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LBP

Yoga and LBP

J Back Musculoskelet Rehabil. 2014 Sep 29.

Disc extrusions and bulges in nonspecific low back pain and sciatica: Exploratory randomised controlled trial comparing yoga therapy and normal medical treatment.

Monro R1, Bhardwaj AK2, Gupta RK2, Telles S2, Allen B3, Little P3.

Abstract

BACKGROUND:

Previous trials of yoga therapy for nonspecific low back pain (nsLBP) (without sciatica) showed beneficial effects.

OBJECTIVE:

To test effects of yoga therapy on pain and disability associated with lumbar disc extrusions and bulges.

METHODS:

Parallel-group, randomised, controlled trial. Sixty-one adults from rural population, aged 20-45, with nsLBP or sciatica, and disc extrusions or bulges. Randomised to yoga (n=30) and control (n=31). Yoga: 3-month yoga course of group classes and home practice, designed to ensure safety for disc extrusions. Control: normal medical care. **OUTCOME MEASURES** (3-4 months)
Primary: Roland Morris Disability Questionnaire (RMDQ); worst pain in past two weeks.
Secondary: Aberdeen Low Back Pain Scale; straight leg raise test; structural changes.

RESULTS:

Disc projections per case ranged from one bulge or one extrusion to three bulges plus two extrusions. Sixty-two percent had sciatica. Intention-to-treat analysis of the RMDQ data, adjusted for age, sex and baseline RMDQ scores, gave a Yoga Group score 3.29 points lower than Control Group (0.98, 5.61; p=0.006) at 3 months. No other significant differences in the endpoints occurred. No adverse effects of yoga were reported.

CONCLUSIONS:

Yoga therapy can be safe and beneficial for patients with nsLBP or sciatica, accompanied by disc extrusions and bulges.

INJECTIONS

Transforaminal versus parasagittal injections

Pain Physician 2014;17;277-290.

Transforaminal Versus Parasagittal Interlaminar Epidural Steroid Injection in Low Back Pain with Radicular Pain: A Randomized, Double-Blind, Active-Control Trial

Babita Ghai, MD, Dipika Bansal, MD, DM, Jonan Puni Kay, MD, Kaivalya Sadashiv Vadaje, MD, and Jyotsna Wig, MD

BACKGROUND: Epidural injections are the most common minimally invasive intervention used to manage low back pain with lumbosacral radicular pain. It can be delivered through either transforaminal (TF), interlaminar, or caudal approaches. The TF approach is considered more efficacious than the interlaminar approach probably because of ventral epidural spread. However, catastrophic complications reported with the TF approach have raised concerns regarding its use. These concerns regarding the safety of the TF approach lead to the search for a technically better route with lesser complications with drug delivery into the ventral epidural space. The parasagittal interlaminar (PIL) route is reported to have good ventral epidural spread. However, there is a paucity of literature comparing the effectiveness of PIL with TF.

OBJECTIVES: To compare effectiveness of PIL and TF epidural injections for managing low back pain with lumbosacral radicular pain. **STUDY DESIGN:** Randomized, double-blind, active-control study. **SETTING:** Interventional pain management clinic in a tertiary care center in India.

METHODS: Sixty-two patients were randomized to receive fluoroscopically guided epidural injection of methylprednisolone (80 mg) either through the PIL (n = 32) or TF (n = 30) approach. Patients were evaluated for effective pain relief (= 50% from baseline) by 0 – 100 visual analogue scale (VAS) and functional improvement by Modified Oswestry Disability Questionnaire (MODQ) at 2 weeks, 1, 2, 3, 6, 9, and 12 months. Patients who failed to respond to the treatment or when the patient's response deteriorated received additional injection of same injectate, dose, and approach. Only if the pain returns should there be a maximum of 3 injections. Other outcome measures were overall VAS and MODQ, number of injections, and presence of ventral and perineural spread.

RESULTS: Effective pain relief (= 50% pain relief from baseline on VAS) was observed in 76% (90% CI 60.6 – 88.5%) of patients in the TF group and 78% (90% CI 62.8 – 89.3%) of patients in the PIL (P = 1.00) group at 3 months. The pain relief survival period was comparable in both groups (P = 0.98). Significant reduction in VAS and improvement in MODQ were observed at all time points post-intervention compared to baseline (P < 0.001) in both groups. On average, patients in the PIL group received 1.84 and patients in the TF group received 1.92 procedures annually. The majority received injection at L4-L5 intervertebral level (24 in TF and 23 in PIL). Ventral epidural spread was comparable in both groups (PIL – 91.6% and TF – 89.6%). No major complications were encountered in either group; however, initial intravascular spread of contrast was observed in 3 patients in the TF group.

LIMITATIONS: Limitations included lack of documentation of adjuvant analgesic drug therapy and procedures performed by a single experienced interventionalist.

CONCLUSIONS: Epidural injection delivered through the PIL approach is equivalent in achieving effective pain relief and functional improvement to the TF approach for the management of low back pain with lumbosacral radicular pain. The PIL approach can be considered a suitable alternative to the TF approach for its equivalent

effectiveness, probable better safety profile, and technical ease.

Radiofrequency

Pain Research and Management

September/October 2014, Volume 19 Issue 5: e146-e153

Radiofrequency ablation for chronic low back pain: A systematic review of randomized controlled trials

LE Leggett | LJJ Soril | DL Lorenzetti | T Noseworthy | R Steadman | S Tiwana | F Clement

BACKGROUND: Radiofrequency ablation (RFA), a procedure using heat to interrupt pain signals in spinal nerves, is an emerging treatment option for chronic low back pain. Its clinical efficacy has not yet been established.

OBJECTIVE: To determine the efficacy of RFA for chronic low back pain associated with lumbar facet joints, sacroiliac joints, discogenic low back pain and the coccyx.

METHODS: A systematic review was conducted. Medline, EMBASE, PubMed, SPORTDiscus, CINAHL and the Cochrane Library were searched up to August 2013. Abstracts and full-text articles were reviewed in duplicate. Included articles were sham-controlled randomized controlled trials (RCTs), assessed the efficacy of RFA, reported at least one month of follow-up and included participants who had experienced back pain for at least three months. Data were extracted in duplicate and quality was assessed using the Cochrane Risk of Bias tool. Due to heterogeneity, as well as a lack of reported mean differences and SDs, meta-analysis was not possible using these data.

RESULTS: The present systematic review retrieved 1063 abstracts. Eleven sham-controlled RCTs were included: three studies involving discogenic back pain; six studies involving lumbar facet joint pain; and two studies involving sacroiliac joint pain. No studies were identified assessing the coccyx. The evidence supports RFA as an efficacious treatment for lumbar facet joint and sacroiliac joint pain, with five of six and both of the RCTs demonstrating statistically significant pain reductions, respectively. The evidence supporting RFA for the treatment of discogenic pain is mixed.

CONCLUSIONS: While the majority of the studies focusing on lumbar facet joints and sacroiliac joints suggest that RFA significantly reduces pain in short-term follow-up, the evidence base for discogenic low back pain is mixed. There is no RCT evidence for RFA for the coccyx. Future studies should examine the clinical significance of the achieved pain reduction and the long-term efficacy of RFA.

SURGERY

LBP ablation

Pain Pract. 2014 Jun 24. doi: 10.1111/papr.12224.

Treatment of Common Low Back Pain: A New Approach to an Old Problem.

Bosscher HA¹, Heavner JE.

Abstract

Low back pain is very common, but the pathophysiology is poorly understood.

We present a new hypothesis regarding the pathophysiology of common low back pain supported by our flexible endoscopic observations of the epidural cavity (epiduroscopy), anatomic dissection of embalmed and fresh cadavers, and careful review of preexisting information available on the anatomy of the epidural space and neuroforamen.

A new approach to the treatment of common low back pain based on the hypothesis was developed and is presented in the case reports of five patients. Treatment focuses on a perichondrium derivative; the peridural membrane, which creates a suprapedicular compartment in the neuroforamen where we hypothesize inflammatory material accumulates. This produces common low back pain by causing inflammation and sensitization of the peridural membrane and periosteum that forms the boundaries of this compartment.

Percutaneous Ablation and Curettage and Inferior Foraminotomy (PACIFsm) aims to destroy the peridural membrane, denervate sensitive structures, and remove inflammatory tissues from the suprapedicular canal. The proposed mechanism of action and safety of PACIFsm is discussed in the context of epidural and neuroforaminal anatomy. As shown by the five case reports, PACIFsm appears to be highly effective and safe, warranting further evaluation.

VISCERA/PELVIC FLOOR**Vaginal pain**

J Sex Med. 2014 Oct 20. doi: 10.1111/jsm.12717.

Neurological Treatment for Vaginal Pain: Does Etiology Matter? A Systematic Review and Meta-Analysis.

Flanagan E¹, Herron KA, O'Driscoll C, Williams AC.

Abstract**INTRODUCTION:**

Classification of vaginal pain within medical or psychiatric diagnostic systems draws mainly on the presumed presence or absence (respectively) of underlying medical etiology. A focus on the experience of pain, rather than etiology, emphasizes common ground in the aims of treatment to improve pain and sexual, emotional, and cognitive experience. Thus, exploring how vaginal pain conditions with varying etiology respond to psychological treatment could cast light on the extent to which they are the same or distinct.

AIM:

To examine the combined and relative efficacy of psychological treatments for vaginal pain conditions.

METHODS:

A systematic search of EMBASE, MEDLINE, PsycINFO, and CINAHL was undertaken. Eleven randomized controlled trials were entered into a meta-analysis, and standardized mean differences and odds ratios were calculated. Effect sizes for individual psychological trial arms were also calculated.

MAIN OUTCOME MEASURES:

Main outcome measures were pain and sexual function.

RESULTS:

Equivalent effects were found for psychological and medical treatments. Effect sizes for psychological treatment arms were comparable across vaginal pain conditions.

CONCLUSIONS:

Effectiveness was equivalent regardless of presumed medical or psychiatric etiology, indicating that presumed etiology may not be helpful in selecting treatment. Research recommendations and clinical implications are discussed. Flanagan E, Herron KA, O'Driscoll C, and Williams AC de C. Psychological treatment for vaginal pain: Does etiology matter? A systematic review and meta-analysis. J Sex Med **:**:*_*_*.

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KEYWORDS: Dyspareunia; Psychotherapy; Sexual Dysfunction; Vaginismus; Vestibulodynia; Vulvodynia PMID: 25329756

CERVICAL SPINE

Endurance tests

J Manipulative Physiol Ther. 2008 Jun;31(5):348-54. doi: 10.1016/j.jmpt.2008.04.010.

Reliability of isometric muscle endurance tests in subjects with postural neck pain.

Edmondston SJ¹, Wallumrød ME, Macléid F, Kvamme LS, Joebges S, Brabham GC

Abstract

OBJECTIVE:

The purpose of this study was to determine the reliability of 3 isometric muscle endurance tests in subjects with postural neck pain.

METHODS:

Twenty-one subjects with chronic postural neck pain performed 3 submaximal muscle tests twice on the first occasion and once at the second session 3 days later. The tests examined isometric neck flexion, neck extension, and scapular muscle endurance.

RESULTS:

Reliability was excellent for the neck flexor test (intraclass correlation coefficient [ICC] = 0.93), moderate for the scapular test (ICC = 0.67), and good for the neck extensor test (ICC = 0.88). The standard error of measure for the tests was 6.4, 10.9, and 25.9 seconds, respectively. The minimum change required to represent real change in muscle endurance was 17.8 seconds for the neck flexor test, 30.1 seconds for the scapular test, and 71.3 seconds for the neck extensor test.

CONCLUSION:

This study showed the reliability of 3 cervical spine and shoulder girdle submaximal muscle endurance tests in patients with postural neck pain.

PMID: 18558277

HEADACHES

Migraine and stress and depression

Int J Womens Health. 2014 Oct 24;6:921-5. doi: 10.2147/IJWH.S62922. eCollection 2014.

Migraine: is it related to hormonal disturbances or stress?

Parashar R¹, Bhalla P², Rai NK³, Pakhare A⁴, Babbar R⁵.

Abstract

BACKGROUND:

Common neurological syndrome (migraine without aura) is more common among women than men. Migraine is among the top 20 causes of disability. Menstruation is known to be a powerful trigger for migraine, and so is stress, but the presentation of headache is similar in both. Also, women are more vulnerable to stress as well as migraine, and this makes a complex relationship of menstruation, stress, and migraine.

OBJECTIVE:

This study was done to understand the association of hormonal fluctuation in menstruation and stress with common migraine.

MATERIALS AND METHODS:

A cross-sectional comparative study was conducted in 40 young adult females, of whom 20 participants were cases of migraine without aura (18-35 years old), and the remaining 20 participants were age-matched controls. The study was done in Maulana Azad Medical College, New Delhi. Study participants were selected on the basis of International Headache Society (ICHD-IIA1.1) (2004) classification. Study participants with neurological disorders, chronic diseases, and disease suggestive of any hormonal disturbances were excluded. Clinically diagnosed migraine cases were asked to maintain a headache diary and to fill in the Depression Anxiety Stress Scales questionnaire. Biochemical assessment of hormonal status for thyroid-stimulating hormone, triiodothyronine, thyroxine, estrogen, follicle-stimulating hormone, luteinizing hormone, and prolactin was also done on the second day of their menstrual cycle. We used the Mann-Whitney U test to compare hormonal levels and the χ^2 test to compare anxiety- or depression-related stress among the migraine and nonmigraine groups.

RESULTS:

Significantly higher values of prolactin were observed in cases (mean \pm standard deviation, 152.7 mIU/L \pm 30.5) compared to controls (76.1 mIU/L \pm 8.7), with a P-value <0.001. There was no statistically significant difference observed in levels of thyroid-stimulating hormone (P=0.081), estrogen (P=0.086), luteinizing hormone (P=0.091), or follicle-stimulating hormone (P=0.478). Also, anxiety with stress or depression with stress was significantly higher among the migraine group than the controls (P=0.002). Odds of any stress in migraine were higher in the migraine group than in the nonmigraine group (odds ratio 12, 95% confidence interval 2.7-53.33).

CONCLUSION:

Migraine, particularly without aura, in women is mainly associated with stress-related anxiety or depression, and are more susceptible to stress in the premenstrual period.

KEYWORDS: menstruation; migraine; stress PMID: 25368535

Mental disorders and headaches

The associations between pre-existing mental disorders and subsequent onset of chronic headaches: a worldwide epidemiological perspective

The Journal of Pain, 11/04/2014 Clinical Article

Bruffaerts R, et al.

Abstract

Although there is a significant association between pre-existing depression and later onset of chronic headache, the extent to which other pre-existing mental disorders are associated with subsequent onset of headache in the general population is not known. Also unknown is the extent to which these associations vary by gender or by life course. We report global data from the WHO's World Mental Health surveys (N=52,095), in which, by means of the Composite International Diagnostic Interview-3.0 (CIDI-3.0), 16 DSM-IV mental disorders were retrospectively assessed in terms of lifetime prevalence and age-of-onset. Frequent or severe headaches were assessed using self-reports. After adjustment for covariates, survival models showed a moderate but consistent association between pre-existing mood (ORs 1.3-1.4), anxiety (ORs 1.2-1.7), and impulse-control disorders (ORs 1.7-1.9) and the subsequent onset of headache. We also found a dose-response relationship between the number of pre-existing mental disorders and subsequent headache onset (OR ranging between 1.9 for 1 up to 3.4 for 5+ pre-existing mental disorders). Our findings suggest a consistent and pervasive relationship between a wide range of pre-existing mental disorders and the subsequent onset of headaches. This highlights the importance of assessing a broad range of mental disorders, not just depression, as specific risk factors for the subsequent onset of frequent or severe headaches.

Perspective

This study shows that there is a temporal association between a broad range of pre-existing mental disorders and the subsequent onset of severe or frequent headaches in general population sample across the world.


Indexing: [epidemiology](#), [pre-existing mental disorders](#), [headache onset](#)

HA and limited upper cervical mobility

Journal of Bodywork and Movement Therapies

Volume 18, Issue 4, Pages 569–575, October 2014

Upper cervical mobility, posture and myofascial trigger points in subjects with episodic migraine: Case-control study

Danit Tali, BPT [Itay Menahem](#), BPT, [Elisha Vered](#), BPT, Med, [Leonid Kalichman](#), PT, PhD 

Summary

Objectives

To evaluate the association between episodic migraines and the prevalence of myofascial trigger points (MTrPs) in the sternocleidomastoid and upper trapezius, forward head posture (FHP), neck range of motion (ROM) and cervical facet joint stiffness.

Methods

20 physiotherapy students with episodic migraines and 20 age- and sex matched healthy controls were included in this observational case-control study. Demographics and headache status were evaluated through questionnaires. Active neck ROM, presence of MTrPs, and cervical facet joint mobility were assessed by physical examination. FHP was measured using a lateral digital photograph taken in a sitting position.

Results

No significant differences were found in neck ROM measurements and FHP between the migraine and control groups. Significant differences were found in the prevalence of cervical facet joints stiffness in Occiput-C1 ($\chi^2 = 4.444, p = 0.035$) and C1–C2 ($\chi^2 = 10.157, p = 0.001$), but not in other segments. Significant differences were found in the prevalence of active and latent MTrPs between the migraine and control subjects in the right trapezius ($\chi^2 = 11.649, p = 0.003$) and right sternocleidomastoid ($\chi^2 = 8.485, p = 0.014$).

Conclusions

Our findings support the hypothesis that the prevalence of MTrPs in neck muscles and hypomobility in the upper cervical facet joints are associated with migraines.

Keywords:

[Forward head posture](#), [Migraine](#), [Myofascial trigger points](#), [Neck mobility](#), [Facet joints mobility](#)

GLENOHUMERAL/SHOULDER

Instability open vs arthroscopic

Arthroscopy. 2014 Sep 9. pii: S0749-8063(14)00614-8. doi: 10.1016/j.arthro.2014.07.008.

Do Arthroscopic and Open Stabilization Techniques Restore Equivalent Stability to the Shoulder in the Setting of Anterior Glenohumeral Instability? A Systematic Review of Overlapping Meta-analyses.

Chalmers PN1, Mascarenhas R2, Leroux T3, Sayegh ET4, Verma NN2, Cole BJ2, Romeo AA2.

Abstract

PURPOSE:

Shoulder instability frequently recurs in young patients without operative treatment. Both open and arthroscopic approaches to shoulder stabilization with labral repair and capsulorrhaphy have been described and are routinely used. Multiple trials have been conducted to compare these approaches, with multiple meta-analyses performed to synthesize these trials; however, the results remain controversial. The purpose of this study was to critically evaluate the current meta-analyses to identify the current state of the art.

METHODS:

In this study we evaluate available scientific support for the ability of both arthroscopic and open soft-tissue stabilization techniques to restore stability of the shoulder by performing a systematic review of the literature for previous meta-analyses. Data were extracted for rates of recurrence and patient outcomes. Study quality was measured with the Oxman-Guyatt and QUOROM (Quality of Reporting of Meta-analyses) systems. The Jadad algorithm was applied independently by 4 authors to determine which meta-analysis provided the highest level of available evidence.

RESULTS:

After application of the inclusion and exclusion criteria, 8 meta-analyses were included. Both studies published prior 2007 concluded that open stabilization provided lower recurrence rates than arthroscopic stabilization, the 3 studies published in 2007 are discordant, and all 3 studies published after 2008 concluded that open and arthroscopic stabilization provided equivalent results. Two meta-analyses had low Oxman-Guyatt scores (<3) signifying major flaws. Four authors independently selected the same meta-analysis as providing the highest quality of evidence using the Jadad algorithm, and this meta-analysis found no difference in recurrence rates between open and arthroscopic stabilization.

CONCLUSIONS:

This systematic review of overlapping meta-analyses comparing arthroscopic and open shoulder stabilization suggests that according to current best available evidence, there are no significant differences in failure rates.

LEVEL OF EVIDENCE: Level IV, systematic review of Level I through IV studies.

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ROTATOR CUFF

Immediate vs. delayed rotator cuff tear surgery

Arthroscopy. 2014 Oct 8. pii: S0749-8063(14)00713-0. doi: 10.1016/j.arthro.2014.08.014.

Are Delayed Operations Effective for Patients With Rotator Cuff Tears and Concomitant Stiffness? An Analysis of Immediate Versus Delayed Surgery on Outcomes.

Kim YS¹, Lee HJ², Park I¹, Im JH¹, Park KS¹, Lee SB³.

Abstract

PURPOSE:

The purpose of this study was to compare the clinical outcomes of immediate rotator cuff repair with capsular release and those of rotator cuff repair after the stiffness was treated with rehabilitative therapy.

METHODS:

Between June 2007 and December 2010, we recruited 63 patients with rotator cuff tears and stiffness. In 33 patients arthroscopic rotator cuff repair was performed with capsular release simultaneously (group I). In 30 patients arthroscopic rotator cuff repair was performed after 6 months of preoperative rehabilitation for stiffness (group II). The American Shoulder and Elbow Surgeons score, Simple Shoulder Test score, Constant score, and visual analog scale score for pain and range of motion (ROM) were assessed at the start of the study; at 3, 6, and 12 months; and at the last visit. The postoperative cuff tendon integrity was assessed between 6 and 12 months using magnetic resonance or ultrasound images.

RESULTS:

There were no significant differences in preoperative demographic data between the groups ($P > .05$). The mean follow-up period was 21.54 months. After treatment, there was significant improvement in ROM and functional scores in both groups, as measured at the last follow-up ($P < .05$). No statistical differences were found in clinical scores and ROM at the last follow-up ($P > .05$). On assessment of the magnetic resonance or ultrasound images taken 6 to 12 months postoperatively, the retear rate for the repaired cuff tendon in each group was 12.1% in group I and 13.4% in group II.

CONCLUSIONS:

In the treatment of rotator cuff tears with stiffness, satisfactory results can be achieved either by repairing the tear with simultaneous capsular release or by waiting to perform the repair after preoperative rehabilitation for stiffness. Because a delayed rotator cuff repair after improving ROM offered no clear advantage over an immediate operation, we recommend surgically treating rotator cuff tears with concomitant stiffness early using a simultaneous capsular release method to save time and to avoid unnecessary rehabilitation.

LEVEL OF EVIDENCE: Level III, retrospective comparative study.

Copyright © 2014 Arthroscopy Association of North America. Published by Elsevier Inc. All rights reserved. PMID: 25306517

ELBOW

Lateral epicondylitis

Sports Med Arthrosc. 2014 Sep;22(3):e1-6. doi: 10.1097/JSA.000000000000024.

Epicondylitis: lateral.

Brummel J¹, Baker CL 3rd, Hopkins R, Baker CL Jr.

Abstract

Lateral epicondylitis is the most common cause of lateral elbow pain in adults. Although it is typically a self-limiting process, there are many nonsurgical and surgical treatment options available if lateral epicondylitis becomes chronic and continues to cause pain. Its common name, tennis elbow, is somewhat of a misnomer because the condition is often work-related and occurs in athletes and nonathletes alike. Acute onset of symptoms occurs more often in young athletes; chronic, recalcitrant symptoms typically occur in older patients.

In this review, we describe the pathogenesis and clinical presentation and the nonsurgical and surgical treatment options currently available.

PMID: 25077751

HIP**Hip weakness with hip pain**

RESEARCH REPORT

Persons With Chronic Hip Joint Pain Exhibit Reduced Hip Muscle Strength

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Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2014, **Volume:** 44 **Issue:** 11 **Pages:** 890-898 doi:10.2519/jospt.2014.5268

Study Design Controlled laboratory cross-sectional study.

Objectives To assess strength differences of the hip rotator and abductor muscle groups in young adults with chronic hip joint pain (CHJP) and asymptomatic controls. A secondary objective was to determine if strength in the uninvolved hip of those with unilateral CHJP differs from that in asymptomatic controls.

Background Little is known about the relationship between hip muscle strength and CHJP in young adults.

Methods Thirty-five participants with CHJP and 35 matched controls (18 to 40 years of age) participated. Using handheld dynamometry, strength of the hip external rotators and internal rotators was assessed with the hip flexed to 90° and 0°. To assess external rotator and internal rotator strength, the hip was placed at the end range of external rotation and internal rotation, respectively. Strength of the hip abductors was assessed in sidelying, with the hip in 15° of abduction. Break tests were performed to determine maximum muscle force, and the average torque was calculated using the corresponding moment arm. Independent-sample *t* tests were used to compare strength values between (1) the involved limb in participants with CHJP and the corresponding limb in the matched controls, and (2) the uninvolved limb in participants with unilateral CHJP and the corresponding limb in the matched controls.

Results Compared to controls, participants with CHJP demonstrated weakness of 16% to 28% ($P < .01$) in all muscle groups tested in the involved hip. The uninvolved hip of 22 subjects with unilateral CHJP demonstrated weakness of 18% and 16% ($P < .05$) in the external rotators (0°) and abductors, respectively, when compared to the corresponding limb of the matched controls.

Conclusion The results of the present study demonstrate that persons with CHJP have weakness in the hip rotator and hip abductor muscles. Weakness also was found in the uninvolved hip of persons with CHJP. *J Orthop Sports Phys Ther* 2014;44(11):890–898. Epub 9 October 2014. doi:10.2519/jospt.2014.5268

Keyword: abductor, dynamometry, external rotator, femoroacetabular impingement, internal rotator

Dysplasia

Acta Orthop. 2013 Jun;84(3):265-70. doi: 10.3109/17453674.2013.792030. Epub 2013 Apr 17.

Changes in walking and running in patients with hip dysplasia.

Jacobsen JS1, Nielsen DB, Sørensen H, Søballe K, Mechlenburg I.

Abstract

BACKGROUND AND PURPOSE:

Earlier studies have suggested that the hip extension angle and the hip flexor moment in walking are affected by hip dysplasia, but to our knowledge there have been no reports on running or evaluations of self-reported health. We evaluated differences in walking, running, and self-reported health between young adults with symptomatic hip dysplasia and healthy controls.

PATIENTS AND METHODS:

Walking and running in 32 patients with hip dysplasia, mean 34 (18-53) years old, was compared with walking and running in 32 controls, mean 33 (18-54) years old. Joint kinematics and kinetics-quantified by the peak hip extension angle and the peak net joint moment of hip flexion during walking and running-were recorded using a motion-capture system, and health was evaluated using the Copenhagen Hip and Groin Outcome Score (HAGOS).

RESULTS:

The peak hip extension angle during walking was less in the patients than in the controls (-10.4 (SD 4.8) degrees vs. -13.2 (SD 4.5) degrees; $p = 0.02$). Similarly, the peak net joint moment of hip flexion during walking was lower in the patients than in the controls (0.57 (SD 0.13) N*m/kg vs. 0.70 (SD 0.22) N*m/kg; $p = 0.008$). In all dimensions of HAGOS, the patients scored lower than the controls. Furthermore, the hip extension angle and the net joint moment of hip flexion correlated with the HAGOS subscales pain and physical function in sport and recreation.

INTERPRETATION:

Patients with symptomatic hip dysplasia do modify walking and running, and we therefore suggest that the impairment found in this study should play an important role in the evaluation of later operative and training interventions.

IMPINGEMENT

Pelvic position

Am J Sports Med. 2014 Nov;42(11):2649-53. doi: 10.1177/0363546514548019. Epub 2014 Sep 8.

Correlation of pelvic incidence with cam and pincer lesions.

Gebhart JJ1, Streit JJ2, Bedi A3, Bush-Joseph CA4, Nho SJ4, Salata MJ2.

Abstract

BACKGROUND:

The sacropelvic parameter of pelvic incidence (PI) is a position-independent anatomic parameter that regulates lumbar lordosis and pelvic orientation. While it has been extensively studied in relation to spine pathology, only a single study has correlated PI with femoroacetabular impingement (FAI).

HYPOTHESIS:

Decreased PI would be associated with an increased prevalence of cam and pincer lesions.

STUDY DESIGN:

Controlled laboratory study.

METHODS:

Measurements of the acetabulum, proximal femur, and sacropelvis were made bilaterally on 40 cadaveric specimens, for a total of 80 hips. Twenty specimens had the presence of bilateral cam deformities (alpha angle $>55^\circ$), and 20 age- and sex-matched specimens had bilateral normal hips. Pincer lesions were defined as an anteversion $<15^\circ$. Pelvic incidence and acetabular version were measured using standardized lateral photographs and a goniometer, respectively. Independent-samples t tests were performed to evaluate for differences in measured parameters between groups.

RESULTS:

The mean PI was $43.1^\circ \pm 8.6^\circ$ for hips with a cam lesion and $47.7^\circ \pm 9.3^\circ$ for normal hips, demonstrating a significant association between decreased PI and the presence of a cam lesion ($P = .02$). The mean version of acetabula with pincer lesions ($n = 28$) was $11.4^\circ \pm 2.5^\circ$, and the mean version of normal acetabula ($n = 52$) was $20.1^\circ \pm 3.8^\circ$. The mean PI of hips with pincer lesions was $42.5^\circ \pm 8.5^\circ$, significantly less than that of normal hips, $47.0^\circ \pm 9.2^\circ$ ($P = .04$).

CONCLUSION:

This study supports a recent study that suggested patients with pincer impingement have a smaller PI than the healthy population, and it is the first to demonstrate a significant association between decreased PI and cam-type femoral deformity. Based on results of this study, further clinical study of the effects of pelvic geometry on FAI is warranted.

CLINICAL RELEVANCE:

While the study results do not prove a causal relationship, it is theorized that the restriction of range of motion and biomechanical adaptations of the pelvis around the hip joints resulting from a smaller PI may affect hip development and FAI. The influence of mechanical factors beyond the hip joint in the development of FAI should be considered by clinicians.

Surgical management vs. conservative

Br J Sports Med. 2014 Sep 22. pii: bjsports-2013-093340. doi: 10.1136/bjsports-2013-093340.

Physical impairments and activity limitations in people with femoroacetabular impingement: a systematic review.

Diamond LE¹, Dobson FL¹, Bennell KL¹, Wrigley TV¹, Hodges PW², Hinman RS¹.

Abstract**BACKGROUND:**

Femoroacetabular impingement (FAI) is a morphological hip condition that can cause hip and/or groin pain in younger active adults. Understanding the nature of physical impairments and activity limitations associated with symptomatic FAI is important to evaluate outcomes and guide development of rehabilitation strategies. The purpose of this systematic review was to establish: (1) whether people with symptomatic FAI demonstrate physical impairments and/or activity limitations compared with people without FAI; and (2) whether treatment affects these parameters.

METHODS:

Four databases (Pubmed, CINAHL, SportDISCUS and Cochrane Library) were searched until the 21 June 2013. Studies evaluated measures of physical impairment and/or activity limitations in people with symptomatic FAI and included either: (1) a comparison control group; or (2) a pretreatment and post-treatment comparison. Methodological quality was assessed using the Newcastle-Ottawa Scale.

RESULTS:

16 studies were included. The most commonly reported physical impairment was decreased range of motion (ROM) into directions of hip joint impingement. Other impairments included altered sagittal and frontal plane hip ROM during gait, altered sagittal plane hip ROM during stair climbing, and decreased hip adductor and flexor muscle strength. Effects of surgery on physical impairments are inconsistent but suggest improved hip ROM during gait, but not during stair climbing. Squatting depth improves following surgical intervention for symptomatic FAI.

CONCLUSIONS:

People with symptomatic FAI demonstrate physical impairments and activity limitations. Surgical intervention may restore some deficiencies, but not all. Further studies of physical impairment and activity limitation are needed to evaluate outcomes from surgical and conservative interventions and to inform rehabilitation programmes.

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KEYWORDS: Biomechanics; Hip; Strength isometric isokinetic PMID: 25246442

KNEE**Hip abductor strength and medial knee pain**

Br J Sports Med. 2014 Nov;48(21):1564-9. doi: 10.1136/bjsports-2012-091710. Epub 2013 Feb 8.

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

Verrelst R¹, Willems TM¹, Clercq DD², Roosen P¹, Goossens L², Witvrouw E¹.

Abstract**OBJECTIVE:**

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

METHODS:

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

RESULTS:

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

CONCLUSIONS:

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

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KEYWORDS: Lower extremity injuries; Sporting injuries; Women in sport PMID: 23396233

Acupuncture and chronic knee pain

JAMA. 2014 Oct 1;312(13):1313-22. doi: 10.1001/jama.2014.12660.

Acupuncture for chronic knee pain: a randomized clinical trial.

Hinman RS1, McCroory P2, Pirotta M3, Relf I3, Forbes A4, Crossley KM5, Williamson E6, Kyriakides M3, Novy K3, Metcalf BR1, Harris A7, Reddy P8, Conaghan PG9, Bennell KL1.

Abstract

IMPORTANCE:

There is debate about benefits of acupuncture for knee pain.

OBJECTIVE:

To determine the efficacy of laser and needle acupuncture for chronic knee pain.

DESIGN, SETTING, AND PARTICIPANTS:

Zelen-design clinical trial (randomization occurred before informed consent), in Victoria, Australia (February 2010-December 2012). Community volunteers (282 patients aged ≥ 50 years with chronic knee pain) were treated by family physician acupuncturists.

INTERVENTIONS:

No acupuncture (control group, $n = 71$) and needle ($n = 70$), laser ($n = 71$), and sham laser ($n = 70$) acupuncture. Treatments were delivered for 12 weeks. Participants and acupuncturists were blinded to laser and sham laser acupuncture. Control participants were unaware of the trial.

MAIN OUTCOMES AND MEASURES:

Primary outcomes were average knee pain (numeric rating scale, 0 [no pain] to 10 [worst pain possible]; minimal clinically important difference [MCID], 1.8 units) and physical function (Western Ontario and McMaster Universities Osteoarthritis Index, 0 [no difficulty] to 68 [extreme difficulty]; MCID, 6 units) at 12 weeks. Secondary outcomes included other pain and function measures, quality of life, global change, and 1-year follow-up. Analyses were by intention-to-treat using multiple imputation for missing outcome data.

RESULTS:

At 12 weeks and 1 year, 26 (9%) and 50 (18%) participants were lost to follow-up, respectively. Analyses showed neither needle nor laser acupuncture significantly improved pain (mean difference; -0.4 units; 95% CI, -1.2 to 0.4, and -0.1; 95% CI, -0.9 to 0.7, respectively) or function (-1.7; 95% CI, -6.1 to 2.6, and 0.5; 95% CI, -3.4 to 4.4, respectively) compared with sham at 12 weeks. Compared with control, needle and laser acupuncture resulted in modest improvements in pain (-1.1; 95% CI, -1.8 to -0.4, and -0.8; 95% CI, -1.5 to -0.1, respectively) at 12 weeks, but not at 1 year. Needle acupuncture resulted in modest improvement in function compared with control at 12 weeks (-3.9; 95% CI, -7.7 to -0.2) but was not significantly different from sham (-1.7; 95% CI, -6.1 to 2.6) and was not maintained at 1 year. There were no differences for most secondary outcomes and no serious adverse events.

CONCLUSIONS AND RELEVANCE:

In patients older than 50 years with moderate or severe chronic knee pain, neither laser nor needle acupuncture conferred benefit over sham for pain or function. Our findings do not support acupuncture for these patients.

KNEE/ACL**Return to sport after ACL**

Br J Sports Med. 2014 Nov;48(21):1543-1552. doi: 10.1136/bjsports-2013-093398. Epub 2014 Aug 25.

Fifty-five per cent return to competitive sport following anterior cruciate ligament reconstruction surgery: an updated systematic review and meta-analysis including aspects of physical functioning and contextual factors.

Ardern CL¹, Taylor NF¹, Feller JA², Webster KE¹.

Abstract**BACKGROUND:**

The aim of this study was to update our original systematic review of return to sport rates following anterior cruciate ligament (ACL) reconstruction surgery.

METHOD:

Electronic databases were searched from April 2010 to November 2013 for articles reporting the number of patients returning to sport following ACL reconstruction surgery. Return to sport rates, physical functioning and contextual data were extracted and combined using random-effects meta-analyses. Data from the original review (articles published up to April 2010) were combined with data from the updated search.

RESULTS:

Sixty-nine articles, reporting on 7556 participants, were reviewed. On average, 81% of people returned to any sport, 65% returned to their preinjury level of sport and 55% returned to competitive level sport after surgery. Symmetrical hopping performance ($d=0.3$) and the contextual factors of younger age ($d=-0.3$), male gender (OR=1.4), playing elite sport (OR=2.5) and having a positive psychological response ($d=0.3$) favoured returning to the preinjury level sport. Receiving a hamstring tendon autograft favoured returning to competitive level sport (OR=2.4), whereas receiving a patellar tendon autograft favoured returning to the preinjury level sport (OR=1.2).

CONCLUSIONS:

Returning to sport varied according to different physical functioning and contextual factors, which could warrant additional emphasis in postoperative rehabilitation programmes to maximise participation.

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KEYWORDS: ACL; Knee; Knee Surgery; Statistics PMID: 2515718

Kinesiophobia and return to sports

J Sport Rehabil. 2014 Oct 30.

Kinesiophobia Following Anterior Cruciate Ligament Reconstruction Among Physically Active Individuals.

Cozzi AL¹, Dunn KL, Harding JL, Valovich McLeod TC, Welch CE.

Abstract

There are approximately 200,000 anterior cruciate ligament (ACL) tears reported annually in the United States. Patients who undergo ACL reconstruction followed by an aggressive rehabilitation protocol can often structurally and functionally progress to a pre-injury level. Despite physical improvements with ACL rehabilitation protocols however, there are still a substantial number of individuals that do not return to pre-injury level. Particularly among physically active individuals, only 63% of patients return back to their full potential pre-injury level. This may be due to continued pain, swelling, stiffness, and weakness in the knee. Additionally, research concerning the topic of kinesiophobia (ie, fear of re-injury), which may prevent individuals from returning to their activities, has increased over the past several years. Kinesiophobia is defined as the irrational or debilitating movement of physical activity resulting in the feeling of vulnerability to painful injury or re-injury. Kinesiophobia may have a significant impact on physically active individuals, considering the amount of patients that do not return to their sport. However, it is unknown whether kinesiophobia is associated with patients' perceived physical impairment levels following ACL reconstruction.

CLINICAL QUESTION:

Is kinesiophobia associated with self-perceived levels of knee function following ACL reconstruction?

PMID: 25365598

Failed ACL assessment

Am J Sports Med. 2014 Oct 15. pii: 0363546514552184.

Knee Contact Force Asymmetries in Patients Who Failed Return-to-Sport Readiness Criteria 6 Months After Anterior Cruciate Ligament Reconstruction.

Gardinier ES¹, Di Stasi S², Manal K³, Buchanan TS³, Snyder-Mackler L⁴.

Abstract**BACKGROUND:**

After anterior cruciate ligament (ACL) injury, contact forces are decreased in the injured knee when compared with the uninjured knee. The persistence of contact force asymmetries after ACL reconstruction may increase the risk of reinjury and may play an important role in the development of knee osteoarthritis in these patients. Functional performance may also be useful in identifying patients who demonstrate potentially harmful joint contact force asymmetries after ACL reconstruction.

HYPOTHESIS:

Knee joint contact force asymmetries would be present during gait after ACL reconstruction, and performance on a specific set of validated return-to-sport (RTS) readiness criteria would discriminate between those who demonstrated contact force asymmetries and those who did not.

STUDY DESIGN:

Descriptive laboratory study.

METHODS:

A total of 29 patients with ACL ruptures participated in gait analysis and RTS readiness testing 6 months after reconstruction. Muscle and joint contact forces were estimated using an electromyography (EMG)-driven musculoskeletal model of the knee. The magnitude of typical limb asymmetry in uninjured controls was used to define limits of meaningful limb asymmetry in patients after ACL reconstruction. The RTS testing included isometric quadriceps strength testing, 4 unilateral hop tests, and 2 self-report questionnaires. Paired t tests were used to assess limb symmetry for peak medial and tibiofemoral contact forces in all patients, and a mixed-design analysis of variance was used to analyze the effect of passing or failing RTS testing on contact force asymmetry.

RESULTS:

Among all patients, neither statistically significant nor meaningful contact force asymmetries were identified. However, patients who failed RTS testing exhibited meaningful contact force asymmetries, with tibiofemoral contact force being significantly lower for the involved knee. Conversely, patients who passed RTS testing exhibited neither significant nor meaningful contact force asymmetries.

CONCLUSION:

Joint contact force asymmetries during gait are present in some patients 6 months after ACL reconstruction. Patients who demonstrated poor functional performance on RTS readiness testing exhibited significant and meaningful contact force asymmetries.

CLINICAL RELEVANCE:

When assessing all patients together, variability in the functional status obscured significant and meaningful differences in contact force asymmetry in patients 6 months after ACL

reconstruction. These specific RTS readiness criteria appear to differentiate between those who demonstrate joint contact force symmetry after ACL reconstruction and those who do not.

Adolescent ACL deficient

Arthroscopy. 2014 Sep 16. pii: S0749-8063(14)00656-2. doi: 10.1016/j.arthro.2014.07.026.

Clinical Outcome of Simultaneous High Tibial Osteotomy and Anterior Cruciate Ligament Reconstruction for Medial Compartment Osteoarthritis in Young Patients With Anterior Cruciate Ligament-Deficient Knees: A Systematic Review.

Li Y¹, Zhang H¹, Zhang J¹, Li X¹, Song G¹, Feng H².

Abstract

PURPOSE:

High tibial osteotomy (HTO) has been a well-established procedure addressing tibiofemoral osteoarthritis in young patients. However, for physically active patients with concomitant anterior cruciate ligament (ACL) injury, simultaneous HTO and ACL reconstruction is considered a salvage procedure. Controversy exists regarding the subjective and objective evaluations and the prevalence of complications.

METHODS:

A search in the Medline database and of major orthopaedic journals was performed. Articles were included if they met the specific inclusion and exclusion criteria. Anterior knee laxity, osteoarthritis, subjective outcomes, sagittal and coronal alignment, and complications were analyzed.

RESULTS:

A total of 721 articles were retrieved from the search, and 11 eligible studies (218 knees) were included for evaluation. Postoperatively, the mean side-to-side difference measured by KT-1000 (MEDmetric, San Diego, CA) was 2.4 mm, and 85.7% of patients gained grade A or B stability according to International Knee Documentation Committee evaluation. Medial compartment osteoarthritis showed a tendency of alleviation. Regardless of the scoring system, all subjective evaluations showed improvement and most of the participants returned to recreational sports. All cases of varus malalignment were corrected, with a mean value of 7.13°. The most prevalent complication was deep venous thrombosis (7.7%).

CONCLUSIONS:

Simultaneous HTO and ACL reconstruction was a salvage procedure for physically active young patients because it provided satisfactory restoration of anterior stability, alleviation of medial compartment osteoarthritis, improvement of subjective evaluations, and a predictable return to recreational sports.

LEVEL OF EVIDENCE: Level IV, systematic review of Level III and IV studies.

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PMID: 25239170

Autograph vs. allograft

Arthroscopy. 2014 Sep 11. pii: S0749-8063(14)00617-3. doi: 10.1016/j.arthro.2014.07.011.

Is There a Higher Failure Rate of Allografts Compared With Autografts in Anterior Cruciate Ligament Reconstruction: A Systematic Review of Overlapping Meta-analyses.

Mascarenhas R¹, Erickson BJ², Sayegh ET³, Verma NN², Cole BJ², Bush-Joseph C², Bach BR Jr².

Abstract**PURPOSE:**

Multiple meta-analyses of randomized controlled trials (RCTs), the highest available level of evidence, have been conducted to determine whether autograft or allograft tissue provides superior clinical outcomes and structural healing in anterior cruciate ligament reconstruction (ACLR); however, results are discordant. The purpose of this study was to conduct a systematic review of meta-analyses comparing ACLR with autografts and allografts to elucidate the cause of discordance and to determine which meta-analyses provide the current best available evidence.

METHODS:

In this study we evaluated available scientific support for autograft versus allograft use in ACLR by systematically reviewing the literature for published meta-analyses. Data regarding patient outcomes and structural healing were extracted from these meta-analyses. Meta-analysis quality was assessed using the Oxman-Guyatt and Quality of Reporting of Meta-analyses (QUOROM) systems. The Jadad algorithm was then applied to determine which meta-analyses provided the highest level of evidence.

RESULTS:

Eight meta-analyses containing a total of 15,819 patients met the eligibility criteria, 2 of which included Level II evidence and 6 of which included Level III/IV evidence. Four meta-analyses found no differences between autografts and allografts for patient outcomes, whereas 4 found autografts superior in one or more respects. Four meta-analyses reported higher graft rupture rates in the allograft group, and 2 found superior hop test performance in autograft-treated patients. Six meta-analyses had low Oxman-Guyatt scores (<4) indicative of major flaws.

CONCLUSIONS:

According to this systematic review of overlapping meta-analyses comparing autografts and allografts for ACLR, the current best available evidence suggests no differences in rupture rates and clinical outcomes. Lower quality meta-analyses indicate that autografts may provide a lower rerupture rate, better hop test performance, and better objective knee stability than do allografts.

LEVEL OF EVIDENCE: systematic review of Level II, III, and IV meta-analyses.

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PMID: 25220350

DVT's and LBP

Knee Surg Sports Traumatol Arthrosc. 2014 Nov 2.

Incidence of deep venous thrombosis in Chinese patients undergoing arthroscopic knee surgery for cruciate ligament reconstruction.

Dong JT1, Wang X, Men XQ, Wang XF, Zheng XZ, Gao SJ.

Abstract

PURPOSE:

This study investigated the incidence of deep venous thrombosis (DVT) in patients undergoing arthroscopic cruciate ligament surgery.

METHODS:

A total of 282 patients were examined by color Doppler ultrasound preoperatively and 3 and 7 days postoperatively.

RESULTS:

DVT was present in 34 of 282 patients (12.1 %); of these, 11 (32.6 %) underwent reconstruction of the anterior cruciate ligament (ACL), alone or in conjunction with the medial or lateral collateral ligament (MCL or LCL, respectively; 17.6 %); eight (23.5 %) of the posterior cruciate ligament (PCL); four (11.8 %) of the PCL-MCL/LCL; and five (14.7 %) of the ACL-MCL. In patients with tourniquets applied for <90, 90-120, and >120 min, the incidence of DVT was 5.6, 12.8, and 17.4 %, respectively.

CONCLUSION:

The incidence of DVT in normal patients undergoing ACL surgery was 12.1 %. A higher incidence was observed among cases of multiligament reconstruction, especially those involving the PCL, as well as in patients with tourniquets applied for more than 2 h. Based on these findings, prophylactic measures for DVT may be considered after arthroscopic knee surgery in order to decrease the incidence of DVT if specific risk factors are present. LEVELS OF EVIDENCE: IV.

Tibial slope and injury

Arthroscopy. 2014 Sep 15. pii: S0749-8063(14)00625-2. doi: 10.1016/j.arthro.2014.07.019.

The Association of Tibial Slope and Anterior Cruciate Ligament Rupture in Skeletally Immature Patients.

O'Malley MP1, Milewski MD2, Solomito MJ3, Erwtaman AS4, Nissen CW2.

Abstract

PURPOSE:

The purpose of our study was to investigate the relation between posterior tibial slope and anterior cruciate ligament (ACL) rupture in patients with open physes.

METHODS:

A retrospective case-control study was performed comparing skeletally immature patients with an ACL rupture with an age-matched control group. Posterior tibial slope was measured on plain lateral radiographs in both groups by blinded readers, at 2 separate time intervals, using a previously examined and accepted technique.

RESULTS:

Thirty-two patients were included in the study group (mean age, 13 years; age range, 9 to 17 years) and compared with 32 patients in the control group (mean age, 13 years; age range, 9 to 16 years). The mean posterior tibial slope in the ACL-injured population was $10.0^\circ \pm 3^\circ$ versus $8.5^\circ \pm 3^\circ$ in the control group ($P = .0128$). Statistical significance was seen in comparisons of slope measurements between the ACL-injured and control groups for 2 of the 3 readers (readers 1 and 3) at both time points ($P = .0348$ and $P = .0051$ for reader 1 and $P = .0009$ and $P = .0059$ for reader 3). Intrarater reliability proved superior with values correlating with moderate to good reliability, whereas inter-rater reliability values corresponded with fair to moderate reliability. The average posterior tibial slope was 9.5° (range, 3° to 14°) for female patients and 9.8° (range, 2° to 16°) for male patients.

CONCLUSIONS:

On the basis of the results of this study, the data support the notion that a moderate association may exist between an increased posterior tibial slope and ACL injury in pediatric patients with open physes.

LEVEL OF EVIDENCE: Level III, case-control study.

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MENISCUS

Surgical management

Arthroscopy: The Journal of Arthroscopic & Related Surgery

Biological Knee Reconstruction for Combined Malalignment, Meniscal Deficiency, and Articular Cartilage Disease

Joshua D. Harris, M.D.^{a, b}, Kristen Hussey, B.S.^b, Hillary Wilson, B.S.^b, Kyle Pilz, M.M.S., PA-C.^b, Anil K. Gupta, M.D., M.B.A.^b, Andreas Gomoll, M.D.^c, Brian J. Cole, M.D., M.B.A.^b

Purpose The aim of this study was to analyze patient-reported outcomes in those undergoing the triad of simultaneous osteotomy, meniscal transplantation, and articular cartilage repair.

Methods Patients undergoing simultaneous meniscal transplantation, distal femoral or proximal tibial osteotomy, and articular cartilage surgery by a single surgeon (B.J.C.) were analyzed. Meniscal transplantation was performed using bone-in-slot techniques. Distal femoral and high tibial osteotomies were performed for valgus and varus malalignment, respectively. Microfracture, autologous chondrocyte implantation, and osteochondral autograft or allograft were performed for articular cartilage disease. Validated patient-reported and surgeon-measured outcomes were collected. Preoperative and postoperative outcomes and medial versus lateral disease were compared using Student *t* tests.

Results

Eighteen participants (mean age, 34 ± 7.8 years; symptomatic patients, 7.4 ± 5.6 years; 2.4 ± 1.0 surgical procedures before study enrollment; mean follow-up, 6.5 ± 3.2 years) were analyzed. Two thirds of participants had medial compartment pathologic conditions and one third had lateral compartment pathologic processes. At final follow-up, there were statistically significant clinically meaningful improvements in International Knee Documentation Committee (IKDC) subjective classification, Lysholm score, and 4 Knee Injury and Osteoarthritis Outcome Score (KOOS) subscores. Postoperative 12-item short form (SF-12) physical and mental component scores were not significantly different from preoperative scores. The Kellgren-Lawrence classification grade was 1.5 ± 1.1 at 2.5 ± 3.0 years after surgery. There was a significantly higher preoperative SF-12 physical composite score (PCS) in participants with lateral compartment pathologic conditions (*v* medial compartment conditions) ($P = .011$). Although there were 13 reoperations in 10 patients (55.5% reoperation rate), only one patient was converted to knee arthroplasty (5.6%) and one to revision cartilage surgery and meniscal transplantation (5.6% revision rate). The most common complication was arthrofibrosis (16.7%).


Conclusions Statistically significant and clinically meaningful improvements in validated patient-reported clinical outcome scores at long-term follow-up were observed in 18 participants undergoing combined meniscal transplantation, osteotomy, and articular cartilage surgery. Although there was a low rate of cartilage or meniscal revision (or both) and total knee arthroplasty, there was a high rate of reoperation. There was no significant difference in outcomes between participants with medial versus lateral pathologic conditions. Level of Evidence Level IV, therapeutic case series.

OSTEOARTHRITIS/KNEE**Knee extensor weakness and OA**


Osteoarthritis and Cartilage 11/03/2014

Knee extensor muscle weakness is a risk factor for development of knee osteoarthritis. A systematic review and meta-analysisBritt Elin Øiestad, PT, PhD 


,

Carsten B. Juhl, PT, MSc 

,

Ingrid Eitzen, PT, PhD 

,

Jonas Bloch Thorlund, MSc, PhD **Summary**

The objective of this study was to perform a systematic review and meta-analysis on the association between knee extensor muscle weakness and the risk of developing knee osteoarthritis.

A systematic review and meta-analysis was conducted with literature searches in Medline, SportsDiscus, EMBASE, CINAHL, and AMED. Eligible studies had to include participants with no radiographic or symptomatic knee osteoarthritis at baseline; have a follow-up time of a minimum of 2 years, and include a measure of knee extensor muscle strength. Hierarchies for extracting data on knee osteoarthritis and knee extensor muscle strength were defined prior to data extraction. Meta-analysis was applied on the basis of the odds ratios (ORs) of developing symptomatic knee osteoarthritis or radiographic knee osteoarthritis in subjects with knee extensor muscle weakness. Odds ratios (ORs) for knee osteoarthritis and 95% confidence intervals (CI) were estimated and combined using a random effects model. Twelve studies were eligible for inclusion in the meta-analysis after the initial searches. Five cohort studies with a follow-up time between 2.5 and 14 years, and a total number of 5707 participants (3353 males and 2154 females), were finally included. The meta-analysis showed an overall increased risk of developing symptomatic knee osteoarthritis in participants with knee extensor muscle weakness (OR 1.65 95% CI 1.23, 2.21; $I^2 = 50.5\%$).

This systematic review and meta-analysis showed that knee extensor muscle weakness was associated with an increased risk of developing knee osteoarthritis in both men and women.

Keywords: **Knee extensor muscle strength, knee osteoarthritis, risk factors**

Hyaluronic Acid

Osteoarthritis and Cartilage, Sept 2014

Effects of hyaluronic acid (HA) viscosupplementation on peripheral Th cells in knee and hip osteoarthritis

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Rheumatology Unit Fornaroli Hospital Magenta Italy Via Donatore Sangue 50, Milan 20013, Italy

Objective

Determine Th lymphocytes concentration in patients with knee or hip osteoarthritis (OA). Evaluate their change after HA viscosupplementation.

Methods

Patients with early primary knee or hip OA (ACR Criteria) were recruited in two groups: group A was only observed longitudinally, group B was treated with a course of three weekly intra-articular injections of HA. A healthy control group gender and age matched was enrolled too. All subjects were followed for 3 months. Flow cytometry was performed from blood samples to assess T cells subpopulations (CD3, CD4, CD8, CCR6, CD38, CxCR3, HLA DR) at baseline and at 3-months visit.

Results

86 patients were recruited with OA: 49 in Group A (35 knee OA, 14 hip OA), 37 in Group B (24 knee OA, 13 hip OA). 23 in Control Group. Activated CD4 T cells (CD4+CD38+DR+, CD4+CD38-DR+), Th2 (CD4+CXCR3-CCR6-), Th1 (CD4+CXCR3+CCR6-) were higher at baseline in group A and B than in control group. After the HA course activated T cells were lower in group B than in group A ($P = 0.01$). Th17 (CD4+CXCR3-CCR6+) at baseline were higher in groups A and B than in control group and decreased levels in Group B after the HA course were observed ($P = 0.03$).

Conclusion

The presence of activated T cells in patients with OA confirm that OA is a disease with an immunological/inflammatory involvement. Our preliminary results seems to show that HA injections could lower the levels of activated T cells, and so regulate the articular milieu.

Proprioception and OA

BMC Musculoskelet Disord. 2014 Sep 27;15:321. doi: 10.1186/1471-2474-15-321.

Can pain influence the proprioception and the motor behavior in subjects with mild and moderate knee osteoarthritis?

de Oliveira DC, Barboza SD, da Costa FD, Cabral MP, Silva VM, Dionisio VC1.

Abstract

BACKGROUND:

Osteoarthritis (OA) is a chronic disease, usually characterized by pain, which is associated with reduced muscle strength, disability and progressive loss of function. However, the pain influence over proprioception and motor behaviour remains unclear. Thus, the purpose of the study was to identify the levels of pain, the proprioceptive acuity and the pattern of muscle recruitment during stair ascent and descent in elderly patients with mild and moderate osteoarthritis (OA) compared to healthy subjects.

METHODS:

The study participants included 11 healthy elderly subjects (7 women and 4 men) and 31 elderly patients with knee OA (19 women and 12 men). The functional capacity was assessed by the Western Ontario and McMaster Universities (WOMAC) osteoarthritis index; the pain was evaluated by Wong-Baker faces pain rating scale (WBS) and pressure pain threshold (PPT); the proprioceptive acuity was based on the joint position sense evaluated by electrogoniometer; and the electromyographic (EMG) activity of the major muscles of the lower limb were evaluated during a task of stair ascent and descent of 15 cm. For statistical analysis it was used Statistic for Windows software (StatSoft Inc., version 5.0). Data from the WOMAC index, WBS, the proprioceptive acuity and IEMG (for each muscle in each phase) were analyzed using the Mann-Whitney U test and data from PPT was used Kruskal-Wallis test.

RESULTS:

Higher scores were found in the WOMAC index and WBS whereas lower scores were seen in PPT in patients with knee OA compared to healthy subjects. In contrast, there were no significant differences in the proprioceptive acuity and EMG results of most muscles analyzed between the groups.

CONCLUSION:

The presence of pain does not influence the proprioception and the motor behavior of the thigh muscles during stair ascent and descent in subjects with mild and moderate knee OA.

Vit. D deficiency and OA

Journal of Nutrition, Oct 2014

Vitamin D Deficiency Is Associated with Progression of Knee Osteoarthritis

. Fang Fang Zhang^{3,8,*}, Jeffrey B Driban⁶, Grace H Lo⁹, Lori Lyn Price^{4,5}, Sarah Booth^{3,8}, Charles B Eaton¹⁰, Bing Lu¹¹, Michael Nevitt¹², Becky Jackson¹³, Cheryl Garganta⁷, Marc C Hochberg¹⁴, Kent Kwok¹⁵, and Timothy E McAlindon

Abstract

.
Background: Knee osteoarthritis (OA) causes functional limitation and disability in the elderly. Vitamin D has biological functions on multiple knee joint structures and can play important roles in the progression of knee OA. The metabolism of vitamin D is regulated by PTH.

Objective: The objective is to investigate whether serum concentrations of 25(OH)D and PTH, individually and jointly, predict the progression of knee OA.

Methods: Serum 25(OH)D and PTH were measured at the 30- or 36-mo visit in 418 participants enrolled in the Osteoarthritis Initiative (OAI) who had ≥ 1 knee with symptomatic and radiographic knee OA. Progression of knee OA was defined as any increase in the radiographic joint space narrowing (JSN) score between the 24- and 48-mo OAI visits.

Results: The mean concentrations of serum 25(OH)D and PTH were 26.2 $\mu\text{g/L}$ and 54.5 pg/mL , respectively. Approximately 16% of the population had serum 25(OH)D $< 15 \mu\text{g/L}$. Between the baseline and follow-up visits, 14% progressed in JSN score. Participants with low vitamin D [25(OH)D $< 15 \mu\text{g/L}$] had >2 -fold elevated risk of knee OA progression compared with those with greater vitamin D concentrations ($\geq 15 \mu\text{g/L}$; OR: 2.3; 95% CI: 1.1, 4.5). High serum PTH ($\geq 73 \text{pg/mL}$) was not associated with a significant increase in JSN score. However, participants with both low vitamin D and high PTH had >3 -fold increased risk of progression (OR: 3.2; 95%CI: 1.2, 8.4).

Conclusion: Our results suggest that individuals deficient in vitamin D have an increased risk of knee OA progression.

FOOT AND ANKLE

Fibular head dysfunction in ankle sprains

RESEARCH REPORT

Fibular Malalignment in Individuals With Chronic Ankle Instability

Authors: Takumi Kobayashi, PT, PhD¹, Eiichi Suzuki, MD², Naohito Yamazaki, RT³, Makoto Suzukawa, PT, MSc⁴, Atsushi Akaike, MD⁵, Kuniaki Shimizu, MD⁵, Kazuyoshi Gamada, PT, PhD⁶

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2014, **Volume:** 44 **Issue:** 11 **Pages:** 872-878 doi:10.2519/jospt.2014.5217

Study Design Case series.

Objectives To determine whether abnormal fibular alignment is present in individuals with chronic ankle instability (CAI) using 3-D analysis of computed tomography (CT)-based bone models.

Background A positional difference of the distal fibula in individuals with unilateral CAI, when compared to the contralateral side, has been suggested. However, previous studies report no consistent pattern of fibular malalignment in the anteroposterior direction and, to our knowledge, no study has investigated mediolateral malalignment.

Methods Seventeen males with unilateral CAI (mean \pm SD age, 21.0 \pm 2.4 years) and no history of injury in the contralateral side were enrolled. Geometric bone models of the tibia and fibula were created from non-weight-bearing CT images, and anatomical coordinate systems were embedded in the tibia model. Bilateral tibiae were superimposed using a best-fit algorithm that moved the tibia to the position of best congruity, and the amount of side-to-side difference in position of the fibulae was measured. The anteroposterior and mediolateral positional difference of the fibula of the ankle with CAI relative to the contralateral ankle, for the distal 10 cm of the fibula length, was determined using a color-coded map.

Results The fibula of the ankle with CAI was significantly more lateral (0.57–0.68 mm) than that of the contralateral healthy ankle at all reference points from distal 10 cm to the lateral malleolus. There was no significant difference in anteroposterior position between the healthy ankles and those with CAI.

Conclusion This study detected malalignment of the distal fibula in ankles with CAI in a non-weight-bearing position. The fibula of the ankles with CAI had a significantly more lateral position than that of the healthy ankles, which may contribute to recurrent lateral ankle sprain or giving-way episodes. *J Orthop Sports Phys Ther* 2014;44(11):872–878. Epub 9 October 2014. doi:10.2519/jospt.2014.5217

Keyword: bone model, color-coded map, computed tomography, distal tibiofibular joint, lateral ankle sprain

Chronic ankle sprain

RESEARCH REPORT

Chronic Complaints After Ankle Sprains: A Systematic Review on Effectiveness of Treatment

Authors: John M. van Ochten, MD¹, Marienke van Middelkoop, PhD¹, Duncan Meuffels, MD², Sita M.A. Bierma-Zeinstra, PhD¹

Study Design Systematic review.

Objective To determine the effectiveness of treatments for patients with chronic complaints after ankle sprain.

Background Though most people recover completely after a lateral inversion ankle injury, a considerable percentage have persistent complaints. Currently, it is still unclear which treatment options are best for these patients.

Methods Major databases, including PubMed, Embase, CINAHL, and PEDro, were searched for randomized controlled trials and controlled clinical trials conducted from 1966 to October 2012. Due to clinical heterogeneity, the data were analyzed using a best-evidence synthesis.

Results A total of 20 randomized controlled trials and 1 controlled clinical trial were included in the analysis. The included studies compared different treatments (training programs, physiotherapy, chiropractic/manual therapy, surgery, postoperative training, and functional treatment). For pain and function outcomes, limited to moderate evidence was found for effectiveness of a training program compared to conservative treatment. Two studies found a decrease of recurrences after a proprioceptive training program. Four studies showed good results for different surgical methods but did not include a nonsurgical control group for comparison. Limited evidence was found for the effectiveness of an early mobilization program after surgery.

Conclusion In chronic ankle complaints after an ankle sprain, a training program gives better results for pain and function, and a decrease of recurrent ankle sprains, than a wait-and-see policy. There was insufficient evidence to determine the most effective surgical treatment, but limited evidence suggests that postoperative, early mobilization was more effective than a plaster cast.

Level of Evidence Therapy, level 1a-. *J Orthop Sports Phys Ther* 2014;44(11):862–871. Epub 9 October 2014. doi:10.2519/jospt.2014.5221

Keyword: ankle injury, instability, training program

Immobilization Impact

J Sport Rehabil. 2014 Oct 30

One Week of Unilateral Ankle Immobilisation Alters Plantarflexor Strength, Balance and Walking Speed: A Pilot Study in Asymptomatic Volunteers.

Caplan N¹, Forbes A, Radha S, Stewart S, Ewen A, St Clair Gibson A, Kader D.

Abstract**CONTEXT:**

Ankle immobilisation is often used following ankle injury.

OBJECTIVE:

To determine the influence of one week's unilateral ankle immobilisation on plantarflexor strength, balance and walking gait in asymptomatic volunteers.

DESIGN:

Repeated measures laboratory study.

SETTING:

University laboratory.

PARTICIPANTS:

Six physically active male participants with no recent history of lower limb injury.

INTERVENTIONS:

Participants completed a one week period of ankle immobilisation achieved through wearing a below knee ankle cast. Before the cast was applied, as well as immediately following cast removal, at 24 hours after cast removal, and at 48 hours after cast removal, their plantarflexor strength was assessed isokinetically, and they completed a single leg balance task as a measure of proprioceptive function. An analysis of their walking gait was also completed. MAIN OUTCOME MEASURES: Peak plantarflexor torque and balance were used to determine any effect on muscle strength and proprioception following cast removal. Ranges of motion (3D) of the ankle, knee and hip, as well as walking speed were used to assess any influence on walking gait.

RESULTS:

Following cast removal, plantarflexor strength was reduced for the majority of participants ($p=0.063$, $CI=-33.98-1.31$) and balance performance was reduced in the immobilised limb ($p<0.05$, $CI=0.84-5.16$). Both strength and balance were not significantly different to baseline levels by 48 hours. Walking speed was not significantly different immediately following cast removal, but increased progressively above baseline walking speed over the following 48 hours. Joint ranges of motion were not significantly different at any time point.

CONCLUSIONS:

The reduction in strength and balance after such a short period of immobilisation suggested compromised central and peripheral neural mechanisms. This suggestion appeared consistent with the delayed increase in walking speed which could occur as a result of the excitability of the neural pathways increasing towards baseline levels.

PMID: 25365574

Recovery from fx

RESEARCH REPORT

Prognosis of Physical Function Following Ankle Fracture: A Systematic Review With Meta-analysis

Authors: Paula R. Beckenkamp, PT^{1,2}, Chung-Wei Christine Lin, PT, PhD^{1,2}, Sakina Chagpar, PT¹, Robert D. Herbert, PT, PhD³, Hidde P. van der Ploeg, PhD^{4,5}, Anne M. Moseley, PT, PhD^{1,2}

Study Design Systematic review and meta-analysis of longitudinal studies.

Objectives To quantify the prognosis of physical function following ankle fracture.

Background Information about the course of recovery of physical function after ankle fracture is essential for patient care and health care policy. The existing data have not previously been included in a meta-analysis.

Methods Studies were identified using searches of electronic databases (Cochrane Central Register of Controlled Trials, MEDLINE, Embase, CINAHL, PEDro, AMED, SPORTDiscus) and gray literature to September 2012. Studies of people with traumatic ankle fracture were included. Two reviewers independently screened references for inclusion, then extracted data and evaluated risk of bias. The outcome of interest was physical function (physical activity and activity limitation). Outcomes were converted to a common 100-point scale, on which higher scores indicated better outcomes. Meta-regression was conducted using generalized estimating equations.

Results Thirty-one studies (37 articles) were included. Adults with ankle fracture, present with significant activity limitation in the short term (mean at 1 month, 31.9; 95% confidence interval [CI]: 18.8, 45.1), recovered markedly but incompletely in the short to medium term (mean at 6 months, 78.3; 95% CI: 70.1, 85.1), and showed little further improvement in the long term (mean at 24 months, 86.6; 95% CI: 78.2, 95.0). Studies with older participants and predominantly male participants tended to report worse functional outcomes.

Conclusion Adults typically experience a rapid initial recovery of physical function after ankle fracture (approximately 80% function at 6 months), but, on average, recovery remains incomplete 24 months after injury. PROSPERO registration number: 42012002979.

Level of Evidence Prognosis, level 2a. *J Orthop Sports Phys Ther* 2014;44(11):841–851. Epub 30 September 2014. doi:10.2519/jospt.2014.5199

Keyword: disability evaluation, function, motor activity

Read More: <http://www.jospt.org/doi/abs/10.2519/jospt.2014.5199#.VGGArPTf8vc>

ACHILLES TENDON

Fascia cruris tear

Br J Sports Med. 2014 Sep 8. pii: bjsports-2013-093273. doi: 10.1136/bjsports-2013-093273.

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

Webborn N¹, Morrissey D², Sarvananthan K², Chan O³.

Abstract

BACKGROUND:

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

METHODS:

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

RESULTS:

11 participants presented at a mean of 4.5 weeks (range 0.5-12) after onset of symptoms. The left Achilles was more commonly injured than the right (7 : 4) and the lateral side more than the medial (6 : 4) with one case with medial and lateral presentation. Clinically, there was swelling and tenderness over the medial or lateral border in the mid to upper portion of the Achilles. 7 of the 11 (63.6%) had functional overpronation. Ultrasound appearances of a tear were identified as hypoechoic area extending from the medial or lateral border of the Achilles extending along the anatomical plane of the fascia cruris. Average return to activity was 5.2 weeks (range 1-22). Participants presenting later had longer recovery but all participants returned to full activity (r=0.4).

CONCLUSIONS:

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

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KEYWORDS:

Achilles; Soft tissue; Sporting injuries; Tendon; Ultrasound

PMID: 25202137

RHEUMATOID ARTHRITIS

Weather

Rheumatol Int. 2014 Oct 24

Does rheumatoid arthritis disease activity correlate with weather conditions?

Savage EM¹, McCormick D, McDonald S, Moore O, Stevenson M, Cairns AP.

Abstract

To determine whether rheumatoid arthritis disease activity correlates with changing weather conditions

A longitudinal analysis of 133 patients attending the Department of Rheumatology, Musgrave Park Hospital, Belfast was performed. Participants had a diagnosis of rheumatoid arthritis and were receiving subcutaneous anti-TNF therapy (Adalimumab or Etanercept) for a period of >6 months. Data were collected at five time points. This included tender joint count, swollen joint count, patient visual analogue score (VAS), erythrocyte sedimentation rate, C-reactive protein, VAS, and DAS-28 (Disease Activity Score). Each weather factor (maximum, minimum temperature, pressure, rainfall, sunshine, humidity, and wind-speed) was analysed against each patients' DAS-28 score at five time points, using an analysis of covariance. A significant correlation was noted between low DAS-28 and increased hours of sunshine ($p < 0.001$). Sunny conditions were associated with a DAS-28 reduction of 0.037 (95 % CI -0.059, -0.016) $p < 0.001$. A significant correlation between humidity and DAS-28 was also noted ($p = 0.016$). Increased humidity was associated with an increased DAS-28 of 0.007 (95 % CI 0.001, 0.013) $p = 0.016$. Higher temperatures were associated with a non-significant decrease in DAS-28 ($p = 0.16$).

In this study, rheumatoid arthritis disease activity (as measured by DAS-28) was significantly lower in both more sunny and less humid conditions.

PMID: 25342437

MANUAL THERAPY

Adverse events and lumbar manipulation

J Manipulative Physiol Ther. 2013 Jun 17. pii: S0161-4754(13)00068-7. doi: 10.1016/j.jmpt.2013.05.00

Serious Adverse Events and Spinal Manipulative Therapy of the Low Back Region: A Systematic Review of Cases.

Hebert JJ¹, Stomski NJ, French SD, Rubinstein SM.

Abstract

OBJECTIVE:

The purpose of this study was to systematically search the literature for studies reporting serious adverse events following lumbopelvic spinal manipulative therapy (SMT) and to describe the case details.

METHODS:

A systematic search was conducted in PubMed including MEDLINE, EMBASE, CINAHL, and The Cochrane Library up to January 12, 2012, by an experienced reference librarian. Study selection was performed by 2 independent reviewers using predefined criteria. We included cases involving individuals 18 years or older who experienced a serious adverse event following SMT applied to the lumbar spine or pelvis by any type of provider (eg, chiropractic, medical, physical therapy, osteopathic, layperson). A serious adverse event was defined as an untoward occurrence that results in death or is life threatening, requires hospital admission, or results in significant or permanent disability. We included studies published in English, German, Dutch, and Swedish.

RESULTS:

A total of 2046 studies were screened, and 41 studies reporting on 77 cases were included. Important case details were frequently unreported, such as descriptions of SMT technique, the pre-SMT presentation of the patient, the specific details of the adverse event, time from SMT to the adverse event, factors contributing to the adverse event, and clinical outcome. Adverse events consisted of cauda equina syndrome (29 cases, 38% of total); lumbar disk herniation (23 cases, 30%); fracture (7 cases, 9%); hematoma or hemorrhagic cyst (6 cases, 8%); or other serious adverse events (12 cases, 16%) such as neurologic or vascular compromise, soft tissue trauma, muscle abscess formation, disrupted fracture healing, and esophageal rupture.

CONCLUSIONS:

This systematic review describes case details from published articles that describe serious adverse events that have been reported to occur following SMT of the lumbopelvic region. The anecdotal nature of these cases does not allow for causal inferences between SMT and the events identified in this review. Recommendations regarding future case reporting and research aimed at furthering the understanding of the safety profile of SMT are discussed.

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PMID: 23787298

C spine manipulation

J Manipulative Physiol Ther. 2014 Oct;37(8):593-601. doi: 10.1016/j.jmpt.2014.08.005. Epub 2014 Sep 8.

Exploring patient satisfaction: a secondary analysis of a randomized clinical trial of spinal manipulation, home exercise, and medication for acute and subacute neck pain.

Leininger BD¹, Evans R², Bronfort G³.

Abstract**OBJECTIVE:**

The purpose of this study was to assess satisfaction with specific aspects of care for acute neck pain and explore the relationship between satisfaction with care, neck pain, and global satisfaction.

METHODS:

This study was a secondary analysis of patient satisfaction from a randomized trial of spinal manipulation therapy (SMT) delivered by doctors of chiropractic, home exercise and advice (HEA) delivered by exercise therapists, and medication (MED) prescribed by a medical doctors for acute/subacute neck pain. Differences in satisfaction with specific aspects of care were analyzed using a linear mixed model. The relationship between specific aspects of care and (1) change in neck pain (primary outcome of the randomized trial) and (2) global satisfaction were assessed using Pearson's correlation and multiple linear regression.

RESULTS:

Individuals receiving SMT or HEA were more satisfied with the information and general care received than MED group participants. Spinal manipulation therapy and HEA groups reported similar satisfaction with information provided during treatment; however, the SMT group was more satisfied with general care. Satisfaction with general care ($r = -0.75$ to -0.77 ; $R(2) = 0.55-0.56$) had a stronger relationship with global satisfaction compared with satisfaction with information provided ($r = -0.65$ to 0.67 ; $R(2) = 0.39-0.46$). The relationship between satisfaction with care and neck pain was weak ($r = 0.17-0.38$; $R(2) = 0.08-0.21$).

CONCLUSIONS:

Individuals with acute/subacute neck pain were more satisfied with specific aspects of care received during spinal manipulation therapy or home exercise interventions compared to receiving medication. The relationship between neck pain and satisfaction with care was weak.

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KEYWORDS:

Chiropractic; Clinical Trial; Exercise Therapy; Musculoskeletal Manipulations; Neck Pain; Patient Satisfaction; Pharmaceutical Preparations

PMID: 25199824

Lumbar extension spinal height

J Manipulative Physiol Ther. 2014 Oct;37(8):586-92. doi: 10.1016/j.jmpt.2014.08.001. Epub 2014 Sep 4.

Spinal height change in response to sustained and repetitive prone lumbar extension after a period of spinal unloading.

Lazzarini M¹, Brismée JM², Owens SC³, Dedrick GS⁴, Sizer PS⁵.

Abstract**OBJECTIVE:**

The purpose of this study was to investigate if differences in spinal height changes in healthy individuals were observed after a period of spinal unloading using repetitive as compared with sustained lumbar extension exercises.

METHODS:

This study used a pretest, posttest, crossover design. Asymptomatic participants were recruited using convenience sampling. Thirty-two participants (15 male; 17 female) without back pain were included in the data analysis (mean, 24.4 years; range, 20-41 years). Participants performed sustained or repetitive prone lumbar extension exercises after 1 hour of sustained spinal unloading. Spinal height was measured using a stadiometer before and after the repetitive and sustained prone lumbar extension exercises.

RESULTS:

Paired t tests revealed no significant difference in spine height after repetitive ($P = .774$) or sustained ($P = .545$) prone lumbar extension after a period of spinal unloading. No significant difference between spinal height changes occurred between sustained (mean [SD], -0.28 [2.59] mm) and repetitive (mean [SD], -0.12 [2.42] mm) lumbar extension ($P = .756$).

CONCLUSION:

In this group of asymptomatic individuals, sustained and repetitive lumbar extension exercises did not appear to affect spinal height after a period of spinal unloading.

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KEYWORDS: Body Height; Intervertebral Disk; Prone Position; Spine

PMID: 25200271

Risk bias in research

J Manipulative Physiol Ther. 2014 Oct;37(8):523-41. doi: 10.1016/j.jmpt.2014.07.007. Epub 2014 Sep 5.

The risk of bias and sample size of trials of spinal manipulative therapy for low back and neck pain: analysis and recommendations.

Rubinstein SM¹, van Eekelen R², Oosterhuis T³, de Boer MR⁴, Ostelo RW⁵, van Tulder MW⁵.

Abstract**OBJECTIVE:**

The purpose of this study was to evaluate changes in methodological quality and sample size in randomized controlled trials (RCTs) of spinal manipulative therapy (SMT) for neck and low back pain over a specified period. A secondary purpose was to make recommendations for improvement for future SMT trials based upon our findings.

METHODS:

Randomized controlled trials that examined the effect of SMT in adults with neck and/or low back pain and reported at least 1 patient-reported outcome measure were included. Studies were identified from recent Cochrane reviews of SMT, and an update of the literature was conducted (March 2013). Risk of bias was assessed using the 12-item criteria recommended by the Cochrane Back Review Group. In addition, sample size was examined. The relationship between the overall risk of bias and sample size over time was evaluated using regression analyses, and RCTs were grouped into periods (epochs) of approximately 5 years.

RESULTS:

In total, 105 RCTs were included, of which 41 (39%) were considered to have a low risk of bias. There is significant improvement in the mean risk of bias over time ($P < .05$), which is the most profound for items related to selection bias and, to a lesser extent, attrition and selective outcome reporting bias. Furthermore, although there is no significant increase in sample size over time (overall $P = .8$), the proportion of studies that performed an a priori sample size calculation is increasing statistically (odds ratio, 2.1; confidence interval, 1.5-3.0). Sensitivity analyses suggest no appreciable difference between studies for neck or low back pain for risk of bias or sample size.

CONCLUSION:

Methodological quality of RCTs of SMT for neck and low back pain is improving, whereas overall sample size has shown only small and nonsignificant increases. There is an increasing trend among studies to conduct sample size calculations, which relate to statistical power. Based upon these findings, 7 areas of improvement for future SMT trials are suggested.

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KEYWORDS: Low Back Pain; Manipulation; Methodology; Neck Pain; Research; Sample Size; Spinal PMID: 25194968

Manual acceleration**Acceleration of clinician hand movements during spinal manipulative therapy****Manual Therapy , 11/05/2014 Clinical Article**

Gelley G, et al.

Abstract

This study used an observational design to examine the kinematics of spinal manipulative therapy (SMT) by determining the acceleration characteristics of the manipulative input at the cervical, thoracic and lumbar spinal regions.

Studies of SMT have been restricted to measuring the forces that result from the manipulative input. Several studies have indicated the rate of force development is a key parameter of clinically delivered SMT. Despite this, the movement strategies employed during SMT, including acceleration, have not been directly measured. Participants (n=29) were recruited from a private practice chiropractic clinic. A wireless accelerometer attached to the clinician's hand was used to characterize the thrust phase of the SMT treatments. Significant differences were found across each spinal region for acceleration amplitude parameters ($p < 0.0001$). Post-hoc analysis indicated that amplitudes significantly increased in order from thoracic to cervical to lumbar regions ($p < 0.0001$). Spinal level was also a significant factor in determining the temporal parameters of hand acceleration during SMT ($p < 0.0005$). This study provides a description of the acceleration properties of clinically delivered SMT. Consistent with that reported for SMT forces, acceleration amplitudes varied significantly across spinal regions with relatively little differences in acceleration latencies. Notably, acceleration amplitudes and latencies were not associated with each other within spinal regions.

These findings indicate that changes in acceleration amplitude, rather than latency, are used to tailor SMT to individuals.

Manual therapy for club foot

BMC Musculoskelet Disord. 2014 Oct 31;15(1):363.

Manipulation and brace fixing for the treatment of congenital clubfoot in newborns and infants.

Su Y, Nan G.

Abstract

BACKGROUND:

As one of the most common congenital deformities in children, clubfoot has long been a challenge for orthopedic surgeons. This paper describes the experience of our team with manipulation and above-the-knee brace fixation without percutaneous Achilles tenotomy for the treatment of clubfoot in newborns and infants.

METHODS:

In the orthopedic department of our hospital, 32 infants and newborns (56 feet) with congenital clubfoot underwent manipulation and above-the-knee brace fixation between 2008 and 2012. External rotation brace was used for 1-4 years during the night after deformity correction. Prospective follow-up for a mean duration of 29 months (range, 12-48 months) was carried out. The efficacy of the treatment was assessed by Pirani's scoring system before and after treatment.

RESULTS:

Fifty-two feet achieved a normal appearance within 3 to 6 months (average, 4.2 months) after treatment. Two patients had skin pressure sores due to improper brace care, but these healed with no scarring after timely treatment. The mean Pirani score 1 year after treatment was 0.21 +/- 0.09, whereas it was 4.93 +/- 1.02 before treatment ($p = 0.0078$). No patient required treatment with percutaneous Achilles tenotomy.

CONCLUSION:

The manipulation and brace fixation used in this study offer an effective method for correcting clubfoot deformity in newborns and infants. This treatment can be an alternative choice to percutaneous Achilles tenotomy.

STM**Massage for neck pain****Neck arthritis pain is reduced and range of motion is increased by massage therapy**Complementary Therapies in Clinical Practice , 11/04/2014 **Clinical Article**

Field T, et al.

Abstract

Background

The literature on the effects of massage therapy on neck arthritis pain is mixed depending on the dose level, and it is also based on self-report. In the present study an attempt was made to enhance the effects of weekly massage therapy by having the participants massage themselves daily. And in addition to self-reports on pain, range of motion (ROM) and the associated ROM pain were assessed before and after the first massage session and pre-post the last session one month later.

Methods

Staff and faculty members at a medical school who were eligible for the study if they had neck arthritis pain were randomly assigned to a massage or a waitlist control group ($N = 24$ per group). The massage group received moderate pressure massages weekly by a massage therapist plus daily self-massages. The waitlist control group received the same schedule massages one month after being control subjects.

Results

The massage group showed significant short-term reductions after the first and last day massages in self-reported pain and in ROM-associated pain as well as an increase in ROM. Comparisons between the massage group ($N = 23$) and the control group ($N = 14$) on the last versus the first day data suggested significantly different changes including increased ROM and reduced ROM-associated pain for the massage group and reduced ROM and increased ROM-associated pain for the control group. These changes occurred specifically for flexion and right and left lateral flexion motions.

Discussion

These data highlight the importance of designing massage therapy protocols that target the most affected neck muscle groups and then assessing range of motion and related pain before and after the massage therapy. Comparisons with other studies also suggest that moderate pressure may contribute to the massage effects, and the use of daily self-massages between sessions may sustain the effects and serve as a cost-effective therapy for individuals with neck arthritis pain.


Keywords: **Neck arthritis, Pain, Range of motion, Massage therapy**

Instrument assisted STM

Journal of Bodywork and Movement Therapies

Volume 18, Issue 4, Pages 602–607, October 2014

Influence of instrument assisted soft tissue treatment techniques on myofascial trigger points

Dawn T. Gulick, PhD, PT, ATC, CSCS 

Summary

Objective The purpose of this study was to examine the influence of instrument assisted soft tissue techniques (IASTT) on myofascial trigger points (MTrP).

Design Randomized, controlled study with the researcher assessing the MTrP sensitivity blinded to the treatment rendered.

Participants Phase 1 = 27; Phase 2 = 22.

Intervention MTrPs were identified in the upper back. In phase 1, two MTrPs (right & left) were identified. One was treated with IASTT, the other was a control. In phase 2, one MTrP was identified in a treatment and a control group. In each phase, the treatment groups received six treatments of IASTT.

Outcome measures Sensitivity threshold of the MTrP was assessed with a dolorimeter.

Results There was a significant improvement in both groups over time but there was no difference between the treatment and control groups.

Conclusions The use of a pressure dolorimeter may have served as a form of ischemic compression treatment. This assessment tool may have been a mitigating factor in the overshadowing any potential influence of the IASTT on the MTrP. Thus, another assessment tool needs to be identified for MTrP assessment. Until that technique is identified, the effect of IASTT on MTrPs is inconclusive.

STM and Headache

Treatment of tension-type headache with articulatory and suboccipital soft tissue therapy: A double-blind, randomized, placebo-controlled clinical trial

Journal of Bodywork & Movement Therapies , 11/10/2014 Clinical Article

Espí-López GV, et al.

This study researches the effectiveness of two manual therapy treatments focused on the suboccipital region for tension-type headache. The data suggest that OAA manipulative treatment and combined therapy treatments proved to be more effective than suboccipital soft tissue inhibition for tension-type headache. The treatment with suboccipital soft tissue inhibition, despite producing less significant results, also has positive effects on different aspects of headache.

Methods

- A randomized double-blind clinical trial was conducted over a period of four weeks with a follow-up at one month.
- Eighty-four patients with a mean age of 39.7 years (SD 11.4) with tension-type headache were assigned to 4 groups which included the following manual therapy treatment: suboccipital soft tissue inhibition; occiput-atlas-axis global manipulation; combination of both techniques; and a control group.

Results

- The primary assessment consisted of collecting socio-demographic data and headache characteristics in a one-month base period, data such as age, gender, severity of pain, intensity and frequency of headache, among other.
- Outcome secondary assessment were: impact of headache, disability, ranges of motion of the craniocervical junction, frequency and intensity of headache, and pericranial tenderness.

MUSCLES

Hamstring injuries

Hamstring injuries in a premier league football team. MRI vs. clinical diagnosis

British Journal of Sports Medicine, 10/31/2014 Evidence Based Medicine

Eastwood D

Abstract

Introduction Hamstring injury is the most common injury in professional football¹ MRI is often used as both a diagnostic and prognostic tool, but clinical judgment is always used to assess injury. There is little evidence in current literature to compare the two.

Aims To evaluate MRI scanning for predicting time missed after hamstring injuries and compare it to clinical judgment.

Methods A retrospective study was carried out, using the medical database of Sunderland AFC (SAFC): a Premier League football club. Players with a hamstring injury who had had an MRI scan were selected. Injuries occurred between 7/03/2009 and 16/02/2013. I found 'individual time-loss', 'radiological findings on MRI' and 'clinical findings' for each player's injury, in documentation by medical staff at SAFC. MRI findings were interpreted using a modified Peetron's classification into four grades. An established system by Jan Ekstrand² predicts time, in days, out of full contact training and playing football matches, based on Peetron's grades. I used this to analyse the accuracy of MRI and of clinical grading.

Results In total, 27 players had hamstring injuries, all receiving an MRI scan and clinical assessment. For MRI classification, 7.4% were grade 0 injuries, 55.5% grade 1, 37.0% grade 2 and 0% grade 3. Clinical judgment assessed 3.7% at grade 0, 62.9% grade 1, 25.9% grade 2 and 7.4% grade 3. Therefore, clinical grading given by medical professionals did not always concur with grading reported from MRI. When using Erkstrand's grading system, clinical grading was more accurate in predicting time out. MRI grading appeared to underestimate injuries; injuries assessed as low grade in fact led to more days injured than predicted. Most injuries (18/27) were given the same MRI and clinical grading, illustrating that there was only some variation between methods.

Conclusions

1. MRI is helpful in verifying the diagnosis and prognosis of a hamstring injury.
2. Clinical grading appeared more accurate than MRI grading in predicting number of days injured. However, this was not statistically significant (p value 0.25).
3. MRI "under grading" may result in a tendency to encourage players to train too soon.
4. Over 60% of hamstring injuries were of radiological grade 0 or 1 (no signs of fibre disruption on MRI) but, in fact, these injuries caused the majority of days out.

ATHLETICS

Female endurance

Med Sci Sports Exerc. 2014 Oct 9.

Are Females More Resistant to Extreme Neuromuscular Fatigue?

Temesi J1, Arnal PJ, Rupp T, Féasson L, Cartier R, Gergelé L, Verges S, Martin V, Millet GY.

Abstract

PURPOSE:

Despite interest in the possibility of females outperforming males in ultra-endurance sporting events, little is known about the sex differences in fatigue during prolonged locomotor exercise. This study investigated possible sex differences in central and peripheral fatigue in the knee extensors and plantar flexors resulting from a 110-km ultra-trail running race.

METHODS:

Neuromuscular function of the knee extensors and plantar flexors was evaluated via transcranial magnetic stimulation (TMS) and electrical nerve stimulation before and after an ultra-trail running race in 20 experienced ultra-endurance trail runners (10 females and 10 males matched by percent of the winning time by sex) during maximal and submaximal voluntary contractions and in relaxed muscle.

RESULTS:

Maximal voluntary knee extensor torque decreased more in males than females (-38% versus -29%, $P = 0.006$) although the reduction in plantar flexor torque was similar between sexes (-26% versus -31%). Evoked mechanical plantar flexor responses decreased more in males than females (-23% versus -8% for potentiated twitch amplitude, $P = 0.010$) indicating greater plantar flexor peripheral fatigue in males. Maximal voluntary activation assessed by TMS and electrical nerve stimulation decreased similarly in both sexes for both muscle groups. Indices of knee extensor peripheral fatigue and corticospinal excitability and inhibition changes were also similar for both sexes.

CONCLUSION:

Females exhibited less peripheral fatigue in the plantar flexors than males after a 110-km ultra-trail running race and males demonstrated a greater decrease in maximal force loss in the knee extensors. There were no differences in the magnitude of central fatigue for either muscle group or TMS-induced outcomes. The lower level of fatigue in the knee extensors and peripheral fatigue in the plantar flexors could partly explain the reports of better performance in females in extreme duration running races as race distance increases.

GAIT

Impact of downhill and uphill walking

J Sport Rehabil. 2014 Oct 29.

The Effect of Uphill and Downhill Walking on Joint Position Sense.

Bottoni G¹, Heinrich D, Kofler P, Hasler M, Nachbauer W.

Abstract

CONTEXT:

During sport activity knee proprioception might worsen. This decrease in proprioceptive acuity negatively influences motor control and therefore may increase injury risk. Hiking is a common activity characterized by a higher intensity exercise phase during uphill walking and a lower intensity exercise phase during downhill walking. Pain and injuries are reported in hiking especially during the downhill phase.

OBJECTIVE:

The purpose of this study was to examine the effect of a "hiking-fatigue-protocol" on joint position sense.

DESIGN:

Repeated measures. Setting: University research laboratory.

PARTICIPANTS:

Twenty-four non-professional sportswomen without knee injuries took part in this study.

MAIN OUTCOME MEASURES:

Joint position sense was tested at the beginning, after 30 minutes uphill walking and after 30 minutes downhill walking on a treadmill (continuous protocol).

RESULTS:

After downhill walking joint position sense was significantly worse than in the test at the beginning ($p = 0.035$, $\alpha = 0.05$). After uphill walking no differences were observed in comparison with the test at the beginning ($p = 0.172$, $\alpha = 0.05$) or in comparison with the test after downhill walking ($p = 0.165$, $\alpha = 0.05$).

CONCLUSION:

Downhill walking causes impairment in knee joint position sense. Considering these results, injury prevention protocols for hiking should focus on maintaining and improving knee proprioception during the descending phase.

PMID: 365450

RUNNING

Factors for prevention

Br J Sports Med. 2014 Sep 3. pii: bjsports-2014-093462. doi: 10.1136/bjsports-2014-093462.

Risk factors for medial tibial stress syndrome in physically active individuals such as runners and military personnel: a systematic review and meta-analysis.

Hamstra-Wright KL1, Huxel Bliven KC2, Bay C1.

Abstract

Medial tibial stress syndrome (MTSS) is a common injury in runners and military personnel. There is a lack of agreement on the aetiological factors contributing to MTSS, making treatment challenging and highlighting the importance of preventive efforts. Understanding the risk factors for MTSS is critical for developing preventive measures.

The purpose of this systematic review and meta-analysis was to assess what factors put physically active individuals at risk to develop MTSS. Selected electronic databases were searched. Studies were included if they contained original research that investigated risk factors associated with MTSS, compared physically active individuals with MTSS and physically active individuals without MTSS, were in the English language and were full papers in peer-reviewed journals. Data on research design, study duration, participant selection, population, groups, MTSS diagnosis, investigated risk factors and risk factor definitions were extracted. The methodological quality of the studies was assessed. When the means and SDs of a particular risk factor were reported three or more times, that risk factor was included in the meta-analysis. There were 21 studies included in the systematic review and nine risk factors qualified for inclusion in the meta-analysis. Increased BMI (weighted mean difference (MD)=0.79, 95% CI 0.38 to 1.20, $p<0.001$), navicular drop (MD=1.19 mm, 95% CI 0.54 to 1.84, $p<0.001$), ankle plantarflexion range of motion (ROM; MD=5.94°, 95% CI 3.65 to 8.24, $p<0.001$) and hip external rotation ROM (MD=3.95°, 95% CI 1.78 to 6.13, $p<0.001$) were risk factors for MTSS. Dorsiflexion and quadriceps-angle were clearly not risk factors for MTSS. There is a need for high-quality, prospective studies using consistent methodology evaluating MTSS risk factors.

Our findings suggest that interventions focused on addressing increased BMI, navicular drop, ankle plantarflexion ROM and hip external rotation ROM may be a good starting point for preventing and treating MTSS in physically active individuals such as runners and military personnel.

PAIN**Harm avoidance and pain**

Pain Pract. 2014 Oct 29. doi: 10.1111/papr.12256.

Relationship between Personality Traits and Endogenous Analgesia: The Role of Harm Avoidance.

Nahman-Averbuch H¹, Yarnitsky D, Sprecher E, Granovsky Y, Granot M.

Abstract**BACKGROUND:**

Whether psychological factors such as anxiety and pain catastrophizing levels influence the expression of endogenous analgesia in general and, more specifically, the conditioned pain modulation (CPM) response is still under debate. It may be assumed that other psychological characteristics also play a role in the CPM response. The neurotransmitters serotonin, dopamine, and norepinephrine are involved both in CPM, as well as personality traits such as harm avoidance (HA), novelty seeking (NS), and reward dependence (RD), which can be obtained by the Tridimensional Personality Questionnaire (TPQ). However, the associations between these traits (HA, NS, and RD) with endogenous analgesia revealed by CPM have not yet been explored.

METHODS:

Healthy middle-age subjects (n = 28) completed the TPQ, Spielberger's State Anxiety Inventory, and the Pain Catastrophizing Scale and were assessed for CPM paradigms using thermal phasic temporal summation as the "test stimulus" and hand immersion into hot water bath (CPM water) or contact heat (CPM contact) for "conditioning stimulus."

RESULTS:

Higher levels of HA were associated with less-efficient CPM responses obtained by both paradigms: CPM water (r = 0.418, P = 0.027) and CPM contact (r = 0.374, P = 0.050). However, NS and RD were not associated with the other measurements. No significant relationship was observed between state anxiety and pain catastrophizing levels and the CPM responses.

CONCLUSIONS:

The relationship between the capacity of endogenous analgesia and the tendency to avoid aversive experience can be explained by mutual mechanisms involving similar neurotransmitters or brain areas. These findings illuminate the key role of harm avoidance obtained by the TPQ in determining the characteristics of pain modulation profile.

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KEYWORDS Tridimensional Personality Questionnaire; anxiety; conditioned pain modulation; harm avoidance; pain catastrophizing

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PHARMACOLOGY

Opioid use in the elderly doubled over the last 11 years

Pain Med. 2014 Oct 28. doi: 10.1111/pme.12613

Use of Opioids and Other Analgesics by Older Adults in the United States, 1999-2010.

Steinman MA¹, Komaiko KD, Fung KZ, Ritchie CS.

BACKGROUND AND OBJECTIVE:

There has been concern over rising use of prescription opioids in young and middle-aged adults. Much less is known about opioid prescribing in older adults, for whom clinical recommendations and the balance of risks and benefits differ from younger adults. We evaluated changes in use of opioids and other analgesics in a national sample of clinic visits made by older adults between 1999 and 2010.

DESIGN, SETTING, AND SUBJECTS:

Observational study of adults aged 65 and older from the 1999-2010 National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey, serial cross-sectional surveys of outpatient visits in the United States.

METHODS:

Medication use was assessed at each study visit and included medications in use prior to the visit and medications newly prescribed at the visit. Results were adjusted for survey weights and design factors to provide nationally representative estimates.

RESULTS:

Mean age was 75 ± 7 years, and 45% of visits occurred in primary care settings. Between 1999-2000 and 2009-2010, the percent of clinic visits at which an opioid was used rose from 4.1% to 9.0% ($P < 0.001$). Although use of all major opioid classes increased, the largest contributor to increased use was hydrocodone-containing combination opioids, which rose from 1.1% to 3.5% of visits over the study period ($P < 0.001$). Growth in opioid use was observed across a wide range of patient and clinic characteristics, including in visits for musculoskeletal problems (10.7% of visits in 1999-2000 to 17.0% in 2009-2010, $P < 0.001$) and in visits for other reasons (2.8% to 7.3%, $P < 0.001$).

CONCLUSIONS:

Opioid use by older adults visiting clinics more than doubled between 1999 and 2010, and occurred across a wide range of patient characteristics and clinic settings.

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KEYWORDS: Aged; Analgesics; Opioid Analgesics; Pharmacoepidemiology; Physician's Practice Patterns; United States **PMID:** 25352175

Cannabis and opioid deaths

JAMA Intern Med. 2014 Oct 1;174(10):1668-73. doi: 10.1001/jamainternmed.2014.4005.

Medical cannabis laws and opioid analgesic overdose mortality in the United States, 1999-2010.

Bachhuber MA1, Saloner B2, Cunningham CO3, Barry CL4.

Abstract**IMPORTANCE:**

Opioid analgesic overdose mortality continues to rise in the United States, driven by increases in prescribing for chronic pain. Because chronic pain is a major indication for medical cannabis, laws that establish access to medical cannabis may change overdose mortality related to opioid analgesics in states that have enacted them.

OBJECTIVE:

To determine the association between the presence of state medical cannabis laws and opioid analgesic overdose mortality.

DESIGN, SETTING, AND PARTICIPANTS:

A time-series analysis was conducted of medical cannabis laws and state-level death certificate data in the United States from 1999 to 2010; all 50 states were included.

EXPOSURES:

Presence of a law establishing a medical cannabis program in the state.

MAIN OUTCOMES AND MEASURES:

Age-adjusted opioid analgesic overdose death rate per 100 000 population in each state. Regression models were developed including state and year fixed effects, the presence of 3 different policies regarding opioid analgesics, and the state-specific unemployment rate.

RESULTS:

Three states (California, Oregon, and Washington) had medical cannabis laws effective prior to 1999. Ten states (Alaska, Colorado, Hawaii, Maine, Michigan, Montana, Nevada, New Mexico, Rhode Island, and Vermont) enacted medical cannabis laws between 1999 and 2010. States with medical cannabis laws had a 24.8% lower mean annual opioid overdose mortality rate (95% CI, -37.5% to -9.5%; $P = .003$) compared with states without medical cannabis laws. Examination of the association between medical cannabis laws and opioid analgesic overdose mortality in each year after implementation of the law showed that such laws were associated with a lower rate of overdose mortality that generally strengthened over time: year 1 (-19.9%; 95% CI, -30.6% to -7.7%; $P = .002$), year 2 (-25.2%; 95% CI, -40.6% to -5.9%; $P = .01$), year 3 (-23.6%; 95% CI, -41.1% to -1.0%; $P = .04$), year 4 (-20.2%; 95% CI, -33.6% to -4.0%; $P = .02$), year 5 (-33.7%; 95% CI, -50.9% to -10.4%; $P = .008$), and year 6 (-33.3%; 95% CI, -44.7% to -19.6%; $P < .001$). In secondary analyses, the findings remained similar.

CONCLUSIONS AND RELEVANCE:

Medical cannabis laws are associated with significantly lower state-level opioid overdose mortality rates. Further investigation is required to determine how medical cannabis laws may interact with policies aimed at preventing opioid analgesic overdose.

ELECTROTHERAPY

Vibration therapy for bones

Curr Opin Endocrinol Diabetes Obes. 2014 Dec;21(6):447-53.

Vibration therapy: clinical applications in bone.

Thompson WR1, Yen SS, Rubin J.

Abstract

PURPOSE OF REVIEW:

The musculoskeletal system is largely regulated through dynamic physical activity and is compromised by cessation of physical loading. There is a need to recreate the anabolic effects of loading on the musculoskeletal system, especially in frail individuals who cannot exercise. Vibration therapy is designed to be a nonpharmacological analogue of physical activity, with an intention to promote bone and muscle strength.

RECENT FINDINGS:

Animal and human studies suggest that high-frequency, low-magnitude vibration therapy improves bone strength by increasing bone formation and decreasing bone resorption. There is also evidence that vibration therapy is useful in treating sarcopenia, which confounds skeletal fragility and fall risk in aging. Enhancement of skeletal and muscle strength involves regulating the differentiation of mesenchymal stem cells to build these tissues; mesenchymal stem cell lineage allocation is positively promoted by vibration signals.

SUMMARY:

Vibration therapy may be useful as a primary treatment as well as an adjunct to both physical and pharmacological treatments, but future studies must pay close attention to compliance and dosing patterns, and importantly, the vibration signal, be it low-intensity vibration (<1g) appropriate for treatment of frail individuals or high-intensity vibration (>1g) marketed as a training exercise.

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