

March 12 FMT abstracts

Pelvis

Sacroiliac joint manipulation attenuates alpha-motoneuron activity in healthy women: a quasi-experimental study.

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Country: United States

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UNLABELLED: Orakifar N, Kamali F, Pirouzi S, Jamshidi F. Sacroiliac joint manipulation attenuates alpha-motoneuron activity in healthy women: a quasi-experimental study.

OBJECTIVE: To determine whether sacroiliac joint (SIJ) manipulation decreases a-motoneuron activity and increases the pressure pain threshold (PPT) over the posterior superior iliac spine (PSIS) in healthy women.

DESIGN: Quasi-experimental study.

SETTING: A university medical center.

PARTICIPANTS: Healthy young women (N=20) aged 18 to 30 years were recruited from among the students of a university medical center after a request for volunteers.

INTERVENTIONS: Joint manipulation consisted of the supine rotational glide manipulation for the sacroiliac region. PPT measurements from the PSIS and Hoffman-reflex (H-reflex) amplitudes from the tibial nerve on the same side were recorded before and after joint manipulation. PPT was monitored for 15 minutes and H-reflex for 20 minutes after the procedure.

MAIN OUTCOME MEASURES: Changes in tibial nerve H-reflex amplitude and PPT values after SIJ manipulation.

RESULTS: SIJ manipulation attenuated a-motoneuronal activity significantly ($P < .05$) but transiently, since the decrease was seen only for 20 seconds after the intervention. There was no positive significant difference in the PPT after SIJ manipulation at any time during postintervention follow-up.

CONCLUSIONS: SIJ manipulation produced a transient attenuation of a-motoneuron excitability in healthy women. These findings demonstrate that our manipulation technique can lead to a short-term reduction in muscle tone as a result of changes in sensory discharge, predominantly in Ia afferents. SIJ manipulation did not significantly affect the PPT in healthy women.

PMID: 22200384

LBP

Ann Occup Hyg. 2012 Feb 22.

Dose-response relationship between work-related cumulative postural exposure and low back pain: A systematic review.

Ribeiro DC, Aldabe D, Abbott JH, Sole G, Milosavljevic S.

Source

University of Otago, Centre for Physiotherapy Research, School of Physiotherapy, PO Box 56, Dunedin 9054, New Zealand.

Abstract

OBJECTIVES:

To assess the evidence for a dose-response relationship between ROM, duration, and frequency of trunk flexion, and risk of occupational LBP.

METHODS:

An electronic systematic search was conducted using Medline, Cumulative Index to Nursing and Allied Health Literature, EMBASE, and Scopus databases focusing on cohort and case-control studies. Studies were included if they focused on non-specific LBP and postural exposure, considering ROM, duration, or frequency of trunk flexion as independent variables. No language restriction was imposed. Included studies were assessed for risk of bias using the Newcastle-Ottawa Scale for observational studies and a summary of evidence is presented.

RESULTS:

Eight studies were included and all were methodologically rated as high quality. The included studies yielded a total of 7023 subjects who were considered for risk analysis. Different outcome measures for postural exposure were adopted making meta-analysis difficult to perform.

CONCLUSIONS:

We could not find a clear dose-response relationship for work posture exposures and LBP. Limited evidence was found for ROM and duration of sustained flexed posture as risk factor for LBP. We found no evidence for frequency of trunk flexion as a risk factor for LBP.

PMID: 22356808 [PubMed - as supplied by publisher]

Neuroplasticity

Effects of limb immobilization on brain plasticity

Abstract

Objective: Little is known about the effects of reduced sensory input and motor output in the human brain. Therefore, we conducted a longitudinal study to investigate whether limb immobilization after unilateral arm injury is reflected in structural plastic changes in gray matter (cortical thickness) and white matter (fractional anisotropy [FA]).

Methods: We examined 10 right-handed subjects with injury of the right upper extremity that required at least 14 days of limb immobilization. Subjects underwent 2 MRI examinations, the first within 48 hours postinjury and the second after an average time interval of 16 days of immobilization. Based on the MRI scans, we measured cortical thickness of sensorimotor regions and FA of the corticospinal tracts.

Results: After immobilization, we revealed a decrease in cortical thickness in the left primary motor and somatosensory area as well as a decrease in FA in the left corticospinal tract. In addition, the motor skill of the left (noninjured) hand improved and is related to increased cortical thickness and FA in the right motor cortex.

Conclusions: The present study illustrates that cortical thickness of the sensorimotor cortex and FA of the corticospinal tract changed during right arm immobilization and that these changes are associated with skill transfer from the right to the left hand. Thus, immobilization induces rapid reorganization of the sensorimotor system. Given that limb immobilization is a standard intervention technique in constraint-induced therapy, therapists should be aware of both the positive and negative effects of this intervention.

LBP

Physiotherapy movement based classification approaches to low back pain: comparison of subgroups through review and developer/expert survey *Full Text* □ BMC Musculoskeletal Disorders, 02/28/2012

Karayannis NV et al. – Schemes vary on: the extent to which loading strategies are pursued; the assessment of movement dysfunction; and advocated treatment approaches. A biomechanical assessment predominates in the majority of schemes (MDT, PBC, MSI), certain psychosocial aspects (fear–avoidance) are considered in the Treatment Based Classification (TBC) scheme, certain neurophysiologic (central versus peripherally mediated pain states) and psychosocial (cognitive and behavioural) aspects are considered in the O'Sullivan Classification System (OCS) scheme.

Methods

- A database search for relevant articles related to low back pain (LBP) and subgrouping or classification was conducted.
- Five dominant movement–based schemes were identified: Mechanical Diagnosis and Treatment (MDT), Treatment Based Classification (TBC), Pathoanatomic Based Classification (PBC), Movement System Impairment Classification (MSI), and O'Sullivan Classification System (OCS) schemes.
- Data were extracted and a survey sent to the classification scheme developers/experts to clarify operational criteria, reliability, decision–making, and converging/diverging elements between schemes.
- Survey results were integrated into the review and approval obtained for accuracy.

Results

- Considerable diversity exists between schemes in how movement informs subgrouping and in the consideration of broader neurosensory, cognitive, emotional, and behavioural dimensions of LBP.
- Despite differences in assessment philosophy, a common element lies in their objective to identify a movement pattern related to a pain reduction strategy.

Two dominant movement paradigms emerge: (i) loading strategies (MDT, TBC, PBC) aimed at eliciting a phenomenon of centralization of symptoms; and (ii) modified movement strategies (MSI, OCS) targeted towards documenting the movement impairments associated with the pain state.

Headache

Altered regional homogeneity in spontaneous cluster headache attacks: a resting-state functional magnetic resonance imaging study *Full Text* □ Chinese Medical Journal, 02/28/2012

En-chao Q et al. – It is referred that these brain regions with altered regional homogeneity might be related to the pain processing and modulation of cluster headache (CH).

Methods

- The functional magnetic resonance imaging scans were obtained for 12 male CH patients with spontaneous right-sided headache attacks during “in attack” and “out of attack” periods and 12 age- and sex-matched normal controls.
- The data were analyzed to detect the altered brain activity by the regional homogeneity method using statistical parametric mapping software.

Results

- Altered regional homogeneity was detected in the anterior cingulate cortex, the posterior cingulate cortex, the prefrontal cortex, insular cortex, and other brain regions involved in pain processing and modulation among different groups.

Headache

Migraine in women: the role of hormones and their impact on vascular diseases □ **The Journal of Headache and Pain, 02/28/2012**

Sacco S et al. – Studies have shown that administration of combined oral contraceptives to migraineurs may further increase the risk for ischemic stroke. Consequently, in women suffering from migraine with aura caution should be deserved when prescribing combined oral contraceptives.

Migraine is a predominantly female disorder. Menarche, menstruation, pregnancy, and menopause, and also the use of hormonal contraceptives and hormone replacement treatment may influence migraine occurrence. Migraine usually starts after menarche, occurs more frequently in the days just before or during menstruation, and ameliorates during pregnancy and menopause. Those variations are mediated by fluctuation of estrogen levels through their influence on cellular excitability or cerebral vasculature. Moreover, administration of exogenous hormones may cause worsening of migraine as may expose migrainous women to an increased risk of vascular disease. In fact, migraine with aura represents a risk factor for stroke, cardiac disease, and vascular mortality. Studies have shown that administration of combined oral contraceptives to migraineurs may further increase the risk for ischemic stroke. Consequently, in women suffering from migraine with aura caution should be deserved when prescribing combined oral contraceptives.

Fibromyalgia

Neuroticism in young women with fibromyalgia links to key clinical features *Full Text*

□ Pain Research and Treatment, 02/20/2012

Malin K et al. – The personality trait of neuroticism significantly associates with the key FM characteristics of pain, sleep, fatigue and confusion as well as the common co-morbidities of depression, anxiety and stress. Personality appears to be an important modulator of FM clinical symptoms.

Methods

- 27 women with FM and 29 age-matched female healthy controls [HC] completed a series of questionnaires examining FM symptoms, personality and psychological variables

Results

- Significant differences between characteristic FM symptoms (sleep, pain, fatigue, and confusion) as well as for the psychological variables of depression, anxiety, and stress were found between FM and HC (< 0.001)
- Neuroticism was only subscale of the Big Five Inventory that showed significant difference between the FM group and HC group [< 0.05]
- Within the FM group, there was a significant association between the level of the neuroticism and each of pain, sleep, fatigue, and confusion, depression, anxiety, and stress ($< 0.05 - 0.01$)

Association between level of neuroticism and level of stress was the strongest of all variables tested

Nerve Injuries

Treatment of Nerve Injuries Follows the "Rule of 18"

Nerve injuries around the elbow are the focus of this review article. There are three main nerves that can be affected: the *median* nerve, the *ulnar* nerve, and the *radial* nerve. Whether it's a sharp, high-energy injury (e.g., knife, saw blade, bullet) or a low-velocity injury (e.g., fracture, traction, crush), the *rule of 18* guides treatment.

The rule of 18 says that motor recovery won't happen past 18 inches from the nerve injury after 18 months have passed. This is because nerves regenerate at about one inch per month. And *motor endplates* degenerate 18 months after nerve damage.

The motor endplate is the highly-excitabile region of muscle fiber responsible for the start of action potentials (firing signals) across the muscle's surface, ultimately causing the muscle to contract. Without a nerve signal, the motor endplate remains silent. And over time, that silence translates into a breakdown of the endplate. If that happens, permanent silence occurs and loss of motor recovery.

Surgeons monitor patients carefully week-by-week and month-by-month for any signs of nerve regeneration and motor recovery. They use pinch and grip strength and sensory testing to measure change. A special test called *Semmes-Weinstein monofilament exam* measures the patient's ability to feel two points of touch on the skin. If no change or improvement is seen, then special neurodiagnostic tests can be done.

This is where the rule of 18 comes in handy. Rate of recovery is matched against the time of injury to determine whether surgery to repair or reconstruct the damaged nerve is needed. For example, the rule of 18 tells the surgeon that the farthest recovery will occur is 18 inches from the injury. Any loss of sensation or motor function further away than that will require a tendon or nerve transfer.

For every month surgery is delayed, one inch of restored motor function may be lost. In other words, say the repair is done six months after the injury. Motor recovery is possible up to 12 inches from the level of the injury. When making the decision when to do surgery, the surgeon also takes into account the type of injury, the patient's age, and the nerve(s) involved.

Bone fractures of the forearm are most likely to cut into the *radial* nerve. Sometimes surgery to repair the fracture is actually the cause of the nerve injury (e.g., a pin or screw used to hold the bone fragments together pierce the nerve).

The *ulnar* nerve is close to the surface of the skin and most likely to be damaged due to direct injury. This is the nerve that causes pain when you hit your "funny bone" (the bony bump of the elbow closest to the body). Damage to this nerve often requires a procedure called *nerve transposition*. The surgeon has to move the nerve away from the bone where it is being bumped or compressed.

Thumb function depends on the *median* nerve. Surgery to perform a nerve or tendon transfer is advised if the median nerve has been damaged high up by the elbow or if the injury is severe enough to compromise thumb movement. The median nerve also provides sensation to most of the hand so full recovery is not complete until 18 months at the earliest. Continued sensory recovery can take two years or more after nerve repair.

Any one of these nerves can be sewn back together if it is damaged by a clean *laceration* (cut) through the nerve. This is called an *end-to-end* repair. Nerve grafting is more likely when there

has been a crush injury to the nerve. The area crushed is removed and a piece of donor nerve is used to replace the crushed portion.

Nerve transfers are used when it's clear that the sensory and/or motor function to the hand isn't going to be restored. Certain extra branches of nerves can be separated and divided to be used in place of the lost nerve without losing motor function at the site of harvest.

Some surgeons suggest early surgical treatment is better. Instead of waiting to see what kind of recovery occurs spontaneously, the surgeon performs a tendon transfer to improve hand function. Maintaining hand movement during the period between injury and recovery may yield better results compared with the wait-and-see (sometimes until it is too late) approach.

The authors conclude by saying that planning treatment for nerve injuries can be a complex and challenging process. The surgeon must take into consideration which nerve was injured, the location and severity of the lesion, the patient's age, and the rule of 18. They agree that tendon or nerve transfers should be done sooner than later if the surgeon's assessment is that recovery will be significantly delayed or not occur at all.

Reference:

Andrew R. Tyser and Kenneth R. Means, Jr, MD. Nerve Injuries About the Elbow: Treatment Options. In *Current Orthopaedic Practice*. January/February 2012. Vol. 23. No. 1. Pp. 29-33.

LBP

PLoS One. 2012;7(2):e30597. Epub 2012 Feb 15.

Predictors of occurrence and severity of first time low back pain episodes: findings from a military inception cohort.

George SZ, Childs JD, Teyhen DS, Wu SS, Wright AC, Dugan JL, Robinson ME.

Source

Department of Physical Therapy and Center for Pain Research and Behavioral Health, University of Florida, Gainesville, Florida, United States of America.

Abstract

Primary prevention studies suggest that additional research on identifying risk factors predictive of low back pain (LBP) is necessary before additional interventions can be developed. In the current study we assembled a large military cohort that was initially free of LBP and followed over 2 years. The purposes of this study were to identify baseline variables from demographic, socioeconomic, general health, and psychological domains that were predictive of a) occurrence; b) time; and c) severity for first episode of self-reported LBP. Baseline and outcome measures were collected via web-based surveillance system or phone to capture monthly information over 2 years. The assembled cohort consisted of 1230 Soldiers who provided self-report data with 518 (42.1%) reporting at least one episode of LBP over 2 years. Multivariate logistic regression analysis indicated that gender, active duty status, mental and physical health scores were significant predictors of LBP. Cox regression revealed that the time to first episode of LBP was significantly shorter for Soldiers that were female, active duty, reported previous injury, and had increased BMI. Multivariate linear regression analysis investigated severity of the first episode by identifying baseline predictors of pain intensity, disability, and psychological distress. Education level and physical fitness were consistent predictors of pain intensity, while gender, smoking status, and previous injury status were predictors of disability. Gender, smoking status, physical health scores, and beliefs of back pain were consistent predictors of psychological distress. These results provide additional data to confirm the multi-factorial nature of LBP and suggest future preventative interventions focus on multi-modal approaches that target modifiable risk factors specific to the population of interest.

Ankle/Ballet

J Sports Sci. 2012 Feb 22. [Epub ahead of print]

Changes in biomechanics and muscle activation in injured ballet dancers during a jump-land task with turnout (Sissonne Fermée).

Lee HH, Lin CW, Wu HW, Wu TC, Lin CF.

Source

a Department of Physical Therapy , National Cheng Kung University , Tainan , Taiwan.

Abstract

Abstract Large impact loading with abnormal muscle activity and motion patterns may contribute to lower extremity injuries in ballet dancers. Yet, few studies investigated the influence of injury on the ballet movement. The purpose of this study was to find the neuromuscular and biomechanical characteristics in dancers with and without ankle injury during a jump-landing Sissonne Fermée task. Twenty-two ballet dancers were recruited and divided into the injured group (n = 11) and the uninjured group (n = 11). They performed a ballet movement called "Sissonne Fermée" with reflective markers and electrodes attached to their lower extremities. Ground reaction force, joint kinematics, and muscle activity were measured. The injured dancers had greater peak ankle eversion but smaller hindfoot-to-tibial eversion angles. Also, the injured dancers had greater activity of the hamstring of the dominant leg and tibialis anterior of the non-dominant leg during the pre-landing phase. The injured dancers had greater tibialis anterior activity of the dominant leg but less muscle activity in the medial gastrocnemius of the non-dominant leg during the post-landing phase. The injured dancers had a greater co-contraction index in the non-dominant ankle and a lower loading rate. The higher co-contraction indices showed that the injured dancers required more muscle effort to control ankle stability. Furthermore, the injured dancers used a "load avoidance strategy" to protect themselves from re-injury. Neuromuscular control training of the ankle joint for ballet dancers to prevent injury is necessary.

LBP

Efficacy of Multidisciplinary Treatment for Patients With Chronic Low Back Pain: A Prospective Clinical Study in 395 Patients □ *Journal of Clinical Rheumatology (JCR)*, 02/29/2012

Moradi B et al. – Multidisciplinary treatment ameliorates pain, functional restoration, and quality of life with medium to high effect sizes even for patients with a long history of chronic back pain. Effect sizes are higher than for monodisciplinary treatments and treatment effects remained stable at 6-month follow-up in a longitudinal uncontrolled study design. Thus, the authors believe that multidisciplinary treatment is vital for the treatment of patients with chronic low back pain. The impact of sociodemographic and pain-related parameters needs to be taken into account when including patients in an appropriate treatment program. They emphasize the presentation of effect sizes as a vital treatment evaluation to enable cross-sectional comparison of therapy outcomes.

Methods

- Data on 395 patients were prospectively collected at study entry, at the end of the program (T1) and after 6 months' follow-up (T2).
- Relevant therapy outcomes were analyzed by presenting effect sizes with Cohen's *d*. Group comparisons were performed for sociodemographic and clinical features to determine the impact on therapy outcome.

Results

- Medium effect sizes ($d = -0.6$ to -0.7) were shown for visual analog scale (VAS) after treatment and at T2, indicating clinically relevant pain relief.
- Significant changes in pain-related disability were observed immediately at T1 with a strong treatment effect ($d = 0.8$).
- Functional capacity was improved with low to medium effect sizes (0.4–0.5).
- Quality-of-life subscales (36-item Short Form Health Survey) improved significantly at T1 for physical function, vitality, and mental health ($d = 0.5$ –0.8).
- Center for Epidemiological Studies – Depression Scale scores improved significantly with strong effect sizes of $d = 0.7$.
- Sociodemographic parameters displayed a significant impact on effect sizes for visual analog scale at T2, with females ($d = -0.9$), age group 30 to 39 years ($d = -1$), and patients with low physical job exposure ($d = -0.9$) benefiting most.
- An increase in number of pain locations (-0.7) and severity of accompanying pain (-0.7) in other body areas significantly impaired therapy outcome and effect sizes of VAS.

Headache

Systematic Review of Interventions for Post-traumatic Headache □PM&R, 02/29/2012

Evidence Based Medicine

Watanabe TK et al. – No strong evidence from clinical trials is available to direct the treatment of post-traumatic headache (PTHA). Some guidelines are offered for PTHA management based on primary headache categories and treatments. It is essential that well-designed clinical studies be conducted to inform clinicians on the management and prevention of PTHA chronicity.

Methods

- Peer-reviewed studies in PubMed, CINAHL, PsycINFO, ProQuest, Web of Science, and Google Scholar:
 - (1) including adult and child samples with mild, moderate, or severe TBI, whiplash, and postconcussion syndrome;
 - (2) with clearly described interventions;
 - (3) with headache treatment as a primary or secondary outcome;
 - (4) published since 1985;
 - (5) written in English.
- s from 812 articles from the above searches were reviewed.
- All research types that studied the treatment of headache after TBI were included, and 64 of the 812 articles appeared to meet the inclusion criteria.
- The 64 articles were reviewed in full and data were extracted; 36 met all criteria for inclusion.
- The final 36 articles were rated according to the American Academy of Neurology criteria for classifying therapeutic studies.

Results

- No class I studies and only one class II study for the management of PTHA were identified.
- One class I and one class II study for whiplash-associated disorder with headache as an outcome were identified.

Twelve studies met criteria for class III.

LBP

Is there a correlation between back pain and stability of the lumbar spine in pregnancy? A model-based hypothesis □Schmerz, 02/29/2012

Liebetau A et al. – The relationship between the non-pregnant and the pregnant simulations demonstrated a considerable increase of acting segmental counter-torques. Simulating an increased lordosis for the pregnant situation in the sagittal plane substantially reduced these acting counter-torques and therefore the demand on the segmental muscles.

During pregnancy approximately 50% of women suffer from low back pain (LBP), which significantly affects their everyday life. The pain could result in chronic insomnia, limit the pregnant women in their ability to work and produce a reduction of their physical activity. The etiology of the pain is still critically discussed and not entirely understood. In the literature different explanations for LBP are given and one of the most common reasons is the anatomical changes of the female body during pregnancy; for instance, there is an increase in the sagittal moments because of the enlarged uterus and fetus and the occurrence of hyperlordosis. The aim of this study was to describe how the anatomical changes in pregnant women affect the stability and the moments acting on the lumbar spine with the help of a simplified musculoskeletal model.

A two-dimensional musculoskeletal model of the lumbar spine in the sagittal plane consisting of five lumbar vertebrae was developed. The model included five centres of rotation and three antagonistic pairs of paraspinal muscles. The concept of altered acting torques during pregnancy was explored by varying the geometrical arrangements. The situations non-pregnant, pregnant and pregnant with hyperlordosis were considered for the model-based approach. These simulations were done dependent on the stability of the erect posture and local counter-torques of every lumbar segment.

In spite of the simplicity of the model and the musculoskeletal arrangement it was possible to maintain equilibrium of the erect posture at every lumbar spinal segment with one minimum physiological cross-sectional area of all paraspinal muscles. The stability of the musculoskeletal system depends on the muscular activity of the paraspinal muscles and diminishing the muscular activity causes unstable lumbar segments.

The relationship between the non-pregnant and the pregnant simulations demonstrated a considerable increase of acting segmental counter-torques. Simulating an increased lordosis for the pregnant situation in the sagittal plane substantially reduced these acting counter-torques and therefore the demand on the segmental muscles.

It is assumed that hyperlordosis is a physiological adaptation to the anatomical changes during pregnancy to minimize the segmental counter-torques and therefore the demand on the segmental muscles.

Further, it can be expected that an enhanced muscle activity caused by selective activity of lumbar muscles increases the stability of the lumbar spine and may improve the situation with LBP during pregnancy.

Cupping

Body in Mind

Research into the role of the brain in chronic pain

[My back has shrunk – The influence of cupping therapy on body image](#)

My Ph.D. research investigated the effect of cupping therapy in the treatment of chronic non-specific neck pain [1-3]. Besides pain and well-being we followed the approach by Moseley, 2008 [4] who found that patients with chronic low back pain showed body image distortions. His patients were unable to designate their whole bodily contours and there was a tendency for displacement of the spine towards painful area.

We were really fascinated by the results and we wondered if this would apply for chronic neck pain as well. So we adapted the design of the body image drawings for the neck area and the study patients who suffered from chronic neck pain were asked to draw the neck area as they felt it.

The drawings themselves indicated that body image was disturbed in neck pain patients too. Parts of the contours were missing, others were very prominent and in most drawings we found a discrepancy between the bodies drawn and normal body physique, for examples shoulders were elevated and at the same height as the ears. We tried to identify these patterns within the drawing but we failed with that. We realized that patients with similar complaints had drawn their neck completely different.

So we tried a new approach, we used qualitative interviews and the study patients themselves interpreted their own drawings. We further asked them about their body image, their coping and daily life and their experiences with cupping therapy. [5]

As a result patients reported that pain was the predominant sensation, it hindered them from sensing the non-painful parts of the neck area. The neck area also felt altered, e.g. swollen or magnified, one also described “having shoulders like an anvil”. Patients’ coping strategies were mostly passive, they tried to endure or distract from the pain. If that did not work they would try to get fixed by their physician instead.

Interestingly cupping therapy did have an effect on body perception; patients reported not only less pain, but also a more differentiated pain and body perception and a feeling of less weight and tension which also expressed in the drawings with a smaller neck and shoulders with rounder edges. What surprised us even more was that the drawings itself and the interview had some impact on body perception when patients drew their attention to the “blind spots”. Coping strategies on the other hand did not change, which is probably the most common finding with passive therapies.

Altogether this study [5] showed that pain and body image distortions are also present in patients with chronic neck pain and that cupping might actually reduce pain and influence the body image. In order to change coping strategies more active treatments are needed.

References

[1] Lauche R, Cramer H, Choi KE, Rampp T, Saha FJ, Dobos GJ, & Musial F (2011). The influence of a series of five dry cupping treatments on pain and mechanical thresholds in patients with chronic non-specific neck pain—a randomised controlled pilot study. *BMC complementary and alternative medicine*, 11 PMID: [21843336](#)

[2] Lauche R, Cramer H, Hohmann C, Choi KE, Rampp T, Saha FJ, Musial F, Langhorst J, & Dobos G (2012). The effect of traditional cupping on pain and mechanical thresholds in patients with chronic nonspecific neck pain: a randomised controlled pilot study. *Evidence-based complementary and alternative medicine : eCAM*, 2012 PMID: [22203873](#)

[3] Cramer H, Lauche R, Hohmann C, Choi KE, Rampp T, Musial F, Langhorst J, & Dobos G (2011). Randomized controlled trial of pulsating cupping (pneumatic pulsation therapy) for chronic neck pain. *Forschende Komplementarmedizin (2006)*, 18 (6), 327-34 PMID: [22189364](#)

[4] Moseley GL (2008). I can't find it! Distorted body image and tactile dysfunction in patients with chronic back pain. *Pain*, 140 (1), 239-43 PMID: [18786763](#)

[5] Lauche R, Cramer H, Haller H, Langhorst J, Musial F, Dobos GJ, Berger B. (in press) “My back has shrunk” – The influence of traditional cupping on body image in patients with chronic neck pain. *Forsch Komplementmed*. PMID

Foot/high heels

Foot Ankle Int. 2012 Jan;33(1):64-9.

The influence of heel height on frontal plane ankle biomechanics: implications for lateral ankle sprains.

Foster A, Blanchette MG, Chou YC, Powers CM.

Source

Los Angeles, CA.

Abstract

BACKGROUND:

Wearing high heel shoes is thought to increase an individual's likelihood of experiencing a lateral ankle sprain. The purpose of this study was to evaluate the influence of heel height on frontal plane kinematics, kinetics, and electromyographic (EMG) activity of the ankle joint during walking.

METHODS:

Eighteen healthy women participated. Three-dimensional kinematics, ground reaction forces, and EMG signals of the tibialis anterior (TA) and peroneus longus (PL) were recorded as subjects ambulated in high (9.5~cm) and low (1.3~cm) heel shoes at a self-selected walking velocity. Peak ankle plantarflexion, peak ankle inversion angle, and the peak ankle inversion moment during the stance phase of gait were evaluated. The EMG variables of interest consisted of the normalized average signal amplitude of the TA and PL during the first 50% of the stance phase. Paired t-tests were used to assess differences between the two shoe conditions.

RESULTS:

When compared to the low heel condition, wearing high heels resulted in significantly greater peak ankle plantarflexion and inversion angles ($p < 0.001$). In addition, the peak inversion moment and PL muscle activation was found to be significantly higher in the high heel condition ($p < 0.001$). No difference in TA muscle activity was found between shoe conditions ($p = 0.30$).

CONCLUSION:

The plantarflexed and inverted posture when wearing high heels may increase an individual's risk for experiencing a lateral ankle sprain.

CLINICAL RELEVANCE:

Data obtained from this investigation highlights the need for increased awareness and proper education related to the wearing of high heel shoes.

PMID: 22381238 [PubMed - in process]

Nutrition

J Am Acad Orthop Surg. 2012 Mar;20(3):123-9.

Vitamin d in orthopaedics.

Patton CM, Powell AP, Patel AA.

Abstract

Vitamin D is an important component in musculoskeletal development, maintenance, and function. Adequate levels of vitamin D correlate with greater bone mineral density, lower rates of osteoporotic fractures, and improved neuromuscular function. Debate exists about both adequate levels required and intake requirements needed to prevent deficiency of vitamin D.

Epidemiologic data have identified an increasing number of orthopaedic patients at risk for vitamin D deficiency, with potentially widespread consequences for bone healing, risk of fracture, and neuromuscular function.

PMID: 22382284 [PubMed - in process]

Knee/ACL

Am J Sports Med. 2012 Mar 1. [Epub ahead of print]

Dynamic Sagittal Plane Trunk Control During Anterior Cruciate Ligament Injury.

Sheehan FT, Sipprell WH 3rd, Boden BP.

Source

Functional and Applied Biomechanics Section in Rehabilitation Medicine, National Institutes of Health, Bethesda, Maryland.

Abstract

BACKGROUND:

Recent studies have demonstrated that trunk control likely plays a role in anterior cruciate ligament (ACL) injury. Yet, the majority of ACL research remains focused on the lower limb, with limited information on the trunk position at the time of injury.

HYPOTHESES:

Athletes experiencing a noncontact ACL injury after a 1-legged landing position their center of mass (COM) more posterior from the base of support (BOS) at initial ground contact in comparison with uninjured athletes. The distance from the COM to the BOS (COM_BOS) is larger in female, as compared with male, athletes during 1-legged landing.

STUDY DESIGN:

Case control study; Level of evidence, 3.

METHODS:

Movie captures of 20 athletes performing a 1-legged landing maneuver resulting in a torn ACL were compared with matched (for gender, sport, and activity just before landing) movie captures of 20 athletes performing a similar maneuver that did not result in an ACL disruption (controls). The COM_BOS, trunk(G) angle, and limb(G) angle (both relative to the gravity vector) were measured in the sagittal plane at initial ground-foot contact. A 2-way ANOVA (injury status × gender) was used to examine the hypotheses.

RESULTS:

There was a significant difference in all 3 measures based on injury status but not on gender. The COM_BOS, normalized by femur length, and limb(G) angle were greater ($\Delta = 0.9$, $P < .001$ and $\Delta = 16^\circ$, $P = .004$, respectively), and the trunk(G) angle was smaller ($\Delta = 12^\circ$, $P = .016$) in the participants who sustained an ACL injury as compared with controls. The average COM was calculated as 38 cm more posterior relative to the BOS in the participants who sustained an ACL injury as compared with controls.

CONCLUSION:

Landing with the COM far posterior to the BOS may be a risk factor for noncontact ACL injury and potentially can be addressed in prevention programs.

PMID: 22383659 [PubMed - as supplied by publisher]

LBP/Pregnancy

Acta Obstet Gynecol Scand. 2012 Feb 24. doi: 10.1111/j.1600-0412.2012.01382.x. [Epub ahead of print]

Does regular exercise during pregnancy influence lumbopelvic pain? A randomized controlled trial.

Stafne SN, Salvesen KA, Romundstad PR, Stuge B, Mørkved S.

Source

Department of Public Health and General Practice, Norwegian University of Science and Technology (NTNU), Trondheim, Norway, Clinical Services, St. Olavs Hospital, Trondheim University Hospital, Trondheim, Norway, National Center for Fetal Medicine, St. Olavs Hospital, Trondheim University Hospital, Norway, Department of Laboratory Medicine, Children's and Women's Health, NTNU, Trondheim, Norway Department of Orthopaedics, Oslo University Hospital, Oslo, Norway.

Abstract

Objective. To study lumbopelvic pain in women randomized to a regular exercise program during pregnancy compared to women receiving standard antenatal care. **Design.** A two-armed, two center randomized controlled trial. **Setting.** St. Olavs Hospital Trondheim University Hospital and Stavanger University Hospital. **Population.** A total of 855 pregnant women were randomized to intervention or control groups. **Methods.** The intervention was a 12-week exercise program, including aerobic and strengthening exercises, conducted between 20 and 36 weeks of pregnancy. One weekly group session was led by physiotherapists and home exercises were encouraged twice a week. Controls received standard antenatal care. **Main Outcome Measures.** Self-reports of lumbopelvic pain and sick leave due to lumbopelvic pain. The data were analyzed according to the "intention-to-treat" principle. **Results.** There were no significant differences between groups of women reporting lumbopelvic pain at 36 weeks (74% vs 75%, $p=0.76$). The proportion of women on sick leave due to lumbopelvic pain was lower in the intervention group (22% vs 31%, $p=0.01$). **Conclusion.** Exercise during pregnancy does not influence the prevalence of lumbopelvic pain, but women offered a regular exercise course seem to handle the disorder better.

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PMID: 22364387 [PubMed - as supplied by publisher]

Gait/LBP

Arch Phys Med Rehabil. 2012 Feb 22. [Epub ahead of print]

Predictors of Walking Performance and Walking Capacity in People With Lumbar Spinal Stenosis, Low Back Pain, and Asymptomatic Controls.

Tomkins-Lane CC, Holz SC, Yamakawa KS, Phalke VV, Quint DJ, Miner J, Haig AJ.

Abstract

Tomkins-Lane CC, Holz SC, Yamakawa KS, Phalke VV, Quint DJ, Miner J, Haig AJ. Predictors of walking performance and walking capacity in people with lumbar spinal stenosis, low back pain, and asymptomatic controls.

OBJECTIVE:

To examine predictors of community walking performance and walking capacity in people with lumbar spinal stenosis (LSS), compared with people with low back pain and asymptomatic control subjects.

PARTICIPANTS:

Participants (N=126; 50 LSS, 44 low back pain, 32 asymptomatic control subjects) aged 55 to 80 years were studied.

INTERVENTIONS:

Not applicable.

MAIN OUTCOME MEASURES:

Seven-day community walking distance measured by pedometer (walking performance) and a 15-minute walking test (walking capacity). All participants had lumbosacral magnetic resonance imaging, electrodiagnostic testing, and a history and physical examination, including a history of pain and neurologic symptoms, a straight leg raise test, and tests for directional symptoms, reflexes, strength, and nerve tension signs. The study questionnaire included demographic information, a history of back/leg pain, and questions about walking, exercise frequency, and pain level, as well as the standardized Quebec Back Pain Disability Scale.

RESULTS:

Body mass index (BMI), pain, age, and female sex predicted walking performance ($r(2)=-.41$) and walking capacity ($r(2)=-.41$). The diagnosis of LSS itself had no clear relationship with either walking variable. Compared with the asymptomatic group, LSS participants had significantly lower values for all walking parameters, with the exception of stride length, while there was no significant difference between the LSS and low back pain groups.

CONCLUSIONS:

BMI, pain, female sex, and age predict walking performance and capacity in people with LSS, those with low back pain, and asymptomatic control subjects. While pain was the strongest predictor of walking capacity, BMI was the strongest predictor of walking performance. Average pain, rather than leg pain, was predictive of walking performance and capacity. Obesity and pain are modifiable predictors of walking deficits that could be targets for future intervention studies aimed at increasing walking performance and capacity in both the low back pain and LSS populations.

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PMID: 22365377 [PubMed - as supplied by publisher]

Shoulder/Injection

J Shoulder Elbow Surg. 2012 Feb 25. [Epub ahead of print]

Does hyaluronate injection work in shoulder disease in early stage? A multicenter, randomized, single blind and open comparative clinical study.

Kim YS, Park JY, Lee CS, Lee SJ.

Source

Department of Orthopaedic Surgery, Catholic University School of Medicine, Seoul, South Korea.

Abstract

BACKGROUND:

This study assessed the hypothesis that injection of high-molecular weight hyaluronate in the treatment of subacromial impingement syndrome is effective and safe, compared with corticosteroid injection in the shoulder joint.

METHODS:

One hundred five patients were allocated randomly into 2 groups: 1 group was injected once a week for 3 weeks with hyaluronate and the other group was injected once with corticosteroid. All injections were guided to the subacromial space by an ultrasonogram. Eighty patients were followed up for 12 weeks after the injection: 38 patients in the hyaluronate group and 42 patients in the corticosteroid group. The functional outcome was measured using the American Shoulder and Elbow Surgeons standardized shoulder assessment form (ASES).

RESULTS:

The Visual Analogue Scale (VAS) score at 12 weeks was decreased significantly from 58.6 ± 19.3 to 24.6 ± 23.1 in the hyaluronate group ($P < .0001$) and from 57.2 ± 19.9 to 36.9 ± 26.5 ($P < .0001$) in the corticosteroid group. There was a significant difference in the VAS score between the hyaluronic acid group and corticoid group ($P = .0180$) at 12 weeks. The functional ASES scores in the hyaluronate and corticosteroid groups were increased from 17.6 ± 4.8 to 22.4 ± 6.5 and from 17.3 ± 4.9 to 21.7 ± 5.8 , respectively, at 12 weeks ($P = .4825$). There was no difference in the number of patients requiring rescue medication between the hyaluronate group and corticosteroid group at 12 weeks ($P = .9254$).

CONCLUSION:

A subacromial hyaluronate injection to treat impingement syndrome produces similar pain and functional improvement to corticosteroid at a short-term follow-up.

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PMID: 22366365 [PubMed - as supplied by publisher]

Sholder/Slap

J Shoulder Elbow Surg. 2012 Feb 24. [Epub ahead of print]

The influence of superior labrum anterior to posterior (SLAP) repair on restoring baseline glenohumeral translation and increased biceps loading after simulated SLAP tear and the effectiveness of SLAP repair after long head of biceps tenotomy.

Patzer T, Habermeyer P, Hurschler C, Bobrowitsch E, Wellmann M, Kircher J, Schofer MD.

Source

Department of Orthopaedics, University Hospital of Düsseldorf, Düsseldorf, Germany.

Abstract

HYPOTHESIS:

Biomechanical studies have shown increased glenohumeral translation and loading of the long head biceps (LHB) tendon after superior labrum anterior to posterior (SLAP) tears. This may explain some of the typical clinical findings, including the prevalence of humeral chondral lesions, after SLAP lesions. The first hypothesis was that SLAP repair could restore the original glenohumeral translation and reduce the increased LHB load after SLAP lesions. The second hypothesis was that SLAP repair after LHB tenotomy could significantly reduce the increased glenohumeral translation.

MATERIALS AND METHODS:

Biomechanical testing was performed on 21 fresh frozen human cadaveric shoulders with an intact shoulder girdle using a sensor-guided industrial robot to apply 20 N of compression in the joint and 50 N translational force at 0°, 30°, and 60° of abduction. LHB loading was measured by a load-cell with 5 N and 25 N preload. Type IIC SLAP lesions were created arthroscopically, and a standardized SLAP repair was done combined with or without LHB tenotomy.

RESULTS:

No significant difference of glenohumeral translation and increased LHB load in SLAP repair compared with the intact shoulder was observed under 5 N and 25 LHB preload, except for anterior translation under 25 N LHB preload. After LHB tenotomy after SLAP lesions, no significant difference of translation was observed with or without SLAP repair.

CONCLUSIONS:

SLAP repair without associated LHB tenotomy helps normalize glenohumeral translation and LHB loading. The stabilizing effect of the SLAP complex is dependent on the LHB. After biceps tenotomy, SLAP repair does not affect glenohumeral translation.

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PMID: 22365557 [PubMed - as supplied by publisher]

Shoulder

Subacromial Impingement Syndrome (BMJ 2012 Feb 20)

A specific exercise strategy that focuses on strengthening eccentric exercises for the rotator cuff and concentric/eccentric exercises for the scapula stabilizers is effective in reducing pain and improving shoulder function in patients with persistent subacromial impingement syndrome, say authors of an [article](#) published online in *BMJ*. By extension, they add, this exercise strategy reduced the need for arthroscopic subacromial decompression within the 3-month timeframe used in the study.

This randomized, participant and single assessor blinded controlled study was conducted in an orthopedic department in a Swedish university hospital. Orthopedic specialists recruited 102 patients with longstanding (more than 6 months) persistent subacromial impingement syndrome that did not respond to earlier conservative treatment.

The specific exercise strategy consisted of strengthening eccentric exercises for the rotator cuff and concentric/eccentric exercises for the scapula stabilizers in combination with manual mobilization. The control exercise program consisted of unspecific movement exercises for the neck and shoulder. Patients in both groups received 5 to 6 individual guided treatment sessions during 12 weeks. In between these supervised sessions the participants performed home exercises once or twice a day for 12 weeks.

The primary outcome was the Constant-Murley shoulder assessment score evaluating shoulder function and pain. Secondary outcomes were patients' global impression of change because of treatment and decision regarding surgery.

Most (97, 95%) participants completed the 12-week study. There was a significantly greater improvement in the Constant-Murley score in the specific exercise group than in the control exercise group (24 points vs 9 points). Significantly more patients in the specific exercise group reported successful outcome (defined as large improvement or recovered) in the patients' global assessment of change because of treatment—69% (35/51) vs 24% (11/46); odds ratio 7.6 (95% confidence interval 3.1 to 18.9). A significantly lower proportion of patients in the specific exercise group subsequently chose to undergo surgery—20% (10/51) vs 63% (29/46); odds ratio 7.7 (95% confidence interval 3.1 to 19.4).

Manipulation/red flag

Spinal cord injury following chiropractic manipulation to the neck.

Chakraverty J, Curtis O, Hughes T, Hourihan M

Acta radiologica (Stockholm, Sweden : 1987)

20111200

52(10):1125-7

Language: eng

Country: England

Clinical Radiology, University Hospital of Wales, Cardiff.

Spinal cord injury is a rare complication of chiropractic treatment. This case report describes a 50-year-old man who developed neurological symptoms a few hours after manipulation (high velocity low amplitude [HVLA] technique) of the cervical spine. Magnetic resonance (MR) imaging of the cervical spine revealed intramedullary high signal at the C2/3 level of the right side of the cervical cord on the T2-weighted images. The potential mechanism of injury and causes of the radiological appearance are discussed.

PMID: 22025741

[View Citation at PubMed](#)

Fibromyalgia

Ann Rheum Dis. 2011 Dec;70(12):2131-3. Epub 2011 Sep 16.

Tailored cognitive-behavioural therapy and exercise training improves the physical fitness of patients with fibromyalgia.

van Koulik S, van Lankveld W, Kraaijmaat FW, van Helmond T, Vedder A, van Hoorn H, Donders AR, Wirken L, Cats H, van Riel PL, Evers AW.

Source

Department of Medical Psychology, Radboud University Nijmegen Medical Centre, The Netherlands. s.vankoulik@mps.umcn.nl

Abstract

OBJECTIVES:

Patients with fibromyalgia have diminished levels of physical fitness, which may lead to functional disability and exacerbating complaints. Multidisciplinary treatment comprising cognitive-behavioural therapy (CBT) and exercise training has been shown to be effective in improving physical fitness. However, due to the high drop-out rates and large variability in patients' functioning, it was proposed that a tailored treatment approach might yield more promising treatment outcomes.

METHODS:

High-risk fibromyalgia patients were randomly assigned to a waiting list control group (WLC) or a treatment condition (TC), with the treatment consisting of 16 twice-weekly sessions of CBT and exercise training tailored to the patient's cognitive-behavioural pattern. Physical fitness was assessed with two physical tests before and 3 months after treatment and at corresponding intervals in the WLC. Treatment effects were evaluated using linear mixed models.

RESULTS:

The level of physical fitness had improved significantly in the TC compared with the WLC. Attrition rates were low, effect sizes large and reliable change indices indicated a clinically relevant improvement among the TC.

CONCLUSIONS:

A tailored multidisciplinary treatment approach for fibromyalgia consisting of CBT and exercise training is well tolerated, yields clinically relevant changes, and appears a promising approach to improve patients' physical fitness. ClinicalTrials.gov ID NCT00268606.

PMID: 21926189 [PubMed - indexed for MEDLINE]

Arch Intern Med. 2011 Dec 12;171(22):2019-26. Epub 2011 Oct 24.

A randomized trial comparing yoga, stretching, and a self-care book for chronic low back pain.

Sherman KJ, Cherkin DC, Wellman RD, Cook AJ, Hawkes RJ, Delaney K, Deyo RA.

Source

Group Health Research Institute, Seattle, WA 98101, USA. sherman.k@ghc.org

Abstract

BACKGROUND:

Chronic low back pain is a common problem lacking highly effective treatment options. Small trials suggest that yoga may have benefits for this condition. This trial was designed to determine whether yoga is more effective than conventional stretching exercises or a self-care book for primary care patients with chronic low back pain.

METHODS:

A total of 228 adults with chronic low back pain were randomized to 12 weekly classes of yoga (92 patients) or conventional stretching exercises (91 patients) or a self-care book (45 patients). Back-related functional status (modified Roland Disability Questionnaire, a 23-point scale) and bothersomeness of pain (an 11-point numerical scale) at 12 weeks were the primary outcomes. Outcomes were assessed at baseline, 6, 12, and 26 weeks by interviewers unaware of treatment group.

RESULTS:

After adjustment for baseline values, 12-week outcomes for the yoga group were superior to those for the self-care group (mean difference for function, -2.5 [95% CI, -3.7 to -1.3]; $P < .001$; mean difference for symptoms, -1.1 [95% CI, -1.7 to -0.4]; $P < .001$). At 26 weeks, function for the yoga group remained superior (mean difference, -1.8 [95% CI, -3.1 to -0.5]; $P < .001$). Yoga was not superior to conventional stretching exercises at any time point.

CONCLUSION:

Yoga classes were more effective than a self-care book, but not more effective than stretching classes, in improving function and reducing symptoms due to chronic low back pain, with benefits lasting at least several months.

TRIAL REGISTRATION:

clinicaltrials.gov Identifier: NCT00447668.

Comment in

Arch Intern Med. 2011 Dec 12;171(22):2026-7.

Pelvic girdle/ manipulation

Arch Phys Med Rehabil. 2012 Jan;93(1):56-61.

Sacroiliac joint manipulation attenuates alpha-motoneuron activity in healthy women: a quasi-experimental study.

Orakifar N, Kamali F, Pirouzi S, Jamshidi F.

Source

Physiotherapy Section, School of Rehabilitation Sciences, Shiraz University of Medical Sciences, Shiraz, Iran.

Abstract

OBJECTIVE:

To determine whether sacroiliac joint (SIJ) manipulation decreases α -motoneuron activity and increases the pressure pain threshold (PPT) over the posterior superior iliac spine (PSIS) in healthy women.

DESIGN:

Quasi-experimental study.

SETTING:

A university medical center.

PARTICIPANTS:

Healthy young women (N=20) aged 18 to 30 years were recruited from among the students of a university medical center after a request for volunteers.

INTERVENTIONS:

Joint manipulation consisted of the supine rotational glide manipulation for the sacroiliac region. PPT measurements from the PSIS and Hoffman-reflex (H-reflex) amplitudes from the tibial nerve on the same side were recorded before and after joint manipulation. PPT was monitored for 15 minutes and H-reflex for 20 minutes after the procedure.

MAIN OUTCOME MEASURES:

Changes in tibial nerve H-reflex amplitude and PPT values after SIJ manipulation.

RESULTS:

SIJ manipulation attenuated α -motoneuronal activity significantly ($P<.05$) but transiently, since the decrease was seen only for 20 seconds after the intervention. There was no positive significant difference in the PPT after SIJ manipulation at any time during postintervention follow-up.

CONCLUSIONS:

SIJ manipulation produced a transient attenuation of α -motoneuron excitability in healthy women. These findings demonstrate that our manipulation technique can lead to a short-term reduction in muscle tone as a result of changes in sensory discharge, predominantly in Ia afferents. SIJ manipulation did not significantly affect the PPT in healthy women.

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Carpal Tunnel

Arch Phys Med Rehabil. 2012 Jan;93(1):78-81.

Physical rehabilitation with ergonomic intervention of currently working keyboard operators with nonspecific/type II work-related upper limb disorder: a prospective study.

Povlsen B.

Source

Department of Orthopaedic Surgery, Guy's & St Thomas' Hospitals, London, UK.
bo@manusmedical.com

Abstract

OBJECTIVE:

To evaluate the effect of a physical training program in combination with ergonomic changes in a group of keyboard operators with nonspecific/type II work-related upper limb disorder (WRULD).

DESIGN:

Prospective study.

SETTING:

Hospital department.

PARTICIPANTS:

Pain-free controls (n=6) and currently working patients with WRULD (n=17) were included.

INTERVENTIONS:

Participants were taught how to self-rehabilitate according to a previously published physical exercise program, in addition the patients requested maximal ergonomic assistance from their employer according to British law.

MAIN OUTCOMES MEASURES:

Pain at rest and after a standardized functional typing test, before and after rehabilitation, with recording of endurance and calculation of typing speed during the tests. Statistical evaluation: Student t test, paired, and 2-tailed.

RESULTS:

After the rehabilitation program, the patients as a group had significantly less pain both at rest (P=.009) and after the typing test (P<.001). The typing endurance improved significantly (P=.027) and became similar to the healthy control group (P=.09). The typing speed improved significantly in the patient group after rehabilitation (P=.032) and became similar to the normal control group (P=.058).

CONCLUSIONS:

Currently working keyboard operators with nonspecific/type II WRULD can benefit significantly from a combination of an individualized self-administered physical rehabilitation program and ergonomic work place improvements. Randomized control studies are needed to further investigate the long-term effect of this encouraging finding.

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PMID: 22200385 [PubMed - indexed for MEDLINE]

Alexander

Int J Clin Pract. 2012 Jan;66(1):98-112. doi: 10.1111/j.1742-1241.2011.02817.x.

Evidence for the effectiveness of Alexander Technique lessons in medical and health-related conditions: a systematic review.

Woodman JP, Moore NR.

Source

Department of Health Sciences, University of York, York, UK. julia@woodman.eclipse.co.uk

Abstract

BACKGROUND:

Complementary medicine and alternative approaches to chronic and intractable health conditions are increasingly being used, and require critical evaluation.

OBJECTIVE:

The aim of this review was to systematically evaluate available evidence for the effectiveness and safety of instruction in the Alexander Technique in health-related conditions.

METHODS:

PUBMED, EMBASE, PSYCHINFO, ISI Web-of-Knowledge, AMED, CINHAI-plus, Cochrane library and Evidence-based Medicine Reviews were searched to July 2011. Inclusion criteria were prospective studies evaluating Alexander Technique instruction (individual lessons or group delivery) as an intervention for any medical indication/health-related condition. Studies were categorised and data extracted on study population, randomisation method, nature of intervention and control, practitioner characteristics, validity and reliability of outcome measures, completeness of follow-up and statistical analyses. Results: Of 271 publications identified, 18 were selected: three randomised, controlled trials (RCTs), two controlled non-randomised studies, eight non-controlled studies, four qualitative analyses and one health economic analysis. One well-designed, well-conducted RCT demonstrated that, compared with usual GP care, Alexander Technique lessons led to significant long-term reductions in back pain and incapacity caused by chronic back pain. The results were broadly supported by a smaller, earlier RCT in chronic back pain. The third RCT, a small, well-designed, well-conducted study in individuals with Parkinson's disease, showed a sustained increased ability to carry out everyday activities following Alexander lessons, compared with usual care. The 15 non-RCT studies are also reviewed.

CONCLUSIONS:

Strong evidence exists for the effectiveness of Alexander Technique lessons for chronic back pain and moderate evidence in Parkinson's-associated disability. Preliminary evidence suggests that Alexander Technique lessons may lead to improvements in balance skills in the elderly, in general chronic pain, posture, respiratory function and stuttering, but there is insufficient evidence to support recommendations in these areas.

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Manipulation/red flags

J Neurosurg. 2011 Dec;115(6):1197-205. Epub 2011 Sep 16.

Cranio-cervical arterial dissections as sequelae of chiropractic manipulation: patterns of injury and management.

Albuquerque FC, Hu YC, Dashti SR, Ablu AA, Clark JC, Alkire B, Theodore N, McDougall CG.

Source

Division of Neurological Surgery, Barrow Neurological Institute, St. Joseph's Hospital and Medical Center, Phoenix, Arizona 85013, USA. neuropub@chw.edu

Abstract

OBJECT:

Chiropractic manipulation of the cervical spine is a known cause of cranio-cervical arterial dissections. In this paper, the authors describe the patterns of arterial injury after chiropractic manipulation and their management in the modern endovascular era.

METHODS:

A prospectively maintained endovascular database was reviewed to identify patients presenting with cranio-cervical arterial dissections after chiropractic manipulation. Factors assessed included time to symptomatic presentation, location of the injured arterial segment, neurological symptoms, endovascular treatment, surgical treatment, clinical outcome, and radiographic follow-up.

RESULTS:

Thirteen patients (8 women and 5 men, mean age 44 years, range 30-73 years) presented with neurological deficits, head and neck pain, or both, typically within hours or days of chiropractic manipulation. Arterial dissections were identified along the entire course of the vertebral artery, including the origin through the V(4) segment. Three patients had vertebral artery dissections that continued rostrally to involve the basilar artery. Two patients had dissections of the internal carotid artery (ICA): 1 involved the cervical ICA and 1 involved the petrocavernous ICA. Stenting was performed in 5 cases, and thrombolysis of the basilar artery was performed in 1 case. Three patients underwent emergency cerebellar decompression because of impending herniation. Six patients were treated with medication alone, including either anticoagulation or antiplatelet therapy. Clinical follow-up was obtained in all patients (mean 19 months). Three patients had permanent neurological deficits, and 1 died of a massive cerebellar stroke. The remaining 9 patients recovered completely. Of the 12 patients who survived, radiographic follow-up was obtained in all but 1 of the most recently treated patients (mean 12 months). All stents were widely patent at follow-up.

CONCLUSIONS:

Chiropractic manipulation of the cervical spine can produce dissections involving the cervical and cranial segments of the vertebral and carotid arteries. These injuries can be severe, requiring endovascular stenting and cranial surgery. In this patient series, a significant percentage (31%, 4/13) of patients were left permanently disabled or died as a result of their arterial injuries.

Stretching

J Strength Cond Res. 2012 Mar;26(3):832-6.

A 10-week stretching program increases strength in the contralateral muscle.

Nelson AG, Kokkonen J, Winchester JB, Kalani W, Peterson K, Kenly MS, Arnall DA.

Source

1Department of Kinesiology, Louisiana State University, Baton Rouge, Louisiana; 2Exercise and Sport Science Department, Brigham Young University-Hawaii, Laie, Hawaii; 3Department of Kinesiology, Leisure and Sports Science, East Tennessee State University, Johnson City, Tennessee; and 4Physical Therapy Department, East Tennessee State University, Johnson City, Tennessee.

Abstract

Nelson, AG, Kokkonen, J, Winchester, JB, Kalani, W, Peterson, K, Kenly, MS, and Arnall, DA. A 10-week stretching program increases strength in the contralateral muscle. *J Strength Cond Res* 26(3): 832-836, 2012-It was questioned whether a unilateral stretching program would induce a crosstraining effect in the contralateral muscle. To test this, 13 untrained individuals participated in a 10-week stretching program while 12 other untrained individuals served as a control group. For the experimental group, the right calf muscle was stretched 4 times for 30 seconds, with a 30-second rest between stretches, 3 d-wk for 10 weeks. Strength, determined via 1 repetition maximum (1RM) unilateral standing toe raise, and range of motion (ROM) were measured pre-post. In the treatment group, the stretched calf muscle had a significant ($p < 0.05$) 8% increase in ROM, whereas the nonstretched calf muscle had a significant 1% decrease in ROM. The 1 RM of the stretched calf muscle significantly increased 29%, whereas the 1RM of the nonstretched calf muscle significantly increased 11%. In the control group, neither 1RM nor ROM changed for either leg. The results indicate that 10 weeks of stretching only the right calf will significantly increase the strength of both calves. Hence, chronic stretching can also induce a crosstraining effect for strength but not for the ROM. This study also validates earlier findings suggesting that stretching can elicit strength gains in untrained individuals.

Arthritis/Pain

Rheumatology (Oxford). 2011 Dec;50(12):2157-65. Epub 2011 Sep 27.

What makes osteoarthritis painful? The evidence for local and central pain processing.

Sofat N, Ejindu V, Kiely P.

Source

Department of Biomedical Sciences, St George's University of London, London, UK.
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Abstract

OA is a chronic arthritic disease characterized by pain, local tissue damage and attempts at tissue repair. Historically, cartilage damage was believed to be the hallmark of OA. However, since cartilage is an avascular, aneural tissue, the mechanisms of pain are likely to be complex and influenced by non-cartilaginous structures in the joint including the synovium, bone and soft tissue. Imaging studies reveal the presence of synovitis and bone marrow lesions that may mediate pain. The presence of local joint inflammation and altered cartilage and bone turnover in OA implicates a potential role for a range of molecular mediators in OA pain. Mechanisms of pain perception may include the activation and release of local pro-inflammatory mediators such as prostaglandins and cytokines accompanied by the destruction of tissue, which is mediated by proteases. However, clinically, there is often disparity between the degree of pain perception and the extent of joint changes in subjects with OA. Such observations have prompted work to investigate the mechanisms of central pain perception in OA. Functional MRI has identified multiple areas of the brain that are involved in OA pain processing. These data demonstrate that pain perception in OA is complex in being influenced by local factors and activation of central pain-processing pathways. In this review, we will discuss current concepts underlying the pathophysiology of pain perception in OA and suggest possible directions for the future management of pain in this condition based on recent clinical studies.

PMID: 21954151 [PubMed - indexed for MEDLINE]

CRPS

Demographic and medical parameters in the development of complex regional pain syndrome type 1 (CRPS1): prospective study on 596 patients with a fracture □Pain, 03/06/2012

Beerthuisen A et al. – The incidence of the diagnosis of CRPS1 after a single fracture depends to a large extent on the diagnostic criteria used. After a fracture, 7% of the patients developed CRPS1 and none of the patients were free of symptoms at 1-year follow-up.

Methods

- A prospective multicenter cohort study of 596 patients (ages 18 years and older) with a single fracture of the wrist, scaphoid, ankle, or metatarsal V, recruited patients from the emergency rooms of 3 Dutch hospitals.
- Of the 596 participants, 42 (7.0%) were diagnosed with CRPS1 according to the Harden and Bruehl criteria, 289 (48.5%) according to the International Association for the Study of Pain criteria, and 127 (21.3%) according to the criteria of Veldman.

Results

- An analysis of the medical and demographic differences revealed that patients in whom CRPS1 later developed more often had intra-articular fractures, fracture dislocations, rheumatoid arthritis, or musculoskeletal comorbidities.
- An ankle fracture, dislocation, and an intra-articular fracture contributed significantly to the prediction of the development of CRPS1.
- No CRPS1 patients were symptom free at 12 months (T3).
- At baseline, patients with CRPS1 had significantly more pain than patients without CRPS1 ($P < .001$).

The incidence of the diagnosis of CRPS1 after a single fracture depends to a large extent on the diagnostic criteria used.

Gait

Gait adaptations in low back pain patients with lumbar disc herniation: trunk coordination and arm swing *Full Text* □ *European Spine Journal*, 01/05/2011

Huang YP et al. – Patients with chronic non-specific low back pain (LBP) walk with more synchronous (in-phase) horizontal pelvis and thorax rotations than controls. In the present study, gait kinematics were compared between LBP patients with lumbar disc herniation and healthy controls during treadmill walking at different speeds and with different step lengths. Movements of legs, arms, and trunk were recorded.

Patients with chronic non-specific low back pain (LBP) walk with more synchronous (in-phase) horizontal pelvis and thorax rotations than controls. Low thorax–pelvis relative phase in these patients appears to result from in-phase motion of the thorax with the legs, which was hypothesized to affect arm swing. In the present study, gait kinematics were compared between LBP patients with lumbar disc herniation and healthy controls during treadmill walking at different speeds and with different step lengths. Movements of legs, arms, and trunk were recorded. The patients walked with larger pelvis rotations than healthy controls, and with lower relative phase between pelvis and thorax horizontal rotations, specifically when taking large steps. They did so by rotating the thorax more in-phase with the pendular movements of the legs, thereby limiting the amplitudes of spine rotation. In the patients, arm swing was out-of phase with the leg, as in controls. Consequently, the phase relationship between thorax rotations and arm swing was altered in the patients.

Fibromyalgia

Predictors of clinical pain in fibromyalgia: examining the role of sleep □ **The Journal of Pain, 03/06/2012**

Anderson RJ et al. – This study suggests that measures of sleep duration and nightly wake time do not predict fibromyalgia pain at the group level. Fibromyalgia patients may benefit from a 3-pronged approach to pain management: reducing pain's spatial extent, normalization of central nervous system hypersensitivity, and psychobehavioral therapies for negative mood.

Methods

- Authors hypothesized that measures of sleep would increase the predictive ability of the clinical pain model.
- Measures of usual pain, spatial extent of pain, negative mood, and pain aftersensation were taken from 74 adults with fibromyalgia.
- Objective (actigraph) and subjective (diary) measures of sleep duration and nightly wake time were also obtained from the participants over 14 days.
- Hierarchical regression indicated that greater spatial extent ($R^2 = .26$), higher aftersensation ratings ($R^2 = .06$), and higher negative mood ($R^2 = .04$) accounted for 36% of the variance in clinical pain (average of 14 daily pain ratings).

Results

- None of the sleep variables were significant predictors of clinical pain.

Results replicate previous research and suggest that spatial extent of pain, pain aftersensation, and negative mood play important roles in clinical pain, but sleep disturbance did not aid in its prediction.

Neural Tension

Radial Nerve Mobilization Decreases Pain Sensitivity and Improves Motor Performance in Patients With Thumb Carpometacarpal Osteoarthritis: A Randomized Controlled Trial

□Archives of Physical Medicine and Rehabilitation, 03/05/2012

Villafane JH et al. – Variables in the placebo group remained unchanged. Tip pinch strength increased by $2.22 \pm .22\text{kg}$ ($P < .04$) and tripod pinch strength by $2.83 \pm .24\text{kg}$ ($P < .019$). Radial nerve mobilization decreases pain sensitivity in the trapeziometacarpal joint and increases tip pinch strength

Villafañe JH, Silva GB, Bishop MD, Fernandez-Carnero J. Radial nerve mobilization decreases pain sensitivity and improves motor performance in patients with thumb carpometacarpal osteoarthritis: a randomized controlled trial.

Objective

To examine the effects of radial nerve mobilization on pain sensitivity and motor performance in subjects with secondary thumb carpometacarpal osteoarthritis.

Design

Randomized controlled trial. Treatment and placebo were given for 4 weeks. Measurements were taken before intervention, after 1 month (first follow-up), and after 2 months (second follow-up).

Setting

Patients from the Department of Physical Therapy, Azienda Sanitaria Locale 3, Collegno (Italy).

Participants

Participants ($N=60$; age range, 70–90y) with right-dominant hand secondary thumb carpometacarpal osteoarthritis without other motor-related pathology. All patients completed the study. No patients were withdrawn from the study.

Interventions

Sliding mobilization of the proximal-distal radial nerve or intermittent ultrasound therapy, used as placebo.

Main Outcome Measures

We hypothesized that radial nerve mobilization induces hypoalgesia and increases strength in secondary thumb carpometacarpal osteoarthritis. We measured pressure pain threshold (PPT) at the trapeziometacarpal joint, the tubercle of the scaphoid bone, and the unciform apophysis of the hamate bone by algometry. Tip pinch strength and tripod pinch strength were measured by a mechanical pinch gauge.

Results

Treatment increased PPT by $3.33 \pm .24\text{kg/cm}^2$ ($P < .001$) in the trapeziometacarpal joint and was maintained until first follow-up and second follow-up. Also, PPT in the scaphoid bone and hamate bone was increased ($P < .001$ and $P < .02$, respectively). Variables in the placebo group remained unchanged. Tip pinch strength increased by $2.22 \pm .22\text{kg}$ ($P < .04$) and tripod pinch strength by $2.83 \pm .24\text{kg}$ ($P < .019$).

Conclusions

Radial nerve mobilization decreases pain sensitivity in the trapeziometacarpal joint and increases tip pinch strength.

Migraine

Migraine and restless legs syndrome in women □ Cephalalgia, 03/08/2012

Schurks M et al. – This data suggest an association between migraine and restless legs syndrome (RLS) at the population level. The association is similar for migraine with and without aura and for new reports of migraine during follow-up.

Methods

- Cohort study among 31,370 women participating in the Women's Health Study.
- Authors had detailed self-reported information on migraine, including aura status, and RLS. RLS was ascertained at the 9-year follow-up.
- Authors calculated odds ratios (OR) and 95% confidence intervals (CI) for the association between migraine and RLS.
- Authors investigated any indication of migraine until RLS ascertainment as well as migraine with and without aura at baseline, prior migraine before baseline, and new reports of migraine during follow-up.

Results

- At baseline or during follow-up 6857 (21.9%) women reported any migraine.
- These women had an increased risk for RLS (multivariable-adjusted OR = 1.22; 95%CI 1.13–1.32).
- Further analyses indicated a similar association for migraine with aura (multivariable-adjusted OR = 1.27; 95%CI 1.10–1.48) and migraine without aura (multivariable-adjusted OR = 1.24; 95%CI 1.09–1.40) as well as for new reports of migraine during follow-up (multivariable-adjusted OR = 1.30; 95%CI 1.10–1.54).

Prior migraine did not appear to be associated with RLS.

Dysmenorrhea/vitamin D

Vitamin D is linked to reduced pain in women with primary dysmenorrhea *Full Text* □OBG Management, 03/09/2012 **Clinical Article**

To the knowledge, this is the first study investigating the effect of a single high dose of vitamin D in primary dysmenorrhea,” the authors write. “The data support the use of cholecalciferol in these patients, especially when exhibiting low plasmatic levels of 25(OH)D, and allow these women to limit the use of NSAIDs.”

Methods

- The prospective intervention study to assess the effect of a single oral dose of cholecalciferol on 40 women aged 18 to 40 years with primary dysmenorrhea.
- Women were randomly allocated in a 1:1 ratio to receive either cholecalciferol (300,000 IU) or placebo five days before the putative beginning of their next menstrual period.

Results

- The investigators identified a significant, negative correlation between the pain score at baseline and levels of 25(OH)D.
- Compared with the placebo group, there was a significant reduction in pain in the vitamin D group over the two-month study.
- Compared with the placebo group, there was a significant reduction in pain in the vitamin D group over the two-month study.
- Women with severe pain at baseline in the vitamin D group experienced the greatest reduction in pain score.

In the vitamin D group, there was no NSAID use recorded at one and two months, while 40% of the placebo group took NSAIDs at least once ($P = 0.003$).

Changes in regional gray matter volume in women with chronic pelvic pain: a voxel-based morphometry study □Pain, 03/09/2012

As-Sanie S et al. – Although endometriosis may be an important risk factor for the development of chronic pelvic pain (CPP), acting as a cyclic source of peripheral nociceptive input, This data support the notion that changes in the central pain system also play an important role in the development of chronic pain, regardless of the presence of endometriosis.

Summary

Chronic pelvic pain, with and without endometriosis, is associated with changes in regional gray matter volume within the central pain system.

Abstract

Chronic pelvic pain (CPP) is a highly prevalent pain condition, estimated to affect 15%–20% of women in the United States. Endometriosis is often associated with CPP, however, other factors, such as preexisting or concomitant changes of the central pain system, might contribute to the development of *chronic* pain. We applied voxel-based morphometry to determine whether women with CPP with and without endometriosis display changes in brain morphology in regions known to be involved in pain processing. Four subgroups of women participated: 17 with endometriosis and CPP, 15 with endometriosis without CPP, 6 with CPP without endometriosis, and 23 healthy controls. All patients with endometriosis and/or CPP were surgically confirmed. Relative to controls, women with endometriosis-associated CPP displayed decreased gray matter volume in brain regions involved in pain perception, including the left thalamus, left cingulate gyrus, right putamen, and right insula. Women with CPP without endometriosis also showed decreases in gray matter volume in the left thalamus. Such decreases were not observed in patients with endometriosis who had no CPP. We conclude that CPP is associated with changes in regional gray matter volume within the central pain system. Although endometriosis may be an important risk factor for the development of CPP, acting as a cyclic source of peripheral nociceptive input, our data support the notion that changes in the central pain system also play an important role in the development of chronic pain, regardless of the presence of endometriosis.

Self-reported pain severity, quality of life, disability, anxiety and depression in patients classified with 'nociceptive', 'peripheral neuropathic' and 'central sensitisation' pain. The discriminant validity of mechanisms-based classifications of low back (\pm leg) pain

- [Keith M. Smart](#) , [Catherine Blake](#), [Anthony Staines](#), [Catherine Doody](#)

Abstract

Evidence of validity is required to support the use of mechanisms-based classifications of pain clinically. The purpose of this study was to evaluate the discriminant validity of 'nociceptive' (NP), 'peripheral neuropathic' (PNP) and 'central sensitisation' (CSP) as mechanisms-based classifications of pain in patients with low back (\pm leg) pain by evaluating the extent to which patients classified in this way differ from one another according to health measures associated with various dimensions of pain.

This study employed a cross-sectional, between-subjects design. Four hundred and sixty-four patients with low back (\pm leg) pain were assessed using a standardised assessment protocol. Clinicians classified each patient's pain using a mechanisms-based classification approach. Patients completed a number of self-report measures associated with pain severity, health-related quality of life, functional disability, anxiety and depression. Discriminant validity was evaluated using a multivariate analysis of variance.

There was a statistically significant difference between pain classifications on the combined self-report measures, ($p = .001$; Pillai's Trace = .33; partial eta squared = .16). Patients classified with CSP ($n = 106$) reported significantly more severe pain, poorer general health-related quality of life, and greater levels of back pain-related disability, depression and anxiety compared to those classified with PNP ($n = 102$) and NP ($n = 256$). A similar pattern was found in patients with PNP compared to NP.

Mechanisms-based pain classifications may reflect meaningful differences in attributes underlying the multidimensionality of pain. Further studies are required to evaluate the construct and criterion validity of mechanisms-based classifications of musculoskeletal pain

Normal neurodynamic responses of the femoral slump test

- [Weng-Hang Lai](#), [Yi-Fen Shih](#) , [Pei-Ling Lin](#), [Wen-Yin Chen](#), [Hsiao-Li Ma](#)

Abstract

Femoral slump test is a neurodynamic testing, which could be used to assess the mechanosensitivity of the femoral component of the nervous system. Although Trainor and Pinnington reported the diagnosis accuracy of the femoral slump test, the neurodynamic responses of the femoral slump test have never been studied. The purposes of this study were to evaluate whether maneuvers that changed the nerve tension altered the responses of the femoral slump test and if these responses were influenced by gender and leg dominance; and to identify the correlations between flexibility and measured hip extension angle. Thirty-two asymptomatic subjects (16 males, 16 females) were recruited. The femoral slump test was performed in trunk slump and neutral positions, and cervical extension was used as the structure differential technique. Hip extension angle and visual analog scale (VAS) of thigh pain was measured during the test. Our results showed the decrease of nerve tension significantly increased hip extension ROM ($P < 0.001$) and lowered pain intensity ($P < 0.001$). The hip extension ROM was similar between genders but smaller for the dominant leg, as compared to the non-dominant side ($P < 0.05$); and the hip ROM did not correlate with any of the flexibility indices ($P > 0.05$). These findings indicated that femoral slump test resulted in normal neurodynamic responses in individuals free of lower extremity problems, and these responses were independent of the influence of muscle flexibility or gender. Future research should emphasize the use of femoral slump test in patient groups such as low back and anterior knee pain.

Manual Therapy

Volume 17, Issue 2 , Pages 133-138, April 2012

Perception of subjective visual vertical and horizontal in patients with chronic neck pain: A cross-sectional observational study

- [Sharon Docherty](#) , [Rebekka Schärer](#), [Jeff Bagust](#), [B. Kim Humphreys](#)

Abstract

Previous studies have shown that chronic neck pain (CNP) patients have a larger spread of perceptual errors for subjective visual vertical (SVV) than those exhibited by asymptomatic controls. The current study investigated whether this was also the case for perception of subjective visual horizontal (SVH) and whether there was a correlation between the two measurements. Fifty patients with CNP were compared with a group of 50 age- and gender-matched controls. All subjects were required to complete a test to measure SVH as well as SVV using the computerised rod and frame (CRAF) test. These tests were conducted under various frame conditions. No difference was found between the errors of the CNP and control groups in the absence of a surrounding frame. When a tilted frame was added to the CRAF test, the range of errors observed in the CNP group increased for both SVV and SVH. In particular, significantly more CNP patients fell outside the reference range of errors and a subgroup of patients, characterised by higher neck pain disability indices, was identified who demonstrated higher than expected errors for both SVV and SVH. However no conclusion could be drawn with regards to the direction of error asymmetry and laterality of pain as those patients with unilateral pain exhibited errors both towards and away from the affected area.

Groin

Manual Therapy

[Volume 17, Issue 2](#) , Pages 145-149, April 2012

Coronal plane hip muscle activation in football code athletes with chronic adductor groin strain injury during standing hip flexion

- [Dylan Morrissey](#) , [Jennifer Graham](#), [Hazel Screen](#), [Amit Sinha](#), [Claire Small](#),
[Richard Twycross-Lewis](#), [Roger Woledge](#)

Abstract

Background

Groin pain arising from adductor muscle injury is common amongst football code athletes and can result in significant time lost from sporting participation. The associated motor control deficits are not well understood.

Aims

The aim of this study was to better understand the coronal plane muscle activation patterns associated with chronic adductor injury.

Methodology

Measures of muscle activation at various stages of the standing hip flexion manoeuvre were made with surface electromyography and motion capture in 9 male football code subjects with chronic adductor injury, and 9 matched controls.

Results

The gluteus medius to adductor longus activation ratio was significantly reduced in subjects with groin pain when the injured leg was either moving ($F = 64.3, p < 0.001$) or in stance phase ($F = 32.4, p < 0.001$) when compared to activity-matched uninjured subjects, equating to a difference varying between 20 and 40% depending on phase of movement. These differences were particularly due to decreased abductor muscle activation. No significant differences between the uninjured and injured side of patients was found.

Conclusion

Football code athletes with groin pain exhibit significantly altered coronal plane muscle activation with comparison to uninjured subjects. These findings need to be taken into account when planning rehabilitation for these athletes

Manual Therapy

Volume 17, Issue 2 , Pages 157-163, April 2012

Differences in end-range lumbar flexion during slumped sitting and forward bending between low back pain subgroups and genders

- [Shannon L. Hoffman](#), [Molly B. Johnson](#), [Dequan Zou](#), [Linda R. Van Dillen](#)  

Abstract

Patterns of lumbar posture and motion are associated with low back pain (LBP). Research suggests LBP subgroups demonstrate different patterns during common tasks. This study assessed differences in end-range lumbar flexion during two tasks between two LBP subgroups classified according to the Movement System Impairment model. Additionally, the impact of gender differences on subgroup differences was assessed. Kinematic data were collected. Subjects in the Rotation (Rot) and Rotation with Extension (RotExt) LBP subgroups were asked to sit slumped and bend forward from standing. Lumbar end-range flexion was calculated. Subjects reported symptom behaviour during each test. Compared to the RotExt subgroup, the Rot subgroup demonstrated greater end-range lumbar flexion during slumped sitting and a trend towards greater end-range lumbar flexion with forward bending. Compared to females, males demonstrated greater end-range lumbar flexion during slumped sitting and forward bending. A greater proportion of people in the Rot subgroup reported symptoms with each test compared to the RotExt subgroup. Males and females were equally likely to report symptoms with each test. Gender differences were not responsible for LBP subgroup differences. Subgrouping people with LBP provides insight into differences in lumbar motion within the LBP population. Results suggesting potential consistent differences across flexion-related tasks support the presence of stereotypical movement patterns that are related to LBP

Manual Therapy

Volume 17, Issue 2 , Pages 164-171, April 2012

Inter-examiner reliability of a proposed decision-making treatment based classification system for low back pain patients

- [Birgitta Widerström](#)  , [Niclas Olofsson](#), [Inga Arvidsson](#), [Karin Harms-Ringdahl](#), [Ulla Evers Larsson](#)

Abstract

Evolving evidence has shown increased clinical outcomes, when low back pain (LBP) patients are classified and receive matched physical treatment. The present study aimed to examine the inter-examiner reliability of a proposed new decision-making classification system for non-specific LBP patients, using a mixed simultaneous and independent examiner design. With minimal familiarization, two pairs of experienced physiotherapists trained in Orthopedic Manual Therapy (OMT) at two different out-patient clinics in primary care, examined and classified 64 consenting consecutive patients. Further, inter-examiner reliability on five examination items was examined. The agreement between examiners was expressed by percentage of agreement (%) and by the un-weighted (κ) or weighted (κ_w) kappa coefficient. The overall % agreement, categorizing patients into one of four classifications was 80% and $\kappa = 0.72$. For each classification, *pain modulation*, *stabilization exercise*, *mobilization* and *training*, agreement was 90%, 83%, 58% and 89% ($\kappa = 0.77, 0.67, 0.11$ and 0.75), respectively. Agreement on five individual examination items was; irritability 82% ($\kappa_w = 0.41$), specific movement pattern 68% ($\kappa = 0.38$), specific segmental signs 67% ($\kappa = 0.28$), uni- or bilateral signs 62% ($\kappa = 0.42$), and neurological signs and symptoms 92% ($\kappa = 0.84$). This study demonstrated that this new classification system had substantial inter-examiner reliability when used by clinically experienced OMT-trained physiotherapists. Agreement within classification was substantial, except for mobilization which was poor. Inter-examiner reliability for the individual examination items varied from fair to almost perfect. Further studies are needed to investigate utility and validity of this new classification system.

Manual Therapy

Volume 17, Issue 2 , Pages 175-179, April 2012

Severity of signs and symptoms in lumbopelvic pain during pregnancy

- [Jan M.A. Mens](#) , [Yvonne H. Huis in 't Veld](#), [Annelies Pool-Goudzwaard](#)

Abstract

Data on the severity of signs and symptoms of lumbopelvic pain (LPP) during pregnancy are scarce. Therefore, this cross-sectional study examines the severity of LPP and pain-related signs and symptoms.

Women with an uncomplicated pregnancy of 20–30 weeks were invited to participate. They rated their pain and fatigue on a numerical rating scale, and pain location was indicated on a drawing. Disability was scored on the Quebec Back Pain Disability Scale (QBPDS) and urine incontinence on a Likert scale. Physical examination consisted of the Active Straight Leg Raise (ASLR) test, the Posterior Pelvic Pain Provocation (PPPP) test and pain score, and force during isometric bilateral hip adduction.

Of all 182 participants, 60.4% reported LPP. Mean pain level was 3.6 (SD 2.2); in 20.0% of the women the score was >5. The mean score on the QBPDS was 27 (SD 16); in 20.9% the score was >40. Compared to women without LPP, women with LPP more frequently suffered back pain in the past ($p<0.001$), had a higher body mass index ($p<0.01$), more often had urinary incontinence ($p<0.05$), had less isometric hip adduction force ($p<0.001$), had more pain on isometric hip adduction ($p<0.01$), had a higher ASLR score ($p<0.001$) and more had often a positive PPPP test ($p<0.001$). Fatigue was not related to LPP during pregnancy.

The main conclusion is that pain and disability of LPP during pregnancy can be interpreted as mild to moderate in most cases, and as severe in about 20%

Stretching/leg cramps

Stretching before sleep reduces the frequency and severity of nocturnal leg cramps in older adults: a randomised trial.

J Physiother

Issue: 1, 17-22

Hallegraeff JM et, al

llegraeff JM, van der Schans CP, de Ruiter R, de Greef MH

2012

58(1):17-22

Language: eng

Country: Australia

Hanze University of Applied Sciences, Groningen.

QUESTION: In adults who experience nocturnal leg cramps, does stretching of the calf and hamstring muscles each day just before sleep reduce the frequency and severity of the cramps?

DESIGN: A randomised trial with concealed allocation and intention-to-treat analysis.

PARTICIPANTS: Eighty adults aged over 55 years with nocturnal leg cramps who were not being treated with quinine.

INTERVENTION: The experimental group performed stretches of the calf and hamstring muscles nightly, immediately before going to sleep, for six weeks. The control group performed no specific stretching exercises. Both groups continued other usual activities.

OUTCOME MEASURES: Participants recorded the frequency of nocturnal leg cramps in a daily diary. Participants also recorded the severity of the pain associated with nocturnal leg cramps on a 10-cm visual analogue scale. Adverse events were also recorded.

RESULTS: All participants completed the study. At six weeks, the frequency of nocturnal leg cramps decreased significantly more in the experimental group, mean difference 1.2 cramps per night (95% CI 0.6 to 1.8). The severity of the nocturnal leg cramps had also decreased significantly more in the experimental group than in the control group, mean difference 1.3cm (95% CI 0.9 to 1.7) on the 10-cm visual analogue scale.

CONCLUSION: Nightly stretching before going to sleep reduces the frequency and severity of nocturnal leg cramps in older adults.

Neural Tension/LBP

The immediate effect of unilateral lumbar Z-joint mobilisation on posterior chain neurodynamics: a randomised controlled study.

Man Ther

Issue: 6, 609-13

Szlezak AM, Georgilopoulos P, Bullock-Saxton JE, Steele MC

201112

16(6):609-13

Language: eng

Country: Scotland

Division of Physiotherapy, Faculty of Health Science & Medicine, Bond University, Gold Coast, QLD 4229, Australia. physioscience@live.com

Hamstring strain (HS) is a common musculoskeletal condition and abnormal neurodynamics has been shown to influence HS and delay recovery. The efficacy of stretching for preventing and treating HS remains uncertain despite extensive research and wide-spread use. The effects of cervical spine mobilisation on peripheral nervous system function, neurodynamics and muscle force in the upper limb have been reported. Very few studies have reported effects of lumbar spine mobilisation on these variables in the lower limb. This study aimed to determine immediate effects of either a unilateral zygapophyseal joint posteroanterior mobilisation or a static posterior chain muscle stretch on the range of passive straight leg raise (SLR) in comparison to a non-treatment control. Using a single-blinded, randomised controlled study design, 36 healthy participants were allocated into one of three groups (control; mobilisation; static posterior chain muscle stretch). Measures of SLR were taken before and after intervention for each group on the day of testing. A General Linear Model (GLM) and a paired sample t-test showed a significant difference between base line and post-intervention for the mobilisation group only ($p < 0.001$), and suggests that unilateral lumbar spine zygapophyseal joint mobilisation can immediately restore posterior chain neurodynamics

HA/Migraine/genetics

Update on the genetics of migraine □ **Headache: The Journal of Head and Face Pain,** **03/12/2012**

Merikangas KR – From this study, 3 MTHFR single nucleotide polymorphisms showing association with migraine in the Norfolk Island population have been identified, thus reinforcing the potential role of MTHFR in migraine susceptibility. Further studies will continue to build a gene profile of variants involved in the complex disease migraine and improve understanding of the underlying genetic causes of this disorder.

- Migraine is a common neurological disorder and is characterized by debilitating head pain and an assortment of additional symptoms which can include nausea, emesis, photophobia, phonophobia, and occasionally, visual sensory disturbances.
- A number of genes have been implicated in the pathogenesis of this disease, including genes involved in regulating the vascular system.
- Of particular importance are the methylenetetrahydrofolate reductase gene (MTHFR) and the role it plays in migraine with aura.
- Migraine with aura has previously been shown to have a significant comorbidity with stroke, making the vascular class of genes a priority for migraine studies.
- In this report, authors outline the importance of the MTHFR gene in migraine and also discuss the use of a genetic isolate to investigate MTHFR genetic variants.

Headache/Concussions

Chronic daily headache in U.S. soldiers after concussion □ **Headache: The Journal of Head and Face Pain, 03/12/2012**

Theeler BJ et al. – The prevalence of chronic daily headache (CDH) in returning U.S. soldiers after a deployment–related concussion is 20%, or 4– to 5–fold higher than that seen in the general U.S. population. CDH following a concussion usually resembles chronic migraine and is associated with onset of headaches within the first week after concussion. The mechanism and number of concussions are not specifically associated with CDH as compared to episodic headache. In contrast, PTSD symptoms are strongly associated with CDH, suggesting that traumatic stress may be an important mediator of headache chronification. These findings justify future studies examining strategies to prevent and treat CDH in military service members following a concussive injury. **Methods**

- A cross–sectional, questionnaire–based study was conducted with a cohort of 978 U.S. soldiers who screened positive for a deployment–related concussion upon returning from Iraq or Afghanistan.
- All soldiers underwent a clinical evaluation at the Madigan Traumatic Brain Injury Program that included a history, physical examination, 13–item self–administered headache questionnaire, and a battery of cognitive and psychological assessments.
- Soldiers with CDH, defined as headaches occurring on 15 or more days per month for the previous 3 months, were compared to soldiers with episodic headaches occurring less than 15 days per month.

Results

- 196 of 978 soldiers (20%) with a history of deployment–related concussion met criteria for CDH and 761 (78%) had episodic headache.
- Soldiers with CDH had a median of 27 headache days per month, and 46/196 (23%) reported headaches occurring every day.
- 107 out of 196 (55%) soldiers with CDH had onset of headaches within 1 week of head trauma and thereby met the time criterion for posttraumatic headache (PTHA) compared to 253/761 (33%) soldiers with episodic headache.
- 97 out of 196 (49%) soldiers with CDH used abortive medications to treat headache on 15 or more days per month for the previous 3 months.
- 130 out of 196 (66%) soldiers with CDH had headaches meeting criteria for migraine compared to 49% of soldiers with episodic headache.
- The number of concussions, blast exposures, and concussions with loss of consciousness was not significantly different between soldiers with and without CDH.
- Cognitive performance was also similar for soldiers with and without CDH.
- Soldiers with CDH had significantly higher average scores on the posttraumatic stress disorder (PTSD) checklist compared to soldiers with episodic headaches.
- 41 percent of soldiers with CDH screened positive for PTSD compared to only 18% of soldiers with episodic headache.

Neuropathic pain/Placebo

Placebo response changes depending on the neuropathic pain syndrome: results of a systematic review and meta-analysis □Pain Medicine, 03/12/2012 Clinical Article

Cepeda MS et al. – Placebo response is influenced by the pain syndrome evaluated. These differences should be considered when evaluating novel compounds for the treatment of neuropathic pain conditions.

Methods

- Systematic literature review and meta-analysis.
- Randomized placebo-controlled trials assessing pain intensity or pain relief in any neuropathic pain syndrome published since 1995 with ≥ 5 days follow-up.
- Placebo response.
- Pain intensity and responder rates (proportion reporting $\geq 50\%$ pain relief).
- Meta-regression models were built.

Results

- 94 studies (N = 5,317) were included in the pain intensity analysis; 47 studies (N = 3,087) were included in the responder analysis.
- After controlling for potential confounders (e.g., subject characteristics, study design characteristics), the placebo response was found to be large and varied with the pain syndrome.
- Compared with diabetic neuropathic/polyneuropathic pain (DPN), the placebo response for a decline in pain intensity and responder rate was smaller in trials that assessed central pain and postherpetic neuralgia (PHN) and larger in trials that assessed HIV pain.
- The model-predicted mean decrease (95% confidence interval [CI]) from baseline in pain intensity (0–10 scale) was as follows: DPN, 1.45 (1.35 to 1.55); PHN, 1.16 (1.03 to 1.29); central pain, 0.44 (–0.41 to 1.30); HIV pain, 1.82 (1.51 to 2.12).

LBP

Multivariable analyses of the relationships between age, gender, and body mass index and the source of chronic low back pain □Pain Medicine, 03/13/2012

DePalma MJ et al. – These findings suggest a significant relationship among gender, age, and body mass index (BMI) and structural causes of chronic low back pain. Lumbar internal disc disruption (IDD) is more prevalent in young males while facet joint pain (FJP) is more prevalent in females with increased BMI. Female gender and low BMI are associated with SIJP.

Methods

- Retrospective chart review.
- University spine center.
- Charts from 378 cases from 358 consecutive patients were reviewed and 157 independent cases from 153 patients who underwent definitive diagnostic injections were analyzed.
- Discography, dual diagnostic facet joint blocks, sacroiliac joint injections, anesthetic interspinous ligaments/opposing spinous processes/posterior fusion hardware injections, percutaneous augmentation.
- Chronic low back pain source was the primary outcome variable.
- Predictor variables included age at initial presentation, gender, and BMI.

Results

- Age, gender, and BMI were each significantly associated with the source of chronic low back pain, after controlling for the effects of each other.
- Increases in age were associated with significant decreases in the odds of internal disc disruption (IDD) vs facet joint pain (FJP), sacroiliac joint pain (SIJP), and other sources and decreases in the odds of FJP and SIJP vs other sources.
- Being female was associated with significant increases in the odds of SIJP vs IDD, FJP, and other sources.

Increased BMI was associated with significant increases in the odds of FJP vs SIJP.

HA/Sexual

Sexual function and distress in women treated for primary headaches in a tertiary university center □ *The Journal of Sexual Medicine*, 03/13/2012

Nappi RE et al. – Women treated for primary headaches were found to display a high rate of sexual symptoms and distress. Both migraine and tension–type headache were associated with sexual pain and Hypoactive sexual desire disorder, but women with chronic tension–type headache seem to be more prone to develop sexual distress.

Methods

- From a total of 194 women consecutively observed over a 3–month period, 100 patients were recruited.
- Migraine with and without aura, and tension–type headache, both episodic and chronic (CTTH), were diagnosed according to the International Classification of Headache Disorders.
- A detailed pharmacological history was collected, and anxiety and depression were assessed using validated scales.
- The Female Sexual Function Index (FSFI) and Female Sexual Distress Scale–Revised were administered.

Results

- More than 90% of the women had a median FSFI full–scale score under the validated cutoff, while 29% reported sexual distress.
- Hypoactive sexual desire disorder (HSDD) was diagnosed in 20% of the women and the pain domain score (median 2, score range 0–6) was highly affected by the head pain condition.
- However, the FSFI domain and full–scale scores did not significantly differ by headache diagnosis.
- The women with CTTH displayed a high rate of sexual distress (45.5%) and a strong negative correlation between desire, arousal, and full–scale FSFI score and number analgesics/month ($r: -0.77, P = 0.006$; $r: -0.76, P = 0.006$; and $r: -0.68, P = 0.02$, respectively).

Depression was positively correlated with sexual distress ($r: 0.63, P = 0.001$) only in the women with CTTH.

Sleep deprivation

Sleep deprivation in chronic somatoform pain--effects on mood and pain regulation

□ **Psychiatry Research, 03/05/2012**

Busch V et al. – The authors conclude that sleep deprivation may generally change the reactivity of the limbic system, but mood processing and pain processing may be affected in an opposite way reflecting neurobiological differences between emotional regulation and interoceptive pain processing.

Abstract

Sleep deprivation was found to exert complex effects on affective dimensions and modalities of pain perception both in healthy volunteers and patients with major depression. Considering multifaceted links between mood and pain regulation in patients with chronic somatoform pain, it is intriguing to study sleep deprivation effects for the first time in this group of patients. Twenty patients with a somatoform pain disorder according to ICD-10 diagnostic criteria were sleep-deprived for one night, followed by one recovery night. Clinical pain complaints (visual analog scale), detection- and pain thresholds (temperature and pressure) as well as mood states (Profile of Mood States) were assessed on the day prior to the experiment, on the day after sleep deprivation and on the day after recovery sleep. We found a discrepancy between significantly increased clinical pain complaints and unaltered experimental pain perception after sleep deprivation. Only the clinical pain complaints, but not the experimental pain thresholds were correlated with tiredness-associated symptoms. Total mood disturbances decreased and feelings of depression and anger improved significantly after sleep deprivation. However, these changes were not correlated with a change in clinical pain perception. We conclude that sleep deprivation may generally change the reactivity of the limbic system, but mood processing and pain processing may be affected in an opposite way reflecting neurobiological differences between emotional regulation and interoceptive pain processing.

Elbow

J Biomech. 2012 Mar 9. [Epub ahead of print]

Evidence of changes in load sharing during isometric elbow flexion with ramped torque.

Bouillard K, Nordez A, Hodges PW, Cornu C, Hug F.

Source

University of Nantes Laboratory "Motricité, Interactions, Performance" (EA 4334), 25 bis boulevard Guy Mollet, BP 72206 44322, Nantes cedex 3, France.

Abstract

This study aimed to: (1) test the repeatability of Supersonic Shear Imaging measures of muscle shear elastic modulus of four elbow flexor muscles during isometric elbow flexion with ramped torque; (2) determine the relationship between muscle shear elastic modulus and elbow torque for the four elbow flexor muscles, and (3) investigate changes in load sharing between synergist elbow flexor muscles with increases in elbow flexor torque. Ten subjects performed ten isometric elbow flexions consisting of linear torque ramps of 30-s from 0 to 40% of maximal voluntary contraction. The shear elastic modulus of each elbow flexor muscle (biceps brachii long head [BB(LH)], biceps brachii short head [BB(SH)], brachialis [BA], and brachioradialis [BR]) and of triceps brachii long head [TB] was measured twice with individual muscles recorded in separate trials in random order. A good repeatability of the shape of the changes in shear elastic modulus as a function of torque was found for each elbow flexor muscle (r-values: 0.85 to 0.94).

Relationships between the shear elastic modulus and torque were best explained by a second order polynomial, except BA where a higher polynomial was required. Statistical analysis showed that BB(SH) and BB(LH) had an initial slow change at low torques followed by an increasing rate of increase in modulus with higher torques. In contrast, the BA shear elastic modulus increased rapidly at low forces, but plateaued at higher forces. These results suggest that changes in load sharing between synergist elbow flexors could partly explain the non-linear EMG-torque relationship classically reported for BB during isometric efforts.

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C Spine/Disc

Eur Spine J. 2012 Mar 10. [Epub ahead of print]

Morphological changes in disc herniation in the lower cervical spine: an ultrastructural study.

Sitte I, Kathrein A, Pedross F, Freund MC, Pfaller K, Archer CW.

Source

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Abstract

INTRODUCTION:

The basis of disc degeneration is still unknown, but is believed to be a cell-mediated process. Apoptosis might play a major role in degenerative disc disease (DDD). The aim of this study was to correlate the viability of disc cells with the radiological degeneration grades (rDG) in disc herniation.

MATERIALS AND METHODS:

Forty anterior IVD's (C4-C7) from 39 patients with DDD were studied histologically and ultrastructurally to quantify healthy, "balloon", chondroptotic, apoptotic and necrotic cells. Patients were classified to their rDG, as having either prolapse (P: DGII + III) and/or osteochondrosis (O: DGIV + V). Similar studies were undertaken on eight control discs.

RESULTS:

Cell death by necrosis (mean 35%) was common but differed not significantly in both groups. All patients with a disc prolapse DGII + III revealed balloon cells (iAF: mean 32%). All appeared alive and sometimes were hypertrophic. However, significantly less balloon cells were found in the O-Group. Control samples revealed no evidence of "balloon" cells in DGII and only a minor rate in DGIII.

CONCLUSION:

According to the different rDG, quantitative changes were obvious in healthy and "balloon" cells, but not for cell death. At the moment it can only be hypothesized if "balloon" cells are part of a repair strategy and/or cause of disc herniation.

PMID: 22407261 [PubMed - as supplied by published]

Incontinence

BreakThrough Physical Therapist Effectively Treats Bowel Incontinence and Constipation Without Costly Surgery or Undesirable Side Effects of Medication



• Expert in Non-Invasive Physical Therapy Treatment Relieves [Incontinence and Constipation Issues](#) for Both Men and Women [Morehead City, NC \(PRWEB\)](#) March 13, 2012
Medscape reports in 2011 that [bowel incontinence](#) is one of the most psychologically and socially debilitating conditions affecting otherwise healthy people. “It can lead to social isolation, loss of self-esteem and self-confidence, and depression.” Jolene Faught, PT, [Pelvic Rehabilitation and Women’s Health Specialist at BreakThrough Physical Therapy’s Morehead City Location](#), treats [bowl incontinence and constipation effectively with physical therapy](#) techniques so patients can avoid costly surgery and the [undesirable side effects](#) of medications and ultimately live more comfortably.

In 2011 Medscape reports that approximately 21,000 women had surgery for bowel incontinence between 1998 and 2003; this is roughly 3500 women per year. The total cost for bowel incontinence treatments in the United States increased from \$34 million in 1998 to \$57.5 million in 2003. In 2003, the average cost for treating bowel incontinence with surgery was \$16,847.

“Medications are seen as a quick fix for [incontinence and constipation](#), but they also quickly become costly and include undesirable side effects,” states Jolene. “[Physical Therapists](#) with advanced training can provide very effective treatment programs for both incontinence and constipation that can help patients avoid high medical costs, long recovery periods, complications, and undesirable side effects.”

In June 2008, the Journal of Diseases of the Colon and Rectum reports that over 2.5 million doctor visits per year in the United States are related to constipation issues. Patients in this study who participated in this specialized type of [physical therapy](#) had significantly reduced constipation problems. They also reported less physical discomfort, fewer worries/concerns, and improved quality of life after seeing their physical therapist.

“I can’t get over how much my life has changed,” one of Faught’s recent patients commented. “Being able to address my diet and how my muscles work in my abdominals and pelvic floor with breathing and functional postures has really changed everything. I’m sleeping better, I’m not leaking (urine or bowel) and I just feel so much better.”

Continued)

Treatment for pelvic rehabilitation involves comprehensive care addressing dietary factors, spine/ hip issues, pelvic floor muscles, abdominals and effective breathing. To learn more about BreakThrough's treatments for pelvic health issues such as, pelvic pain, painful intercourse, loss of bladder or bowel control, constipation, or pain and dysfunction during and after pregnancy, please visit BreakThroughPTClinics.com

About BreakThrough Physical Therapy:

BreakThrough Physical Therapy is a private physical therapy practice with locations five locations in Greensboro, Fayetteville, Morehead City, and Winston Salem, North Carolina. Known for treating patients based on the latest scientific research available, BreakThrough physical **theraKneepists** pride themselves in being spine experts. They deliver hands-on physical therapy based on the best research to achieve optimal results for patients with bad backs, achy joints, wounded hands, and work injuries. Along the way, the BreakThrough Physical Therapy family has fun and makes friends with their patients (and their pets, their kids, their in-laws, and neighbors....) For more information visit BreakThroughPTClinics.com or find BreakThrough Physical Therapy on Facebook and Twitter.

###

Erica Schrock ☐ BreakThrough Physical Therapy ☐ 601-832-6803

Stretching

Appl Physiol Nutr Metab. 2011 Dec;36(6):790-7. Epub 2011 Oct 20.

Relative static stretch-induced impairments and dynamic stretch-induced enhancements are similar in young and middle-aged men.

Behm DG, Plewe S, Grage P, Rabbani A, Beigi HT, Byrne JM, Button DC.

Source

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Abstract

Middle-aged individuals may not respond in a similar manner as younger individuals. The study's objective was to examine the effect of static (SS) and dynamic stretching (DS) in young and middle-aged men on subsequent performance. Ten young (22 ± 1.4 years) and 8 middle-aged men (46.3 ± 6.5 years) participated in 3 conditions consisting of SS (4×30 s for right and left quadriceps, hamstrings, and plantar flexors), DS (8×30 s of bilateral butt kicks, walking lunges, and plantar flexors) and control. Dependent variables included sit and reach, hip extension flexibility, countermovement jump (CMJ) height, drop jump (DJ) height, static balance, reaction (RT) and movement time (MT). Measurements were taken pre-intervention, post- and 10 min post-intervention. A 3-way repeated measurement ANOVA revealed that the younger men had higher jump heights, faster RT and MT, and greater flexibility than the middle-aged men. DS significantly enhanced DJ ($p = 0.04$) and CMJ ($p = 0.006$) height compared with SS and control conditions. SS ($p < 0.0001$) and DS ($p = 0.004$) post-intervention sit and reach scores were significantly greater than pre-intervention scores. There were no significant differences between the SS and DS sit and reach scores. CMJ heights were impaired ($p = 0.04$) by SS. Conversely, DS post-intervention jump heights were significantly ($p < 0.0001$) higher than SS post-, control post-, and control 10 min post-intervention. SS-induced impairments and DS-induced enhancements of CMJ height were not affected by age. DS provided similar improvements in sit and reach scores as SS. DS is recommended as the most appropriate stretching routine prior to work or athletic performance for younger and middle-aged men

Knee

Arthritis Care Res (Hoboken). 2012 Feb;64(2):238-47. doi: 10.1002/acr.20642.

Long-term outcomes and costs of an integrated rehabilitation program for chronic knee pain: a pragmatic, cluster randomized, controlled trial.

Hurley MV, Walsh NE, Mitchell H, Nicholas J, Patel A.

Source

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Abstract

OBJECTIVE:

Chronic joint pain is a major cause of pain and disability. Exercise and self-management have short-term benefits, but few studies follow participants for more than 6 months. We investigated the long-term (up to 30 months) clinical and cost effectiveness of a rehabilitation program combining self-management and exercise: Enabling Self-Management and Coping of Arthritic Knee Pain Through Exercise (ESCAPE-knee pain).

METHODS:

In this pragmatic, cluster randomized, controlled trial, 418 people with chronic knee pain (recruited from 54 primary care surgeries) were randomized to usual care (pragmatic control) or the ESCAPE-knee pain program. The primary outcome was physical function (Western Ontario and McMaster Universities Osteoarthritis Index [WOMAC] function), with a clinically meaningful improvement in physical function defined as a $\geq 15\%$ change from baseline. Secondary outcomes included pain, psychosocial and physiologic variables, costs, and cost effectiveness.

RESULTS:

Compared to usual care, ESCAPE-knee pain participants had large initial improvements in function (mean difference in WOMAC function -5.5; 95% confidence interval [95% CI] -7.8, -3.2). These improvements declined over time, but 30 months after completing the program, ESCAPE-knee pain participants still had better physical function (difference in WOMAC function -2.8; 95% CI -5.3, -0.2); lower community-based health care costs (£-47; 95% CI £-94, £-7), medication costs (£-16; 95% CI £-29, £-3), and total health and social care costs (£-1,118; 95% CI £-2,566, £-221); and a high probability (80-100%) of being cost effective.

CONCLUSION:

Clinical and cost benefits of ESCAPE-knee pain were still evident 30 months after completing the program. ESCAPE-knee pain is a more effective and efficient model of care that could substantially improve the health, well-being, and independence of many people, while reducing health care costs.

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Obesity/exercise

Diabetes Obes Metab. 2012 Feb;14(2):139-48. doi: 10.1111/j.1463-1326.2011.01497.x. Epub 2011 Nov 3.

The effects of dietary weight loss with or without exercise training on liver enzymes in obese metabolic syndrome subjects.

Straznicky NE, Lambert EA, Grima MT, Eikelis N, Nestel PJ, Dawood T, Schlaich MP, Masuo K, Chopra R, Sari CI, Dixon JB, Tilbrook AJ, Lambert GW.

Source

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Abstract

AIM:

Insulin resistance and visceral adiposity are predisposing factors for fatty liver disease. The main objectives of this study were (i) to compare the effects of caloric restriction (CR) alone or together with moderate-intensity aerobic exercise training (CR+EX) on liver enzymes, a surrogate marker of liver injury, in obese metabolic syndrome (MetS) subjects and (ii) to identify anthropometric, metabolic, cardiovascular and dietary predictors of changes in liver enzymes.

METHODS:

Sedentary men and women (n = 63), aged 55 ± 6 (s.d.) years with body mass index 32.7 ± 4.1 kg/m² and confirmed MetS, were randomized to 12-week CR, CR+EX or no treatment (Control).

RESULTS:

Weight loss averaged 7.6% in the CR and 9.1% in the CR+EX group (time effect, $p < 0.001$; group effect, $p = 0.11$); insulin sensitivity improved by 49 and 45%, respectively (both $p < 0.001$). Fitness (maximal oxygen consumption) increased by 19% in the CR+EX group only ($p < 0.001$). Alanine aminotransferase (ALT) levels decreased by 20% in the CR and 24% in the CR+EX group (time effect, both $p < 0.001$; group effect, $p = 0.68$); corresponding values for γ -glutamyltransferase (GGT) were -28 and -33%, respectively (time effect, both $p < 0.001$; group effect, $p = 0.28$). Reduction in abdominal fat mass (measured by DXA from L1 to L4) independently predicted Δ ALT ($r = 0.42$, $p = 0.005$) and Δ GGT ($r = 0.55$, $p < 0.001$), whereas change in dietary saturated fat intake was independently associated with Δ ALT ($r = 0.35$, $p = 0.03$).

CONCLUSIONS:

Reductions in central adiposity and saturated fat intake are key drivers of improvement in liver enzymes during lifestyle interventions. Exercise training did not confer significant incremental benefits in this study.

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Overuse syndrome/ exercise

Am J Sports Med. 2011 Nov;39(11):2447-51. Epub 2011 Aug 3.

Continued significant effect of physical training as treatment for overuse injury: 8- to 12-year outcome of a randomized clinical trial.

Hölmich P, Nyvold P, Larsen K.

Source

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Abstract

BACKGROUND:

The treatment of exercise-related injuries is often a problem, and recurrent injuries are common. Two recent systematic reviews found only one high-quality paper on the treatment of long-standing groin pain. In this randomized clinical trial, a training program including strength training resulted in a return of 79% of the athletes to the previous level of sport without any groin pain. The long-term effect of this exercise program was evaluated.

HYPOTHESIS:

The effect of the exercise program for adductor-related groin pain is long lasting.

STUDY DESIGN:

Randomized controlled trial; Level of evidence, 1.

METHODS:

Forty-seven (80%) of the 59 original participants of the study agreed to participate in this 8- to 12-year follow-up. They were all interviewed and examined using a standardized and reproducible protocol, identical to the one used in the original trial. The investigating physician (P.N.) was not involved in the original study and was unaware of the original treatment allocation.

RESULTS:

A significant effect of the active training treatment still existed for the whole group ($P = .047$) and even more for the subgroup of 39 (83%) soccer players ($P = .012$). No significant differences were found regarding age, present sports activity, reasons for activity reduction, or time to follow-up. Conclusion: The beneficial short-term effect of the exercise program used in the primary randomized clinical trial for treating long-standing adductor-related groin pain in athletes was found to be lasting, both for the whole group and even more for the large subgroup of soccer players. This is the first time an exercise treatment for overuse injuries to the musculoskeletal system has been shown to have a long-lasting effect (8-12 years).

Knee/gait

Arthritis Care Res (Hoboken). 2011 Mar;63(3):405-26. doi: 10.1002/acr.20380. Epub 2010 Oct 27.

Gait modification strategies for altering medial knee joint load: a systematic review.

Simic M, Hinman RS, Wrigley TV, Bennell KL, Hunt MA.

Source

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Abstract

OBJECTIVE:

To evaluate the effect of gait modification strategies on the external knee adduction moment (KAM), a marker of medial knee joint load; determine potentially adverse effects; assess the methodologic quality; and identify areas of future research.

METHODS:

Five electronic databases were searched. Studies evaluating the effects of gait modifications on the KAM in either healthy individuals or those with knee osteoarthritis (OA) were included. Methodologic quality was evaluated by 2 reviewers using the Downs and Black checklist.

RESULTS:

Twenty-four studies met the inclusion criteria, exploring 14 different gait modifications of varying sample sizes, age groups, and OA classifications. Contralateral cane use, increased step width, medial knee thrust, increased hip internal rotation, weight transfer to the medial foot, and increased lateral trunk lean demonstrated KAM reductions. Tai Chi gait, ipsilateral cane use, Nordic walking poles, and increased knee flexion exhibited increases in the KAM, demonstrating a potential detriment to their use. The effects of reduced stride length, as well as increases and reductions in either toe-out or gait speed, were inconsistent across the studies and gait cycle.

CONCLUSION:

This review demonstrates that some gait modifications have the ability to alter knee load. Future research is required to determine the magnitude of modification required to maximize beneficial effects, the best method of training, long-term patient adherence, and if these biomechanical changes can translate into clinically relevant changes in symptoms or disease progression risk.

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Neural Tension/Radial

Radial Nerve Mobilization Decreases Pain Sensitivity and Improves Motor Performance in Patients With Thumb Carpometacarpal Osteoarthritis: A Randomized Controlled Trial

□Archives of Physical Medicine and Rehabilitation, 03/05/2012

Villafane JH et al. – Variables in the placebo group remained unchanged. Tip pinch strength increased by $2.22 \pm .22\text{kg}$ ($P < .04$) and tripod pinch strength by $2.83 \pm .24\text{kg}$ ($P < .019$). Radial nerve mobilization decreases pain sensitivity in the trapeziometacarpal joint and increases tip pinch strength.

Abstract

Objective

To examine the effects of radial nerve mobilization on pain sensitivity and motor performance in subjects with secondary thumb carpometacarpal osteoarthritis.

Design

Randomized controlled trial. Treatment and placebo were given for 4 weeks. Measurements were taken before intervention, after 1 month (first follow-up), and after 2 months (second follow-up).

Setting

Patients from the Department of Physical Therapy, Azienda Sanitaria Locale 3, Collegno (Italy).

Participants

Participants ($N=60$; age range, 70–90y) with right-dominant hand secondary thumb carpometacarpal osteoarthritis without other motor-related pathology. All patients completed the study. No patients were withdrawn from the study.

Interventions

Sliding mobilization of the proximal-distal radial nerve or intermittent ultrasound therapy, used as placebo.

Main Outcome Measures

We hypothesized that radial nerve mobilization induces hypoalgesia and increases strength in secondary thumb carpometacarpal osteoarthritis. We measured pressure pain threshold (PPT) at the trapeziometacarpal joint, the tubercle of the scaphoid bone, and the unciform apophysis of the hamate bone by algometry. Tip pinch strength and tripod pinch strength were measured by a mechanical pinch gauge.

Results

Treatment increased PPT by $3.33 \pm .24\text{kg/cm}^2$ ($P < .001$) in the trapeziometacarpal joint and was maintained until first follow-up and second follow-up. Also, PPT in the scaphoid bone and hamate bone was increased ($P < .001$ and $P < .02$, respectively). Variables in the placebo group remained unchanged. Tip pinch strength increased by $2.22 \pm .22\text{kg}$ ($P < .04$) and tripod pinch strength by $2.83 \pm .24\text{kg}$ ($P < .019$).

Conclusions

Radial nerve mobilization decreases pain sensitivity in the trapeziometacarpal joint and increases tip pinch strength.

Vestibular

Physiother Res Int. 2012 Mar 13. doi: 10.1002/pri.532. [Epub ahead of print]
Vestibular and Motor Contributions to Mobility: Limitations of Seniors Awaiting Discharge from Hospital Care.

Golder MD, Earl EM, Mallery LH.

Source

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Abstract

BACKGROUND AND PURPOSE:

Following hospitalization, seniors are at risk of impaired mobility and increased risk of falling, which can lead to injuries and re-admission. The primary purpose of this paper was to evaluate the ability of hospitalized seniors to use vestibular inputs for balance control. The secondary purpose was to examine the influence of vestibular function and lower limb muscle strength on mobility.

METHODS:

Experimental and correlation designs were used. Patients (aged 65-90 years), preparing for discharge from an inpatient geriatric rehabilitation unit, were recruited. Vestibular control of standing balance was measured using the Clinical Test of Sensory Interaction for Balance (CTSIB). Mobility was measured with the Timed Up and Go (TUG) Test. Lower limb muscle maximum voluntary isometric contraction (MVIC) strength was tested with portable dynamometry. Wilcoxon signed rank test, with alpha adjusted for multiple comparisons ($p \leq 0.017$), was used to compare relevant components of the CTSIB. Stepwise regression was used to assess the influence of vestibular impairment on TUG score.

RESULTS:

CTSIB(Test6) (median = 7.1 seconds, range = 0.0-30.0) was less than CTSIB(Test1) (30.0 seconds, 30.0-30.0) and CTSIB(Test4) (30.0 seconds, 10.5-30.0) ($W = 136$, $p < 0.017$). MVIC scores (Nm·kg(-1) , mean \pm SD) included hip abduction 0.38 ± 0.2 , hip flexion 0.32 ± 0.1 , hip extension 0.44 ± 0.2 , knee flexion 0.31 ± 0.1 , knee extension 0.33 ± 0.2 , ankle dorsiflexion 0.12 ± 0.1 and ankle plantarflexion 0.23 ± 0.1 . Mean TUG score was 26.1 ± 6.0 seconds. Performance on CTSIB(Test6) explained 55% of the variance in TUG scores, whereas hip extension strength explained an additional 6%.

CONCLUSIONS:

Seniors awaiting discharge from hospital had impaired vestibular control of balance that was systematically associated with impaired mobility. Evaluating vestibular function prior to discharge from hospital could improve discharge planning with respect to management of impairments that threaten balance and safe mobility. Copyright © 2012 John Wiley & Sons, Ltd.