulations in healthy volunteers. Participants received four noxious stimulations immediately after each of six successive blocks (2 min each) of a numerical Stroop task in a neutral condition (low cognitive demand) and six successive blocks in an interference condition (high cognitive demand).

RESULTS:

Results revealed that pain was rated higher following the condition requiring higher cognitive control. A similar effect was observed on the NFR.

CONCLUSIONS:

These findings suggest that pain regulation mechanisms including the descending pain modulatory system may be less efficient after the performance of tasks requiring high cognitive control resulting in stronger pain experience.

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PMID:23475816

LBP/Tennis serve

[Med Sci Sports Exerc.](#) 2013 Mar 6. [Epub ahead of print]

Lumbar Loading in the Elite Adolescent Tennis Serve: A Link to Low Back Pain.

[Campbell A](#), [Straker L](#), [O'Sullivan P](#), [Elliott B](#), [Reid M](#).

Source

1School of Physiotherapy and Curtin Health Innovation Research Institute, Curtin University, Australia; 2School of Sport Science, Exercise and Health, The University of Western Australia, Australia; 3Sport Science and Medicine Unit, Tennis Australia, Australia.

Abstract

Purpose: This study aimed to quantify and compare lumbar region kinetics in kick and flat serves performed by elite, adolescent male players with and without a history of low back pain (LBP). Lumbar region kinematics, as well as racquet velocity and the position of the ball at impact, were described to facilitate kinetic data interpretation.

Methods: Twenty Tennis Australia adolescent male players participated; 7 with a history of disabling LBP and confirmed L4/L5 injury, and 13 age, height, mass and performance matched controls. The Vicon motion analysis system was utilised to record racquet, upper and lower limb, trunk and lumbar movement during three 'flat' and three 'kick' serves. A customised mathematical model calculated lumbar region kinetics/kinematics, racquet velocity and ball position at impact and are reported as if all players were right-handed. A series of 2×2 mixed model analyses of variance were utilised to compare between pain/no pain and kick/flat serves.

Results: There was no significant difference in racquet velocity or ball position at impact between pain groups or serve types. The players with LBP reported significantly greater (mean difference: 1.5 N.kg) peak left lateral force than the control group. The flat serve was associated with significantly greater flexion moments (mean difference: 2.7N.kg) than the kick serve.

Conclusions: The lumbar region undergoes substantial loading during both the kick and flat tennis serves, including lateral flexion forces approximately 8 times those experienced during running. Given that these left lateral flexion forces are significantly greater in players with a history of disabling LBP and occur simultaneous with peak vertical force, extension and right lateral rotation, this may be an important low back pain mechanism in this population.

PMID:23470302

Randomized Trial of Trigger Point Acupuncture Treatment for Chronic Shoulder Pain: A Preliminary Study *Full Text*

Journal of Acupuncture and Meridian Studies, 03/19/2013 Clinical Article

Itoh K et al. –

The authors compared the effect of trigger point acupuncture (TrP), with that of sham (SH) acupuncture treatments, on pain and shoulder function in patients with chronic shoulder pain. Compared with SH acupuncture therapy, TrP therapy appears more effective for chronic shoulder pain.

Methods

- The participants were 18 patients (15 women, 3 men; aged 42–65years) with nonradiating shoulder pain for at least 6months and normal neurological findings.
- The participants were randomized into two groups, each receiving five treatment sessions.
- The TrP group received treatment at trigger points for the muscle, while the other group received SH acupuncture treatment on the same muscle.
- Outcome measures were pain intensity (visual analogue scale, VAS) and shoulder function (Constant–Murley Score: CMS).

Results

- After treatment, pain intensity between pretreatment and 5weeks after TrP decreased significantly ($p < 0.001$).
- Shoulder function also increased significantly between pretreatment and 5weeks after TrP ($p < 0.001$).
- A comparison using the area under the outcome curves demonstrated a significant difference between groups ($p = 0.024$).

Read more: <http://www.mdlinx.com/pain-management/news-article.cfm/4514638/shoulder-pain-acupuncture-chronic-shoulder-pain#ixzz2OOjoLN9S>

LBP/extension

[J Manipulative Physiol Ther.](#) 2013 Feb;36(2):91-100. doi: 10.1016/j.jmpt.2012.12.006.

An investigation into the onset, pattern, and effects of pain relief on lumbar extensor electromyography in people with acute and chronic low back pain.

[Williams JM](#), [Haq I](#), [Lee RY](#).

Source

Lecturer, School of Health and Social Care, Bournemouth University, Bournemouth, Dorset, UK.
Electronic address: jwilliams@bournemouth.ac.uk.

Abstract

OBJECTIVE:

The aim of this study was to use an experimental pain relief model to determine the effect of pain relief on lumbar muscle function in people with low back pain.

METHODS:

A test-retest design was used with all data collection being completed within a therapy setting. Twenty people with acute and 20 with chronic low back pain were recruited from general practitioner and therapist referrals. Participants completed spinal movements and lifting. Electromyography (EMG) was used to measure the pattern of muscle activity, onset of muscle activation, and peak activation of bilateral lumbar multifidus and iliocostalis. Movements were investigated before and after pain relief, through the self-administration of oral analgesia.

RESULTS:

Electromyography profiles and peak values were reliable across 3 trials, and EMG profiles correlated well with kinematic profiles. Specific EMG profiles were commonly associated with specific kinematic values, and on the whole, the EMG profiles were unaffected by pain relief. Muscle onset times and peak muscle amplitudes were not affected by pain relief in either acute or chronic low back pain.

CONCLUSION:

This study showed that the EMG activities from the lumbar region, including lumbar multifidus and iliocostalis, are reliable, and specific EMG profiles are identifiable. Pain relief as achieved in this study did not affect the pattern of EMG activity, onset of muscle activation, or peak activation values.

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PMID:23499144

LBP/Disc

Physiotherapy. 2013 Mar 18. pii: S0031-9406(12)00135-6. doi: 10.1016/j.physio.2012.09.007.
[Epub ahead of print]

Preliminary evidence for the features of non-reducible discogenic low back pain: survey of an international physiotherapy expert panel with the Delphi technique.

Chan AY, Ford JJ, McMeeken JM, Wilde VE.

Source

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Abstract

OBJECTIVES:

The lumbar intervertebral disc is a known source of low back pain (LBP). Various clinical features of discogenic pain have been proposed, but none have been validated. Several subgroups of discogenic pain have been hypothesised, with non-reducible discogenic pain (NRDP) proposed as a relevant clinical subgroup. The objectives of this study were to obtain consensus from an expert panel on the features of discogenic low back pain, the existence of subgroups of discogenic LBP, particularly NRDP, and the associated features of NRDP.

DESIGN:

Three-round Delphi survey.

PARTICIPANTS:

Twenty-one international physiotherapists with expertise in LBP.

METHODS:

Panellists listed and ranked features that they believed to be indicative of discogenic pain and NRDP. On completion of Round 3, features with $\geq 50\%$ agreement between panellists were deemed to have reached consensus.

RESULTS:

After three rounds, 10 features of discogenic LBP were identified. Nineteen of the panellists believed that NRDP was a subgroup of discogenic LBP, and nine features of NRDP were identified.

CONCLUSION:

This study provides preliminary validation for the features associated with discogenic LBP. It also provides evidence supporting the existence and features of NRDP as a separate clinical subgroup of discogenic LBP.

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PMID: 23517665 [PubMed - as supplied by publisher]

Fibromyalgia/opioid

Clin Ther. 2013 Mar;35(3):303-11. doi: 10.1016/j.clinthera.2013.02.003. Epub 2013 Feb 26.

Geographic variation of chronic opioid use in fibromyalgia.

Painter JT, Crofford LJ, Talbert J.

Source

Division of Pharmaceutical Evaluation and Policy, College of Pharmacy, University of Arkansas for Medical Sciences, Little Rock, Arkansas; VA HSRD Center for Mental Healthcare and Outcomes Research, Central Arkansas Veterans Healthcare System, Little Rock, Arkansas. Electronic address: jtpainter@uams.edu.

Abstract

BACKGROUND:

Opioid use for the treatment of chronic nonmalignant pain has increased drastically over the past decade. Although no evidence of efficacy exists supporting the treatment of fibromyalgia (FM) with chronic opioid therapy, a large number of patients are receiving this therapy. Geographic variation in the use of opioids has been demonstrated in the past, but there are no studies examining variation of chronic opioid use.

OBJECTIVE:

This study examines both the extent of geographic variation and the factors associated with variation across states of chronic opioid use among patients with FM.

METHODS:

Using a large, nationally representative dataset of commercially insured individuals, the following characteristics were examined: sex, disease prevalence, physician prevalence, illicit drug use, and the presence of a prescription monitoring program. Other contextual and structural characteristics were also assessed.

RESULTS:

The analysis included 245,758 patients with FM; 11.3% received chronic opioid therapy during the study period. There was a 5-fold difference between the states with the lowest rate of use (~4%) and those with the highest (~20%). The weighted %CV was 36.2%. Percent female and previous illicit opioid use rates were associated with higher rates of chronic opioid use, and FM prevalence and physician prevalence were associated with lower rates. The presence of a prescription monitoring program was not significantly correlated.

CONCLUSIONS:

Geographic variation in chronic opioid use among patients with FM exists at rates similar to those seen in other studies examining opioid use. This large level of geographic variation suggests that the prescribing decision is not based solely on physician-patient interaction but also on contextual and structural factors at the state level. The level of physician and condition prevalence suggest that information dissemination and peer-to-peer interaction may play a key role in adopting evidence-based medicine for the treatment of patients suffering from FM and related conditions. Level of diagnosis prevalence as a predictor of evidence-based practice has not been reported in the literature and is an important contribution to research on geographic variation.

Published by EM Inc USA.

PMID: 23485077 [PubMed - in process]

Knee/VMO

Skeletal Radiol. 2013 May;42(5):659-66. doi: 10.1007/s00256-012-1520-4. Epub 2012 Sep 21.

Shear wave elastography properties of vastus lateralis and vastus medialis obliquus muscles in normal subjects and female patients with patellofemoral pain syndrome.

Botanlioglu H, Kantarci F, Kaynak G, Unal Y, Ertan S, Aydingoz O, Erginer R, Unlu MC, Mihmanli I, Babacan M.

Source

Cerrahpasa Faculty of Medicine, Department of Orthopaedics and Traumatology, Istanbul University, Kocamustafapasa, Istanbul, 34303, Turkey, huseyinbotanlioglu@yahoo.com.

Abstract

OBJECTIVE:

The aim of our study was to define and compare the mechanical properties of the vastus lateralis (VL) and vastus medialis obliquus muscles (VMO) by the way of quantitative shear-wave elastography in male and female healthy control (HC) subjects, and in female patients with patellofemoral pain syndrome (PFPS).

MATERIALS AND METHODS:

Twenty-two healthy volunteers (11 male and 11 female) and 11 female patients with anterior knee pain were included in the study. The SWE examinations for VL and VMO were performed while the subjects were performing open kinetic chain exercises in neutral and 30° hip abduction. The contraction capacity (CC) and contraction ratio (CR) values were determined in resting and contraction phases in both hip positions.

RESULTS:

The mean elasticity values in the CC for VL and VMO muscles were significantly higher in male HC subjects when compared to female HC subjects ($p < 0.05$). The CR of the VL muscle in female patients with PFPS was not significantly different than the female HC group. The CR for the VMO muscle was significantly lower in female patients with PFPS when compared to female HC subjects ($p < 0.05$).

CONCLUSIONS:

We found a significant VMO weakness, and this method may provide quantitative data that might influence the diagnosis of muscle weakness, in female patients with PFPS.

PMID: 22996306 [PubMed - in process]

LBP/Balance

J Manipulative Physiol Ther. 2013 Feb;36(2):111-8. doi: 10.1016/j.jmpt.2012.12.005.

Intrasession and intersession reliability of postural control in participants with and without nonspecific low back pain using the biodex balance system.

Sherafat S, Salavati M, Ebrahimi Takamjani I, Akhbari B, Mohammadirad S, Mazaheri M, Negahban H.

Source

PhD Candidate in Physical Therapy, Physiotherapy Department of University of Social Welfare & Rehabilitation Sciences, Tehran, Iran.

Abstract

OBJECTIVE:

The purpose of this study was to evaluate the reliability of the Biodex Balance System (BBS) (Biodex Medical Systems, Shirley, NY) in chronic low back pain (CLBP) patients and healthy individuals in various conditions of postural and cognitive difficulty.

METHODS:

In this methodological study, using the BBS, dynamic balance of 15 CLBP patients and 15 healthy matched individuals was assessed during bilateral stance in combined conditions of visual feedback (eyes open and eyes closed) and platform stability (levels 5 and 3), either isolated or concurrent with performing cognitive task (auditory Stroop task). The Overall stability index, anterior-posterior stability index, and medial-lateral stability index, provided by BBS as measures of postural performance, were recorded. Intraclass correlation coefficient (ICC), standard error of measurement, and coefficient of variation were used to determine intersession and intrasession reliability of postural and cognitive measures.

RESULTS:

Biodex Balance System stability indices were more reliable in the CLBP (compared with healthy) group. The intersession ICCs in CLBP group for anterior-posterior stability index ranged from 0.60 to 0.88, for medial-lateral stability index from 0.64 to 0.94, and for OASI from 0.63 to 0.91. The intersession ICCs in healthy group for anterior-posterior stability index ranged from 0.42 to 0.86, for medial-lateral stability index from 0.56 to 0.89, and for OASI from 0.54 to 0.84. Biodex Balance System stability indices were more reliable in eyes-closed (compared with eyes-open) condition and platform stability level 5 (compared with level 3).

CONCLUSION:

Biodex Balance System stability indices appear to be reliable measures of postural control in the CLBP patients especially in more challenging conditions, such as when standing with eyes closed.

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PMID: 23499146

LBP/Adolescents/positioning sense

Man Ther. 2013 Mar 18. pii: S1356-689X(13)00034-9. doi: 10.1016/j.math.2013.02.005. [Epub ahead of print]

Lumbar spine repositioning sense in adolescents with and without non-specific chronic low back pain - An analysis based on sub-classification and spinal regions.

Astfalck RG, O'Sullivan PB, Smith AJ, Straker LM, Burnett AF.

Source

Curtin University of Technology, Perth, Western Australia, Australia.

Abstract

OBJECTIVE:

To identify differences in repositioning error in adolescents with and without non-specific chronic low back pain (NSCLBP), sub-groups of NSCLBP and in different spinal regions.

METHODS:

Spinal repositioning error was measured during a seated task. Variables were constant error (CE), absolute error (AE) and variable error (VE) for lower lumbar, upper lumbar and lumbar angles. 28 subjects with NSCLBP were sub-classified using O'Sullivan's system and compared to 28 healthy controls.

RESULTS:

Significant differences were noted for AE between adolescents with and without NSCLBP, but no differences were found for CE or VE. When sub-grouped there was a pattern for lower AE and higher VE in the flexion sub-group. This group also displayed a tendency to undershoot the criterion position in the lower lumbar spine. Greater VE was noted in the extension sub-group and those with no NSCLBP in the upper lumbar compared to the lower lumbar spine.

CONCLUSIONS:

Differences in spinal repositioning errors were noted between adolescents with and without NSCLBP and sub-groups of NSCLBP. Those with flexion-pattern NSCLBP had the lowest levels of spinal repositioning ability. Individuals with no-LBP (low-back pain) or extension-pattern NSCLBP displayed greater variability in the upper lumbar spine.

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PMID: 23518039

Adolescents/analgesics

Scand J Caring Sci. 2013 Mar 20. doi: 10.1111/scs.12039. [Epub ahead of print]

High-frequency use of over-the-counter analgesics among adolescents: reflections of an emerging difficult life, a cross-sectional study.

Skarstein S, Rosvold EO, Helseth S, Kvarme LG, Holager T, Småstuen MC, Lagerløv P.

Source

Department of Nursing, Oslo and Akershus University College of Applied Sciences, Oslo, Norway.

Abstract

AIMS:

To examine characteristics of 15- to 16-year-old adolescents who used over-the-counter analgesics daily to weekly (high-frequency users) as compared to those who used less or no analgesics (low-frequency users). Further to analyse the differences in pain experience, lifestyle, self-esteem, school attendance and educational ambition.

METHODS:

An anonymous cross-sectional questionnaire-based study. The questionnaire covered the use of over-the-counter analgesics, pain experience, sociodemographics, lifestyle factors, self-esteem, school absence and future educational plans. The study took place in the 10th grade in six junior high schools in a medium-sized town in Norway. The local sales data for analgesics and antipyretics were close to the national average. We invited 626 adolescents to participate. Of the 367 adolescents (59%) who responded, 51% were girls. Associations between the frequency of use of over-the-counter analgesic and the mentioned variables were analysed using multiple logistic regression.

RESULTS:

In total, 26% (42 boys and 48 girls) used over-the-counter analgesics daily to weekly. These high-frequency users experienced more widespread pain, slept less, had more paid spare-time work, drank more caffeinated drinks, participated more often in binge drinking, had lower self-esteem, less ambitious educational plans and more frequent school absence than did the low-frequency users. These associations remained significant when controlling for gender, cultural background and self-evaluated economic status.

CONCLUSION:

Adolescent, who are high-frequency users of over-the-counter analgesics, suffer more pain and have identifiable characteristics indicative of complex problems. Their ability to handle stress appears to be discordant with the kind of situations to which they are exposed. The wear and tear associated with allostatic mechanisms counteracting stress may heighten their pain experience.

© 2013 The Authors Scandinavian Journal of Caring Sciences © 2013 Nordic College of Caring Science.

PMID: 23517110

Prolo/Knee

[Altern Ther Health Med.](#) 2003 May-Jun;9(3):58-62.

Long-term effects of dextrose prolotherapy for anterior cruciate ligament laxity.

[Reeves KD](#), [Hassanein KM](#).

Source

Department of Biometry, University of Kansas Medical Center, Kansas City, Kan., USA.

Abstract

CONTEXT:

Use of dextrose prolotherapy. Prolotherapy is defined as injection that causes growth of normal cells or tissue.

OBJECTIVE:

Determine the 1 and 3 year efficacy of dextrose injection prolotherapy on anterior cruciate ligament (ACL) laxity. After year 1, determine patient tolerance of a stronger dextrose concentration (25% versus 10%).

DESIGN:

Prospective consecutive patient trial.

PATIENTS OR OTHER PARTICIPANTS:

Eighteen patients with 6 months or more of knee pain plus ACL knee laxity. This laxity was defined by a KT1000 anterior displacement difference (ADD) of 2 mm or more.

INTERVENTION:

Intraarticular injection of 6-9 cc of 10% dextrose at months 0, 2, 4, 6, and 10. Injection with 6 cc of 25% dextrose at 12 months. Then, depending on patient preference, injection of either 10% or 25% dextrose every 2-4 months (based on patient preference) through 36 months.

MAIN OUTCOME MEASURES:

Visual analogue scale (VAS) for pain at rest, pain on level surfaces, pain on stairs, and swelling. Goniometric flexion range of motion, and KT1000-measured ADD were also measured. All measurements were obtained at 0, 6, 12 and 36 months.

RESULTS:

Two patients did not reach 6 month data collection, 1 of whom was diagnosed with disseminated cancer. The second was wheelchair-bound and found long-distance travel to the clinic problematic. Sixteen subjects were available for data analysis. KT1000 ADD, measurement indicated that 6 knees measured as normal (not loose) after 6 months, 9 measured as normal after 1 year (6 injections), and 10 measured as normal at 3 years. At the 3 year follow-up, pain at rest, pain with walking, and pain with stair use had improved by 45%, 43%, and 35% respectively. Individual paired t tests indicated subjective swelling improved 63% (P = .017), flexion range of motion improved by 10.5 degrees (P = .002), and KT1000 ADD improved by 71% (P = .002). Eleven out of 16 patients preferred 10% dextrose injection.

CONCLUSION:

In patients with symptomatic anterior cruciate ligament laxity, intermittent dextrose injection resulted in clinically and statistically significant improvement in ACL laxity, pain, swelling, and knee range of motion.

PMID:12776476

C spine/upper traps/trigger points

[Ultrasound Imaging](#). 2013 Apr;35(2):173-87. doi: 10.1177/0161734612472408.

Ultrasonic characterization of the upper trapezius muscle in patients with chronic neck pain.

[Turo D](#), [Otto P](#), [Shah JP](#), [Heimur J](#), [Gebreab T](#), [Zaazhoa M](#), [Armstrong K](#), [Gerber LH](#), [Sikdar S](#).

Source

1George Mason University, Fairfax, VA, USA.

Abstract

Myofascial trigger points (MTrPs) are palpable, tender nodules in taut bands of skeletal muscle that are painful on compression. MTrPs are characteristic findings in myofascial pain syndrome (MPS). The role of MTrPs in the pathophysiology of MPS is unknown. Localization, diagnosis, and clinical outcome measures of painful MTrPs can be improved by objectively characterizing and quantitatively measuring their properties.

The goal of this study was to evaluate whether ultrasound imaging and elastography can differentiate symptomatic (active) MTrPs from normal muscle. Patients with chronic (>3 months) neck pain with spontaneously painful, palpable (i.e., active) MTrPs and healthy volunteers without spontaneous pain (having palpably normal muscle tissue) were recruited for this study. The upper trapezius muscles in all subjects were imaged, and the echotexture was analyzed using entropy filtering of B-mode images. Vibration elastography was performed by vibrating the muscle externally at 100 Hz. Color Doppler variance imaging was used to quantify the regions of color deficit exhibiting low vibration amplitude. The imaging measures were compared against the clinical findings of a standardized physical exam.

We found that sites with active MTrPs (n = 14) have significantly lower entropy (p < 0.05) and significantly larger nonvibrating regions (p < 0.05) during vibration elastography compared with normal, uninvolved muscle (n = 15). A combination of both entropy analysis and vibration elastography yielded 69% sensitivity and 81% specificity in discriminating active MTrPs from normal muscle. These results suggest that active MTrPs have more homogeneous texture and heterogeneous stiffness when compared with normal, unaffected muscle.

Our methods enabled us to improve the imaging contrast between suspected MTrPs and surrounding muscle. Our results indicate that in subjects with chronic neck pain and active MTrPs, the abnormalities are not confined to discrete isolated nodules but instead affect the milieu of the muscle surrounding palpable MTrPs. With further refinement, ultrasound imaging can be a promising objective method for characterizing soft tissue abnormalities associated with active MTrPs and elucidating the role of MTrPs in the pathophysiology of MPS.

PMID:23493615

Pelvic pain/ Meni

J Obstet Gynaecol Res. 2013 Mar 17. doi: 10.1111/jog.12008. [Epub ahead of print]

Age at menarche and pregnancy-related pelvic pain.

[Kirkeby MJ](#), [Biering K](#), [Olsen J](#), [Juhl M](#), [Nohr EA](#).

Source

Department of Occupational Medicine, Herning Regional Hospital, Herning, Denmark.

Abstract

AIM:

Menarcheal age is a predictor of several complications related to pregnancy and diseases later in life. We aimed to study if menarcheal age is a risk factor for pregnancy-related pelvic pain.

MATERIAL AND METHODS:

A nested case-control study was conducted within the Danish National Birth Cohort, a cohort of pregnant women, recruited during 1996-2002, and their children. In the second trimester of pregnancy the women provided information about age at menarche and potential confounders. Selection of cases (n = 2227) was based on self-reported pelvic pain during pregnancy from an interview done 6 months post-partum. The controls (n = 2588) were randomly selected among women who did not report pelvic pain. We used logistic regression analysis to calculate odds ratios (OR) for pregnancy-related pelvic pain according to age at menarche.

RESULTS:

In the cohort, 18.5% of all pregnant women reported pregnancy-related pelvic pain. Compared to women who were 12-14 years old at menarche, the adjusted OR for overall pelvic pain were 1.4 (95% confidence interval [CI] 1.1-1.7) in women 11 years or younger and 0.8 (95%CI 0.6-0.9) in women 15 years or older. The corresponding adjusted OR for severe pelvic pain were 1.6 (95%CI 1.3-2.0) and 0.7 (95%CI 0.6-0.9). When age was analyzed as a continuous variable, the odds for overall and severe pelvic pain decreased with 14% and 16%, respectively, for each increasing year.

CONCLUSIONS:

The risk of pregnancy-related pelvic pain decreased with increasing menarcheal age in an 'exposure-response' pattern. A low menarcheal age is a risk indicator and may be a risk factor for pregnancy-related pelvic pain.

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PMID:23496415

[Knee/Patella/kinematics/](#)

Med Sci Sports Exerc. 2013 Mar 21. [Epub ahead of print]

Neuromuscular Activity and Knee Kinematics in Adolescents with Patellofemoral Pain.

Rathleff MS, Samani A, Olesen JL, Roos EM, Rasmussen S, Christensen BH, Madeleine P.

Source

1Orthopaedic Surgery Research Unit, Aalborg University Hospital, Denmark; 2HEALTH, Aarhus University, Denmark; 3Centre for Sensory-Motor Interaction (SMI), Department of Health Science and Technology, Aalborg University, Denmark; 4Department of Rheumatology, Aalborg Hospital - Aarhus University Hospital, Denmark; 5Institute of Sports Science and Clinical Biomechanics, University of Southern Denmark, Denmark.

Abstract

: Purpose: To investigate neuromuscular control of the knee during stair descent among female adolescents with Patellofemoral Pain (PFP) and report its association with self-reported clinical status assessed by the Knee injury and Osteoarthritis Outcome Score (KOOS).

Methods: Fifty-seven previously untreated female adolescents diagnosed with PFP aged 15 to 19 years were recruited from schools. The control group consisted of 29 age-matched healthy female adolescents. Bipolar surface electrodes were placed on VM and VL and an electronic knee goniometer was placed at the knee to collect knee flexion/extension kinematics. The participants walked down a stairway consisting of 24 steps at their normal pace. Sample Entropy was used to quantify the complexity of the time series from surface electromyography (sEMG) and kinematics during the stance phase. Self-reported clinical status was assessed by the KOOS and maximal quadriceps torque measured using strap-mounted handheld dynamometry.

Results: Female adolescents with PFP were characterized by altered neuromuscular knee control during stair descent, lower maximal quadriceps torque, and poorer KOOS scores across all five domains. Furthermore, a positive association was found between the complexity of sEMG from VL and self-reported pain determined by KOOSpain indicating larger impairments in neuromuscular knee control among those with the highest pain levels.

Conclusion: The current findings show that female adolescents with PFP are characterized by altered neuromuscular control of the knee during stair descent and lower maximal quadriceps torque. These results suggest that rehabilitation is needed, and should focus on restoring neuromuscular control and muscle strength.

PMID: 23524514

LBP/Manipulation

Phys Ther. 2013 Mar 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 to decide which vertebral level should be manipulated in patients with low back pain. However, it is unclear whether spinal manipulation needs to be specific to a vertebral level.

OBJECTIVE:

The purpose of this study was 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 an upper thoracic vertebra) in patients with chronic nonspecific low back pain for the outcome measures of pain intensity and pressure pain threshold at the time of the assessment.

DESIGN:

This was a 2-arm, prospectively registered, randomized controlled trial with a blinded assessor. in an outpatient physical therapy clinic in Brazil.

PATIENTS:

The study participants were 148 patients with chronic nonspecific 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 consecutively numbered, sealed, opaque envelopes.

INTERVENTIONS:

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

MEASUREMENTS:

Pain intensity was measured by a 0 to 10 numeric pain rating scale. Pressure pain threshold was measured using a pressure algometer.

LIMITATIONS:

It was not possible to blind the therapist and participants.

RESULTS:

A total of 148 patients participated in the study (74 in each group). There was no loss to 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% confidence interval=-0.10 to 1.10) and -1.78 points (95% confidence interval=-6.40 to 2.82), respectively. No adverse reactions were observed.

CONCLUSION:

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

J Spinal Disord Tech. 2013 Apr;26(2):E53-7. doi: 10.1097/BSD.0b013e318260a09c.

Association between estrogen receptor gene polymorphism and back pain intensity in female patients with degenerative lumbar spondylolisthesis.

Roh HL, Lee JS, Suh KT, Kim JI, Lee HS, Goh TS, Park SH.

Source

*Department of Orthopaedic Surgery, Medical Research Institute, Pusan National University School of Medicine, Busan †Department of Orthopaedic Surgery, Medical Research Institute, Pusan National University Yangsan Hospital, Yangsan, Republic of Korea.

Abstract

STUDY DESIGN:

: Prospective study.

OBJECTIVE:

: To examine the possible association of estrogen receptor α (ER α) polymorphisms and pain intensity in symptomatic female degenerative spondylolisthesis (DS) patients.

SUMMARY OF BACKGROUND DATA:

: DS has been associated with a significant sex effect. Thus, several studies about the association between the ER gene and osteoarthritis have been reported. However, whether estrogen is associated with pain sensitivity is inconsistent in the existing literatures from both human and animal studies.

METHODS:

: The PvuII and XbaI polymorphisms, bone mineral density at the lumbar spine (LSBMD) and at the femoral neck (FNBMD), pain intensity at the leg and lower back, and radiologic and anthropometric findings were analyzed in 192 patients with DS.

RESULTS:

: There was a significant association between XbaI polymorphism and the visual analog scale score of back pain. The back pain visual analog scale in patients with a GG genotype was significantly higher than in patients with the AG (P<0.05) or the AA (P<0.05) genotypes. In addition, the presence of the CG haplotype was found to be associated with back pain intensity in the haplotype analysis of the PvuII and the XbaI polymorphisms of ER α .

CONCLUSIONS:

: These results suggest that the ER α gene polymorphism using XbaI restriction enzyme influences the perception of back pain in patients with DS.

PMID: 22668753

Viscera

J Pediatr. 2013 Mar 22. pii: S0022-3476(13)00240-0. doi: 10.1016/j.jpeds.2013.02.033. [Epub ahead of print]

Prevalence of Pain-Predominant Functional Gastrointestinal Disorders and Somatic Symptoms in Patients with Anxiety or Depressive Disorders.

Yacob D, Di Lorenzo C, Bridge JA, Rosenstein PF, Onorato M, Bravender T, Campo JV.

Source

Division of Pediatric Gastroenterology, Nationwide Children's Hospital and The Ohio State University, Columbus, OH. Electronic address: des.yacob@nationwidechildrens.org.

Abstract

OBJECTIVE:

To determine whether children with symptoms of internalizing psychiatric disorders have a greater prevalence of pain-predominant functional gastrointestinal disorders (FGIDs) and migraine-like headaches.

STUDY DESIGN:

Children and adolescents aged 6-18 years were recruited from a behavioral health center (n = 31) and a primary care center (n = 36). Subjects completed Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-based symptom inventory questionnaires to screen for internalizing psychiatric disorders, the Questionnaire on Pediatric Gastrointestinal Symptoms, and a somatic distress assessment interview.

RESULTS:

Thirty-three subjects (19 of 31 from the behavioral health center and 14 of 36 from the primary care center) screened positive for symptoms of anxiety or depressive disorders. The remainder screened negative and served as controls. Pain-predominant FGIDs were more common in the group with symptoms of anxiety or depression compared with controls (prevalence, 51.5% vs 8.8%; $P = .0002$). Migraine headaches occurred in 57.6% of the subjects with internalizing psychiatric disorders vs 23.5% of the control group ($P = .006$). The prevalence of functional constipation did not differ significantly between the 2 groups. The data remained essentially unchanged when analyzed within each center of recruitment.

CONCLUSION:

Youths with anxiety or depressive symptoms are more likely to suffer from pain-predominant FGIDs and migraine-like headaches, but not from functional constipation. The lack of an association between functional constipation and internalizing psychiatric symptoms suggests that FGIDs associated with pain may bear a specific relationship to emotional disorders.

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PMID:23522860

Pain/self management

J Clin Nurs. 2013 Mar 27. doi: 10.1111/jocn.12134. [Epub ahead of print]

Pain experiences and self-management strategies among middle-aged and older adults with arthritis.

Gong G, Li J, Li X, Mao J.

Source

School of Nursing, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei, China.

Abstract

AIMS AND OBJECTIVES:

The purposes were (1) to explore pain experiences and the use and perceived effectiveness of pain self-management methods among middle-aged and older adults with osteoarthritis or rheumatoid arthritis in mainland China and (2) to compare those with diagnoses of osteoarthritis and rheumatoid arthritis.

BACKGROUND:

Prior research has suggested that pain is a major concern for people with arthritis. However, studies systematically investigating pain experiences and self-management status of arthritis patients are scarce in mainland China.

DESIGN:

Descriptive survey.

METHODS:

Participants (n = 197) aged 45 and over, diagnosed with either osteoarthritis or rheumatoid arthritis, and experiencing persistent pain were administered three self-report questionnaires: the Demographic Data Questionnaire, the Brief Pain Inventory and the Pain Management Inventory.

RESULTS:

The mean of the overall pain intensity was 5.6 (SD = 1.3). The median of number of pain sites was 7.0 (QR = 7.0) and the overall pain interference was 6.0 (QR = 2.6). Most participants experienced moderate to severe pain and interference. The current methods used for managing pain were perceived as only moderately effective. The sample used a median of 4.0 (QR = 3.0) self-management methods. Most often used were prescribed medicine, massage, heat and activity pacing. Methods perceived as most helpful included prescribed medicine, over-the-counter medicine, hot baths and heat. Persons with rheumatoid arthritis had significantly more pain sites, higher pain intensity and greater number of pain management methods used compared to those with osteoarthritis.

CONCLUSIONS:

Pain management is a significant problem in this population. The findings highlight the importance of helping the individual to identify and appropriately use a variety of self-management methods, selecting the appropriate method(s) at any one time.

RELEVANCE TO CLINICAL PRACTICE:

Healthcare providers are urged to develop appropriate interventions on pain management tailored to arthritis patients in mainland China.

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PMID: 23534697

Dry needling/knee

Efficacy of Myofascial Trigger Point Dry Needling in the Prevention of Pain after Total Knee Arthroplasty: A Randomized, Double-Blinded, Placebo-Controlled Trial *Full Text* □ Evidence-based Complementary and Alternative Medicine , 04/02/2013 **Clinical Article**

Mayoral O et al. – The aim of this study was to determine whether the dry needling of myofascial trigger points (MTrPs) is superior to placebo in the prevention of pain after total knee arthroplasty. A single dry needling treatment of MTrP under anaesthesia reduced pain in the first month after knee arthroplasty, when pain was the most severe. Results show a superiority of dry needling versus placebo. An interesting novel placebo methodology for dry needling, with a real blinding procedure, is presented.

Methods

- Forty subjects were randomised to a true dry needling group (T) or to a sham group (S).
- All were examined for MTrPs by an experienced physical therapist 4–5 hours before surgery.

Results

- Immediately following anaesthesiology and before surgery started, subjects in the T group were dry needled in all previously diagnosed MTrPs, while the S group received no treatment in their MTrPs.
- Subjects were blinded to group allocation as well as the examiner in presurgical and follow-up examinations performed 1, 3, and 6 months after arthroplasty.
- Subjects in the T group had less pain after intervention, with statistically significant differences in the variation rate of the visual analogue scale (VAS) measurements 1 month after intervention and in the need for immediate postsurgery analgesics.
- Differences were not significant at 3- and 6-month follow-up examinations.

Read more: <http://www.mdlinx.com/orthopedics/news-article.cfm/4539427/myofascial-trigger-point-knee-arthroplasty#ixzz2PMYIchii>

Trigeminal nerve

Eur J Radiol. 2013 May;82(5):783-6. doi: 10.1016/j.ejrad.2012.11.027. Epub 2012 Dec 21.

Microstructural abnormalities in the trigeminal nerves of patients with trigeminal neuralgia revealed by multiple diffusion metrics.

Liu Y, Li J, Butzkueven H, Duan Y, Zhang M, Shu N, Li Y, Zhang Y, Li K.

Source

Department of Radiology, Xuanwu Hospital, Capital Medical University, Beijing 100053, PR China; Beijing Key laboratory of MRI and Brain Informatics, Beijing, PR China.

Abstract

OBJECTIVE:

To investigate microstructural tissue changes of trigeminal nerve (TGN) in patients with unilateral trigeminal neuralgia (TN) by multiple diffusion metrics, and correlate the diffusion indexes with the clinical variables.

METHODS:

16 patients with TN and 6 healthy controls (HC) were recruited into our study. All participants were imaged with a 3.0T system with three-dimension time-of-flight (TOF) magnetic resonance angiography and fluid attenuated inversion recovery (FLAIR) DTI-sequence. We placed regions of interest over the root entry zone of the TGN and measured fractional anisotropy (FA), mean diffusivity (MD), axial diffusivity (AD) and radial diffusivity (RD). The mean values of FA, MD, AD and RD were compared between the affected and unaffected sides in the same patient, and to HC values. The correlation between the side-to-side diffusion metric difference and clinical variables (disease duration and visual analogy scale, VAS) was further explored.

RESULTS:

Compared with the unaffected side and HC, the affected side showed significantly decreased FA and increased RD; however, no significant changes of AD were found. A trend toward significantly increased MD was identified on the affected side comparing with the unaffected side. We also found the significant correlation between the FA reduction and VAS of pain ($r=-0.55$, $p=0.03$).

CONCLUSION:

DTI can quantitatively assess the microstructural abnormalities of the affected TGN in patients with TN. Our results suggest demyelination without significant axonal injury is the essential pathological basis of the affected TGN by multiple diffusion metrics. The correlation between FA reduction and VAS suggests FA as a potential objective MRI biomarker to correlate with clinical severity.

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PMID: 23265178

Opioid use/LBP

Opioid use among low back pain patients in primary care: Is opioid prescription associated with disability at 6 month follow-up □Pain, 04/01/2013 Clinical Article

Ashworth J et al. – The authors aimed to explore the relationship between prescribed opioids and disability among patients consulting in primary care with back pain. The findings indicate that even after adjusting for a substantial number of potential confounders, opioids were associated with slightly worse functioning in back pain patients at 6 month follow-up.

Methods

- 715 participants from a prospective cohort study who gave consent for review of medical and prescribing records, and completed baseline and 6 month follow-up questionnaires were included.
- Opioid prescription data was obtained from electronic prescribing records and morphine equivalent doses calculated.
- The primary outcome was disability (Roland–Morris Disability Questionnaire RMDQ) at 6 months.
- Multivariable linear regression was used to examine the association between opioid prescription at baseline and RMDQ score at 6 months.
- Analyses were adjusted for potential confounders using propensity scores reflecting the probability of opioid prescription given baseline characteristics.
- 234 participants (32.7%) were prescribed opioids in the baseline period.

Results

In the final multivariable analysis, opioid prescription at baseline was significantly associated with higher disability at 6 month follow-up ($p < 0.022$), but the magnitude of this effect was small, with mean RMDQ score 1.18 (95% CI 0.17, 2.19) points higher among those prescribed opioids compared to those who were not.

LBP/Epicural

Mol Pain. 2013 Mar 28;9(1):17. [Epub ahead of print]

Preclinical studies of low back pain.

Strong JA, Xie W, Bataille FJ, Zhang JM.

Abstract

Chronic low back pain is a major cause of disability and health care costs. Current treatments are inadequate for many patients. A number of preclinical models have been developed that attempt to mimic aspects of clinical conditions that contribute to low back pain. These involve application of nucleus pulposus material near the lumbar dorsal root ganglia (DRG), chronic compression of the DRG, or localized inflammation of the DRG. These models, which are primarily implemented in rats, have many common features including behavioral hypersensitivity of the hindpaw, enhanced excitability and spontaneous activity of sensory neurons, and locally elevated levels of inflammatory mediators including cytokines. Clinically, epidural injection of steroids (glucocorticoids) is commonly used when more conservative treatments fail, but clinical trials evaluating these treatments have yielded mixed results. There are relatively few preclinical studies of steroid effects in low back pain models. One preclinical study suggests that the mineralocorticoid receptor, also present in the DRG, may have pro-inflammatory effects that oppose the activation of the glucocorticoid receptor. Although the glucocorticoid receptor is the target of anti-inflammatory steroids, many clinically used steroids activate both receptors. This could be one explanation for the limited effects of epidural steroids in some patients. Additional preclinical research is needed to address other possible reasons for limited efficacy of steroids, such as central sensitization or presence of an ongoing inflammatory stimulus in some forms of low back pain.

PMID: 23537369

Pain/Neuropathic

Eur J Pain. 2013 Mar 27. doi: 10.1002/j.1532-2149.2013.00307.x. [Epub ahead of print]

Mechanical allodynia in neuropathic pain. Where are the brain representations located? A positron emission tomography (PET) study.

Peyron R, Faillenot I, Pomares FB, Le Bars D, Garcia-Larrea L, Laurent B.

Source

Department of Neurology, Pain Center, CHU de Saint-Etienne, France; PRES de Lyon, France; CERMEP, Lyon, France; INSERM U879, UCB Lyon 1, UJM Saint-Etienne, France.

Abstract

BACKGROUND:

Brain areas involved in nociception have been repeatedly investigated. Therefore, brain responses to physiological pain conditions are well identified. The same is not true for allodynic pain in patients with neuropathic pain since the cortical reorganizations that are involved in the conversion of non-noxious stimuli into painful sensations still remain unknown.

METHODS:

The present positron emission tomography (PET) study enrolled 19 patients with dynamic mechanical allodynia to brushing or to cold rubbing of the skin. PET activations during allodynic stimulation were compared to those obtained with the same innocuous stimulation applied outside the neuropathic pain area (control). In a second comparison, they were compared with responses to a noxious heat stimulation applied outside the neuropathic pain area (experimental pain).

RESULTS:

Common responses to allodynia and control stimulations were found in contralateral SI, SII and insula and in ipsilateral cerebellum. Not surprisingly, heat pain condition was associated with activations in contralateral prefrontal and SII cortices and, bilaterally, in the anterior insular cortices. Distinctive cortical responses between control and allodynic conditions were restricted to one activation within the contralateral anterior insula, a region also activated by experimental heat pain.

CONCLUSIONS:

The insular subdivision was inappropriately activated considering the innocuous nature of the stimulus, but adequately activated with regard to pain-evoked sensation. Subcortically, the hypothesis of reorganization at any level of the somatosensory and pain pathways underlying such insular activity was supported by the observed shift of thalamic activation from a lateral-posterior to an anterior-medial position.

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PMID: 23536357

Hypermobility/Pain/Adolescents

Arthritis Rheum. 2013 Feb 28. doi: 10.1002/art.37836. [Epub ahead of print]

Hypermobility is a risk factor for musculoskeletal pain in adolescence: Findings from a prospective cohort study.

Tobias JH, Deere K, Palmer S, Clark EM, Clinch J.

Source

Musculoskeletal Research Unit, School of Clinical Sciences, University of Bristol, Avon Orthopaedic Centre, Southmead Hospital, Bristol. UK BS10 5NB. Jon.Tobias@bristol.ac.uk.

Abstract

OBJECTIVES:

To determine whether joint hypermobility (JH) in childhood is a risk factor for the subsequent development of musculoskeletal pain.

METHODS:

JH was determined by Beighton score at age 13.8 years in children from the Avon Longitudinal Study of Parents and Children (ALSPAC), using a cut-off of >6. Musculoskeletal pain was evaluated by questionnaire at age 17.8 years. Logistic regression analysis was performed in 2901 participants (1267 boys and 1634 girls) with complete data.

RESULTS:

4.6% of participants were hypermobile at age 13.8 years. Moderately troublesome musculoskeletal pain at age 17.8 was reported most commonly at the lower back (16.1%), upper back (8.9%), neck (8.6%), shoulder (9.5%), knee (8.8%) and ankle/foot (6.8%). JH was associated with an increased risk of at least moderately troublesome musculoskeletal pain at the shoulder (1.68; 1.04, 2.72), knee (1.83; 1.10, 3.02) and ankle/foot (1.82; 1.05, 3.16) (ORs with 95%CI, adjusted for gender, maternal education and BMI). An equivalent relationship was not observed at other sites including the spine, elbows, hands and hips. In analyses examining interactions with obesity, associations between JH and knee pain showed higher ORs in obese participants (1.6 and 11.0 in non-obese and obese participants respectively, P=0.04 for obesity interaction).

CONCLUSIONS:

JH represents a risk factor for musculoskeletal pain in adolescence, comprising a specific distribution namely the shoulder, knee and ankle/foot. These relationships were strongest in the presence of obesity, consistent with a causal pathway whereby JH leads to pain at sites exposed to the greatest mechanical forces. © 2012 American College of Rheumatology.

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PMID: 23450628

Headache/Melatonin

Efficiency of Melatonin in Chronic Tension Type Headache Patients and Effects on Anxiety and Depression *Full Text*

Journal of Neurological Sciences (Turkish), 04/01/2013 **Clinical Article**

Karadas O et al. –

In this study the authors aimed to determine efficacy of melatonin in chronic tension type headache patients and effects on anxiety and depression. The results of the study suggest that melatonin therapy may be an effective and safe treatment method in chronic Tension type headache(TTH).

Methods

- 21 chronic TTH patients were included in this study.
- 3mg/day melatonin were ordered to each patients during 3months.
- Number of painful days within a month, severity of pain (by using Visual Analog Scale (VAS)), Hamilton depression scores and Hamilton anxiety scores were detected before and 3months after the treatment.

Results

- 5 men and 16 women were included in this study.
- Mean age of patients was 33,14±8,95 (19-51)years.
- Number of painful days within a month decreased from 20,14±4,00(15-28)days to 13,76±3,14(9-19), VAS scores decreased from 65,95±11,46 (45-85) to 50,95±13,28(25-75), Hamilton depression score decreased from 21,28±7,54(3-35) to 15,76±5,55(4-28) and Hamilton anxiety scores decreased from 16,66±8,71(3-39) to 11,80±6,42(2-28).
- Improvements in all parameters were statically significant (p=0,001; p=0,002; p=0,001; p=0,001, respectively).

Read more: <http://www.mdlinx.com/psychiatry/news-article.cfm/4513755/anxiety-depression-headache#ixzz2PMbZQEN4>

Manipulation/LBP

Spine (Phila Pa 1976). 2013 Apr 1;38(7):540-8. doi: 10.1097/BRS.0b013e318275d09c.

Spinal high-velocity low amplitude manipulation in acute nonspecific low back pain: a double-blinded randomized controlled trial in comparison with diclofenac and placebo.

von Heymann WJ, Schloemer P, Timm J, Muehlbauer B.

Source

*Competence Center for Clinical Studies; and †Institute for Biometrics, University of Bremen, Bremen, Germany.

Abstract

STUDY DESIGN.: A randomized, double-blinded, placebo-controlled, parallel trial with 3 arms.

OBJECTIVE.: To investigate in acute nonspecific low back pain (LBP) the effectiveness of spinal high-velocity low-amplitude (HVLA) manipulation compared with the nonsteroidal anti-inflammatory drug diclofenac and with placebo.

SUMMARY OF BACKGROUND DATA.: LBP is an important economical factor in all industrialized countries. Few studies have evaluated the effectiveness of spinal manipulation in comparison to nonsteroidal anti-inflammatory drugs or placebo regarding satisfaction and function of the patient, off-work time, and rescue medication.

METHODS.: A total of 101 patients with acute LBP (for <48 hr) were recruited from 5 outpatient practices, exclusion criteria were numerous and strict. The subjects were randomized to 3 groups: (1) spinal manipulation and placebo-diclofenac; (2) sham manipulation and diclofenac; (3) sham manipulation and placebo-diclofenac. Outcomes registered by a second and blinded investigator included self-rated physical disability, function (SF-12), off-work time, and rescue medication between baseline and 12 weeks after randomization.

RESULTS.: Thirty-seven subjects received spinal manipulation, 38 diclofenac, and 25 no active treatment. The placebo group with a high number of dropouts for unsustainable pain was closed praecox. Comparing the 2 active arms with the placebo group the intervention groups were significantly superior to the control group. Ninety subjects were analyzed in the collective intention to treat. Comparing the 2 intervention groups, the manipulation group was significantly better than the diclofenac group (Mann-Whitney test: $P = 0.0134$). No adverse effects or harm was registered.

CONCLUSION.: In a subgroup of patients with acute nonspecific LBP, spinal manipulation was significantly better than nonsteroidal anti-inflammatory drug diclofenac and clinically superior to placebo.

PMID: 23026869

Acupuncture/LBP

Spine (Phila Pa 1976). 2013 Apr 1;38(7):549-557.

Acupuncture for Chronic Low Back Pain: A Multicenter, Randomized, Patient-Assessor Blind, Sham-Controlled Clinical Trial.

Cho YJ, Song YK, Cha YY, Shin BC, Shin IH, Park HJ, Lee HS, Kim KW, Cho JH, Chung WS, Lee JH, Song MY.

Source

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**Acupuncture & Meridian Science Research Center, College of Korean Medicine, Kyung Hee University, Seoul, Korea; and ††Acupuncture, Moxibustion & Meridian Research Group, Medical Research Division, Korea Institute of Korean Medicine, Daejeon, Korea.

Abstract

STUDY DESIGN.: Multicenter, randomized, patient-assessor blind, sham-controlled clinical trial.

OBJECTIVE.: To investigate the efficacy of acupuncture treatment with individualized setting for reduction of bothersomeness in participants with chronic low back pain (cLBP). **SUMMARY OF BACKGROUND DATA.:** Low back pain is one of the main reasons of disability among adults of working age. Acupuncture is known as an effective treatment of cLBP, but it remains unclear whether acupuncture is superior to placebo.

METHODS: One hundred thirty adults aged 18 to 65 years with nonspecific LBP lasting for at least last 3 months prior to the trial participated in the study from 3 Korean medical hospitals. Participants received individualized real acupuncture treatments or sham acupuncture treatments for more than 6 weeks (twice a week) from Korean Medicine doctors. Primary outcome was change of visual analogue scale (VAS) score for bothersomeness of cLBP. Secondary outcomes included VAS score for pain intensity and questionnaires including Oswestry Disability Index, general health status (Short Form-36), and Beck Depression Inventory (BDI).

RESULTS: There were no baseline differences observed between the 2 groups, except in the Oswestry Disability Index. One hundred sixteen participants finished the treatments and 3- and 6-month follow-ups, with 14 subjects dropping out. Significant difference in VAS score for bothersomeness and pain intensity score of cLBP has been found between the 2 groups ($P < 0.05$) at the primary end point (8 wk). In addition, those 2 scores improved continuously until 3-month follow-up ($P = 0.011$, $P = 0.005$, respectively). Oswestry Disability Index, the Beck Depression Inventory, and Short Form-36 scores were also improved in both groups without group difference.

CONCLUSION.: This randomized sham-controlled trial suggests that acupuncture treatment shows better effect on the reduction of the bothersomeness and pain intensity than sham control in participants with cLBP.

PMID: 23026870

Fusion/LBP

Spine (Phila Pa 1976). 2013 Apr 1;38(7):E409-22. doi: 10.1097/BRS.0b013e3182877f11.

Lumbar spine fusion for chronic low back pain due to degenerative disc disease: a systematic review.

Phillips FM, Slosar PJ, Youssef JA, Andersson G, Papatheofanis F.

Source

*Department of Orthopaedic Surgery, Rush University Medical Center, Chicago, IL †SpineCare Medical Group, San Francisco Spine Institute, San Francisco, CA; ‡Spine Colorado/Durango Orthopedic Associates, P.C., Durango, CO; and §Saint Katherine College, Encinitas, CA.

Abstract

STUDY DESIGN.: Systematic literature review.

OBJECTIVE.: To categorize published evidence systematically for lumbar fusion for chronic low back pain (LBP) in order to provide an updated and comprehensive analysis of the clinical outcomes.

SUMMARY OF BACKGROUND DATA.: Despite a large number of publications of outcomes of spinal fusion surgery for chronic LBP, there is little consensus on efficacy.

METHODS.: A MEDLINE and Cochrane database search was performed to identify published articles reporting on validated patient-reported clinical outcomes measures (2 or more of visual analogue scale, Oswestry Disability Index, Short Form [36] Health Survey [SF-36] PCS, and patient satisfaction) with minimum 12 months of follow-up after lumbar fusion surgery in adult patients with LBP due to degenerative disc disease. Twenty-six total articles were identified and stratified by level of evidence: 18 level 1 (6 studies of surgery vs. nonoperative treatment, 12 studies of alternative surgical procedures), 2 level 2, 2 level 3, and 4 level 4 (2 prospective, 2 retrospective). Weighted averages of each outcomes measure were computed and compared with established minimal clinically important difference values.

RESULTS.: Fusion cohorts included a total of 3060 patients. The weighted average improvement in visual analogue scale back pain was 36.8/100 (standard deviation [SD], 14.8); in Oswestry Disability Index 22.2 (SD, 14.1); in SF-36 Physical Component Scale 12.5 (SD, 4.3). Patient satisfaction averaged 71.1% (SD, 5.2%) across studies. Radiographical fusion rates averaged 89.1% (SD, 13.5%), and reoperation rates 12.5% (SD, 12.4%) overall, 9.2% (SD, 7.5%) at the index level. The results of the collective studies did not differ statistically in any of the outcome measures based on level of evidence (analysis of variance, $P > 0.05$).

CONCLUSION.: The body of literature supports fusion surgery as a viable treatment option for reducing pain and improving function in patients with chronic LBP refractory to nonsurgical care when a diagnosis of disc degeneration can be made.

PMID: 23334400

Headache/Cluster/Migraine

Headache. 2013 Mar 27. doi: 10.1111/head.12077. [Epub ahead of print]

Migraine-Like Accompanying Features in Patients With Cluster Headache. How Important Are They?

Zidverc-Trajkovic J, Podgorac A, Radojicic A, Sternic N.

Source

School of Medicine, University of Belgrade, Belgrade, Serbia; Headache Center, Neurology Clinic, Clinical Center of Serbia, Belgrade, Serbia.

Abstract

BACKGROUND:

According to the International Classification of Headache Disorders diagnostic criteria, the differences between migraine and cluster headache (CH) are clear. In addition to headache attack duration and pain characteristics, the symptoms accompanying headache represent the key features in a differential diagnosis of these 2 primary headache disorders. Just a few studies of patients with CH exist examining the presence of nausea, vomiting, photophobia, phonophobia, and aura, the features commonly accompanying migraine headache. The aim of this study was to determine the presence of migraine-like features (MF) in patients with CH and establish the significance of these phenomena related to other clinical features and response to treatment.

METHODS:

One hundred and fifty-five patients with CH were studied, and 24.5% of them experienced at least one of MF during every CH attack. Nausea and vomiting were the most frequently reported MF. The clinical presentation between CH patients with and without MF was not significantly different with the exception of aggravation of pain by effort (20.6% vs 4.1%) and facial sweating (13.2% vs 0.85%), both more frequent in CH patients with MF.

CONCLUSION:

Inferred from the results of our study, the presence of MF in CH patients had no important influence on the diagnosis and treatment of CH patients. The major differences of these 2 primary headache disorders, attack duration, lateralization, and the nature of associated symptoms, as delineated in the International Classification of Headache Disorders, are still useful tools for effective diagnosis.

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PMID: 23534887

Pain/Genetics

Nat Rev Rheumatol. 2013 Apr 2. doi: 10.1038/nrrheum.2013.43. [Epub ahead of print]
The phenotypic and genetic signatures of common musculoskeletal pain conditions.

Diatchenko L, Filligim RB, Smith SB, Maixner W.

Source

Regional Center for Neurosensory Disorders, Koury Oral Health Sciences Building, University of North Carolina, Chapel Hill, NC 27599-7455, USA.

Abstract

Musculoskeletal pain conditions, such as fibromyalgia and low back pain, tend to coexist in affected individuals and are characterized by a report of pain greater than expected based on the results of a standard physical evaluation. The pathophysiology of these conditions is largely unknown, we lack biological markers for accurate diagnosis, and conventional therapeutics have limited effectiveness. Growing evidence suggests that chronic pain conditions are associated with both physical and psychological triggers, which initiate pain amplification and psychological distress; thus, susceptibility is dictated by complex interactions between genetic and environmental factors. Herein, we review phenotypic and genetic markers of common musculoskeletal pain conditions, selected based on their association with musculoskeletal pain in previous research. The phenotypic markers of greatest interest include measures of pain amplification and 'psychological' measures (such as emotional distress, somatic awareness, psychosocial stress and catastrophizing). Genetic polymorphisms reproducibly linked with musculoskeletal pain are found in genes contributing to serotonergic and adrenergic pathways. Elucidation of the biological mechanisms by which these markers contribute to the perception of pain in these patients will enable the development of novel effective drugs and methodologies that permit better diagnoses and approaches to personalized medicine.

PMID: 23545734

Stretching

[J Strength Cond Res.](#) 2013 Mar 21. [Epub ahead of print]

Acute effects of different stretching durations on passive torque, mobility, and isometric muscle force.

[Matsuo S, Suzuki S, Iwata M, Banno Y, Asai Y, Tsuchida W, Inoue T.](#)

Source

1Program in Physical and Occupational Therapy, Graduate School of Medicine, Nagoya University, Nagoya, Japan 2Department of Rehabilitation, Faculty of Health Sciences, Nihon Fukushi University, Handa, Japan 3Department of Rehabilitation, Nagoya University Hospital, Nagoya, Japan.

Abstract

Static stretching is widely applied in various disciplines. However, the acute effects of different durations of stretching are unclear. Therefore, the present study was designed to investigate the acute effects of different stretching durations on muscle function and flexibility, and provide insight into the optimal duration of static stretching. This randomized crossover trial included 24 healthy students (17 men and 7 women) who stretched their right hamstrings for durations of 20, 60, 180, and 300 s in a random order. The following outcomes were assessed using an isokinetic dynamometer as markers of lower limb function and flexibility: static passive torque (SPT), dynamic passive torque (DPT), stiffness, straight leg raise (SLR), and isometric muscle force. SPT was significantly decreased after all stretching durations ($p < 0.05$). SPT was significantly lower after 60, 180, and 300 s of stretching compared with after 20-s stretching, and stiffness decreased significantly after 180- and 300-s stretching ($p < 0.05$). In addition, DPT and stiffness were significantly lower after 300 s than after 20-s stretching ($p < 0.05$), and SLR increased significantly after all stretching durations ($p < 0.05$). SLR was higher after 180- and 300-s stretching than after 20-s stretching and higher after 300-s stretching than after 60-s stretching ($p < 0.05$). Isometric muscle force significantly decreased after all stretching durations ($p < 0.05$). Therefore, increased duration of stretching is associated with a decrease in SPT but an increase in SLR. Over 180 s of stretching was required to decrease DPT and stiffness, but isometric muscle force decreased regardless of stretching duration. In conclusion, these results indicate that longer durations of stretching are needed to provide better flexibility.

PMID: 23524367

LBP/Repositioning sense

Man Ther. 2013 Mar 18. pii: S1356-689X(13)00034-9. doi: 10.1016/j.math.2013.02.005. [Epub ahead of print]

Lumbar spine repositioning sense in adolescents with and without non-specific chronic low back pain - An analysis based on sub-classification and spinal regions.

Astfalck RG, O'Sullivan PB, Smith AJ, Straker LM, Burnett AF.

Source

Curtin University of Technology, Perth, Western Australia, Australia.

Abstract

OBJECTIVE:

To identify differences in repositioning error in adolescents with and without non-specific chronic low back pain (NSCLBP), sub-groups of NSCLBP and in different spinal regions.

METHODS:

Spinal repositioning error was measured during a seated task. Variables were constant error (CE), absolute error (AE) and variable error (VE) for lower lumbar, upper lumbar and lumbar angles. 28 subjects with NSCLBP were sub-classified using O'Sullivan's system and compared to 28 healthy controls.

RESULTS:

Significant differences were noted for AE between adolescents with and without NSCLBP, but no differences were found for CE or VE. When sub-grouped there was a pattern for lower AE and higher VE in the flexion sub-group. This group also displayed a tendency to undershoot the criterion position in the lower lumbar spine. Greater VE was noted in the extension sub-group and those with no NSCLBP in the upper lumbar compared to the lower lumbar spine.

CONCLUSIONS:

Differences in spinal repositioning errors were noted between adolescents with and without NSCLBP and sub-groups of NSCLBP. Those with flexion-pattern NSCLBP had the lowest levels of spinal repositioning ability. Individuals with no-LBP (low-back pain) or extension-pattern NSCLBP displayed greater variability in the upper lumbar spine.

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PMID:23518039

LBP/Cancer

[Man Ther.](#) 2013 Mar 17. pii: S1356-689X(13)00038-6. doi: 10.1016/j.math.2013.02.009. [Epub ahead of print]

Metastatic disease masquerading as mechanical low back pain; atypical symptoms which may raise suspicion.

[Finucane L.](#)

Source

Spinal Clinic, First Community Health and Care, Musculoskeletal Interface Team, Oxted Therapies Unit, Barnetts Shaw Way, Oxted RH8 0NQ, UK. Electronic address: Laura.finucane@nhs.net.

Abstract

Clinicians working in spinal clinics and outpatient settings are faced with the possibility of identifying patients with serious pathology causing back pain. Spinal metastatic disease is the most common serious pathology seen in non-surgical spinal clinics, with breast cancer being the most common cause of spinal metastases in women (Van Goethem et al., 2004). This case report describes the assessment and treatment of a patient presenting with low back pain radiating into the abdomen and bilateral anterior thigh pain, which was metastatic in origin. This case highlights the importance of early diagnosis of metastatic disease, and identifies symptoms that may help to raise the index of suspicion for the clinician.

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PMID:23514713

LBP/Motor Control

[Spine \(Phila Pa 1976\)](#). 2013 Mar 15;38(6):E350-8. doi: 10.1097/BRS.0b013e31828435fb.

Motor control exercises reduces pain and disability in chronic and recurrent low back pain: a meta-analysis.

[Byström MG](#), [Rasmussen-Barr E](#), [Grooten WJ](#).

Source

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Abstract

STUDY DESIGN.: Meta-analysis of randomized, controlled trials. **OBJECTIVE.:** To determine the short-term, intermediate, and long-term effectiveness of MCE, with regard to pain and disability, in patients with chronic and recurrent low-back pain. **SUMMARY OF BACKGROUND DATA.:** Previous meta-analyses have shown no difference between the effects of MCE and general exercise in the treatment of low back pain. Several high quality studies on this topic have been published lately, warranting a new meta-analysis. **METHODS.:** We searched electronic databases up to October 2011 for randomized controlled trials clearly distinguishing MCE from other treatments. We extracted pain and disability outcomes and converted them to a 0 to 100 scale. We used the RevMan5 (Nordic Cochrane Centre, Copenhagen, Denmark) software to perform pooled analyses to determine the weighted mean differences (WMDs) between MCE and 5 different control interventions. **RESULTS.:** Sixteen studies were included. The pooled results favored MCE compared with general exercise with regard to disability during all time periods (improvement in WMDs ranged from -4.65 to -4.86), and with regard to pain in the short and intermediate term (WMDs were -7.80 and -6.06, respectively). Compared with spinal manual therapy, MCE was superior with regard to disability during all time periods (the WMDs ranged between -5.27 and -6.12), but not with regard to pain. Furthermore, MCE was superior to minimal intervention during all time periods with regard to both pain (the WMDs ranged between -10.18 and -13.32) and disability (the WMDs ranged between -5.62 and -9.00). **CONCLUSION.:** In patients with chronic and recurrent low back pain, MCE seem to be superior to several other treatments. More studies are, however, needed to investigate what subgroups of patients experiencing LBP respond best to MCE.

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C spine/expectations

[J Orthop Sports Phys Ther](#). 2013 Mar 18. [Epub ahead of print]

Patient Expectations of Benefit from Interventions for Neck Pain and Resulting Influence on Outcomes.

[Bishop MD](#), [Mintken PE](#), [Bialosky JE](#), [Cleland JA](#).

OBJECTIVES:

The objectives of this study were to 1) examine patients' general expectations for treatment by physical therapists and specific expectations for common interventions in patients with neck pain; and 2) assess the extent to which the patients' general and specific expectations for treatment affect clinical outcomes.

BACKGROUND:

Patient expectations can have a profound influence on the magnitude of treatment outcome across a broad variety of patient conditions.

METHODS:

We performed a secondary analysis of data from a clinical trial of interventions for neck pain. Prior to beginning treatment for neck pain, 140 patients were asked their general expectations of benefit as well as their specific expectations for individual interventions. Next we examined how these expectations related to the patients' ratings of the success of treatment at one and six months after treatment.

RESULTS:

Patients had positive expectations for treatment by a physical therapist with more than 80% of patients expecting to have moderate relief of symptoms, prevention of disability, the ability to do more activity, and to sleep better. The manual therapy interventions of massage (87%) and manipulation (75%) had the highest proportion of patients who expected these interventions to significantly improve neck pain. These were followed by strengthening (70%) and range of motion (54%) exercises. Very few patients thought surgery would improve their neck pain (<1%). At 1-month, patients who were unsure of experiencing complete pain relief had lower odds than patients expecting complete relief (OR 0.33, 95%CI 0.11, 0.99). Believing that manipulation would help and not receiving manipulation lowered the odds of success (OR 0.16, 95%CI 0.04, 0.72) compared to believing manipulation would help and receiving manipulation. Six months after treatment, having unsure expectations for complete pain relief lowered the odds of success 0.19 (95%CI 0.05, 0.7) times while definitely expecting to do more exercise increased odds of success (OR 11.4, 95%CI 1.7, 74.7) times. When considering self-reported disability, patients who believed manipulation would help and received manipulation reported less disability than those who didn't believe manipulation would help and both received manipulation (difference of -3.8, 95%CI -5.9, -1.5; p=0.006) and did not receive manipulation (difference of -5.7, 95%CI -9.3, -2.1; p=0.014). There was also an interaction between time and the expectation for complete relief. Here, participants who expected complete relief had greater changes in disability at 1-month (20.3% 95%CI 18.1, 22.6) compared to those participants who did not expect complete relief (14.1%, 95%CI 11.1, 17.0; p=0.014).

CONCLUSION:

General expectations of benefit have a strong influence on clinical outcomes for patients with neck pain.

LEVEL OF EVIDENCE:

Prognosis, level 2b.J Orthop Sports Phys Ther, Epub 18 March 2013.
doi:10.2519/jospt.2013.4492. PMID:23508341

Strengthening

[J Strength Cond Res.](#) 2013 Mar 21. [Epub ahead of print]

PERFORMANCE AND NEUROMUSCULAR ADAPTATIONS FOLLOWING DIFFERING RATIOS OF CONCURRENT STRENGTH AND ENDURANCE TRAINING.

[Jones TW](#), [Howatson G](#), [Russell M](#), [French DN](#).

Source

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Abstract

The interference effect attenuates strength and hypertrophic responses when strength and endurance training are conducted concurrently; however, the influence of training frequency upon these responses remain unclear when varying ratios of concurrent strength and endurance training are performed. Therefore the purpose of the study was to examine the strength, limb girth and neuromuscular adaptations to varying ratios of concurrent strength and endurance training. Twenty four men with >2 years resistance training experience completed 6 weeks of 3 d·wk of i) strength training (ST), ii) concurrent strength and endurance training ratio 3:1 (CT3), iii) concurrent strength and endurance training ratio 1:1 (CT1) or iv) no training (CON) in an isolated limb model. Assessments of maximal voluntary contraction via isokinetic dynamometry leg extensions (MVC), limb girth and neuromuscular responses via electromyography (EMG) were conducted at baseline, mid-intervention and post-intervention. Following training, ST and CT3 conditions elicited greater MVC increases than CT1 and CON conditions ($P \leq 0.05$). ST resulted in significantly greater increases in limb girth than both CT1 and CON conditions ($P = 0.05$ and 0.004 respectively). CT3 induced significantly greater limb girth adaptations than CON condition ($P = 0.04$). No effect of time or intervention was observed for EMG ($P > 0.05$). In conclusion greater frequencies of endurance training performed increased the magnitude of the interference response on strength and limb girth responses following 6 weeks of 3-d· of training.

Therefore, the frequency of endurance training should remain low if the primary focus of the training intervention is strength and hypertrophy.

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[J Orthop Sports Phys Ther.](#) 2013;43(4):204-13. doi: 10.2519/jospt.2013.4524. Epub 2013 Mar 13.

The effectiveness of a manual therapy and exercise protocol in patients with thumb carpometacarpal osteoarthritis: a randomized controlled trial.

[Villafañe JH](#), [Cleland JA](#), [Fernández-de-Las-Peñas C](#).

Abstract

STUDY DESIGN:

Double-blind, randomized controlled trial.

OBJECTIVE:

To examine the effectiveness of a manual therapy and exercise approach relative to a placebo intervention in individuals with carpometacarpal (CMC) joint osteoarthritis (OA).

BACKGROUND:

Recent studies have reported the outcomes of exercise, joint mobilization, and neural mobilization interventions used in isolation in patients with CMC joint OA. However, it is not known if using a combination of these interventions as a multimodal approach to treatment would further improve outcomes in this patient population.

METHODS:

Sixty patients, 90% female (mean \pm SD age, 82 \pm 6 years), with CMC joint OA were randomly assigned to receive a multimodal manual treatment approach that included joint mobilization, neural mobilization, and exercise, or a sham intervention, for 12 sessions over 4 weeks. The primary outcome measure was pain. Secondary outcome measures included pressure pain threshold over the first CMC joint, scaphoid, and hamate, as well as pinch and strength measurements. All outcome measures were collected at baseline, immediately following the intervention, and at 1 and 2 months following the end of the intervention. Mixed-model analyses of variance were used to examine the effects of the interventions on each outcome, with group as the between-subject variable and time as the within-subject variable.

RESULTS:

The mixed-model analysis of variance revealed a group-by-time interaction ($F = 47.58$, $P < .001$) for pain intensity, with the patients receiving the multimodal intervention experiencing a greater reduction in pain compared to those receiving the placebo intervention at the end of the intervention, as well as at 1 and 2 months after the intervention ($P < .001$; all group differences greater than 3.0 cm, which is greater than the minimal clinically important difference of 2.0 cm). A significant group-by-time interaction ($F = 3.19$, $P = .025$) was found for pressure pain threshold over the hamate bone immediately after the intervention; however, the interaction was no longer significant at 1 and 2 months postintervention.

CONCLUSION:

This clinical trial provides evidence that a combination of joint mobilization, neural mobilization, and exercise is more beneficial in treating pain than a sham intervention in patients with CMC joint OA. However, the treatment approach has limited value in improving pressure pain thresholds, as well as pinch and grip strength. Future studies should include several therapists, a measure of function, and long-term outcomes. Trial registration: Current Controlled Trials ISRCTN37143779.

LEVEL OF EVIDENCE:

Therapy, level 1b. [J Orthop Sports Phys Ther](#) 2013;43(4):204-213. Epub 13 March 2013. doi:10.2519/jospt.2013.4524.PMID:23485660

Shoulder/Claviclectomy

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Three-dimensional shoulder kinematics after total claviclectomy: A biomechanical investigation of a single case.

Camargo PR, Phadke V, Braman JP, Ludewig PM.

Source

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Abstract

Since total claviclectomy is an uncommon surgical procedure, few case reports exist in the literature. This report describes the three-dimensional scapulothoracic kinematics in a subject with unilateral total claviclectomy. Kinematic data were collected during shoulder protraction with arms at the side of the body, horizontal arm adduction at 90° of elevation, humeral internal/external rotation with the arm at 90° of elevation in the frontal plane, and elevation and lowering of the arm in the sagittal plane. Descriptive data were compared to the subject's contralateral shoulder. Scapulohumeral rhythm during arm elevation in the sagittal plane was calculated for both sides. Overall the subject demonstrated excessive scapular mobility. However, kinematics during elevation were similar to the contralateral side during elevation. The subject demonstrates good muscle control despite the lack of normal sternoclavicular and acromioclavicular joint articulations. His relatively well-preserved shoulder biomechanics belied his ongoing symptoms, especially involving pain with activities that required use of the arm away from the side.

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Sit to stand/Lumbar Spine

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Upper and lower lumbar segments move differently during sit-to-stand.

[Parkinson S](#), [Campbell A](#), [Dankaerts W](#), [Burnett A](#), [O'Sullivan P](#).

Source

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Abstract

Sit-to-stand (STS) is a functional dynamic task, requiring movement of the lumbar spine, however, little is known about whether regional differences or between-gender differences exist during this task. The aim of this study was to confirm whether kinematic differences existed within regions of the lumbar spine during STS and also to determine whether between-gender differences were evident. An electromagnetic measurement device, recording at 25 Hz, determined how different lumbar spine regions (combined, lower and upper) moved during STS in 29 healthy participants (16 males, 13 females). Discrete outputs including mean range of motion (ROM), maximum and minimum were calculated for each lumbar spine region. Analyses of covariance (ANCOVA) with repeated measures were used to determine whether regional differences and between-gender differences were evident in the lumbar spine during STS. With the lumbar spine modelled as two segments, the lower lumbar (LLx) and upper lumbar (ULx) regions made different contributions to STS: $F_{1,27} = 21.8$; $p < 0.001$. No between-gender differences were found with the lumbar spine modelled as a single region (combined lumbar: CLx), however, modelled as two regions there was a significant gender difference between the LLx and ULx regions: $F_{1,27} = 7.3$ ($p = 0.012$). The results indicate that modelling the lumbar spine as a single segment during STS does not adequately represent lumbar spine kinematics and there are important gender differences. These findings also need to be considered when investigating STS in clinical populations.

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