

JULY 2012 ABSTRACTS

Sitting/BET

Man Ther. 2012 Jun 25.

Can we reduce the effort of maintaining a neutral sitting posture? A pilot study.

O'Sullivan K, McCarthy R, White A, O'Sullivan L, Dankaerts W.

Source

University of Limerick, Limerick, Ireland.

Abstract

Neutral sitting postures encouraging lumbar lordosis have been recommended in the management of sitting-related low back pain (LBP). However, prolonged lordotic sitting postures can be associated with increased fatigue and discomfort. This pilot study investigated whether changing the type of chair used in sitting can reduce the effort of maintaining a neutral sitting posture. The muscle activation of six trunk muscles was recorded using surface electromyography in 12 painfree participants. Participants were facilitated into a neutral sitting posture for 1min on both a standard backless office chair and a dynamic, forward-inclined chair (Back App). Lumbar multifidus activity was significantly lower on the Back App chair ($p=0.013$). None of the other five trunk muscles measured demonstrated a significant difference in activity between the chairs. There was no significant difference ($p=0.108$) in the perceived effort of maintaining the neutral sitting posture on the two chairs. This study suggests that the lumbar multifidus activation required to maintain a neutral sitting posture can be reduced by considering the type of chair used. The mechanism through which the Back App chair reduces lumbar multifidus activation is unclear, but the greatest difference between chairs is the degree of hip flexion. The ability to maintain a neutral lumbar posture with less lumbar multifidus activation is potentially advantageous during prolonged sitting. Further investigations of the effects of chair design on longer duration sitting, and among LBP subjects, are warranted.

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PMID: 22738884 [PubMed - as supplied by publisher]

Exercise

Res Sports Med. 2012 Jul;20(3-4):263-73.

Influence of exercise order on repetition performance during low-intensity resistance exercise.

Simão R, Figueiredo T, Leite RD, Jansen A, Willardson JM.

Source

a Universidade Federal do Rio de Janeiro , School of Physical Education and Sports , Rio de Janeiro , Brazil.

Abstract

The purpose of this study was to compare repetition maximum performance and ratings of perceived exertion during resistance exercise sessions conducted at a low intensity (i.e., 20RM) and in different exercise orders. Twenty-one recreationally trained men performed two total body resistance exercise sessions in opposite orders; each exercise was performed for three sets with 2 minutes passive rest between sets and exercises. The results indicated significantly greater total repetitions for each exercise when performed near the beginning of a sequence and for the first set of each exercise, irrespective of the sequence. The ratings of perceived exertion, however, were not significantly different between sequences. In conclusion, repetition maximum performance for resistance exercise sessions conducted at a low intensity is significantly different based on exercise order. Therefore, when performing high repetitions with relatively low intensity loads, exercises should be prioritized based on individual needs and sports-specific movement patterns for greater volume and potential for the desired neuromuscular adaptations.

PMID: 22742079 [PubMed - in process]

C spine/combined movements

Man Ther. 2012 Jun 5.

Inter-examiner reliability of active combined movements assessment of subjects with a history of mechanical neck problems.

Stamos I, Heneghan NR, McCarthy C, Wright C.

Source

School of Health and Population Sciences, University of Birmingham, UK.

Abstract

Combined movement examination (CME) is used in clinical management of spinal dysfunction. Whilst reliability of lumbar spine CME has been investigated, reliability of cervical spine CME is unclear. The aim of this study was to assess the inter-rater reliability of a CME protocol in subjects who have previously experienced a neck problem. Subjects were evaluated to identify their "side of discomfort", "dysfunctional active prime movement (PrM)", "prime combination of movements (PrC)" and "stretch pattern". A secondary aim included the evaluation of a movement order effect. Inter-rater reliability of CME was evaluated in subjects (n = 25) with a history of mechanical neck problems. Through questioning and visual observation of the "functional demonstration", raters (n = 3) had to classify subjects in anterior or posterior stretch patterns and determine movement combinations. Descriptive data for "PrC" showed moderate (67%) percentage agreement for anterior pattern and excellent (92%) for posterior pattern. AC1 values (95% Confidence Interval) were calculated for "Side" (AC1 = 0.96, CI: 0.89-1) and "Pattern" (AC1 = 0.96, CI: 0.89-1) demonstrating excellent inter-examiner reliability. "PrM" demonstrated total (100%) agreement. Establishing an order effect was unreliable (anterior pattern: 33%; posterior pattern: 38%). Results showed that a CME based protocol is a reliable assessment tool. Further research using larger samples and other clinical presentations is warranted.

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PMID: 22677716 [PubMed - as supplied by publisher]

C spine

Man Ther. 2012 Jun 12.

Inter-therapist agreement in classifying patients with cervical radiculopathy and patients with non-specific neck-arm pain.

Tampin B, Briffa NK, Hall T, Lee G, Slater H.

Source

Abstract

Identification of differences in clinical presentation and underlying pain mechanisms may assist the classification of patients with neck-arm pain which is important for the provision of targeted best evidence based management. The aim of this study was to: (i) assess the inter-examiner agreement in using specific systems to classify patients with cervical radiculopathy and patients with non-specific neck-arm pain associated with heightened nerve mechanosensitivity (NSNAP); (ii) assess the agreement between two clinical examiners and two clinical experts in classifying these patients, and (iii) assess the diagnostic accuracy of the two clinical examiners. Forty patients with unilateral neck-arm pain were examined by two clinicians and classified into (i) cervical radiculopathy, (ii) NSNAP, (iii) other. The classifications were compared to those made independently by two experts, based on a review of patients' clinical assessment notes. The experts' opinion was used as the reference criterion to assess the diagnostic accuracy of the clinical examiners in classifying each patient group. There was an 80% agreement between clinical examiners, and between experts and 70%-80% between clinical examiners and experts in classifying patients with cervical radiculopathy (kappa between 0.41 and 0.61). Agreement was 72.5%-80% in classifying patients with NSNAP (kappa between 0.43 and 0.52). Clinical examiners' diagnostic accuracy was high (radiculopathy: sensitivity 79%-84%; specificity 76%-81%; NSNAP: sensitivity 78%-100%; specificity 71%-81%). Compared to expert opinion, clinicians were able to identify patients with cervical radiculopathy and patients with NSNAP in 80% of cases, our data supporting the reliability of these classification systems.

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LBP

Man Ther. 2012 Jun 20.

The effect of increasing sets (within one treatment session) and different set durations (between treatment sessions) of lumbar spine posteroanterior mobilisations on pressure pain thresholds.

Pentelka L, Hebron C, Shapleski R, Goldshtein I.

Source

University of Brighton, Faculty of Health, School of Health Professions, 49 Darley Road, Eastbourne BN20 7UR, UK.

Abstract

Spinal mobilisations are a common form of treatment intervention applied by physiotherapists in clinical practice to manage musculoskeletal pain and/or dysfunction. Previous research has demonstrated that mobilisations cause a hypoalgesic effect. However, there is very little research investigating the optimal treatment dose inducing this effect.

AIM:

To investigate the effect of the number of sets (up to 5) and different durations (30 vs. 60 s) on pressure pain thresholds (PPTs) at different sites.

METHODS:

This single-blinded, randomised, same subject repeated measures crossover design included 19 asymptomatic healthy volunteers. The participants received 5 sets of either 30 or 60 s of postero-anterior mobilisations to L4 on different days. PPTs were measured immediately before, between and after the intervention at 4 different standardised sites.

RESULTS:

A 4-way ANOVA analysis revealed that there was no statistically significant difference between 30 versus 60 s of mobilisations. However, there was a tendency for PPT values to be higher for the 60 s intervention. All PPT measurements after the interventions were significantly higher than the baseline. Only the measurement after the 4th set of mobilisations was significantly higher than the measurement after the 1st set ($p = 0.035$).

CONCLUSIONS:

The results suggest that in order to induce the greatest local hypoalgesia, at least 4 sets of mobilisations are required. The different durations of 30 versus 60 s of mobilisation may not change the extent of the hypoalgesic effect.

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PMID: 22726916 [PubMed - as supplied by publisher]

Manipulation/pediatric

J Can Chiropr Assoc. 2012 Jun;56(2):128-41.

The use of spinal manipulative therapy for pediatric health conditions: a systematic review of the literature.

Gleberzon BJ, Arts J, Mei A, McManus EL.

Source

Professor & Chair, Department of Chiropractic Therapeutics, CMCC 6100 Leslie St, Toronto, Ontario. M2H 3J1.

Abstract

INTRODUCTION:

This study had two purposes. These were: (i) to conduct a search of the literature between 2007 and 2011 investigating the use of spinal manipulative therapy (SMT) for pediatric health conditions and (ii) to perform a systematic review of eligible retrieved clinical trials.

METHODS:

The Index of Chiropractic Literature and PubMed were electronically searched using appropriate search words and MeSH terms, respectively, as well as reference tracking of previous reviews. Studies that met the inclusion criteria were evaluated using an instrument that assessed their methodological quality.

RESULTS:

Sixteen clinical trials were found that met the inclusion criteria and were scored.

DISCUSSION:

Six clinical trials investigated the effectiveness of SMT on colic, two each on asthma and enuresis, and one each on hip extension, otitis media, suboptimal breastfeeding, autism, idiopathic scoliosis and jet lag. None investigated the effectiveness of SMT on spinal pain.

CONCLUSION:

Studies that monitored both subjective and objective outcome measures of relevance to both patients and parents tended to report the most favorable response to SMT, especially among children with asthma. Many studies reviewed suffered from several methodological limitations. Further research is clearly required in this area of chiropractic health care, especially with respect to the clinical effectiveness of SMT on pediatric back pain.

PMID: 22675226 [PubMed - in process] PMID: PMC3364062

C spine

Man Ther. 2012 Jun 13.

Ultrasound imaging with speckle tracking of cervical muscle deformation and deformation rate: Isometric contraction of patients after anterior cervical decompression and fusion for cervical disc disease and controls.

Peolsson A, Löfstedt T, Trygg J, Peolsson M.

Source

Department of Medical and Health Sciences, Division of Physiotherapy, Faculty of Health Sciences, Linköping University, SE-58183 Linköping, Sweden.

Abstract

There is currently a lack of information regarding neck muscle activity during specific exercises. The purpose of the present study was to investigate deformation and deformation rate in different layers of dorsal and ventral neck muscles during isometric neck muscle contraction in individuals after anterior cervical decompression and fusion and in healthy controls. This study included 10 individuals (mean age 60 years; SD 7.1) with a verified, long-standing neck disorder and 10 healthy, age- and sex-matched controls. Ultrasonography and post-process speckle tracking analysis was used to investigate the degree and the rate of neck muscles motions at the C4 segmental level during sub-maximal, isometric resistance of the head in a seated position. None of the analyses performed showed significant differences between groups ($p > 0.05$). In the dorsal muscles, both groups exhibited a higher deformation rate in the multifidus than in the trapezius, splenius, and semispinalis capitis ($p \leq 0.01$). In the neck disorder group, the multifidus also showed a higher deformation rate compared to the semispinalis cervicis ($p = 0.02$). In the ventral muscles of patients with neck disorders, the longus colli had a higher deformation rate than the sternocleidomastoid ($p = 0.02$). Among the healthy controls, the multifidus showed a higher degree of deformation ($p = 0.02$) than the trapezius. In conclusion, our results showed no significant differences between the two groups in mechanical neck muscle activation. Larger studies with different exercises, preferably with a standardized measure of resistance, are needed to investigate whether patients and controls show differences in deformation and deformation rates in neck muscles.

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Tests/SLR

Man Ther. 2012 Jun 22.

Understanding the Active Straight Leg Raise (ASLR): An electromyographic study in healthy subjects.

Hu H, Meijer OG, Hodges PW, Bruijn SM, Strijers RL, Nanayakkara PW, van Royen BJ, Wu W, Xia C, van Dieën JH.

Source

Research Institute MOVE, Faculty of Human Movement Sciences, VU University Amsterdam, Amsterdam, The Netherlands; Department of Orthopaedic Surgery, Shanghai Sixth People's Hospital, Shanghai Jiaotong University, Shanghai 200233, PR China.

Abstract

The Active Straight Leg Raise (ASLR) is an important test in diagnosing pelvic girdle pain (PGP). It is difficult to understand what happens normally during the ASLR, let alone why it would be impaired in PGP. In the present study, healthy subjects performed the ASLR under normal conditions, with weight added above the ankle, and while wearing a pelvic belt. Activity of the abdominal muscles, rectus femoris (RF), and biceps femoris (BF) was recorded with surface electromyography (EMG), and transversus abdominis (TA) with fine wire EMG. RF was ipsilaterally active, BF contralaterally, and the abdominal muscles bilaterally. All muscle activity was higher with weight, and abdominal muscle activity was lower with the pelvic belt. In both these conditions, TA and obliquus abdominis internus (OI) were more asymmetrically active than obliquus externus. The abdominal muscles engage in multitasking, combining symmetric and asymmetric task components. Hip flexion causes an unwanted forward pull on the ipsilateral ilium, which is counteracted by contralateral BF activity. To transfer this contralateral force toward ipsilateral, the lateral abdominal muscles press the ilia against the sacrum ("force closure"). Thus, problems with the ASLR may derive from problems with force closure. Also abdominal wall activity counteracts forward rotation of the ilium. Moreover, contralateral BF activity causes transverse plane rotation of the pelvis, often visible as an upward movement of the contralateral anterior superior iliac spine. Such transverse plane rotation is countered by ipsilateral TA and OI. The present study facilitates the understanding of what normally happens during the ASLR.

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Motor control

Exp Brain Res. 2012 Jun 19.

Training-related decrease in antagonist muscles activation is associated with increased motor cortex activation: evidence of central mechanisms for control of antagonist muscles.

Dal Maso F, Longcamp M, Amarantini D.

Source

PRISSMH, F2SMH, STAPS, Université Paul Sabatier Toulouse 3, 118 route de Narbonne, 31062, Toulouse Cedex 9, France, fabien.dal-maso@univ-tlse3.fr.

Abstract

During human contraction, net joint torque production involves the contribution of the antagonist muscles. Their activation protects the articulations and facilitates movement accuracy, but despite these fundamental roles, little is known about the brain mechanisms underlying their control. In view of previous studies that showed lesser antagonist muscles activation in participants engaged in regular strength training (ST) than in participants actively engaged in endurance disciplines (ED), we used this between-group comparison to investigate the possible role of motor cortex activity on the control of antagonist muscles. Electroencephalographic (EEG) and electromyographic (EMG) activity as well as the net joint torque were recorded, while ten ST and eleven ED participants performed isometric knee muscles exertions at different force levels. EEG data showed a linear increase in the suppression of cortical oscillations in the 21-31 Hz frequency band with increasing force level in ST but not in ED participants. This effect was associated with lesser EMG activation of the antagonist muscles in ST than in ED participants, the difference between groups also increasing with the force level. Both effects were found specifically during flexion exertions, indicating that ST participants developed sharp central adaptations to control the antagonist muscles involved as prime movers in their usual training task. This result suggests that the cortical adaptations induced by regular strength training could exert a specific encoding of the antagonist muscles, leading to the minimization of their activation and improved energetic efficiency of the muscle contraction.

PMID: 22710618 [PubMed - as supplied by publisher]

C spine

J Orthop Sports Phys Ther. 2012 Jun 18. doi:10.2519/jospt.2012.4151.

Immediate Changes in Widespread Pressure Pain Sensitivity, Neck Pain, and Cervical Range of Motion After Cervical or Thoracic Thrust Manipulation in Patients With Bilateral Chronic Mechanical Neck Pain: A Randomized Clinical Trial.

Martínez-Segura R, De-la-Llave-Rincón AI, Ortega-Santiago R, Cleland JA, Fernández-de-Las-Peñas C.

Abstract

STUDY DESIGN:

Randomized clinical trial.

OBJECTIVES:

To compare the effects of cervical versus thoracic thrust manipulation in patients with bilateral chronic mechanical neck pain on pressure pain sensitivity, neck pain, and cervical range of motion.

BACKGROUND:

Evidence suggests that spinal interventions can stimulate descending inhibitory pain pathways. To our knowledge, no study has investigated the neurophysiological effects of thoracic thrust manipulation in individuals with bilateral chronic mechanical neck pain, including widespread changes on pressure sensitivity.

METHODS AND MEASURES:

Ninety patients (51% females) were randomly assigned to 1 of 3 groups: cervical thrust manipulation on the right, cervical thrust manipulation on the left, or thoracic thrust manipulation. Pressure pain thresholds (PPTs) over the C5-C6 zygapophyseal joint, lateral epicondyle, and tibialis anterior muscle, neck pain (11-point numeric pain rating scale [NPRS]), and cervical spine range of motion were collected at baseline and 10 minutes after the intervention by an assessor blinded to the treatment allocation of the patients. Mixed-model ANCOVAs were used to examine the effects of the treatment on each outcome variable with group as the between subject variable, time and side as the within subjects variables, and gender as covariate. The primary analysis was the Group * Time interaction.

RESULTS:

No significant interactions were found with the mixed model ANCOVAs for any PPT level (C5-C6: $P>0.210$; lateral epicondyle: $P>0.186$; tibialis anterior muscle: $P>0.268$), neck pain intensity ($P=0.923$), or cervical range of motion (flexion: $P=0.700$; extension: $P=0.387$; lateral-flexion: $P>0.672$; rotation: $P>0.192$) as dependent variables: all groups exhibiting similar changes in PPT, neck pain and, cervical range of motion (all, $P<0.001$). Gender did not influence the main effects or the interaction effects in the analyses that were performed for the outcomes ($P>0.10$).

CONCLUSIONS:

The results of the current randomized clinical trial suggest that cervical and thoracic thrust manipulation induce similar changes in PPT, neck pain intensity, and cervical range of motion in individuals with bilateral chronic mechanical neck pain. However, changes in PPT and cervical range of motion were small and did not surpass their respective minimal detectable change values. Further, because we did not include a control group, we cannot rule out the placebo effect of either thrust intervention on the outcomes.

LEVEL OF EVIDENCE:Therapy, Level 1b. *J Orthop Sports Phys Ther*, Epub 18 June 2012.

C spine

Man Ther. 2012 Jun 22.

Localised resistance selectively activates the semispinalis cervicis muscle in patients with neck pain.

Schomacher J, Petzke F, Falla D.

Source

Center for Sensory-Motor Interaction (SMI), Department of Health Science and Technology, Aalborg University, Denmark.

Abstract

The semispinalis cervicis muscle displays reduced and less defined activation in patients with neck pain which is associated with increased activity of the splenius capitis muscle. Exercises to selectively activate the semispinalis cervicis muscle may be relevant for patients with neck pain however the most appropriate type of exercise has not been determined. The purpose of this study was to investigate whether a specific exercise could selectively activate the semispinalis cervicis muscle relative to the splenius capitis. Ten women with chronic neck pain participated. Intramuscular electrodes were inserted into the semispinalis cervicis and splenius capitis unilaterally on the side of greatest pain. After testing the maximal neck extension force, three isometric exercises were performed in sitting: 1. the investigator placed a hand on the patient's occiput and pushed into flexion asking the patient to resist into extension maximally, 2. the investigator placed the thumb and index finger on the vertebral arch of C2 and pushed into flexion asking the patient to resist maximally, 3. same procedure as for C2 however the resistance was applied at C5. The ratio between the normalized electromyography (EMG) amplitude of the semispinalis cervicis and splenius capitis was computed. The relative activation of the semispinalis cervicis was greater ($P < 0.05$) than the splenius capitis with resistance at C2 (2.53 ± 2.43) compared to resistance at the occiput (1.39 ± 1.00) or at C5 (1.16 ± 0.85). The results indicate that localized resistance can achieve relative isolation of the semispinalis cervicis muscle. This exercise approach may be relevant for patients with neck pain.

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LBP

Man Ther. 2012 Jun 22.

Low back pain: An assessment using positional MRI and MDT.

Hedberg K, Alexander LA, Cooper K, Hancock E, Ross J, Smith FW.

Source

School of Health Sciences, Faculty of Health and Social Care, Robert Gordon University,
Garthdee Road, Aberdeen AB10 7QG, UK.

Abstract

Current guidelines advise against the use of routine imaging for low back pain. Positional MRI can provide enhanced assessment of the lumbar spine in functionally loaded positions which are often relevant to the presenting clinical symptoms. The purpose of this case report is to highlight the use of positional MRI in the assessment and classification of a subject with low back pain. A low back pain subject underwent a Mechanical Diagnosis and Therapy (MDT) assessment and positional MRI scan of the lumbar spine. The MDT assessment classified the subject as "other" since the subjective history indicated a possible posterior derangement whilst the objective assessment indicated a possible anterior derangement. Positional MRI scanning in flexed, upright and extended sitting postures confirmed the MDT assessment findings to reveal a dynamic spinal stenosis which reduced in flexion and increased in extension.

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LBP

PM R. 2012 Jun 22.

Influence of Directional Preference on Two Clinical Dichotomies: Acute Versus Chronic Pain and Axial Low Back Pain Versus Sciatica.

Donelson R, Long A, Spratt K, Fung T.

Source

SelfCare First, LLC, 13 Gibson Rd, Hanover, NH 03755.

Abstract

OBJECTIVE:

To determine whether outcomes from treatment determined by subjects' directional preference (ie, reduction in back and/or leg pain, by performing a single direction of repeated end-range lumbar movement) would vary based on pain duration, location, or neurologic status.

DESIGN:

A secondary analysis of data from a multicenter randomized clinical trial.

SETTING:

Eleven physical therapy departments or clinics in 5 countries, with referrals for both acute and chronic low back pain.

SUBJECTS:

Seventy-one of 80 subjects with acute to chronic low back pain, and with and without radicular leg pain, and with or without mild neurologic deficit, were found at baseline to have a directional preference and were then treated with directional exercises that matched their directional preference.

METHODS:

All of the subjects were treated for 2 weeks with directional exercises and compatible posture modifications. Independent variables were pain duration, pain location, and neurologic status.

MAIN OUTCOME MEASUREMENTS:

Primary measures were back and leg pain intensity and function (Roland Morris Disability Questionnaire). Secondary measures were activity interference, medication use, depression (Beck Depression Inventory), and a self-report of improvement.

RESULTS:

The subjects significantly improved their back and leg pain intensity, disability, and all secondary outcome measures, but pain duration, location, and neurologic status classification did not predict treatment responsiveness. Across all pain duration categories, 91%-100% either improved or resolved completely. There also was significant improvement across all pain location and neurologic status categories, with no significant differences across the outcome variables.

CONCLUSIONS:

In subjects found to have a directional preference who then treated themselves with matching directional exercises, neither pain duration nor pain location and neurologic status predicted their uniformly good-to-excellent outcomes.

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PMID: 22727504 [PubMed - as supplied by publisher]

Shoulder/Sleep

Association between the side of unilateral shoulder pain and preferred sleeping position: a cross-sectional study of 83 danish patients □ *Journal of Manipulative and Physiological Therapeutics*, 07/09/2012

Kempf B et al. –

Patients with unilateral shoulder pain were more likely to sleep on the side of the painful shoulder than on the pain-free side and reported to turn away from their partners in bed. It is unknown whether the observed associations are causal, but it is worth investigating whether a change in sleeping position has a positive effect on patients with shoulder pain and if this can be achieved simply by changing side of sleeping in bed.

Methods

- In a cross-sectional study.
- Adult patients seeking chiropractic care with unilateral shoulder pain were asked about sleeping position and, if sleeping with a partner, which side of the bed they slept in.
- A total of 83 participants were included from 10 chiropractic clinics.
- Associations were cross-tabulated and tested by Fisher exact test

Results

- The pain was in the right shoulder in 55% (95 % confidence interval, 46–66) of the participants with unilateral pain.
- The side of shoulder pain was associated to the side patients slept on, with 67% of those sleeping on one side lying on the painful shoulder ($P = .02$).

Moreover, patients were more likely to turn away from their partner at night, and 76% slept on the side opposite their partner ($P < .001$).

C spine/exercise

Arch Phys Med Rehabil. 2012 Jul;93(7):1225-33.

Training mode-dependent changes in motor performance in neck pain.

O'Leary S, Jull G, Kim M, Uthaikhup S, Vicenzino B.

Source

National Health and Medical Research Council (NHMRC) of Australia Centre for Clinical Research Excellence in Spinal Pain, Injury and Health, The University of Queensland, Brisbane, Australia; Physiotherapy Department, Royal Brisbane and Women's Hospital, Queensland Health, Queensland, Australia.

Abstract

O'Leary S, Jull G, Kim M, Uthaikhup S, Vicenzino B. Training mode-dependent changes in motor performance in neck pain.

OBJECTIVE:

To determine whether changes in motor performance after a course of exercise in patients with mechanical neck pain (MNP) were dependent on the primary behavioral demand of the exercise performed.

DESIGN:

Randomized controlled trial.

SETTING:

University laboratory.

PARTICIPANTS:

Volunteers (N=60; 35 women, 25 men; mean age, 37.9y) with chronic MNP participated in the study.

INTERVENTION:

Exercise targeted to improve cervical motor performance including endurance training (ETr; n=20), coordination training (CTr; n=20), and active mobility training (n=20).

MAIN OUTCOME MEASURES:

Changes in the cervical motor performance domains of strength, endurance, coordination, and active mobility were evaluated immediately after the 10-week training program, and at a 26-week follow-up.

RESULTS:

Between-group comparisons revealed significantly greater gains in endurance ($P<.02$) by the ETr group, and significantly greater gains in coordination ($P<.01$) by the CTr group. All 3 groups had improvement in pain ($P<.01$) and disability ($P<.01$).

CONCLUSIONS:

Changes in motor performance in individuals with MNP in response to an exercise program were dependent on the specific mode of exercise performed, with minimal improvement in other domains of motor performance.

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Coccyx

J Med Case Rep. 2012 Jul 2;6(1):175.

Defecation pain and coccydynia due to an anteverted coccyx: a case report.

Salar O, Mushtaq F, Ahmed M.

Abstract

ABSTRACT:

INTRODUCTION:

Defecation pain is a common problem with many etiologies implicated. Elucidating a cause requires a thorough medical history, examination and appropriate investigations, which may include endoscopy, barium enema, examination under anesthesia and magnetic resonance imaging or computed tomography. Coccydynia is a term used to describe pain in the region of the coccyx, often due to abnormal mobility of the coccyx. Non-surgical management options remain the gold standard for coccydynia with surgery being reserved for complicated cases.

CASE PRESENTATION:

This is a case of a 67-year-old Caucasian man who presented with a two-and-a-half-year history of worsening rectal pain.

CONCLUSION:

To the best of our knowledge, we describe the first case in the literature of an abnormally mobile anteverted coccyx causing predominantly defecation pain and coccydynia, successfully treated by coccygectomy. When first-line investigations fail to elucidate a cause of defecation pain one must, in the presence of unusual symptoms, consider musculoskeletal pathologies emanating from the coccyx and an orthopedic consultation must then be sought for diagnostic purposes

C spine/Exercise

Ultrasound imaging with speckle tracking of cervical muscle deformation and deformation rate: Isometric contraction of patients after anterior cervical decompression and fusion for cervical disc disease and controls □

Manual Therapy , 07/03/2012

Peolsson A et al. –

These results showed no significant differences between the two groups in mechanical neck muscle activation. Larger studies with different exercises, preferably with a standardized measure of resistance, are needed to investigate whether patients and controls show differences in deformation and deformation rates in neck muscles.

Methods

- This study included 10 individuals (mean age 60 years; SD 7.1) with a verified, long-standing neck disorder and 10 healthy, age- and sex-matched controls.
- Ultrasonography and post-process speckle tracking analysis was used to investigate the degree and the rate of neck muscles motions at the C4 segmental level during sub-maximal, isometric resistance of the head in a seated position.
- None of the analyses performed showed significant differences between groups ($p > 0.05$).
- In the dorsal muscles, both groups exhibited a higher deformation rate in the multifidus than in the trapezius, splenius, and semispinalis capitis ($p \leq 0.01$).

Results

- In the neck disorder group, the multifidus also showed a higher deformation rate compared to the semispinalis cervicis ($p = 0.02$).
- In the ventral muscles of patients with neck disorders, the longus colli had a higher deformation rate than the sternocleidomastoid ($p = 0.02$).

Among the healthy controls, the multifidus showed a higher degree of deformation ($p = 0.02$) than the trapezius.

Chronic pain

J Pain. 2012 Jun 26.

Mechanical and Heat Hyperalgesia Highly Predict Clinical Pain Intensity in Patients With Chronic Musculoskeletal Pain Syndromes.

Staud R, Weyl EE, Price DD, Robinson ME.

Source

Department of Medicine, University of Florida, Gainesville, Florida.

Abstract

Multiple abnormalities in pain processing have been reported in patients with chronic musculoskeletal pain syndromes. These changes include mechanical and thermal hyperalgesia, decreased thresholds to mechanical and thermal stimuli (allodynia), and central sensitization, all of which are fundamental to the generation of clinical pain. Therefore, we hypothesized that quantitative sensory tests may provide useful predictors of clinical pain intensity of such patients. Our previous studies of fibromyalgia (FM) patients have shown statistically significant correlations of quantitative sensory test results with clinical pain intensity, including mechanical spatial summation, number of pain areas, wind-up, and wind-up aftersensations. Although these tests predicted up to 59% of the variance in FM clinical pain intensity, their expense and technical complexities limited widespread use in clinical practice and trials. Thus, we developed practical tests of primary (mechanical) and secondary (heat) hyperalgesia that also strongly predict clinical pain intensity in patients with chronic musculoskeletal pain disorders. Thirty-six individuals with FM, 24 with local musculoskeletal pain, and 23 normal controls underwent testing of mechanical and heat hyperalgesia at the shoulders and hands. All subjects rated experimental pains using an electronic visual analog scale. Using either heat or pressure pain ratings as well as tender point counts and negative affect as predictors, up to 49.4% of the patients' variance of clinical pain intensity could be estimated. Results of this study emphasize the important contributions of peripheral and central factors to both local and widespread chronic pain. Overall, measures of mechanical and heat hyperalgesia in combination with tender point and negative affect provided powerful predictors of clinical pain intensity in chronic musculoskeletal pain patients that can be readily used in clinical practice and trials. PERSPECTIVE: Simple tests of mechanical and heat hyperalgesia can predict large proportions of the variance in clinical pain intensity of chronic musculoskeletal pain patients and thus are feasible to be included in clinical practice and clinical trials

Fibromyalgia

Curr Pain Headache Rep. 2012 Jun 21.

Brain Imaging in Fibromyalgia.

Jorge LL, Amaro E Jr.

Source

Hospital Israelita Albert Einstein and Instituto de Reabilitação "Lucy Montoro", Avenida Albert Einstein, 627 3rd Floor Block D, 05651901, Morumbi, Sao Paulo, Brazil, lilianalj@einstein.br.

Abstract

Fibromyalgia is a primary brain disorder or a result of peripheral dysfunctions inducing brain alterations, with underlying mechanisms that partially overlap with other painful conditions. Although there are methodologic variations, neuroimaging studies propose neural correlations to clinical findings of abnormal pain modulation in fibromyalgia. Growing evidences of specific differences of brain activations in resting states and pain-evoked conditions confirm clinical hyperalgesia and impaired inhibitory descending systems, and also demonstrate cognitive-affective influences on painful experiences, leading to augmented pain-processing. Functional data of neural activation abnormalities parallel structural findings of gray matter atrophy, alterations of intrinsic connectivity networks, and variations in metabolites levels along multiple pathways. Data from positron-emission tomography, single-photon-emission-computed tomography, blood-oxygen-level-dependent, voxel-based morphometry, diffusion tensor imaging, default mode network analysis, and spectroscopy enable the understanding of fibromyalgia pathophysiology, and favor the future establishment of more tailored treatments.

PMID: 22717698 [PubMed - as supplied by publisher]

C spine

J Med Case Rep. 2012 Jun 28;6(1):166.

Cervical disc herniation presenting with neck pain and contralateral symptoms: a case report.

Yeung JT, Johnson JJ, Karim AS.

ABSTRACT:

INTRODUCTION:

Cervical disc herniation often results in neck and arm pain in patients as a result of direct impingement of nerve roots and associated inflammatory processes. The clinical presentation usually corresponds with the side of herniation and ipsilateral symptoms predominate the clinical picture.

CASE PRESENTATION:

A 35-year-old Caucasian man presented to our facility with neck pain and left-sided upper and lower extremity pain. A magnetic resonance imaging scan revealed a right paramedian herniated disc at the C5 to C6 level. All other cervical levels were normal without central canal stenosis or neural foraminal stenosis. Results from magnetic resonance imaging scans of the brain and lumbar spine were negative. An anterior cervical discectomy was performed at the C5 to C6 level, and an inter-body graft and plate were placed. Our patient had complete resolution of his neck and left arm pain.

CONCLUSIONS:

Anterior discectomy and fusion of the cervical spine resulted in complete resolution of our patient's neck and left arm symptoms and improvement of his contralateral left leg pain. Cervical disc herniation may present with contralateral symptoms that are different from the current perception of this disease.

PMID: 22741922 [PubMed - as supplied by publisher]

Pain/Smoking

Cigarette smoking and pain: Depressive symptoms mediate smoking-related pain symptoms

□ Pain, 06/28/2012

Goesling J et al. – Smoking rates were high and smoking was associated with a worse chronic pain phenotype. Importantly, depressive symptoms emerged as a critical mediating factor in helping to explain the relationship between smoking and pain.

Methods

- This study investigated the association between smoking, pain, and depressive symptoms.
- Participants were new patients seen at a multidisciplinary pain clinic.
- All patients were mailed an intake packet of validated questionnaires as part of an ongoing research and clinical care initiative.
- Of the 497 patients evaluated, 426 had valid smoking data.
- Among these patients, 32.6% (n=139) reported being current smokers, 31.7% (n=135) were classified as former smokers, and 35.7% (n=152) were never smokers.
- A multivariate analysis of covariance (smoking status, age, gender, education) revealed a main effect for pain severity (F=7.36, P<0.001), pain interference (F=4.03, P=0.001), and depressive symptoms (F=7.87, P<0.001).

Results

- Current smokers demonstrated higher pain severity, pain interference, and depressive symptoms compared with former smokers and never smokers (P<0.01 for all analyses), while there were no differences between the former-smoker and never-smoker groups.
- However, the effect of smoking on pain severity (P=0.06) and pain interference (P=0.22) was no longer significant after controlling for depressive symptoms in a mediation model.

Additionally, among former smokers, longer quit duration was associated with less pain severity.

Knee/Injections

Effect of regenerative injection therapy on function and pain in patients with knee osteoarthritis: a randomized crossover study □

Pain Medicine, 07/16/2012 Clinical Article

Dumais R et al. –

The use of regenerative injection therapy (RIT) is associated with a marked reduction in symptoms, which was sustained for over 24 weeks.

Methods

- Crossover study where participants were randomly assigned to receive exercise therapy for 32 weeks in combination with RIT on weeks 0, 4, 8, and 12 or RIT on weeks 20, 24, 28, and 32.
- Thirty–six patients with chronic knee osteoarthritis.
- RIT, which is made up of injections of 1 cc of 15% dextrose 0.6% lidocaine in the collateral ligaments and a 5 cc injection of 20% dextrose 0.5% lidocaine inside the knee joint.
- The primary outcome was the Western Ontario and McMaster Universities Osteoarthritis Index of severity of osteoarthrosis symptoms (WOMAC) score (range: 0–96).

Results

- Following 16 weeks of follow–up, the participants assigned to RIT presented a significant reduction of their osteoarthritis symptoms (mean \pm standard deviation: -21.8 ± 12.5 , $P < 0.001$).
- WOMAC scores in this group did not change further during the last 16 weeks of follow–up, when the participants received exercise therapy only (-1.2 ± 10.7 , $P = 0.65$).
- WOMAC scores in the first 16 weeks did not change significantly among the participants receiving exercise therapy only during this period (-6.1 ± 13.9 , $P = 0.11$).
- There was a significant decrease in this groups' WOMAC scores during the last 16 weeks when the participants received RIT (-9.3 ± 11.4 , $P = 0.006$).
- After 36 weeks, WOMAC scores improved in both groups by 47.3% and 36.2%.

The improvement attributable to RIT alone corresponds to a 11.9–point (or 29.5%) decrease in WOMAC scores.

Pain/Medication

Associations between spousal or significant other solicitous responses and opioid dose in patients with chronic pain □

Pain Medicine, 07/16/2012 Clinical Article

Cunningham JL et al. –

These findings suggest solicitous responses from a spouse or significant other may have an important influence on opioid dose among adults with chronic pain.

Methods

- Retrospective design.
- Multidisciplinary pain rehabilitation center.
- The cohort included 466 consecutively admitted patients who had a spouse or significant other and were using daily opioids.
- Three-week outpatient pain rehabilitation program.
- Solicitous subscale of the Multidimensional Pain Inventory and morphine equivalent dose upon admission.

Results

- The mean solicitous subscale score and morphine equivalent dose were 49.8 (standard deviation [SD] = 8.7) and 118 mg/day (SD = 149), respectively.
- Univariate linear regression analysis showed that greater subscale scores were associated with greater doses of opioids ($P = 0.007$).

In a multivariate model adjusted for age, sex, ethnicity, years of education, employment status, pain duration, depression, and pain severity, the association retained significance ($P = 0.007$).

Respiration

Sports Med. 2012 Aug 1;42(8):707-24.

Effect of respiratory muscle training on exercise performance in healthy individuals: a systematic review and meta-analysis.

Illi SK, Held U, Frank I, Spengler CM.

Objectives: Two distinct types of specific respiratory muscle training (RMT), i.e. respiratory muscle strength (resistive/threshold) and endurance (hyperpnoea) training, have been established to improve the endurance performance of healthy individuals. We performed a systematic review and meta-analysis in order to determine the factors that affect the change in endurance performance after RMT in healthy subjects. Data sources: A computerized search was performed without language restriction in MEDLINE, EMBASE and CINAHL and references of original studies and reviews were searched for further relevant studies. Review methods: RMT studies with healthy individuals assessing changes in endurance exercise performance by maximal tests (constant load, time trial, intermittent incremental, conventional [non-intermittent] incremental) were screened and abstracted by two independent investigators. A multiple linear regression model was used to identify effects of subjects' fitness, type of RMT (inspiratory or combined inspiratory/expiratory muscle strength training, respiratory muscle endurance training), type of exercise test, test duration and type of sport (rowing, running, swimming, cycling) on changes in performance after RMT. In addition, a meta-analysis was performed to determine the effect of RMT on endurance performance in those studies providing the necessary data. Results: The multiple linear regression analysis including 46 original studies revealed that less fit subjects benefit more from RMT than highly trained athletes (6.0% per 10 mL · kg⁻¹ · min⁻¹ decrease in maximal oxygen uptake, 95% confidence interval [CI] 1.8, 10.2%; p = 0.005) and that improvements do not differ significantly between inspiratory muscle strength and respiratory muscle endurance training (p = 0.208), while combined inspiratory and expiratory muscle strength training seems to be superior in improving performance, although based on only 6 studies (+12.8% compared with inspiratory muscle strength training, 95% CI 3.6, 22.0%; p = 0.006). Furthermore, constant load tests (+16%, 95% CI 10.2, 22.9%) and intermittent incremental tests (+18.5%, 95% CI 10.8, 26.3%) detect changes in endurance performance better than conventional incremental tests (both p < 0.001) with no difference between time trials and conventional incremental tests (p = 0.286). With increasing test duration, improvements in performance are greater (+0.4% per minute test duration, 95% CI 0.1, 0.6%; p = 0.011) and the type of sport does not influence the magnitude of improvements (all p > 0.05). The meta-analysis, performed on eight controlled trials revealed a significant improvement in performance after RMT, which was detected by constant load tests, time trials and intermittent incremental tests, but not by conventional incremental tests. Conclusion: RMT improves endurance exercise performance in healthy individuals with greater improvements in less fit individuals and in sports of longer durations. The two most common types of RMT (inspiratory muscle strength and respiratory muscle endurance training) do not differ significantly in their effect, while combined inspiratory/expiratory strength training might be superior. Improvements are similar between different types of sports. Changes in performance can be detected by constant load tests, time trials and intermittent incremental tests only. Thus, all types of RMT can be used to improve exercise performance in healthy subjects but care must be taken regarding the test used to investigate the improvements.

PMID: 22765281 [PubMed - in process]

LBP/SLR

Man Ther. 2012 Jun 22.

Understanding the Active Straight Leg Raise (ASLR): An electromyographic study in healthy subjects.

Hu H, Meijer OG, Hodges PW, Bruijn SM, Strijers RL, Nanayakkara PW, van Royen BJ, Wu W, Xia C, van Dieën JH.

Source

Research Institute MOVE, Faculty of Human Movement Sciences, VU University Amsterdam, Amsterdam, The Netherlands; Department of Orthopaedic Surgery, Shanghai Sixth People's Hospital, Shanghai Jiaotong University, Shanghai 200233, PR China.

Abstract

The Active Straight Leg Raise (ASLR) is an important test in diagnosing pelvic girdle pain (PGP). It is difficult to understand what happens normally during the ASLR, let alone why it would be impaired in PGP. In the present study, healthy subjects performed the ASLR under normal conditions, with weight added above the ankle, and while wearing a pelvic belt. Activity of the abdominal muscles, rectus femoris (RF), and biceps femoris (BF) was recorded with surface electromyography (EMG), and transversus abdominis (TA) with fine wire EMG. RF was ipsilaterally active, BF contralaterally, and the abdominal muscles bilaterally. All muscle activity was higher with weight, and abdominal muscle activity was lower with the pelvic belt. In both these conditions, TA and obliquus abdominis internus (OI) were more asymmetrically active than obliquus externus. The abdominal muscles engage in multitasking, combining symmetric and asymmetric task components. Hip flexion causes an unwanted forward pull on the ipsilateral ilium, which is counteracted by contralateral BF activity. To transfer this contralateral force toward ipsilateral, the lateral abdominal muscles press the ilia against the sacrum ("force closure"). Thus, problems with the ASLR may derive from problems with force closure. Also abdominal wall activity counteracts forward rotation of the ilium. Moreover, contralateral BF activity causes transverse plane rotation of the pelvis, often visible as an upward movement of the contralateral anterior superior iliac spine. Such transverse plane rotation is countered by ipsilateral TA and OI. The present study facilitates the understanding of what normally happens during the ASLR.

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PMID: 22728211 [PubMed - as supplied by publisher]

Mobilization

The effect of increasing sets (within one treatment session) and different set durations (between treatment sessions) of lumbar spine posteroanterior mobilisations on pressure pain thresholds □

Manual Therapy , 07/12/2012

Pentelka L et al. –

The results suggest that in order to induce the greatest local hypoalgesia, at least 4 sets of mobilisations are required. The different durations of 30 versus 60 s of mobilisation may not change the extent of the hypoalgesic effect.

Methods

- This single–blinded, randomised, same subject repeated measures crossover design included 19 asymptomatic healthy volunteers.
- The participants received 5 sets of either 30 or 60 s of postero–anterior mobilisations to L4 on different days.
- PPTs were measured immediately before, between and after the intervention at 4 different standardised sites.

Results

- A 4–way ANOVA analysis revealed that there was no statistically significant difference between 30 versus 60 s of mobilisations.
- However, there was a tendency for PPT values to be higher for the 60 s intervention.
- All PPT measurements after the interventions were significantly higher than the baseline.

Only the measurement after the 4th set of mobilisations was significantly higher than the measurement after the 1st set ($p = 0.035$).

Viscera

Pain. 2012 Jun 19.

Functional abdominal pain patient subtypes in childhood predict functional gastrointestinal disorders with chronic pain and psychiatric comorbidities in adolescence and adulthood.

Walker LS, Sherman AL, Bruehl S, Garber J, Smith CA.

Source

Vanderbilt University School of

Abstract

Although pediatric functional abdominal pain (FAP) has been linked to abdominal pain later in life, childhood predictors of long-term outcomes have not been identified. This study evaluated whether distinct FAP profiles based on patterns of pain and adaptation in childhood could be identified and whether these profiles predicted differences in clinical outcomes and central sensitization (wind-up) on average 9 years later. In 843 pediatric FAP patients, cluster analysis was used to identify subgroups at initial FAP evaluation based on profiles of pain severity, gastrointestinal (GI) and non-GI symptoms, pain threat appraisal, pain coping efficacy, catastrophizing, negative affect, and activity impairment. Three profiles were identified: high pain dysfunctional, high pain adaptive, and low pain adaptive. Logistic regression analyses controlling for age and sex showed that, compared with pediatric patients with the low pain adaptive profile, those with the high pain dysfunctional profile were significantly more likely at long-term follow-up to meet criteria for pain-related functional gastrointestinal disorder (FGID) (odds ratio: 3.45, confidence interval: 1.95 to 6.11), FGID with comorbid nonabdominal chronic pain (odds ratio: 2.6, confidence interval: 1.45 to 4.66), and FGID with comorbid anxiety or depressive psychiatric disorder (odds ratio: 2.84, confidence interval: 1.35 to 6.00). Pediatric patients with the high pain adaptive profile had baseline pain severity comparable to that of the high pain dysfunctional profile, but had outcomes as favorable as the low pain adaptive profile. In laboratory pain testing at follow-up, high pain dysfunctional patients showed significantly greater thermal wind-up than low pain adaptive patients, suggesting that a subgroup of FAP patients has outcomes consistent with widespread effects of heightened central sensitization.

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Pain/Fear

Pain. 2012 Aug;153(8):1742-8.

Identifying selective visual attention biases related to fear of pain by tracking eye movements within a dot-probe paradigm.

Yang Z, Jackson T, Gao X, Chen H.

Source

School of Psychology, Southwest University, Chongqing, China.

Abstract

This research examined selective biases in visual attention related to fear of pain by tracking eye movements (EM) toward pain-related stimuli among the pain-fearful. EM of 21 young adults scoring high on a fear of pain measure (H-FOP) and 20 lower-scoring (L-FOP) control participants were measured during a dot-probe task that featured sensory pain-neutral, health catastrophe-neutral and neutral-neutral word pairs. Analyses indicated that the H-FOP group was more likely to direct immediate visual attention toward sensory pain and health catastrophe words than was the L-FOP group. The H-FOP group also had comparatively shorter first fixation latencies toward sensory pain and health catastrophe words. Conversely, groups did not differ on EM indices of attentional maintenance (i.e., first fixation duration, gaze duration, and average fixation duration) or reaction times to dot probes. Finally, both groups showed a cycle of disengagement followed by re-engagement toward sensory pain words relative to other word types. In sum, this research is the first to reveal biases toward pain stimuli during very early stages of visual information processing among the highly pain-fearful and highlights the utility of EM tracking as a means to evaluate visual attention as a dynamic process in the context of FOP.

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Coccyx/tumor

J Minim Invasive Gynecol. 2012 Jul;19(4):517-20.

Sacrococcygeal neurofibroma: rare cause for chronic pelvic pain.

Paul PG, Pravinkumar T, Sheetal B.

Paul's Hospital, Centre For Advanced Endoscopy & Infertility Treatment, Cochin, Kerala, India.

Abstract

Pelvic pain is a common gynecologic complaint. Retroperitoneal pelvic tumors are rarely a cause of pelvic pain. Neurofibroma is an uncommon pelvic retroperitoneal tumor, and only 17 cases are reported to date. A 38-year-old woman with chronic pelvic pain had a soft fixed mass that was the size of an orange in the right posterolateral fornix, with a normal uterus on pelvic examination, and a mass of 6.3 × 5.2 cm with mixed echotexture on the right side separate from both ovaries on transvaginal ultrasonography. A provisional diagnosis of retroperitoneal mass probably a retroperitoneal teratoma was made. Laparoscopy was performed; an ill-defined retroperitoneal soft tissue mass of about 6 cm was seen on the right pararectal and presacral area, displacing the rectum toward the left side. The mass was soft and jellylike without a cyst wall. Histopathologic study and immunohistochemistry results were consistent with neurofibroma of the sacrococcygeal regions. To our knowledge this is the third case of sacrococcygeal neurofibroma treated by complete laparoscopic excision. Gynecologists should keep sacrococcygeal neurofibroma as a differential diagnosis of pelvic pain with atypical location of a pelvic mass. A high index of suspicion and an appropriate imaging technique are needed for accurate diagnosis. Laparoscopy seems to be a safe and effective method of managing retroperitoneal presacral neurofibromas.

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Fibromyalgia

Arthritis Res Ther. 2012 Jul 9;14(4):R162.

Changes in pain and insulin-like growth factor 1 in fibromyalgia during exercise: the involvement of cerebrospinal inflammatory factors and neuropeptides.

Bjersing JL, Dehlin M, Erlandsson M, Bokarewa M, Mannerkorpi K.

Abstract

INTRODUCTION:

Fibromyalgia (FM) is characterized by chronic pain. Impaired growth hormone responses and reduced serum insulin-like growth factor 1 (IGF-1) are common in FM. The aim was to examine changes in serum IGF-1, cerebrospinal fluid (CSF), neuropeptides and cytokines during aerobic exercise in FM patients.

METHOD:

A total of 49 patients (median age 52 years) with FM were included in the study. They were randomized to either the moderate-to-high intensity Nordic Walking (NW) program (n=26) or the supervised low-intensity walking (LIW) program (n=23). Patients participated in blood tests before and after 15-weeks of aerobic exercise. Changes in serum levels of free IGF-1, pain rating on a 0-100 mm scale, pain threshold and 6-minute walk test (6MWT) were examined. CSF, neuropeptides, matrix metalloproteinase 3 (MMP-3) and inflammatory cytokines were determined. Non-parametric tests were used for group comparisons and correlation analyses.

RESULTS:

Serum free IGF-1 levels did not change during 15-weeks of exercise between the two groups, although the 6MWT significantly improved in the NW-group ($p=0.033$) when compared to LIW. Pain did not significantly change in any of the groups, but tended to decrease ($p=0.052$) over time in the total group. There was a tendency towards a correlation between baseline IGF-1 and an decrease of pain in response to exercise ($r=0.278$, $p=0.059$). When adjusted for age this tendency disappeared. The change in serum free IGF-1 correlated positively with an alteration in CSF substance P (SP) levels ($r_s=0.495$, $p=0.072$), neuropeptide Y (NPY) ($r_s=0.802$, $p=0.001$), and pain threshold ($r_s=0.276$, $p=0.058$). Differing CSF SP levels correlated positively to a change in pain threshold ($r_s=0.600$, $p=0.023$), while the shift in CSF MMP-3 inversely correlated with an altered pain threshold ($r_s=-0.569$, $p=0.034$).

CONCLUSIONS:

The baseline level of serum free IGF-1 did not change during high or low-intensity of aerobic exercise. Changes in IGF-1 correlated positively with a variation in CSF SP, NPY and pain threshold. These data indicate a beneficial role of IGF-1 during exercise in FM. Trial registration. ClinicalTrials.gov NCT00643006.

PMID: 22776095 [PubMed - as supplied by publisher]

Chronic Pain

An expanded view of self-management: patients' perceptions of education and support in an intervention for chronic musculoskeletal pain □

Pain Medicine, 07/11/2012

Matthias MS et al. –

Results corroborate previous work and suggest that current conceptualizations of self-management are incomplete. A model is proposed that not only depicts self-management as involving more than activities and strategies, but also acknowledges the central role of relationships and support in pain self-management.

Methods

- Qualitative interviews were conducted with 26 patients in the intervention arm of ESCAPE (21% of total intervention patients) to determine patients' experiences with and perceptions of the intervention.
- Patients were purposefully sampled to include treatment responders (defined as $\geq 30\%$ reduction in pain-related disability or pain severity), nonresponders, and noncompleters (completed $< 50\%$ of trial).
- Qualitative analysis was guided by grounded theory.

Results

- Both responders and nonresponders discussed the importance of the self-management education they received.
- Of particular significance, patients identified the nurse care manager who administered the intervention as being integral to patients' ability to self-manage their chronic pain.
- Patients described important ways in which the nurse facilitated their self-management, reported under three themes:
 - Helping patients find what works for their pain;
 - Holding patients accountable for their pain management;
 - Motivating and providing emotional support to patients.

C spine/NDI

Eur Spine J. 2012 Jul 3.

Detecting relevant changes and responsiveness of Neck Pain and Disability Scale and Neck Disability Index.

Jorritsma W, Dijkstra PU, de Vries GE, Geertzen JH, Reneman MF.

Source

Department of Rehabilitation Medicine, Center for Rehabilitation, University Medical Center Groningen, University of Groningen, PO Box 30.002, 9750 RA, Haren, Groningen, The Netherlands, w.jorritsma@cvr.umcg.nl.

Abstract

PURPOSE:

To investigate relevant change on the Neck Pain and Disability Scale (NPAD) and Neck Disability Index (NDI) and which questionnaire is the most responsive in patients with non-specific chronic neck pain (CNP).

METHODS:

Seventy-six patients with non-specific CNP in an outpatient tertiary rehabilitation setting were dichotomized into "improved" and "stable" based on global perceived effect (GPE) scores. To investigate relevant change minimal detectable change (MDC) and minimal important change (MIC) with the receiver operator characteristic (ROC) cut-off point were assessed. Comparison of responsiveness was performed using areas under the ROC curve (AUC) and correlations between change scores of NPAD and NDI, and GPE.

RESULTS:

MDC and MIC on NPAD (scale 0-100) were 31.7 and 11.5 points, respectively. MDC and MIC on NDI (scale 0-50) were 8.4 and 3.5 points, respectively. Changes should exceed this MDC or MIC cut-off to be interpreted as relevant. AUC was 0.75 for both NPAD and NDI. Correlations between change scores of NPAD and NDI, and GPE were, respectively, 0.48 (95 % CI 0.29-0.64) and 0.49 (95 % CI 0.30-0.64).

CONCLUSIONS:

Relevant change on both NPAD and NDI assessed with MDC and MIC resulted in different cut-offs and consequently with different amounts of certainty that the patient is improved. Responsiveness of NPAD and NDI was similar

Shoulder

J Shoulder Elbow Surg. 2012 Jun 25.

Is shoulder pain for three months or longer correlated with depression, anxiety, and sleep disturbance?

Cho CH, Jung SW, Park JY, Song KS, Yu KI.

Source

Pain Research Center, Department of Orthopedic Surgery, Dongsan Medical Center, School of Medicine, Keimyung University, Daegu, South Korea.

Abstract

BACKGROUND:

Recent studies have found a high prevalence of depression, anxiety, and sleep disturbance in patients with chronic musculoskeletal pain. We conducted a study to determine whether shoulder pain for 3 months or longer is correlated with depression, anxiety, and sleep disturbance.

MATERIALS AND METHODS:

We prospectively evaluated 130 patients who had had shoulder pain for 3 months or longer (group I) and 60 healthy controls (group II). We obtained visual analog scale (VAS) pain score, and scores for the American Shoulder and Elbow Surgeons (ASES), Korean Shoulder Scale (KSS), Hospital Anxiety and Depression Scale (HADS), and Pittsburgh Sleep Quality Index (PSQI).

RESULTS:

The mean VAS pain score, ASES score, and KSS score in group I were 6.2, 46.6, and 51.5, respectively. In that group, 22.3% had depression, 19.2% had anxiety, and 81.5% had sleep disturbance. The prevalences were higher in group I than in group II. There were no differences in depression, anxiety, or sleep disturbance by age, sex, type of disease, or duration of symptoms in group I. VAS pain scores positively correlated with PSQI scores ($P = .01$). ASES and KSS scores negatively correlated with HADS depression and anxiety subscale and PSQI scores ($P < .001$). Shoulder pain for 3 months or longer was the strongest predictor of sleep disturbance ($P < .001$).

CONCLUSIONS:

Our study demonstrated high prevalence and close relationships of depression, anxiety, and sleep disturbance in patients with shoulder pain for 3 months or longer. These results may indicate importance of the psychologic approach as well as adequate pain control.

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Pain/smoking

Cigarette smoking and pain: Depressive symptoms mediate smoking-related pain symptoms

□

Pain, 06/28/2012

Goesling J et al. – Smoking rates were high and smoking was associated with a worse chronic pain phenotype. Importantly, depressive symptoms emerged as a critical mediating factor in helping to explain the relationship between smoking and pain.

Methods

- This study investigated the association between smoking, pain, and depressive symptoms.
- Participants were new patients seen at a multidisciplinary pain clinic.
- All patients were mailed an intake packet of validated questionnaires as part of an ongoing research and clinical care initiative.
- Of the 497 patients evaluated, 426 had valid smoking data.
- Among these patients, 32.6% (n=139) reported being current smokers, 31.7% (n=135) were classified as former smokers, and 35.7% (n=152) were never smokers.
- A multivariate analysis of covariance (smoking status, age, gender, education) revealed a main effect for pain severity (F=7.36, P<0.001), pain interference (F=4.03, P=0.001), and depressive symptoms (F=7.87, P<0.001).

Results

- Current smokers demonstrated higher pain severity, pain interference, and depressive symptoms compared with former smokers and never smokers (P<0.01 for all analyses), while there were no differences between the former-smoker and never-smoker groups.
- However, the effect of smoking on pain severity (P=0.06) and pain interference (P=0.22) was no longer significant after controlling for depressive symptoms in a mediation model.

Additionally, among former smokers, longer quit duration was associated with less pain severity.

Neuropathic pain

Sensory Neurons, Ion Channels, Inflammation and the Onset of Neuropathic Pain

□ Canadian Journal of Neurological Sciences, 06/28/2012

Stemkowski PL et al. –

Although evidence is mounting to support the role of interleukin-1 β , prostaglandins and other cytokines in the onset of neuropathic pain, the clinical efficacy of drugs which antagonize or prevent the actions of these mediators is yet to be determined. basic science findings do, however, support the use of pre-emptive analgesia during procedures which involve nerve manipulation and the use of anti-inflammatory steroids as soon as possible following traumatic nerve injury.

Neuropathic pain often fails to respond to conventional pain management procedures. here we review the aetiology of neuropathic pain as would result from peripheral neuropathy or injury. We show that inflammatory mediators released from damaged nerves and tissue are responsible for triggering ectopic activity in primary afferents and that this, in turn, provokes increased spinal cord activity and the development of 'central sensitization'. Although evidence is mounting to support the role of interleukin-1 β , prostaglandins and other cytokines in the onset of neuropathic pain, the clinical efficacy of drugs which antagonize or prevent the actions of these mediators is yet to be determined. basic science findings do, however, support the use of pre-emptive analgesia during procedures which involve nerve manipulation and the use of anti-inflammatory steroids as soon as possible following traumatic nerve injury.

Myofascial trigger points

Pain Med. 2012 Jun 8.

Two- and Three-Dimensional Ultrasound Imaging to Facilitate Detection and Targeting of Taut Bands in Myofascial Pain Syndrome.

Shankar H, Reddy S.

Source

Department of Anesthesiology, Clement Zablocki VA Medical Center & Medical College of Wisconsin, Milwaukee, Wisconsin Medical College of Wisconsin, Milwaukee, Wisconsin, USA.

Abstract

Introduction. Ultrasound imaging has gained acceptance in pain management interventions. Features of myofascial pain syndrome have been explored using ultrasound imaging and elastography. There is a paucity of reports showing the benefit clinically. This report provides three-dimensional features of taut bands and highlights the advantages of using two-dimensional ultrasound imaging to improve targeting of taut bands in deeper locations. **Case Report.** Fifty-eight-year-old man with pain and decreased range of motion of the right shoulder was referred for further management of pain above the scapula after having failed conservative management for myofascial pain syndrome. Three-dimensional ultrasound images provided evidence of aberrancy in the architecture of the muscle fascicles around the taut bands compared to the adjacent normal muscle tissue during serial sectioning of the accrued image. On two-dimensional ultrasound imaging over the palpated taut band, areas of hyperechogenicity were visualized in the trapezius and supraspinatus muscles. Subsequently, the patient received ultrasound-guided real-time lidocaine injections to the trigger points with successful resolution of symptoms. **Conclusions.** This is a successful demonstration of utility of ultrasound imaging of taut bands in the management of myofascial pain syndrome. Utility of this imaging modality in myofascial pain syndrome requires further clinical validation.

Wiley Periodicals, Inc

LBP/Spondy/radiographs

Eur Spine J. 2012 Feb;21(2):256-61.

The analysis of segmental mobility with different lumbar radiographs in symptomatic patients with a spondylolisthesis.

Cabraja M, Mohamed E, Koeppen D, Kroppenstedt S.

Source

Department of Neurosurgery, Charité, Universitätsmedizin Berlin, Hindenburgdamm 30, 12200 Berlin, Germany. mario.cabraja@charite.de

Abstract

PURPOSE:

Lumbar flexion-extension radiographs in standing position (SFE) are the most commonly used imaging method to evaluate segmental mobility. Many surgeons use SFE to disclose abnormal vertebral motion and base their decision for surgical fusion on its results. We tested the hypothesis that imaging in standing and recumbent position (SRP) reveals a higher sagittal translation (ST) and sagittal rotation (SR) in symptomatic patients than with SFE.

MATERIALS AND METHODS:

We analysed images of 100 symptomatic patients with a low-grade spondylolisthesis that underwent surgical fusion. To determine the ST and SR in SRP, we compared the images taken in the recumbent position in the CT with images taken in the standing position during the routine plain radiography.

RESULTS:

The measurement of ST revealed an absolute value of 2.3 ± 1.5 mm in SFE and 4.0 ± 2.0 mm in SRP and differed significantly ($p = 0.001$). The analysis of the relative value showed an ST of $5.9 \pm 3.9\%$ in SFE and $7.8 \pm 5.4\%$ in SRP ($p = 0.008$). The assessment of ST in flexion and in a recumbent position (FRP) revealed the highest ST (4.6 ± 2.5 mm or $9.2 \pm 5.7\%$). Comparison of SR showed the highest rotation in SFE ($6.1^\circ \pm 3.8^\circ$), however, compared to SRP ($5.4^\circ \pm 3.3^\circ$), it missed the level of significance ($p = 0.051$).

CONCLUSIONS:

For evaluation of ST in symptomatic patients with spondylolisthesis SRP appears to be more suitable than SFE, while a pathological SR is better revealed in SFE. The analysis of SRP might offer a complementary method to detect or exclude pathological mobility in more cases.

PMID: 21670945 [PubMed - indexed for MEDLINE] PMCID: PMC3265590 [Available on 2013/2/1]

Manipulation/Pain

Pain Med. 2012 Jun;13(6):754-61.

Is spinal manipulation effective for pain? An overview of systematic reviews.

Posadzki P.

Abstract

Objective. This article is aimed at critically evaluating the evidence from systematic reviews (SRs) of spinal manipulation in patients with pain. **Design.** The study was designed as a SR of SRs. **Methods.** Four electronic databases were searched to identify all relevant articles of the effectiveness of spinal manipulation for pain. SRs were defined as articles employing a repeatable methods section. **Results.** Twenty-two SRs relating to the following pain conditions: low back pain (N = 6), headache (N = 5), neck pain (N = 4), any medical problem (N = 1), carpal tunnel syndrome (N = 1), dysmenorrhea (N = 1), fibromyalgia (N = 1), lateral epicondylitis (N = 1), musculoskeletal conditions (N = 1) and nonspinal pain (N = 1), were included. Positive or, for multiple SR, unanimously positive conclusions were drawn for none of the conditions mentioned earlier. **Limitation.** Publication bias as a well-known phenomenon may have been inherited in this article. **Conclusion.** Collectively, these data fail to demonstrate that spinal manipulation is an effective intervention for pain management.

Wiley Periodicals, Inc

C spine/manipulation

Ann Intern Med. 2012 Jan 3;156(1 Pt 1):1-10.

Spinal manipulation, medication, or home exercise with advice for acute and subacute neck pain: a randomized trial.

Bronfort G, Evans R, Anderson AV, Svendsen KH, Bracha Y, Grimm RH.

Abstract

BACKGROUND:

Mechanical neck pain is a common condition that affects an estimated 70% of persons at some point in their lives. Little research exists to guide the choice of therapy for acute and subacute neck pain.

OBJECTIVE:

To determine the relative efficacy of spinal manipulation therapy (SMT), medication, and home exercise with advice (HEA) for acute and subacute neck pain in both the short and long term.

DESIGN:

Randomized, controlled trial. (ClinicalTrials.gov registration number: NCT00029770)

SETTING:

1 university research center and 1 pain management clinic in Minnesota.

PARTICIPANTS:

272 persons aged 18 to 65 years who had nonspecific neck pain for 2 to 12 weeks.

INTERVENTION:

12 weeks of SMT, medication, or HEA.

MEASUREMENTS:

The primary outcome was participant-rated pain, measured at 2, 4, 8, 12, 26, and 52 weeks after randomization. Secondary measures were self-reported disability, global improvement, medication use, satisfaction, general health status (Short Form-36 Health Survey physical and mental health scales), and adverse events. Blinded evaluation of neck motion was performed at 4 and 12 weeks.

RESULTS:

For pain, SMT had a statistically significant advantage over medication after 8, 12, 26, and 52 weeks ($P \leq 0.010$), and HEA was superior to medication at 26 weeks ($P = 0.02$). No important differences in pain were found between SMT and HEA at any time point. Results for most of the secondary outcomes were similar to those of the primary outcome.

LIMITATIONS:

Participants and providers could not be blinded. No specific criteria for defining clinically important group differences were prespecified or available from the literature.

CONCLUSION:

For participants with acute and subacute neck pain, SMT was more effective than medication in both the short and long term. However, a few instructional sessions of HEA resulted in similar outcomes at most time points.

PRIMARY FUNDING SOURCE:

National Center for Complementary and Alternative Medicine, National Institutes of Health

Scoliosis

Spine J. 2012 Jun 21.

A new risk classification rule for curve progression in adolescent idiopathic scoliosis.

Lee CF, Fong DY, Cheung KM, Cheng JC, Ng BK, Lam TP, Yip PS, Luk KD.

Source

School of Nursing, The University of Hong Kong, Pokfulam, Hong Kong SAR, China.

Abstract

BACKGROUND CONTEXT:

Prognostic factors for curve progression of adolescent idiopathic scoliosis (AIS) have been reported previously. There is only one existing rule that classifies AIS patients into two groups by a curvature of 25°.

PURPOSE:

This study aimed to develop a more refined risk classification rule for AIS.

STUDY DESIGN:

This was a retrospective cohort study.

PATIENT SAMPLE:

We examined 2,308 untreated AIS patients, aged 10 years and older, who had a Risser sign of 2 and lesser and a curvature less than 30° at presentation.

OUTCOME MEASURES:

Outcome was taken as the time to progression to 30°.

METHODS:

Patients' clinical parameters were analyzed by Classification and Regression Tree analysis.

RESULTS:

The new classification rule identified four risk groups of curve progression. Patients with a curvature of 26° and more and less than 18° constituted the highest and lowest risk groups, respectively. The two intermediate groups were identified by the age (11.3 years), menarcheal status, and body height (154 cm).

CONCLUSIONS:

The risk classification rule only uses information at the first presentation and can aid physicians in deriving an efficient management

T spine

Clinical and Radiological Investigation of Thoracic Spine Extension Motion During Bilateral Arm Elevation

Stephen J. Edmondston, Andrij Ferguson, Patrick Ippersiel, Lars Ronningen, Stig Sodeland, Luke Barclay

/jospt.2012.4164 DOI: 10.2519

STUDY DESIGN: Single cohort laboratory based study.

OBJECTIVES: To measure thoracic spine extension motion during bilateral arm elevation using functional radiography and photographic image analysis.

BACKGROUND: Impairment of thoracic spine extension motion may impact on shoulder girdle function. Motion of the thoracic spine during arm movement has not been directly measured using functional radiographic analysis.

METHODS: In 21 asymptomatic males, the thoracic kyphosis was measured in neutral standing and in end-range bilateral arm elevation using lateral radiographs and photographic image analysis. Using both measurement techniques, the difference between the two body positions was used to quantify the range of extension motion of the thoracic spine. Bland and Altman plots were used to examine the agreement between measurement techniques. The relationship between the amount of thoracic kyphosis in neutral standing and kyphosis in full bilateral arm elevation was also examined.

RESULTS: The mean \pm SD increase in thoracic extension with bilateral arm elevation was 12.8 \pm 7.6 $^{\circ}$ and 10.5 \pm 4.4 when measured from the radiographs and photographs, respectively. There was a significant correlation between the radiographic and photographic measurements of the amount of neutral thoracic kyphosis measured in neutral posture ($r=0.71$, $p<0.01$) and for the kyphosis measured while in full bilateral arm elevation ($r=0.82$, $p<0.001$). The mean difference between the 2 measurement techniques was 2.1 degrees for kyphosis measured in neutral posture, and 0.5 degrees when measured in full bilateral arm elevation. The thoracic kyphosis angle measured in neutral posture was strongly correlated with the thoracic kyphosis angle measured in full bilateral arm elevation when measured with both radiographic ($r=0.78$, $p<0.001$) and photographic ($r=0.84$, $p<0.001$) techniques.

CONCLUSION: In asymptomatic men, bilateral arm elevation is associated with movement of the thoracic spine towards extension but the amount of movement is variable among individuals.

J Orthop Sports Phys Ther, Epub 20 April 2012. doi:10.2519/jospt.2012.4164

KEY WORDS: biomechanics, kyphosis, movement analysis, range of motion, shoulder elevation

Knee/Patella/Tests

Physiotherapy. 2012 Jun;98(2):93-100.

Best tests/clinical findings for screening and diagnosis of patellofemoral pain syndrome: a systematic review.

Cook C, Mabry L, Reiman MP, Hegedus EJ.

Source

Division of Physical Therapy, Walsh University, 2020 East Maple Street, North Canton, OH 44720, USA. ccook@walsh.edu

Abstract

BACKGROUND:

Diagnosis of patellofemoral pain syndrome (PFPS) is commonly performed using a myriad of clinical and imaging-based criteria.

OBJECTIVES:

The objective of this systematic literature review was to summarize the research on accuracy of individual clinical tests/findings for PFPS.

DATA SOURCES:

MEDLINE, ProQuest Nursing and Allied Health, Cochrane Trials, PEDro, and CINAHL.

STUDY SELECTION OR ELIGIBILITY CRITERIA: PRISMA guidelines were followed for this review. To be considered for review, the study required: (1) a description of a clinical test or tests used for diagnosing PFPS (including a test that was combined with another finding such as patient history), (2) a report of the diagnostic accuracy of the measures (e.g., sensitivity and specificity), and (3) an acceptable reference standard for comparison. **STUDY APPRAISAL OR SYNTHESIS METHODS:** Quality Assessment of Studies of Diagnostic Accuracy (QUADAS) scores were completed on each selected article. Sensitivity, specificity, and negative and positive likelihood ratios (LR-/LR+) were calculated for each diagnostic test described.

RESULTS:

The systematic search strategy and hand search revealed 704 potential articles, 9 of which met the criteria for this review; analysing a total of 22 PFPS clinical tests. After assessment using the QUADAS score, 1 of the 9 articles was of high quality. The tests with the highest reported diagnostic value were also associated with studies that had the lowest QUADAS values.

CONCLUSION:

A majority of the studies that have investigated diagnostic accuracy of clinical tests for PFPS demonstrate notable design or reporting biases, and at this stage, determining the best tests for diagnosis of PFPS is still difficult.

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Functional movement screen

J Orthop Sports Phys Ther. 2012;42(6):530-40.

The functional movement screen: a reliability study.

Teyhen DS, Shaffer SW, Lorenson CL, Halfpap JP, Donofry DF, Walker MJ, Dugan JL, Childs JD.

OBJECTIVES:

To determine intrarater test-retest and interrater reliability of the Functional Movement Screen (FMS) among novice raters.

BACKGROUND:

The FMS is used by various examiners to assess movement and predict time-loss injuries in diverse populations (eg, youth to professional athletes, firefighters, military service members) of active participants. Unfortunately, critical analysis of the reliability of the FMS is currently limited to 1 sample of active college-age participants.

METHODS:

Sixty-four active-duty service members (mean \pm SD age, 25.2 \pm 3.8 years; body mass index, 25.1 \pm 3.1 kg/m²) without a history of injury were enrolled. Participants completed the 7 component tests of the FMS in a counterbalanced order. Each component test was scored on an ordinal scale (0 to 3 points), resulting in a composite score ranging from 0 to 21 points. Intrarater test-retest reliability was assessed between baseline scores and those obtained with repeated testing performed 48 to 72 hours later. Interrater reliability was based on the assessment from 2 raters, selected from a pool of 8 novice raters, who assessed the same movements on day 2 simultaneously. Descriptive statistics, weighted kappa (κ_w), and percent agreement were calculated on component scores. Intraclass correlation coefficients (ICCs), standard error of the measurement, minimal detectable change (MDC95), and associated 95% confidence intervals (CIs) were calculated on composite scores.

RESULTS:

The average \pm SD score on the FMS was 15.7 \pm 0.2 points, with 15.6% (n = 10) of the participants scoring less than or equal to 14 points, the recommended cutoff for predicting time-loss injuries. The intrarater test-retest and interrater reliability of the FMS composite score resulted in an ICC_{3,1} of 0.76 (95% CI: 0.63, 0.85) and an ICC_{2,1} of 0.74 (95% CI: 0.60, 0.83), respectively. The standard error of the measurement of the composite test was within 1 point, and the MDC95 values were 2.1 and 2.5 points on the 21-point scale for interrater and intrarater reliability, respectively. The interrater agreement of the component scores ranged from moderate to excellent (κ_w = 0.45-0.82).

CONCLUSION:

Among novice raters, the FMS composite score demonstrated moderate to good interrater and intrarater reliability, with acceptable levels of measurement error. The measures of reliability and measurement error were similar for both intrarater reliability that repeated the assessment of the movement patterns over a 48-to-72-hour period and interrater reliability that had 2 raters assess the same movement pattern simultaneously. The interrater agreement of the FMS component scores was good to excellent for the push-up, quadruped, shoulder mobility, straight leg raise, squat, hurdle, and lunge. Only 15.6% (n = 10) of the participants were identified to be at risk for injury based on previously published cutoff values. *J Orthop Sports Phys Ther* 2012;42(6):530-540, Epub 14 May 2012. doi:10.2519/jospt.2012.3838

Core muscles/multifidus

Man Ther. 2012 Jul 9.

Increased intramuscular fatty infiltration without differences in lumbar muscle cross-sectional area during remission of unilateral recurrent low back pain.

D'hooge R, Cagnie B, Crombez G, Vanderstraeten G, Dolphens M, Danneels L.

Source

Department of Rehabilitation Sciences and Physiotherapy, Ghent University, 3B3, De Pintelaan 185, 9000 Ghent, Belgium.

Abstract

Lumbar muscle degeneration is a common feature in non-specific low back pain (LBP). It is hypothesized that degenerated muscles might compromise spinal stability and lead to further injury/pain. However, little is known about lumbar muscle morphometry after resolution of LBP. Therefore, this study investigated the extent of lumbar muscle atrophy and fatty infiltration in individuals who are at risk for a recurrence of LBP. Thirteen participants in remission of unilateral recurrent LBP were compared to 13 healthy controls, comparable for age, weight, length and level of physical activity. Total, lean muscle and fat cross-sectional area (CSA) of lumbar multifidus (MF), erector spinae (ES) and psoas (PS) were investigated on T1-weighted Magnetic Resonance Imaging (MRI), bilaterally and at 3 lumbar levels (L3 upper, L4 upper and L4 lower endplate). In addition, a muscle-fat-index (MFI) was calculated reflecting the amount of fatty infiltration in lean muscle tissue. No significant differences for total, lean muscle and fat CSA were found between people in remission of recurrent LBP and the control group. Conversely, MFI was increased bilaterally at the 2 lowest lumbar levels. There were no differences between the previously painful and non-painful side of the LBP group for any of the parameters. These results show a generalized increase in intramuscular fatty infiltration in lean muscle tissue in the absence of macroscopical signs of muscle degeneration after resolution of LBP. These findings reflect a decreased muscle quality, but not quantity, and might indicate a pathophysiological mechanism contributing to recurrence of LBP.

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Migraine

Headache. 2012 Jul 3. doi: 10.1111/j.1526-4610.2012.02209.x.

Beyond Neurovascular: Migraine as a Dysfunctional Neurolimbic Pain Network.

Maizels M, Aurora S, Heinricher M.

Source

From the Blue Ridge Headache Center, Asheville, NC, USA (M. Maizels); Swedish Neuroscience Institute - Swedish Headache Center, Seattle, WA, USA (S. Aurora); Oregon Health & Science University - Neurological Surgery, Portland, OR, USA (M. Heinricher).

Abstract

No single model of migraine explains all of the known features of the disorder. Migraine has recently been characterized as an abnormality in pain-modulating circuits in the brainstem. The periaqueductal gray appears to have a critical role in migraine genesis and has been labeled the "migraine generator." The concept of a "pain matrix," rather than a specific locus of pain, is widely accepted in the pain literature and offers a new dimension to understanding migraine. Recent neuroimaging studies of migraineurs suggest altered functional connectivity between brainstem pain-modulating circuits and cortical (limbic) centers. Numerous clinical observations suggest that limbic influences play an important role in migraine expression. We propose a model of migraine as a dysfunction of a "neurolimbic" pain network. The influence between brainstem and cortical centers is bidirectional, reflecting the bidirectional interaction of pain and mood. Neurolimbic dysfunction may increase as migraine becomes more chronic or refractory. The neurolimbic model expands the model of migraine as a dysfunction of brainstem nuclei. A neurolimbic model may help bridge a gap in understanding the migraine attack, the interictal dysfunctions of episodic migraine, the progression to chronic migraine, and the common comorbidities with other disorders (such as fibromyalgia, irritable bowel syndrome, and mood and anxiety disorders), which may also be considered neurolimbic. A neurolimbic model of migraine may be a useful heuristic that would impact both clinical treatment and research agendas, as well as education of physicians and patients

Belief

J Pain Symptom Manage. 2012 Jul 2.

Religious Beliefs and Practices in End-Stage Renal Disease: Implications for Clinicians.

Elliott BA, Gessert CE, Larson P, Russ TE.

Source

University of Minnesota School of Medicine, Duluth, Minnesota, USA.

Abstract

CONTEXT:

This qualitative study investigated end-of-life decision making among patients with end-stage renal disease.

OBJECTIVES:

Analysis revealed that many of these patients' and their family members' religious beliefs and practices provided a basis for their decision making and for coping with their circumstances and dialysis treatment.

METHODS:

A prospective qualitative study interviewed 31 elderly dialysis patients and their family members; interviews lasted 30-90 minutes. Interviews were transcribed and coded independently by three investigators. The codes were collected into content-specific "nodes" and themes. Investigators identified and reconciled their interpretations by returning to the transcripts to assure that conclusions reflected participants' sentiments.

RESULTS:

Five themes pertaining to religious beliefs and practices emerged. Two themes were related to decision making: their faith-based beliefs and the meaning that emerges from these beliefs; two described how their coping is impacted: the participants' religious practices and their perceived support from the church community; and one described the participants' spiritual distress.

CONCLUSION:

These findings offer insights into chaplains' roles in the end-stage renal disease setting and the issues that they and other palliative care team members can anticipate and address in patient support and decision making. The results also support recent work to develop methodologies for research on religious and spiritual issues in medical settings.

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Pain/anxiety

Anxiety and fear-avoidance in musculoskeletal pain □ **Current Pain and Headache Reports, 07/18/2012**

Lucchetti G et al. –

Authors found some similarities between proposed mechanisms and explicative models for both conditions as well as an overlapping between the treatments available. The recognition of this association is important for professionals who deal with chronic pain.

- Musculoskeletal pain (MP) is common in the general population and has been associated with anxiety in several ways:
- Muscle tension is included as a part of the diagnostic criteria for generalized anxiety disorder,
- Pain can be a common symptom and a good indicator of an anxiety disorder,
- Anxiety is an independent predictor of quality of life in patients with chronic MP,
- Anxiety leads to higher levels of pain chronification,
- And fear, anxiety, and avoidance are related to MP.

The objective of this article is to explore the mechanisms underlying the relation between anxiety disorders and musculoskeletal pain as well as its management.

Authors have also highlighted the role of spirituality and religiosity in MP treatment.

J Pain. 2012 Jul 11.

Genetic HLA Associations in Complex Regional Pain Syndrome With and Without Dystonia.

van Rooijen DE, Roelen DL, Verduijn W, Haasnoot GW, Huygen FJ, Perez RS, Claas FH, Marinus J, van Hilten JJ, van den Maagdenberg AM.

Source

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

Abstract

We previously showed evidence for a genetic association of the human leukocyte antigen (HLA) system and complex regional pain syndrome (CRPS) with dystonia. Involvement of the HLA system suggests that CRPS has a genetic component with perturbed regulation of inflammation and neuroplasticity as possible disease mechanisms. However, it is at present unclear whether the observed association with HLA-B62 and HLA-DQ8 in CRPS patients with dystonia also holds true for patients without dystonia. Therefore, we tested the possible association with HLA-B62 and HLA-DQ8 in a clinically homogeneous group of 131 CRPS patients without dystonia. In addition, we investigated the possible association with other alleles of the HLA-A, HLA-B, HLA-C, HLA-DR, and HLA-DQ loci. We showed an increased prevalence of HLA-DQ8 (molecularly typed as HLA-DQB1*03:02; OR = 1.65 [95% CI 1.12-2.42], P = .014) in CRPS without dystonia, whereas no association was observed for HLA-B62 (molecularly typed as HLA-B*15:01; OR = 1.22 [95% CI .78-1.92], P = .458). Our data suggest that CRPS with and CRPS without dystonia may be genetically different, but overlapping, disease entities because only HLA-DQ8 is associated with both. The findings also indicate that distinct biological pathways may play a role in both CRPS subtypes. PERSPECTIVE: This study is the first to replicate a specific HLA region conferring genetic risk for the development of CRPS. Moreover, associations of HLA-DQ8 with both CRPS with and CRPS without dystonia, and HLA-B62 only with CRPS with dystonia, suggest that these disease entities may be genetically different, but overlapping.

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LBP/

Phys Ther. 2012 Jun 28.

Back Pain Beliefs Are Related to the Impact of Low Back Pain in 17-Year-Olds.

Smith AJ, O'Sullivan PB, Beales D, Straker L.

Source

A.J. Smith, PhD, School of Physiotherapy and Curtin Health Innovation Research Institute, Curtin University, Perth, Western Australia, Australia, and Telethon Institute for Child Health Research, Perth, Australia.

Abstract

BackgroundDisability in adults with low back pain (LBP) is associated with negative back pain beliefs (BPB). Adult BPB can be positively influenced with education, resulting in reduced LBP disability. By late adolescence the prevalence of LBP reaches adult levels. The relationship between LBP experience, impact and BPB has not been investigated in late adolescence.ObjectivesDocument unknown relationships between LBP experience, LBP impact and BPB in 17 year olds.DesignCross-sectional.

METHODS:

/b>1,126 adolescents in the Raine Study provided full information on LBP, LBP impact (sought professional advice or treatment, taken medication, missed school or work, interfered with normal activities, interfered with physical activities), BPB and a number of covariates.

RESULTS:

/b>BPB were more positive in subjects with experience of LBP (30.2(sd=5.6) p<0.001) than in subjects without experience of LBP (28.5(sd=5.1)). Those with LBP without activity modification impacts had more positive BPB than those with activity modification impacts, even after adjustment for mental well-being and gender. The adjusted difference in BPB between those subjects with experience of LBP but no activity modification impacts and those subjects reporting all 3 activity modification impacts was 2.9 points (95%CI:1.7 to 4.2, p<0.001).

SUBJECTS:

with no impact had more positive BPB than those with no experience of LBP (adjusted difference 2.2, 95%CI:1.4 to 2.9, p<0.001). More positive BPB were also associated with female gender, lower body mass index, higher family income, better SF-36 Mental Health scores and more positive primary carer beliefs.LimitationsCause and effect cannot be ascertained with the cross-sectional design.

CONCLUSION:

/b>Differences in BPB are associated with different levels of LBP impact at 17. This provides a potential target for intervention early during the life course.

PMID: 22745197 [PubMed - as supplied by publisher

LBP/Acupuncture

Pain. 2012 Jul 4.

Acupuncture in patients with acute low back pain: A multicentre randomised controlled clinical trial.

Vas J, Aranda JM, Modesto M, Benítez-Parejo N, Herrera A, Martínez-Barquín DM, Aguilar I, Sánchez-Araujo M, Rivas-Ruiz F.

Source

Public Health System, Servicio Andaluz de Salud, Pain Treatment Unit, Doña Mercedes Primary Health Care Centre, Dos Hermanas, Spain.

Abstract

Reviews of the efficacy of acupuncture as a treatment for acute low back pain have concluded that there is insufficient evidence for its efficacy and that more research is needed to evaluate it. A multicentre randomized controlled trial was conducted at 4 primary-care centres in Spain to evaluate the effects of acupuncture in patients with acute nonspecific low back pain in the context of primary care. A total of 275 patients with nonspecific acute low back pain (diagnosed by their general practitioner) were recruited and assigned randomly to 4 different groups: conventional treatment either alone or complemented by 5 sessions over a 2-week period of true acupuncture, sham acupuncture, or placebo acupuncture per patient. Patients were treated from February 2006 to January 2008. The primary outcome was the reduction in Roland Morris Disability Questionnaire scores of 35% or more after 2weeks' treatment. The patients in the 3 types of acupuncture groups were blinded to the treatments, but those who received conventional treatment alone were not. In the analysis adjusted for the total sample (true acupuncture relative risk 5.04, 95% confidence interval 2.24-11.32; sham acupuncture relative risk 5.02, 95% confidence interval 2.26-11.16; placebo acupuncture relative risk 2.57 95% confidence interval 1.21-5.46), as well as for the subsample of occupationally active patients, all 3 modalities of acupuncture were better than conventional treatment alone, but there was no difference among the 3 acupuncture modalities, which implies that true acupuncture is not better than sham or placebo acupuncture.

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C spine/radiculopathy/t spine

Physiother Theory Pract. 2012 Jul 11.

T2 radiculopathy: A differential screen for upper extremity radicular pain.

Sebastian D.

Source

Clinical Instructor and Program Director, Institute of Therapeutic Sciences, Clinical Residency in Orthopaedic Physical Therapy , Clinical Fellowship in Orthopaedic Manual Physical Therapy, Consultant, Alternative Rehab Inc, Livonia, MI , USA.

Abstract

Radicular pain in the upper extremity can have a cervical origin terminating at the cervicothoracic junction (C8, T1). Review of the literature suggests cutaneous representations of T2 nerve root to the axilla, posteromedial arm, and lateral forearm, suggesting yet another source of upper extremity radicular pain. A 53-year-old female experienced insidious right upper thoracic pain radiating into the right axilla, upper arm, and lateral forearm (10/10 numerical pain rating scale (NPRS)) of 1-week duration. Medical referral suggested cervical radiculopathy, however, cervical spine examination was unremarkable. She presented with mechanical dysfunction of C8, T1; T1, T2; and T2, T3 vertebral segments with restricted cervical extension. Firm compression over the right lateral aspect of the second and third thoracic vertebrae reproduced her symptoms markedly. There was a predominance of right axillary pain. Cervical extension reproduced local upper thoracic pain. Nine treatment visits for a period of 3 weeks addressed mechanical dysfunction at the cervicothoracic junction and upper thoracic region, comprising manual therapy, corrective exercise, and pain modalities. Reduction of local tenderness, and radiating axillary and right arm pain was observed (2/10 NPRS), with improved cervical extension. The second thoracic intercostal nerve and the adjoining intercostobrachial nerve, medial antebrachial cutaneous nerve, and the posterior brachial cutaneous branch of the radial nerve are speculated to be potential symptom mediators. They have a representation to the axilla, medial and posterior arm, and lateral forearm - a representation supporting the speculation of upper extremity radicular symptoms following mechanical dysfunction of the upper thoracic vertebrae.

PMID: 22783813 [PubMed - as supplied by publisher]

LBP

Spine (Phila Pa 1976). 2012 Jul 15;37(16):1347-1356.

A Randomized Controlled Trial on the Effectiveness of a Classification-Based System for Subacute and Chronic Low Back Pain.

Apeldoorn AT, Ostelo RW, van Helvoirt H, Fritz JM, Knol DL, van Tulder MW, de Vet HC.

Source

*Department of Epidemiology and Biostatistics and the EMGO+ Institute for Health and Care Research, VU University Medical Centre, Amsterdam, the Netherlands; †Medical Centre Alkmaar, Alkmaar, the Netherlands ‡Department of Health Sciences and the EMGO+ Institute for Health and Care Research, Faculty of Earth and Life Sciences, VU University, Amsterdam, the Netherlands §Medical Back Neck Centre, The Hague, the Netherlands |Department of Physical Therapy, University of Utah, and Intermountain Health Care, Salt Lake City, UT.

Abstract

STUDY DESIGN.: A randomized controlled trial.

OBJECTIVE.: To assess the effectiveness of Delitto's classification-based treatment approach compared with usual physical therapy care in patients with subacute or chronic low back pain.

SUMMARY OF BACKGROUND DATA.: No trial has evaluated this approach in patients with subacute and chronic low back pain.

METHODS.: Before randomization, all patients were classified by research physical therapists according to a modified version of Delitto's classification-based system. Randomization was computer-generated, with centralized allocation concealment. The statistician and the physical therapists were unblinded. Patients and assistants who collected follow-up questionnaires were blinded. Follow-up assessments were completed at 8, 26, and 52 weeks. The primary analysis was performed according to the intention-to-treat principle, using multilevel analysis. The main outcomes were global perceived effect, disability (Oswestry Disability Index, 0-100), and pain intensity (Numerical Rating Scale, 0-10). Secondary outcomes were quality of life, fear-avoidance beliefs, and psychosocial status.

RESULTS.: A total of 156 patients were included (classification-based group, n = 74; usual physical therapy group, n = 82). There were no statistically significant differences between the treatment groups for any of the outcomes at any of the follow-up time points. After 8 weeks, patients in the classification-based group had greater global perceived effect scores; adjusted odds ratio of 1.01 (95% confidence interval [CI], 0.31 to 3.28), and higher adjusted Oswestry Disability Index and Numerical Rating Scale scores; mean adjusted differences of 0.48 points (95% CI, -4.59 to 3.63) and 0.49 points (95% CI, -1.34 to 0.37) respectively, but all differences were statistically nonsignificant.

CONCLUSION.: The classification-based system used in this study was not effective for improving physical therapy care outcomes in a population of patients with subacute and chronic low back pain

PT/LBP

Man Ther. 2012 Jul 13.

The effectiveness of physiotherapy functional restoration for post-acute low back pain: A systematic review.

Richards MC, Ford JJ, Slater SL, Hahne AJ, Surkitt LD, Davidson M, McMeeken JM.

Source

Low Back Research Team, Musculoskeletal Research Centre, Department of Physiotherapy, School of Allied Health, Faculty of Health Sciences, La Trobe University, 3086, Australia(1).

Abstract

BACKGROUND:

The effectiveness of multidisciplinary treatment for post-acute (>6 weeks) low back pain (LBP) has been established. Physiotherapists have sufficient training to conduct less intensive functional restoration. The effectiveness of physiotherapy functional restoration (PFR) has not been evaluated using current systematic review methodology.

OBJECTIVES:

To determine the effects of PFR for post-acute LBP.

DATA SOURCES:

Electronic databases searched include: MEDLINE, EMBASE, CINAHL, PsycINFO, PEDro and Cochrane CENTRAL. TRIAL ELIGIBILITY CRITERIA: Randomised controlled trials of physiotherapy treatment for post-acute LBP combining exercise and cognitive-behavioural intervention compared with other intervention, no intervention or placebo. TRIAL APPRAISAL AND SYNTHESIS

METHODS:

Two authors independently extracted data. Risk of bias was assessed using the PEDro scale and overall quality of the body of evidence was assessed using GRADE (Grading of Recommendations, Assessment, Development and Evaluation). Treatment effect sizes and 95% confidence intervals were calculated for pain, function and sick leave.

RESULTS:

Sixteen trials were included. Heterogeneity prevented meta-analysis for most comparisons. Meta-analyses showed moderate to high quality evidence of significant but small effects favouring PFR compared with advice for intermediate term function and intermediate and long term pain. There was however low to moderate quality evidence that PFR was no more effective than a range of other treatment types. Heterogeneous trials frequently contributed to very low quality evidence.

CONCLUSIONS:

Moderate to high quality evidence was found of small effects favouring PFR compared with advice. Preliminary evidence suggested PFR is not different to other treatment types. Further high quality research is required replicating existing trial protocols.

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C spine/manipulation

Ann Intern Med. 2012 Jan 3;156(1 Pt 1):1-10.

Spinal manipulation, medication, or home exercise with advice for acute and subacute neck pain: a randomized trial.

Bronfort G, Evans R, Anderson AV, Svendsen KH, Bracha Y, Grimm RH.

BACKGROUND:

Mechanical neck pain is a common condition that affects an estimated 70% of persons at some point in their lives. Little research exists to guide the choice of therapy for acute and subacute neck pain.

OBJECTIVE:

To determine the relative efficacy of spinal manipulation therapy (SMT), medication, and home exercise with advice (HEA) for acute and subacute neck pain in both the short and long term.

DESIGN:

Randomized, controlled trial. (ClinicalTrials.gov registration number: NCT00029770)

SETTING:

1 university research center and 1 pain management clinic in Minnesota.

PARTICIPANTS:

272 persons aged 18 to 65 years who had nonspecific neck pain for 2 to 12 weeks.

INTERVENTION:

12 weeks of SMT, medication, or HEA.

MEASUREMENTS:

The primary outcome was participant-rated pain, measured at 2, 4, 8, 12, 26, and 52 weeks after randomization. Secondary measures were self-reported disability, global improvement, medication use, satisfaction, general health status (Short Form-36 Health Survey physical and mental health scales), and adverse events. Blinded evaluation of neck motion was performed at 4 and 12 weeks.

RESULTS:

For pain, SMT had a statistically significant advantage over medication after 8, 12, 26, and 52 weeks ($P \leq 0.010$), and HEA was superior to medication at 26 weeks ($P = 0.02$). No important differences in pain were found between SMT and HEA at any time point. Results for most of the secondary outcomes were similar to those of the primary outcome.

LIMITATIONS:

Participants and providers could not be blinded. No specific criteria for defining clinically important group differences were prespecified or available from the literature.

CONCLUSION:

For participants with acute and subacute neck pain, SMT was more effective than medication in both the short and long term. However, a few instructional sessions of HEA resulted in similar outcomes at most time points.

http://r20.rs6.net/tn.jsp?e=001S-ypJ3FvMRvYswxXYTR8q9EPh2EBvGa6EKSf1S0OEmtr_2G5FBmCWoZRXLt8302gU0ehe38zvexGalw2e6M7eDm5D5554ycbmGf_uRX0MjdY_ZLpDUfuzh9FZHm0_tu_m2xEiZTuR0k=

[LBP/McKenzie](#)

Man Ther. 2012 Jun 22.

Low back pain: An assessment using positional MRI and MDT.

Hedberg K, Alexander LA, Cooper K, Hancock E, Ross J, Smith FW.

Source

School of Health Sciences, Faculty of Health and Social Care, Robert Gordon University,
Garthdee Road, Aberdeen AB10 7QG, UK.

Abstract

Current guidelines advise against the use of routine imaging for low back pain. Positional MRI can provide enhanced assessment of the lumbar spine in functionally loaded positions which are often relevant to the presenting clinical symptoms. The purpose of this case report is to highlight the use of positional MRI in the assessment and classification of a subject with low back pain. A low back pain subject underwent a Mechanical Diagnosis and Therapy (MDT) assessment and positional MRI scan of the lumbar spine. The MDT assessment classified the subject as "other" since the subjective history indicated a possible posterior derangement whilst the objective assessment indicated a possible anterior derangement. Positional MRI scanning in flexed, upright and extended sitting postures confirmed the MDT assessment findings to reveal a dynamic spinal stenosis which reduced in flexion and increased in extension.

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Knee/Patella

Man Ther. 2012 Jun 27.

Management of a difficult knee problem.

McConnell J.

Source

McConnell and Clements Physiotherapy, 4 Bond Street, Mosmann, NSW 2088, Australia.

Abstract

Chronic disabling patellofemoral (PF) pain and instability can have significant effects on patient function and lifestyle. Although the management of PF pain has improved greatly, there is still a category of patient who tends to have recalcitrant symptoms, which are difficult to manage. The patient often bounces from practitioner to practitioner, physiotherapist as well as surgeon, for some relief of symptoms. However, often the underlying source of the pain is not well understood, so treatment can aggravate the symptoms. The following case report demonstrates the effectiveness of physiotherapy in managing a complex clinical case of a 40 year old patient with bilateral PF symptoms of severe right knee pain and a subluxing left patella, as well as left hip pain. Some background is given as to the source of the right knee pain with magnetic resonance imaging (MRI) supporting the diagnosis and treatment progression. The initial MRI demonstrated marked redundancy of the patellar tendon, resulting in patella baja (infera). Two years and ten treatments later, the patient, who originally could barely walk, was playing tennis for the first time in 25 years. Her MRI showed a complete resolution of the patella baja (infera), indirectly implying an improvement in quadriceps tone, as well as, resolution of the subchondral bone marrow oedema at the lateral patellar facet. Physiotherapists should not give up on patients with chronic musculoskeletal conditions as much can be done for them. These patients need clinicians to persevere, because certainly, for both patient and therapist, the rewards are great.

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LBP

Key Characteristics of Low Back Pain and Disability in College-Aged Adults: A Pilot Study

Archives of Physical Medicine and Rehabilitation [Volume 93, Issue 7](#) , Pages 1217-1224, July 2012

- [John P. Handrakis](#), PT, DPT, EdD , [Karen Friel](#), PT, DHS, [Frank Hoeffner](#), DPT, [Ola Akinkunle](#), DPT, [Vito Genova](#), DPT, [Edward Isakov](#), DPT, [Jerrill Mathew](#), DPT, [Frank Vitulli](#), DPT

Objective

To identify which factors commonly associated with low back pain (LBP) and disability differ between college-aged persons with LBP and with no or minimal LBP.

Design

Clinical measurement, observational study. Subjects were assessed for LBP with the visual analog scale (VAS) and for disability from LBP using the Oswestry Disability Index (ODI). Subjects were measured for variables commonly associated with LBP and were grouped by both VAS (minimum [min]/no pain, pain) and ODI (no disability, disability) scores.

Setting

College campus at a university.

Participants

A convenience sample (N=84) of English-speaking students (34 men, 50 women) between 18 and 30 years of age.

Interventions

Not applicable.

Main Outcome Measures

Sports activity (sports activity score of the Baecke Physical Activity Questionnaire), depression, hamstring and hip flexor range of motion, low back extensor endurance, abdominal strength and endurance.

Results

A significant main effect of group was found for both pain ($P=.019$) and disability groups ($P=.006$). The min/no pain and pain groups differed in back endurance (114.2 ± 38.8 s vs 94.5 ± 44.5 s, respectively; $P=.04$). The no disability and disability groups differed in back endurance (116.3 ± 35.9 s vs 97.1 ± 45.7 s, respectively; $P=.03$) and the sports activity score of the Baecke Physical Activity Questionnaire ($2.98\pm .95$ vs $2.48\pm .85$, respectively; $P=.01$). Subjects with hyperkyphotic postures compared with the normative thoracic group had higher depression scores (49 vs 38.5 , respectively; $P=.03$) and less hamstring flexibility (30.5 vs 49.9 , respectively; $P<.001$).

Conclusions

Back extensor endurance was consistently different between both the pain and disability groups. Addressing limited low back extensor endurance and low levels of physical activity in young adults may have clinical relevance for the prevention and treatment of LBP and disability.

LBP

The effectiveness of physiotherapy functional restoration for post-acute low back pain: A systematic review □

Manual Therapy , 07/23/2012

Richards MC et al. –

Moderate to high quality evidence was found of small effects favouring physiotherapy functional restoration (PFR) compared with advice. Preliminary evidence suggested PFR is not different to other treatment types. Further high quality research is required replicating existing trial protocols.

Methods

- Electronic databases searched include: MEDLINE, EMBASE, CINAHL, PsycINFO, PEDro and Cochrane CENTRAL.
- Randomised controlled trials of physiotherapy treatment for post-acute LBP combining exercise and cognitive-behavioural intervention compared with other intervention, no intervention or placebo.
- Two authors independently extracted data.
- Risk of bias was assessed using the PEDro scale and overall quality of the body of evidence was assessed using GRADE (Grading of Recommendations, Assessment, Development and Evaluation).
- Treatment effect sizes and 95% confidence intervals were calculated for pain, function and sick leave.

Results

- Sixteen trials were included.
- Heterogeneity prevented meta-analysis for most comparisons.
- Meta-analyses showed moderate to high quality evidence of significant but small effects favouring PFR compared with advice for intermediate term function and intermediate and long term pain.
- There was however low to moderate quality evidence that PFR was no more effective than a range of other treatment types.

Heterogeneous trials frequently contributed to very low quality evidence.

Pain

Do physical or psychosocial factors at work predict multi-site musculoskeletal pain? A 4-year follow-up study in an industrial population □

International Archives of Occupational & Environmental Health, 07/23/2012

Neupane S et al. –

This prospective study provides new evidence of the high occurrence and persistence of musculoskeletal pain at multiple body sites in an industrial population with a strong association between biomechanical and psychosocial exposures at work and multi-site pain. Prevention of multi-site pain with many-sided modification of work exposures is likely to reduce work disability.

Methods

- Survey responses from 734 employees (518 blue- and 216 white-collar; 65 % female) of a food processing company were collected twice, in 2005 and 2009.
- Information on musculoskeletal pain during the preceding week, and on environmental, biomechanical and psychosocial work exposures were obtained through a structured questionnaire.
- The association of multi-site pain with work exposures was estimated with logistic regression by gender and age group.

Results

- At baseline, 54 % of informants reported pain in more than one area, and 50 % at 4-year follow-up.
- Forty percent of all employees had multi-site pain both at baseline and at follow-up.
- Among those with multi-site pain at baseline, 69 % had multi-site pain at follow-up.
- Both repetitive work and awkward work postures at baseline were associated with multi-site pain at follow-up.

Psychosocial factors (low job satisfaction, low team spirit, and little opportunity to exert influence at work) also strongly predicted multi-site pain at follow-up, especially among younger workers and men.

Hallux valgus

Validity and Reliability of Hallux Valgus Angle Measured on Digital Photographs

Sheree Nix, Trevor Russell, Bill Vicenzino, Michelle Smith

jospt.2012.3841

STUDY DESIGN: Controlled laboratory study.

OBJECTIVES: To investigate the reliability and concurrent validity of photographic measurements of hallux valgus angle compared to radiographs as the criterion standard.

BACKGROUND: Clinical assessment of hallux valgus involves measuring alignment between the first toe and metatarsal on weight-bearing radiographs or visually grading the severity of deformity with categorical scales. Digital photographs offer a noninvasive method of measuring deformity on an exact scale; however, the validity of this technique has not previously been established.

METHODS: Thirty-eight subjects (30 female, 8 male) were examined (76 feet, 54 with hallux valgus). Computer software was used to measure hallux valgus angle from digital records of bilateral weight-bearing dorsoplantar foot radiographs and photographs. One examiner measured 76 feet on 2 occasions 2 weeks apart, and a second examiner measured 40 feet on a single occasion. Reliability was investigated by intraclass correlation coefficients and validity by 95% limits of agreement. The Pearson correlation coefficient was also calculated.

RESULTS: Intrarater and interrater reliability were very high (intraclass correlation coefficients greater than 0.96) and 95% limits of agreement between photographic and radiographic measurements were acceptable. Measurements from photographs and radiographs were also highly correlated (Pearson $r = 0.96$).

CONCLUSIONS: Digital photographic measurements of hallux valgus angle are reliable and have acceptable validity compared to weight-bearing radiographs. This method provides a convenient and precise tool in assessment of hallux valgus, while avoiding the cost and radiation exposure associated with radiographs.

J Orthop Sports Phys Ther 2012;42(7):642-648, Epub 25 January 2012.

doi:10.2519/jospt.2012.3841

KEY WORDS: foot deformity, measurement, radiograph

Migraines

The study of time perception in migraineurs □Headache:

The Journal of Head and Face Pain, 07/26/2012

Zhang J et al. –

This study indicates that not only is time perception impaired in migraineurs, but that this impairment is exhibited for durations in the milliseconds range, and not the seconds range.

Methods

- In this study, authors used a temporal reproduction task to assess the estimation of the duration of visual stimulus in 27 migraine patients.
- The stimulus was delivered at different intervals over the milliseconds and seconds range.

Results

- In the setting of an interstimulus interval for 1 second and an interstimulus interval for 5 seconds in the 600–millisecond–duration reproduction task, the migraineurs showed impairment in time perception, and in that they significantly overestimated the duration, as compared with the healthy subjects.

When compared with the healthy controls for the 3–second and 5–second duration reproduction task, migraineurs in the setting of an interstimulus interval for 1 second and an interstimulus interval for 5 seconds did not show impairment in time perception.

LBP/epidural

The effectiveness of lumbar interlaminar epidural injections in managing chronic low back and lower extremity pain: systematic review

Pain Physician, 07/26/2011

Benyamin RM et al. –

The evidence based on this systematic review is good for lumbar epidural injections under fluoroscopy for radiculitis secondary to disc herniation with local anesthetic and steroids, fair with local anesthetic only; whereas it is fair for radiculitis secondary to spinal stenosis with local anesthetic and steroids, and fair for axial pain without disc herniation with local anesthetic with or without steroids.

Methods

- The available literature on lumbar interlaminar epidural injections with or without steroids in managing various types of chronic low back pain with or without lower extremity pain was reviewed.
- The quality assessment and clinical relevance criteria utilized were the Cochrane Musculoskeletal Review Group criteria as utilized for interventional techniques for randomized trials and the criteria developed by the Newcastle–Ottawa Scale criteria for observational studies.
- The level of evidence was classified as good, fair, or limited based on the quality of evidence developed by the U.S. Preventive Services Task Force (USPSTF).
- Data sources included relevant literature identified through searches of PubMed and EMBASE from 1966 to December 2011, and manual searches of the bibliographies of known primary and review articles.
- The primary outcome measure was pain relief (short–term relief = up to 6 months and long–term > 6 months).
- Secondary outcome measures were improvement in functional status, psychological status, return to work, and reduction in opioid intake.

Results

- Overall, 82 lumbar interlaminar trials were identified.
- All non–randomized studies without fluoroscopy and randomized trials not meeting the inclusion criteria were excluded.
- Overall, 15 randomized trials and 11 non–randomized studies were included in the analysis.
- Analysis was derived mainly from fluoroscopically–guided randomized trials and non–randomized studies.
- The evidence is good for radiculitis secondary to disc herniation with local anesthetics and steroids, fair with local anesthetic only; whereas it is fair for radiculitis secondary to spinal stenosis with local anesthetic and steroids, and fair for axial pain without disc herniation with local anesthetic with or without steroids, with fluoroscopically–guided epidural injections.

CRP

Complex Regional Pain Syndrome: Whats in a Name? □

The Journal of Pain, 07/19/2010

Coderre TJ –

Within a 2–year period in the 1940s, 2 Boston physicians published dramatically opposing views on the underlying nature of a syndrome now known as complex regional pain syndrome (CRPS). Evans suggested, in several papers in 1946–1947, that sympathetic reflexes maintain pain and dystrophy in affected limbs. Foisie, in 1947, suggested arterial vasospasms were key in the etiology of this pain syndrome. Evans' hypothesis established the nomenclature for this syndrome for 60 years, and his term, “reflex sympathetic dystrophy,” guided clinical treatment and research activities over the same period. Foisie's proposed nomenclature was unrecognized, and had virtually no impact on the field. Recent evidence suggests that Evans' contribution to the field may have in fact led clinicians and researchers astray all those years. This focus article on CRPS compares recent observations with these 2 earlier theories and asks the question—what if we had adopted Foisie's nomenclature from the beginning?

Terence J. Coderre (07/19/2010) comments: □ Sometimes it's instructive to look back in the literature to earlier years when a syndrome was first named to determine what motivated the nomenclature. In some instances, like the one described in the article, the chosen name does the field a misservice, implicating mechanisms that may be incorrect, and possible misguiding treatment and research. Reflex sympathetic dystrophy was coined in the 1940's as well as another lesser known term -- traumatic arterial vasospasm, which did not catch on as the early name for complex regional pain syndrome (CRPS). It is the author's opinion that growing evidence suggests that the lesser known name would have been more appropriate, and that the mechanisms it suggests provide additional treatment options for patients with CRPS.

Migraine

Lavender Essential Oil in the Treatment of Migraine Headache: A Placebo-Controlled Clinical Trial □European

Neurology, 04/23/2012 Clinical Article

Sasannejad P et al. –

The present study suggests that inhalation of lavender essential oil may be an effective and safe treatment modality in acute management of migraine headaches.

Methods

- Forty-seven patients with definite diagnosis of migraine headache were divided into cases and controls.
- Cases inhaled lavender essential oil for 15 min, whereas the control group used liquid paraffin for the same time period.
- Patients were asked to record their headache severity and associated symptoms in 30-min intervals for a total of 2 h.
- The authors matched the two groups for key confounding factors.

Results

- The mean reduction of headache severity in cases was 3.6 ± 2.8 based on Visual Analogue Scale score.
- The reduction was 1.6 ± 1.6 in controls.
- This difference between the controls and cases was statistically significant with $p < 0.0001$.
- From 129 headache attacks in cases, 92 responded entirely or partially to lavender.
- In the control group, 32 out of 68 recorded headache attacks responded to placebo.

The percentage of responders was significantly higher in the lavender group than the placebo group ($p = 0.001$).

Manual therapy/headaches

Manual therapies for cervicogenic headache: a systematic review □

The Journal of Headache and Pain, 04/03/2012

Chaibi A et al. –

The randomized clinical trials (RCTs) mostly included participant with infrequent cervicogenic headache (CEH). Future challenges regarding CEH are substantial both from a diagnostic and management point of view.

- This paper systematically reviewed randomized clinical trials (RCT) assessing the efficacy of manual therapies for cervicogenic headache (CEH).
- A total of seven RCTs were identified, i.e. one study applied physiotherapy ± temporomandibular mobilization techniques and six studies applied cervical spinal manipulative therapy (SMT).

The RCTs suggest that physiotherapy and SMT might be an effective treatment in the management of CEH, but the results are difficult to evaluate, since only one study included a control group that did not receive treatment.

HA/Acupuncture

Efficacy of acupuncture for acute migraine attack: a multicenter single blinded, randomized controlled trial □

Pain Medicine, 05/01/2012

Wang LP et al. –

This trial suggested that verum acupuncture group was superior to sham acupuncture group on relieving pain and reducing the usage of acute medication.

Methods

- The study was designed as a multicenter, single-blinded, randomized controlled clinical trial.
- From March 2007 to February 2009, 150 patients were randomly allocated to verum or sham acupuncture group in a ratio of 1:1.
- Every patient received a verum or sham acupuncture treatment when having a migraine attack and, medications were allowed if the pain failed to be relieved two hours after the acupuncture.
- The primary outcome was visual analog scale (VAS) scores for pain, ranging from 0 (no pain) to 10 (worst pain ever).

Results

- The mean VAS scores 24 hours after treatment decreased from 5.7 ± 1.4 to 3.3 ± 2.5 in the verum acupuncture group, and from 5.4 ± 1.3 to 4.7 ± 2.4 in the sham acupuncture group. Significant differences existed between the two groups ($P = 0.001$).

LBP/Fear

Fear avoidance beliefs predict disability in older adults with chronic low back pain.

PM R. 2012 Jul;4(7):493-7.

Camacho-Soto A, Sowa GA, Perera S, Weiner DK.

Source

Department of Medicine and Physical Medicine and Rehabilitation, University of Pittsburgh School of Medicine, Pittsburgh, PA(□).

Abstract

OBJECTIVES:

To determine whether fear avoidance beliefs (FABs) in older adults with chronic low back pain (CLBP) are significantly associated with gait speed decline and/or self-report of greater disability.

DESIGN:

Cross-sectional analysis.

SETTING:

An academic medical center (single site).

PARTICIPANTS:

Two hundred English-speaking participants aged 65 years and older with CLBP every day or almost every day of moderate or greater intensity for ≥ 3 months.

MAIN OUTCOME MEASUREMENTS:

The physical activity portion of the FAB questionnaire assessed FABs. Disability was measured with gait speed and the Roland Morris Questionnaire. Covariates measured included age, gender, body mass index, chronic disease (Cumulative Illness Rating Scale), depression (Geriatric Depression Scale), and pain (McGill Pain Questionnaire Short Form).

RESULTS:

FABs were significantly associated with the Roland Morris Questionnaire ($P < .0001$) and gait speed ($P = .002$) after controlling for all covariates.

CONCLUSION:

FABs related to physical activity in older adults with CLBP were significantly associated with both self-reported and performance-based disability after controlling for known confounders. Previous studies have reported similar associations between self-reported measures of disabling back pain and FABs. Ours is the first study to examine the relationship between FAB and gait speed, a powerful predictor of morbidity and mortality. Future work should examine whether targeting fear avoidance in addition to other psychosocial measures in older adults with CLBP improves gait speed and functional independence.

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Knee/foot

Br J Sports Med. 2012 Jul 19.

Factors associated with patellofemoral pain syndrome: a systematic review.

Lankhorst NE, Bierma-Zeinstra SM, van Middelkoop M.

Source

Department of General Practice, Erasmus MC, University Medical Center, Rotterdam, The Netherlands.

Abstract

This review systematically summarises factors associated with patellofemoral pain syndrome (PFPS). A systematic literature search was conducted. Studies including ≥ 20 patients with PFPS that examined ≥ 1 possible factor associated with PFPS were included. A meta-analysis was performed, clinical heterogeneous data were analysed descriptively. The 47 included studies examined 523 variables, eight were pooled. Pooled data showed a larger Q-angle, sulcus angle and patellar tilt angle (weighted mean differences (WMD) 2.08; 95% CI 0.64, 3.63 and 1.66; 95% CI 0.44, 2.77 and 4.34; 95% CI 1.16 to 7.52, respectively), less hip abduction strength, lower knee extension peak torque and less hip external rotation strength (WMD -3.30; 95% CI -5.60, -1.00 and -37.47; 95% CI -71.75, -3.20 and -1.43; 95% CI -2.71 to -0.16, respectively) in PFPS patients compared to controls. Foot arch height index and congruence angle were not associated with PFPS. Six out of eight pooled variables are associated with PFPS, other factors associated with PFPS were based on single studies. Further research is required.

Fibromyalgia

Predictors of pain and functioning over time in fibromyalgia syndrome: An autoregressive path analysis □

Arthritis Care and Research , 07/19/2012

Van Liew C et al. –

The model suggests that self-efficacy is a salient factor in fibromyalgia symptomatology. The findings support designing interventions that use a multimodal approach, with an explicit focus on combining exercise (or other means) to improve physical functioning and psychotherapy (e.g., cognitive-behavioral therapy) with the intention of reprocessing the functional improvements gained and the implications of these improvements for one's ability to manage their fibromyalgia symptoms. By doing so, self-efficacy should be enhanced, which will produce the greatest and broadest benefits for fibromyalgia patients.

Methods

- Data from 462 participants (441 women) were analyzed using an autoregressive path analytic model with first and second order cross-lagged effects.

Results

- Self-efficacy was the only significant predictor of depression, physical functioning, and pain intensity ratings across time.

Physical functioning at 6-months predicted self-efficacy at 1-year; no other factors related significantly to self-efficacy in the model.

CRP

Can J Anaesth. 2012 Jul 14.

Update on the pathogenesis of complex regional pain syndrome: Role of oxidative stress.

Taha R, Blaise GA.

Source

Multinova Medical Centre, Université de Montréal, Montreal, QC, Canada.

Abstract

PURPOSE:

Complex regional pain syndrome (CRPS) is a chronic inflammatory pain syndrome that affects one or more extremities of the body. It is characterized by burning pain and abnormalities in the sensory, motor, and autonomic nervous systems. This review illustrates how oxidative stress and nuclear factor erythroid 2-related factor (Nrf2) activation might contribute to understanding the etiopathogenesis of CRPS.

PRINCIPAL FINDINGS:

The precise cause of CRPS remains unclear, and current treatments are not effective in many patients. The mechanism underlying CRPS may differ across patients and even within a single patient over time. Inflammatory and neuronal mechanisms have been suggested as key contributors to CRPS. Recent evidence demonstrates that oxidative stress is associated with clinical symptoms in patients with CRPS-I. Oxidative stress plays a key role in CRPS pathogenesis. The Nrf2 factor is a master regulator of the transcription of multiple antioxidants, which protects against oxidative stress and inflammation by inducing antioxidant and detoxifying genes through binding with an antioxidant response element. It has antinociceptive effects against inflammatory pain in an animal model.

CONCLUSION:

This review summarises the effect of oxidative stress and mitochondrial dysfunction in the pathogenesis of CRPS. It also addresses the question of whether there is a potential role for Nrf2 (activated by pharmacological or nutritional activators) in alleviating the clinical features of CRPS or preventing its progression.

PMID: 22798149 [PubMed - as supplied by publisher]

Headaches/Cluster

A case-control study on cortical thickness in episodic cluster headache □Headache:

The Journal of Head and Face Pain, 07/27/2012

Seifert CL et al. –

This study demonstrates alterations in cortical thickness in cluster headache patients suggesting a potential role of cortical structures in cluster headache pathogenesis. However, it cannot be determined from this study whether the changes are cause or consequence of the disorder. The correlation of cortical thickness with disease duration in the somatosensory cortex may suggest disease-related plasticity in the somatosensory system.

Methods

- Authros investigated 12 men with episodic cluster headache during a phase without acute headache as well as age and sex-matched healthy controls using high resolution T1-weighted magnetic resonance imaging acquired at 3T and performed a categorical whole-brain surface-based comparison of cortical thickness between groups.
- Furthermore, a correlation analysis of disease duration and cortical thickness was conducted.

Results

- In comparison with control subjects, authors found a reduction of cortical thickness in the angular gyrus and the precentral gyrus in cluster headache patients contralaterally to the headache side.
- These reductions did not correlate with disease duration.

The cortical thickness of an area within the primary sensory cortex correlated with disease duration.

Pain/Prayer

J Behav Med. 2012 Jul 7.

Expectations contribute to reduced pain levels during prayer in highly religious participants.

Jegindø EM, Vase L, Skewes JC, Terkelsen AJ, Hansen J, Geertz AW, Roepstorff A, Jensen TS.

Source

Danish Pain Research Center, Aarhus University Hospital, Aarhus, Denmark, elsemarie@cfin.dk.

Abstract

Although the use of prayer as a religious coping strategy is widespread and often claimed to have positive effects on physical disorders including pain, it has never been tested in a controlled experimental setting whether prayer has a pain relieving effect. Religious beliefs and practices are complex phenomena and the use of prayer may be mediated by general psychological factors known to be related to the pain experience, such as expectations, desire for pain relief, and anxiety. Twenty religious and twenty non-religious healthy volunteers were exposed to painful electrical stimulation during internal prayer to God, a secular contrast condition, and a pain-only control condition. Subjects rated expected pain intensity levels, desire for pain relief, and anxiety before each trial and pain intensity and pain unpleasantness immediately after on mechanical visual analogue scales. Autonomic and cardiovascular measures provided continuous non-invasive objective means for assessing the potential analgesic effects of prayer. Prayer reduced pain intensity by 34 % and pain unpleasantness by 38 % for religious participants, but not for non-religious participants. For religious participants, expectancy and desire predicted 56-64 % of the variance in pain intensity scores, but for non-religious participants, only expectancy was significantly predictive of pain intensity (65-73 %). Conversely, prayer-induced reduction in pain intensity and pain unpleasantness were not followed by autonomic and cardiovascular changes

LBP/Manipulation

Man Ther. 2012 Aug;17(4):325-9

Can a within/between-session change in pain during reassessment predict outcome using a manual therapy intervention in patients with mechanical low back pain?

Cook CE, Showalter C, Kabbaz V, O'Halloran B.

Source

Division of Physical Therapy, Walsh University, North Canton, OH 44720, USA.
ccook@walsh.edu

Abstract

The purposes of the study were to determine whether the combined occurrence of within/between-session changes were significantly associated with functional outcomes, pain, and self-report of recovery in patients at discharge who were treated with manual therapy for low back pain. A secondary purpose was to determine the extent of change needed for the within/between-session change with association to function. The study involved 100 subjects who were part of a randomized controlled trial that examined manual therapy techniques who demonstrated a positive response to manual therapy during the initial assessment. Within- and between-session findings (within/between session) were defined as a change in pain report from baseline to after the second physiotherapy visit. Within/between-session changes were analyzed for associations between pain change scores at discharge, rate of recovery, and a 50% reduction of the Oswestry disability index (ODI) by discharge. The results suggest there is a significant association between a within/between-session change after the second physiotherapy visit and discharge outcomes for pain and ODI in this sample of patients who received a manual therapy intervention. A 2-point change or greater on an 11-point scale is associated with functional recovery at discharge and accurately described the outcome in 67% of the cases. This is the first study that has shown an association of within/between-session changes with disability scores at discharge and is the first to define the extent of change necessary for prognosis of an outcome. A within/between-session change should be considered as a complimentary artifact along with other examination findings during clinical decision making.

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Manipulation

Man Ther. 2012 Jul 16.

The effect of duration and amplitude of spinal manipulative therapy (SMT) on spinal stiffness.

Vaillant M, Edgecombe T, Long CR, Pickar JG, Kawchuk GN.

Source

University of Alberta, Edmonton, Alberta, Canada.

Abstract

The aim of this study was to determine the effect of spinal manipulative therapy (SMT) force magnitude and force duration on the spinal stiffness of a feline preparation. A mechanical device performed simulated SMTs at the L6 spinous process in 22 anaesthetised felines. Animals were divided into four groups. Two groups (no preload, preload) received SMT having maximal displacements of 1.0 mm, 2.0 mm and 3.0 mm of total displacement (displacement control). In two other groups (preload, no preload), SMTs were applied with maximal loads of 25%, 55% and 85% body weight (force control). Each of the SMTs were applied in order of increasing displacement or force amplitudes, at increasing durations ranging from 25 to 250 ms. Spinal stiffness was quantified by applying an indentation load to external surface of the back. Linear mixed effects models were fit for post-SMT stiffness variables. When SMT was applied under displacement control with and without a preceding preload, a significant interactive effect occurred between force magnitude and force duration ($p \leq 0.05$) for some of the stiffness variables. The findings from this experiment demonstrate that spinal stiffness in a feline model was affected by the interaction of the force amplitude and force duration parameters but the exact nature of this interaction remains unclear. This study provides guidance for further investigation given other SMT parameters not tested here may facilitate the ability of SMT to alter spinal stiffness.

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Womans health

BJOG, 2012 Jul 17.

doi: 10.1111/j.1471-0528.2012.03426.x.

Does regular exercise including pelvic floor muscle training prevent urinary and anal incontinence during pregnancy? A randomised controlled trial.

Stafne S, Salvesen K, Romundstad P, Torjusen I, Mørkved S.

Source

Department of Public Health and General Practice, Norwegian University of Science and Technology (NTNU),

Abstract

Please cite this paper as: Stafne S, Salvesen K, Romundstad P, Torjusen I, Mørkved S. Does regular exercise including pelvic floor muscle training prevent urinary and anal incontinence during pregnancy? A randomised controlled trial. BJOG 2012; DOI: 10.1111/j.1471-0528.2012.03426.x. **Objective** To assess whether pregnant women following a general exercise course, including pelvic floor muscle training (PFMT), were less likely to report urinary and anal incontinence in late pregnancy than a group of women receiving standard care. **Design** A two-armed, two-centred randomised controlled trial. **Setting** Trondheim University Hospital (St. Olavs Hospital) and Stavanger University Hospital, in Norway. **Population** A total of 855 women were included in this trial. **Methods** The intervention was a 12-week exercise programme, including PFMT, conducted between 20 and 36 weeks of gestation. One weekly group session was led by physiotherapists, and home exercises were encouraged at least twice a week. Controls received regular antenatal care. **Main outcome measures** Self-reported urinary and anal incontinence after the intervention period (at 32-36 weeks of gestation). **Results** Fewer women in the intervention group reported any weekly urinary incontinence (11 versus 19%, $P = 0.004$). Fewer women in the intervention group reported faecal incontinence (3 versus 5%), but this difference was not statistically significant ($P = 0.18$). **Conclusions** The present trial indicates that pregnant women should exercise, and in particular do PFMT, to prevent and treat urinary incontinence in late pregnancy. Thorough instruction is important, and specific pelvic floor muscle exercises should be included in exercise classes for pregnant women. The preventive effect of PFMT on anal incontinence should be explored in future trials.

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Head and neck

J Am Osteopath Assoc. 2012 Jul;112(7):457-60.

Osteopathic manipulative treatment to resolve head and neck pain after tooth extraction.

Meyer PM, Gustowski SM.

Source

Department of Osteopathic Manipulative Medicine, University of North Texas Health Science Center, Texas College of Osteopathic Medicine, 3500 Camp Bowie Blvd, Fort Worth, TX 76102-4567. sharon.gustowski@unthsc.edu.

Abstract

Pain is a common occurrence after tooth extraction and is usually localized to the extraction site. However, clinical experience shows that patients may also have pain in the head or neck in the weeks after this procedure. The authors present a case representative of these findings. In the case, cranial and cervical somatic dysfunction in a patient who had undergone tooth extraction was resolved through the use of osteopathic manipulative treatment. This case emphasizes the need to include a dental history when evaluating head and neck pain as part of comprehensive osteopathic medical care. The case can also serve as a foundation for a detailed discussion regarding how to effectively incorporate osteopathic manipulative treatment into primary care practice for patients who present with head or neck pain after tooth extraction.

PMID: 22802546 [PubMed - in process]

Upper limb neural tension

Man Ther. 2012 Jul 17.

The effect of cervical traction combined with neural mobilization on pain and disability in cervical radiculopathy. A case report.

Savva C, Giakas G.

Source

Department of Health Science, Diogenous 6, Engomi, European University, Nicosia, Cyprus.

Abstract

Cervical radiculopathy is the result of cervical nerve root pathology that may lead to chronic pain and disability. Although manual therapy interventions including cervical traction and neural mobilization have been advocated to decrease pain and disability caused by cervical radiculopathy, their analgesic effect has been questioned due to the low quality of research evidence. The purpose of this paper is to present the effect of cervical traction combined with neural mobilization on pain and disability in a patient experiencing cervical radiculopathy. A 52-year-old woman presented with a 2 month history of neurological cervico-brachial pain and whose presentation was consistent with cervical radiculopathy. Cervical traction and a slider neural mobilization of the medial nerve were applied simultaneously to reduce the patient's pain and disability measured at baseline and at 2 and 4 weeks using the Numeric Pain Rating Scale, the Neck Disability Index and the Patient-Specific Functional Scale. Improvements in all outcome measures were noted over a period of four weeks. Scores in all outcome measures revealed that the patient's pain had almost disappeared and that she was able to perform her household chores and job tasks without difficulties and limitations. In conclusion, the findings of this study support that the application of cervical traction combined with neural mobilization can produce significant improvements in terms of pain and disability in cervical radiculopathy.

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http://r20.rs6.net/tn.jsp?e=001S-ypJ3FvMRtqHgXRmj0adL7GrK-2uItMAVeY--m_oPvo3L6hvfRjVwLzQSIHBYDkkkF1Ox-dJXCVLPa25rjkufxx1Ae107g-Fxa1dVGCnG10IJOu9g4pzkqgi5LoKrgCwJ2-bC7fRVfmdYCOvwHwo66xg2PLVsOI2EWTU7ufEFw=

Scapula

Br J Sports Med. 2012 Jul 21.

Clinical assessment of the scapula: a review of the literature.

Struyf F, Nijs J, Mottram S, Roussel NA, Cools AM, Meeusen R.

Source

Department of Healthcare, Division of Musculoskeletal Physiotherapy, Artesis University College Antwerp, Merksem, Antwerp, Belgium.

Abstract

Scientific evidence supporting a role for faulty scapular positioning in patients with various shoulder disorders is cumulating. Clinicians who manage patients with shoulder pain and athletes at risk of developing shoulder pain need to have the skills to assess static and dynamic scapular positioning and dynamic control. Several methods for the assessment of scapular positioning are described in scientific literature. However, the majority uses expensive and specialised equipment (laboratory methods), making their use in clinical practice nearly impossible. On the basis of biometric and kinematic studies, guidelines for interpreting the observation of static and dynamic scapular positioning pattern in patients with shoulder pain are provided. At this point, clinicians can use reliable clinical tests for the assessment of both static and dynamic scapular positioning in patients with shoulder pain. However, this review also provides clinicians several possible pitfalls when performing clinical scapular evaluation. On the basis of its clinical relevance, its proven reliability, its relation to body length and its applicability in a clinical setting, this review recommends to assess the scapula both static (visual observation and acromial distance or Baylor/double square method for shoulder protraction) and semidynamic (visual observation and inclinometry for scapular upward rotation). In addition, when the patient demonstrates with shoulder impingement symptoms, the scapular repositioning test and scapular assistant test are recommended for relating the patients' symptoms to the position or movement of the scapula.

PMID: 22821720 [PubMed - as supplied by publisher]

http://r20.rs6.net/tn.jsp?e=001S-ypJ3FvMRvJ4MxW5cg2gHcWw77bF-30CZ43bpkvKqTOK8ydY2fXXiNOy7_fRIYoV_v7OxVWQsKhXqdbbQoiG0uwgsfVtY9mJHffD-gr4W9Da78gviBIZACigLALXbRg8S317_SLxR0=

Scapula

J Am Acad Orthop Surg. 2012 Jun;20(6):364-72.

Scapular dyskinesia and its relation to shoulder injury.

Kibler WB, Sciascia A, Wilkes T.

Source

The Shoulder Center of Kentucky, Lexington, KY, USA.

Abstract

The scapula plays a key role in nearly every aspect of normal shoulder function. Scapular dyskinesia-altered scapular positioning and motion-is found in association with most shoulder injuries. Basic science and clinical research findings have led to the identification of normal three-dimensional scapular kinematics in scapulohumeral rhythm and to abnormal kinematics in shoulder injury, the development of clinical methods of evaluating the scapula (eg, scapular assistance test, scapular retraction test), and the formulation of rehabilitation guidelines. Primary scapular presentations such as scapular winging and snapping should be managed with a protocol that is focused on the scapula. Persons with associated conditions such as shoulder impingement, rotator cuff disease, labral injury, clavicle fracture, acromioclavicular joint injury, and multidirectional instability should be evaluated for scapular dyskinesia and treated accordingly.

http://r20.rs6.net/tn.jsp?e=001S-ypJ3FvMRvJ4MxW5cg2gHeWw77bF-30CZ43bpkvKqTOK8ydY2fXXiNOy7_fRIYoV_v7OxVWQsKhXqdbbQoiG0uwgsfVtY9mJHffD-gr4W9Da78gviBIZACigLALXbRg8S317_SLxR0=

LBP

J Spinal Disord Tech. 2012 Aug;25(6):318-23.

Claustrophobia: a proxy for psychological distress in patients with back pain.

Kerr HL, Dabke HV, Collins IE, Grevitt M.

Source

Spines Department, Queens Medical Centre, Nottingham University Hospitals NHS trust, Derby Road, Nottingham, UK.

Abstract

STUDY DESIGN:

Case-control study.

OBJECTIVE:

The aim of this study was to assess the levels of psychological distress in patients with back pain who expressed claustrophobia at the time of their magnetic resonance imaging (MRI) scan, compared with sex and age-matched normal controls who did not exhibit claustrophobia. The secondary aim was to document the level of disability and intervention rates in this group.

SUMMARY OF BACKGROUND DATA:

Psychosocial factors influence the outcomes of low back pain treatment with psychological distress being associated with poorer surgical outcomes in patients with low back pain. Up to 14% of patients experience claustrophobia during MRI scans requiring sedation to complete the scan. The effect of claustrophobia on back pain disability and outcomes has not been previously reported.

METHODS:

Twenty females and 13 males all requiring MRI scan under sedation for claustrophobia (group 1) were compared with an age and sex-matched cohort that had MRI scan without sedation (group 2). Both groups were drawn from a chronic back clinic. Average age in both groups was 54 years (range, 27 to 79 y). Both groups had standard conservative therapy, together with psychometric evaluation: Zung Depression Index and Modified Somatic Perception Questionnaire. Disability was measured by Oswestry Disability Index. Primary outcome measures were intervention rates (surgery, injections, and physiotherapy sessions) and prevalence of psychological distress.

RESULTS:

Mean Zung Depression Index in group 1 was significantly higher than in group 2 (59.5 vs. 28.9, $P < 0.05$) as was the mean Modified Somatic Perception Questionnaire score (13.3 vs. 9.2, $P < 0.05$.) Prevalence of psychological distress was higher in group 1 (75.8% vs. 18.2%, $P < 0.05$). Oswestry Disability Index was the same in both groups (50% vs. 48%). Group 1 had 13 interventions (13 patients=39.4%) compared with 26 in group 2 (26 patients=78.8%) ($P < 0.05$). Twenty-two patients (66.7%) in group 1 were discharged after their MRI scan with no intervention compared with 7 patients (21.2%) in group 2 ($P < 0.05$).

CONCLUSIONS:

Claustrophobic patients with back pain showed higher levels of depression than nonclaustrophobic patients, with a higher rate of psychological distress. Disability, however, was not higher. The majority of claustrophobic patients did not require surgical intervention. The reasons for this are unclear and require further investigation. Claustrophobia requiring sedation for MRI scans may be a proxy for psychological distress in these patients and psychometric testing is advised during assessment to help with surgical decision making

Scapula

Man Ther. 2012 Jul 23.

Scapular positioning assessment: Is side-to-side comparison clinically acceptable?

Morais NV, Pascoal AG.

Source

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Abstract

Clinicians routinely assess scapular position and motion of the symptomatic shoulder taking as reference for the contralateral asymptomatic side. A different positioning between sides (scapular asymmetry) is often assumed as pathological, however, the symmetry of scapular kinematics in healthy individuals is yet to be demonstrated. This study tested the hypothesis of scapular symmetry during arm elevation. The 3-dimensional scapular positioning of the dominant and non-dominant shoulders of fourteen healthy young adults was simultaneously measured by a 6 degrees of freedom electromagnetic tracking device at three positions of arm elevation: rest, hands on hips, and 90° of shoulder abduction with internal rotation. The scapula on the dominant shoulder showed greater retraction ($P < 0.001$; $\eta(2)(p) = 0.68$) and upward rotation ($P < 0.001$; $\eta(2)(p) = 0.70$) at all positions of arm elevation. From rest to 90° of shoulder abduction, the mean (\pm SD) amount of scapular angular displacement was, respectively for dominant and non-dominant shoulders, 7.2° ($\pm 7.8^\circ$) and 7.2° ($\pm 4.4^\circ$) for retraction, 17.4° ($\pm 5.1^\circ$) and 17.8° ($\pm 6.4^\circ$) for upward rotation, and 3.8° ($\pm 3.6^\circ$) and 0.9° ($\pm 3.6^\circ$) for posterior tilting. These findings suggest that scapular positioning on the thorax are not the same despite the observation of an identical kinematic pattern during arm elevation. This should be taken into consideration when comparing scapular position and motion of symptomatic and contralateral shoulders.

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Scapular positioning assessment: Is side-to-side comparison clinically acceptable? Nuno Valente Morais, Augusto Gil Pascoal. *Manual Therapy July 25, 2012*

Manual Therapy

Somatic dysfunction and its association with chronic low back pain, back-specific functioning, and general health: results from the osteopathic trial □

Journal of the American Osteopathic Association, 08/03/2012

Licciardone JC et al. –

The present study demonstrates that somatic dysfunction, particularly in the lumbar and sacrum/pelvis regions, is common in patients with chronic LBP. Forthcoming extensions of the OSTEOPATHIC Trial will assess the efficacy of OMT according to baseline levels of somatic dysfunction.

Methods

- A cross-sectional study nested within a randomized controlled trial.
- University-based study in Dallas-Fort Worth, Texas.
- A total of 455 adult research patients with non-specific chronic LBP.
- Somatic dysfunction in the lumbar, sacrum/pelvis, and pelvis/innominate regions, including key lesions representing severe somatic dysfunction.
- A 10-cm visual analog scale (VAS), the Roland-Morris Disability Questionnaire (RMDQ), and the Medical Outcomes Study Short Form-36 Health Survey (SF-36) were used to measure LBP severity, back-specific functioning, and general health, respectively.

Results

- Severe somatic dysfunction was most prevalent in the lumbar (225 [49%]), sacrum/pelvis (129 [28%]), and pelvis/innominate (48 [11%]) regions.
- Only 30 patients (7%) had no somatic dysfunction in the lumbar, sacrum/pelvis, or pelvis/innominate regions.
- There were 4 statistically significant pairwise correlations for severe somatic dysfunction: thoracic (T) 10-12 with ribs; T10-12 with lumbar; lumbar with sacrum/pelvis; and sacrum/pelvis with pelvis/innominate.
- Having a key lesion in the lumbar region ($\rho=0.80$) or sacrum/pelvis region ($\rho=0.71$) was strongly correlated with the overall number of key lesions. There were no consistent demographic or clinical predictors of somatic dysfunction. The presence (vs absence) of severe somatic dysfunction in the lumbar region was associated with greater LBP severity (median VAS score, 4.7 vs 3.8, respectively; $P=.003$) and greater back-specific disability (median RMDQ score, 6 vs 4, respectively; $P=.01$). The presence (vs absence) of severe somatic dysfunction in the sacrum/pelvis region was associated with greater back-specific disability (median RMDQ score, 6 vs 5, respectively; $P=.02$) and poorer general health (median SF-36 score, 62 vs 72, respectively; $P=.002$).

An increasing number of key lesions was associated with back-specific disability ($P=.009$) and poorer general health ($P=.02$).

Knee/VMO

Electromechanical Delay of the Vastus Medialis Obliquus and Vastus Lateralis in Individuals With Patellofemoral Pain Syndrome □

Journal of Orthopaedic & Sports Physical Therapy, 08/03/2012

Chen HY et al. –

The mechanical properties of the vastus medialis obliquus (VMO) and vastus lateralis (VL) may be altered in patients with patellofemoral pain syndrome (PFPS).

Methods

- Twenty–six individuals with PFPS and 26 healthy volunteers were studied.
- The VMO and VL were electrically stimulated to evoke muscle twitches.
- Ultrasound was used to assess patellar movement elicited by the muscle twitch.
- The time period from the onset of electrical stimulation to the onset of patellar movement was measured as the EMD.
- The EMDs of the VMO and VL were compared between groups using a mixed model ANOVA.

Results

- Subsequent to a significant interaction ($P < .001$), post–hoc analysis indicated that EMD of the VMO was longer (PFPS, 37.3 ± 0.7 ; control, 25.9 ± 0.7 ; $P < .001$) and EMD of the VL was shorter (PFPS, 18.4 ± 0.5 ; control, 25.1 ± 0.5 ; $P < .001$) in the PFPS group.

Therefore, for the individuals with PFPS, the EMD for the VMO was significantly longer than for the VL ($P < .001$) which was not the case for the control group ($P = .20$).

Knee/patella

Hip Posterolateral Musculature Strengthening in Sedentary Females With Patellofemoral Pain Syndrome: A Randomized Controlled Clinical Trial With 1-Year Follow-Up

Thiago Yukio Fukuda, William Pagotti Melo, Bruno Marcos Zaffalon, Flavio Marcondes Rossetto, Eduardo Magalhães, Flavio Fernandes Bryk, RobRoy L. Martin

DOI: 10.2519/jospt.2012.4184

STUDY DESIGN: Randomized controlled trial.

BACKGROUND: Recent studies have shown that a hip strengthening program reduces pain and improves function in individuals with patellofemoral pain syndrome (PFPS). However there are no clinical trials evaluating long-term outcomes of this type of program compared to conventional knee strengthening and stretching exercises.

OBJECTIVE: To determine if adding hip strengthening exercises to a conventional knee exercise program produces better long-term outcomes than conventional knee exercises alone in women with PFPS.

METHODS: Fifty-four sedentary females between 20 and 40 years of age and a diagnosis of unilateral PFPS were randomly assigned to a knee exercise (KE) or a knee and hip exercise (KHE) group. The women in the KE group (N=26; mean age 23 years) performed a 4-week conventional knee stretching and strengthening program. The women in the KHE group (N=28; mean age 22 years) performed the same exercises as those in the KE group as well as strengthening exercises for the hip abductors, lateral rotators, and extensors. An 11-point numerical pain rating scale (NPRS), lower extremity functional scale (LEFS), anterior knee pain scale (AKPS), and single hop test were used as outcome measures at baseline (pre-treatment) and at 3, 6, and 12 months post-treatment.

RESULTS: At baseline, demographic, pain, and functional assessment data were similar between groups. Those in the KHE group had a higher level of function and less pain at 3, 6, and 12-month compared to baseline ($P<0.05$). In contrast, the KE group had reduced pain only at the 3 and 6-month follow-up ($P<0.05$), without any changes in LEFS, AKPS, or hop testing ($P>0.05$) through the course of the study. Compared to the KE group, the KHE group had less pain and better function at 3, 6, and 12-months post-treatment ($P<0.05$). The between-group mean differences, favoring the KHE group, for LEFS at 3, 6, and 12 months post-treatment were 22.0, 22.0, and 20.8, respectively.

CONCLUSION: Knee stretching and strengthening exercises supplemented by hip posterolateral musculature strengthening exercises were more effective than knee exercises alone in improving long-term function and reducing pain in women with PFPS.

LEVEL OF EVIDENCE: Therapy, Level 1.

J Orthop Sports Phys Ther, Epub 2 August 2012. doi:10.2519/jospt.2012.4184

KEY WORDS: anterior knee pain, chondromalacia, knee, patella

Sciatic nerve

Comparison of Longitudinal Sciatic Nerve Movement With Different Mobilization Exercises: An In Vivo Study Utilizing Ultrasound Imaging

Richard F. Ellis, Wayne A. Hing, Peter J. McNair

DOI: 10.2519/jospt.2012.3854

STUDY DESIGN: Controlled laboratory study using a single-group, within-subjects comparison.

OBJECTIVES: To determine whether different types of neural mobilization exercises are associated with differing amounts of longitudinal sciatic nerve excursion measured in vivo at the posterior midthigh region.

BACKGROUND: Recent research focusing on the upper limb of healthy subjects has shown that nerve excursion differs significantly between different types of neural mobilization exercises. This has not been examined in the lower limb. It is important to initially examine the influence of neural mobilization on peripheral nerve excursion in healthy people to identify peripheral nerve excursion impairments under conditions in which nerve excursion may be compromised.

METHODS: High-resolution ultrasound imaging was used to assess sciatic nerve excursion at the posterior midthigh region. Four different neural mobilization exercises were performed in 31 healthy participants. These neural mobilization exercises used combinations of knee extension and cervical spine flexion and extension. Frame-by-frame cross-correlation analysis of the ultrasound images was used to calculate nerve excursion. A repeated-measures analysis of variance and isolated means comparisons were used for data analysis.

RESULTS: Different neural mobilization exercises induced significantly different amounts of sciatic nerve excursion at the posterior midthigh region ($P < .001$). The slider exercise, consisting of the participant performing simultaneous cervical spine and knee extension, resulted in the largest amount of sciatic nerve excursion (mean \pm SD, 3.2 ± 2.0 mm). The amount of excursion during the slider exercise was slightly greater (mean \pm SD, 2.6 ± 1.5 mm; $P = .002$) than it was during the tensioner exercise (simultaneous cervical spine flexion and knee extension). The single-joint neck flexion exercise resulted in the least amount of sciatic nerve excursion at the posterior midthigh (mean \pm SD, -0.1 ± 0.1 mm), which was significantly smaller than the other 3 exercises ($P < .001$).

CONCLUSION: These findings are consistent with the results of previous research that has examined median nerve excursion associated with different neural mobilization exercises. Such nerve excursion supports theories of nerve motion associated with cervical spine and extremity movement, as generalizable to the lower limb.

J Orthop Sports Phys Ther 2012;42(8):667-675, Epub 18 June 2012.

doi:10.2519/jospt.2012.3854

Pilates

DMA Clinical Pilates Directional-Bias Assessment: Reliability and Predictive Validity

Evelyn Tulloch, Craig Phillips, Gisela Sole, Allan Carman, J. Haxby Abbott

DOI: 10.2519/jospt.2012.3790

STUDY DESIGN: Randomized, repeated-measures crossover design.

OBJECTIVES: To determine the interrater reliability of directional-bias assessment and to investigate its validity for predicting immediate changes in dynamic postural stability and muscle performance following directionally biased exercises.

BACKGROUND: Directional bias in dynamic postural stability deficits may be associated with outcome following intervention.

METHODS: Two researchers independently assessed 33 participants, each with a history of more than 1 unilateral lower-limb injury, for directional bias. Interrater reliability was evaluated with the kappa coefficient and a prevalence-adjusted and bias-adjusted kappa coefficient. Participants were randomly allocated to perform matched-bias (MB) or unmatched-bias (UB) exercises first, in 2 crossover groups. Two outcome measures, time to stabilization and rebound hopping, were assessed before and following each exercise intervention, using a force plate. Crossover trial data were analyzed by *t* tests for period, interaction, and treatment effects, and repeated-measures analyses of variance were used to investigate differences between baseline, MB, and UB.

RESULTS: Interrater reliability of directional-bias assessment was substantial ($\kappa = 0.75$; prevalence-adjusted and bias-adjusted $\kappa = 0.76$). Following MB exercises, medial/lateral time to stabilization and time on the ground during rebound hopping were significantly shorter ($P = .01$ and $P = .05$, respectively) compared with UB exercises. Compared with baseline, pairwise change in anterior/posterior time to stabilization ($P = .008$) improved following MB, whereas time in the air decreased following UB ($P = .036$).

CONCLUSION: Directional-bias assessment demonstrates substantial reliability, and outcomes suggest validity for predicting immediate improvements following matched directionally biased exercises.

J Orthop Sports Phys Ther 2012;42(8):676-687. doi:10.2519/jospt.2012.3790

Neck/Manipulation

Short-Term Effects of Kinesio Taping Versus Cervical Thrust Manipulation in Patients With Mechanical Neck Pain: A Randomized Clinical Trial

Manuel Saavedra-Hernández, Adelaida M. Castro-Sánchez, Manuel Arroyo-Morales, Joshua A. Cleland, Inmaculada C. Lara-Palomo, César Fernández-de-las-Peñas

DOI: 10.2519/jospt.2012.4086

STUDY DESIGN: Randomized clinical trial.

OBJECTIVE: To compare the effectiveness of cervical spine thrust manipulation to that of Kinesio Taping applied to the neck in individuals with mechanical neck pain, using self-reported pain and disability and cervical range of motion as measures.

BACKGROUND: The effectiveness of cervical manipulation has received considerable attention in the literature. However, because some patients cannot tolerate cervical thrust manipulation, alternative therapeutic options should be investigated.

METHODS: Eighty patients (36 women) were randomly assigned to 1 of 2 groups: the manipulation group, which received 2 cervical thrust manipulations, and the tape group, which received Kinesio Taping applied to the neck. Neck pain (11-point numeric pain rating scale), disability (Neck Disability Index), and cervical-range-of-motion data were collected at baseline and 1 week after the intervention by an assessor blinded to the treatment allocation of the patients. Mixed-model analyses of variance were used to examine the effects of the treatment on each outcome variable, with group as the between-subjects variable and time as the within-subjects variable. The primary analysis was the group-by-time interaction.

RESULTS: No significant group-by-time interactions were found for pain ($F = 1.892$, $P = .447$) or disability ($F = 0.115$, $P = .736$). The group-by-time interaction was statistically significant for right ($F = 7.317$, $P = .008$) and left ($F = 9.525$, $P = .003$) cervical rotation range of motion, with the patients who received the cervical thrust manipulation having experienced greater improvement in cervical rotation than those treated with Kinesio Tape ($P < .01$). No significant group-by-time interactions were found for cervical spine range of motion for flexion ($F = 0.944$, $P = .334$), extension ($F = 0.122$, $P = .728$), and right ($F = 0.220$, $P = .650$) and left ($F = 0.389$, $P = .535$) lateral flexion.

CONCLUSION: Patients with mechanical neck pain who received cervical thrust manipulation or Kinesio Taping exhibited similar reductions in neck pain intensity and disability and similar changes in active cervical range of motion, except for rotation. Changes in neck pain surpassed the minimal clinically important difference, whereas changes in disability did not. Changes in cervical range of motion were small and not clinically meaningful. Because we did not include a control or placebo group in this study, we cannot rule out a placebo effect or natural changes over time as potential reasons for the improvements measured in both groups.

LEVEL OF EVIDENCE: Therapy, level 1b.

J Orthop Sports Phys Ther 2012;42(8):724-730, Epub 20 April 2012.
doi:10.2519/jospt.2012.4086

Cryotherapy

Intramuscular Temperature Changes During and After 2 Different Cryotherapy Interventions in Healthy Individuals

Kimberly A. Rupp, Daniel C. Herman, Jay Hertel, Susan A. Saliba

DOI: 10.2519/jospt.2012.4200

STUDY DESIGN: Crossover.

OBJECTIVES: To compare the time required to decrease intramuscular temperature 8°C below baseline temperature, and to compare intramuscular temperature 90 minutes posttreatment, between 2 cryotherapy modalities.

BACKGROUND: Cryotherapy is used to treat pain from muscle injuries. Cooler intramuscular temperatures may reduce cellular metabolism and secondary hypoxic injury to attenuate acute injury response, specifically the rate of chemical mediator activity. Modalities that decrease intramuscular temperature quickly may be beneficial in the treatment of muscle injuries.

METHODS: Eighteen healthy subjects received 2 cryotherapy conditions, crushed-ice bag (CIB) and cold-water immersion (CWI), in a randomly allocated order, separated by 72 hours. Each condition was applied until intramuscular temperature decreased 8°C below baseline. Intramuscular temperature was monitored in the gastrocnemius, 1 cm below subcutaneous adipose tissue. The primary outcome was time to decrease intramuscular temperature 8°C below baseline. A secondary outcome was intramuscular temperature at the end of a 90-minute rewarming period. Paired *t* tests were used to examine outcomes.

RESULTS: Time to reach an 8°C reduction in intramuscular temperature was not significantly different between CIB and CWI (mean difference, 2.6 minutes; 95% confidence interval: -3.10, 8.30). Intramuscular temperature remained significantly colder 90 minutes post-CWI compared to CIB (mean difference, 2.8°C; 95% confidence interval: 2.07°C, 3.52°C).

CONCLUSION: There was no difference in time required to reduce intramuscular temperature 8°C 1 cm below adipose tissue using CIB and CWI. However, intramuscular temperature remained significantly colder 90 minutes following CWI. These results provide clinicians with information that may guide treatment-modality decisions.

J Orthop Sports Phys Ther 2012;42(8):731-737, Epub 23 March 2012.

doi:10.2519/jospt.2012.4200

KEY WORDS: adipose tissue, cold-water immersion, ice bag

LBP

Man Ther. 2012 Jul 13.

The effectiveness of physiotherapy functional restoration for post-acute low back pain: A systematic review.

Richards MC, Ford JJ, Slater SL, Hahne AJ, Surkitt LD, Davidson M, McMeeken JM.

Source

Low Back Research Team, Musculoskeletal Research Centre, Department of Physiotherapy, School of Allied Health, Faculty of Health Sciences, La Trobe University, 3086, Australia(1).

Abstract

BACKGROUND:

The effectiveness of multidisciplinary treatment for post-acute (>6 weeks) low back pain (LBP) has been established. Physiotherapists have sufficient training to conduct less intensive functional restoration. The effectiveness of physiotherapy functional restoration (PFR) has not been evaluated using current systematic review methodology.

OBJECTIVES:

To determine the effects of PFR for post-acute LBP.

DATA SOURCES:

Electronic databases searched include: MEDLINE, EMBASE, CINAHL, PsycINFO, PEDro and Cochrane CENTRAL. TRIAL ELIGIBILITY CRITERIA: Randomised controlled trials of physiotherapy treatment for post-acute LBP combining exercise and cognitive-behavioural intervention compared with other intervention, no intervention or placebo. TRIAL APPRAISAL AND SYNTHESIS

METHODS:

Two authors independently extracted data. Risk of bias was assessed using the PEDro scale and overall quality of the body of evidence was assessed using GRADE (Grading of Recommendations, Assessment, Development and Evaluation). Treatment effect sizes and 95% confidence intervals were calculated for pain, function and sick leave.

RESULTS:

Sixteen trials were included. Heterogeneity prevented meta-analysis for most comparisons. Meta-analyses showed moderate to high quality evidence of significant but small effects favouring PFR compared with advice for intermediate term function and intermediate and long term pain. There was however low to moderate quality evidence that PFR was no more effective than a range of other treatment types. Heterogeneous trials frequently contributed to very low quality evidence.

CONCLUSIONS:

Moderate to high quality evidence was found of small effects favouring PFR compared with advice. Preliminary evidence suggested PFR is not different to other treatment types. Further high quality research is required replicating existing trial protocols.

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Scapula

J Biomech. 2012 Aug 9;45(12):2176-9.

Identification of scapular kinematics using surface mapping: A validation study.

Mattson JM, Russo SA, Rose WC, Rowley KM, Richards JG.

Source

Human Performance Lab, Biomechanics and Movement Science Program, Department of Kinesiology and Applied Physiology, University of Delaware, Newark, DE 19716, USA.

Abstract

The immediate goal of this study was to develop and validate a noninvasive, computational surface mapping approach for measuring scapular kinematics by using available motion capture technology in an innovative manner. The long-term goal is to facilitate clinical determination of the role of the scapula in children with brachial plexus birth palsy (BPBP). The population for this study consisted of fourteen healthy adults with prominent scapulae. Subject-specific scapular templates were created using the coordinates of five scapular landmarks obtained from palpation with subjects seated and arms relaxed in a neutral position. The scapular landmarks were re-palpated and their locations recorded in the six arm positions of the modified Mallet classification. The six Mallet positions were repeated with approximately 300 markers covering the scapula. The markers formed a surface map covering the tissue over the scapula. The scapular template created in the neutral position was iteratively fit to the surface map of each trial, providing an estimate of the orientation of the scapula. These estimates of scapular orientation were compared to the known scapular orientation determined from the scapular landmarks palpated in each Mallet position. The magnitude of the largest mean difference about an anatomical axis between the two measures of scapular orientation was 3.8° with an RMS error of 5.9° . This technique is practical for populations with visibly prominent scapulae (e.g., BPBP patients), for which it is a viable alternative to existing clinical methods with comparable accuracy.

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Identification of scapular kinematics using surface mapping: A validation study. Mattson JM, Russo SA, Rose WC, Rowley KM, Richards JG. *J Biomech.* 2012 Aug 9

Manual Therapy

Chiropr Man Therap. 2012 Jun 22;20(1):19.

Clinical decision rules, spinal pain classification and prediction of treatment outcome: A discussion of recent reports in the rehabilitation literature.

Hebert JJ, Fritz JM.

Source

Faculty of Health Sciences, Murdoch University, Murdoch, WA, Australia.
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Abstract

ABSTRACT: Clinical decision rules are an increasingly common presence in the biomedical literature and represent one strategy of enhancing clinical-decision making with the goal of improving the efficiency and effectiveness of healthcare delivery. In the context of rehabilitation research, clinical decision rules have been predominantly aimed at classifying patients by predicting their treatment response to specific therapies. Traditionally, recommendations for developing clinical decision rules propose a multistep process (derivation, validation, impact analysis) using defined methodology. Research efforts aimed at developing a "diagnosis-based clinical decision rule" have departed from this convention. Recent publications in this line of research have used the modified terminology "diagnosis-based clinical decision guide." Modifications to terminology and methodology surrounding clinical decision rules can make it more difficult for clinicians to recognize the level of evidence associated with a decision rule and understand how this evidence should be implemented to inform patient care. We provide a brief overview of clinical decision rule development in the context of the rehabilitation literature and two specific papers recently published in Chiropractic and Manual Therapies.

http://r20.rs6.net/tn.jsp?e=001S-ypJ3FvMRtsWVf0MxS901XVpX2q5vWfP07BMR2U9Tz1G_FbgBRZkIBxwmpDfAN5Q-wZX1W4P60ISUj5JVQCFVA1FliY-wlIpfSKxiaPwUX7G3PG1kzBkytqE6ruwe2T_WNrnMIQpo=

Hip

Br J Sports Med. 2012 Jul 7.

Diagnostic accuracy of clinical tests of the hip: a systematic review with meta-analysis.

Reiman MP, Goode AP, Hegedus EJ, Cook CE, Wright AA.

Source

Community and Family Practice, Duke University School of Medicine, Durham, North Carolina, USA.

Abstract

Background Hip Physical Examination (HPE) tests have long been used to diagnose a myriad of intra- and extra-articular pathologies of the hip joint. Useful clinical utility is necessary to support diagnostic imaging and subsequent surgical decision making. **Objective** Summarise and evaluate the current research and utility on the diagnostic accuracy of HPE tests for the hip joint germane to sports related injuries and pathology.

Methods A computer-assisted literature search of MEDLINE, CINAHL and EMBASE databases (January 1966 to January 2012) using keywords related to diagnostic accuracy of the hip joint. This systematic review with meta-analysis utilised the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for the search and reporting phases of the study. Der-Simonian and Laird random effects models were used to summarise sensitivities (SN), specificities (SP), likelihood ratios and diagnostic OR.

Results The employed search strategy revealed 25 potential articles, with 10 demonstrating high quality. Fourteen articles qualified for meta-analysis. The meta-analysis demonstrated that most tests possess weak diagnostic properties with the exception of the patellar-pubic percussion test, which had excellent pooled SN 95 (95% CI 92 to 97%) and good specificity 86 (95% CI 78 to 92%).

Conclusion Several studies have investigated pathology in the hip. Few of the current studies are of substantial quality to dictate clinical decision-making. Currently, only the patellar-pubic percussion test is supported by the data as a stand-alone HPE test. Further studies involving high quality designs are needed to fully assess the value of HPE tests for patients with intra- and extra-articular hip dysfunction.

PMID: 22773321 [PubMed - as supplied by publisher]

http://r20.rs6.net/tn.jsp?e=001S-ypJ3FvMRvsBVtZr2SvTV_5kv9aADWZyK7rzoUI9VFDuAUkrs01PbxhtU3otpMXwEXo3HVUac9fYsdwnIwLWTWe_-rRlq7eHzXUZrubiZj1XWJo717UbNQwKEF6TCScVX9KAc85_-yjGB-jFwxd3duukUBWBhNwH1hHtec6VGs=

LB/Spondylo

Eur Spine J. 2012 Feb;21(2):256-61.

The analysis of segmental mobility with different lumbar radiographs in symptomatic patients with a spondylolisthesis.

Cabraja M, Mohamed E, Koeppen D, Kroppenstedt S.

Source

Department of Neurosurgery, Charité, Universitätsmedizin Berlin, Hindenburgdamm 30, 12200 Berlin, Germany. mario.cabraja@charite.de

Abstract

PURPOSE:

Lumbar flexion-extension radiographs in standing position (SFE) are the most commonly used imaging method to evaluate segmental mobility. Many surgeons use SFE to disclose abnormal vertebral motion and base their decision for surgical fusion on its results. We tested the hypothesis that imaging in standing and recumbent position (SRP) reveals a higher sagittal translation (ST) and sagittal rotation (SR) in symptomatic patients than with SFE.

MATERIALS AND METHODS:

We analysed images of 100 symptomatic patients with a low-grade spondylolisthesis that underwent surgical fusion. To determine the ST and SR in SRP, we compared the images taken in the recumbent position in the CT with images taken in the standing position during the routine plain radiography.

RESULTS:

The measurement of ST revealed an absolute value of 2.3 ± 1.5 mm in SFE and 4.0 ± 2.0 mm in SRP and differed significantly ($p = 0.001$). The analysis of the relative value showed an ST of $5.9 \pm 3.9\%$ in SFE and $7.8 \pm 5.4\%$ in SRP ($p = 0.008$). The assessment of ST in flexion and in a recumbent position (FRP) revealed the highest ST (4.6 ± 2.5 mm or $9.2 \pm 5.7\%$). Comparison of SR showed the highest rotation in SFE ($6.1^\circ \pm 3.8^\circ$), however, compared to SRP ($5.4^\circ \pm 3.3^\circ$), it missed the level of significance ($p = 0.051$).

CONCLUSIONS:

For evaluation of ST in symptomatic patients with spondylolisthesis SRP appears to be more suitable than SFE, while a pathological SR is better revealed in SFE. The analysis of SRP might offer a complementary method to detect or exclude pathological mobility in more cases.

PMID: 21670945 [PubMed - indexed for MEDLINE] PMCID: PMC3265590 [Available on 2013/2/1]

http://r20.rs6.net/tn.jsp?e=0012I9mCjoRdITIs8VvMbjXjNViqByAHekJcl_Vz_N-NSWx18xkkPSZhq_eHElzFIYL-IqoGzVoS2VW4ISA2OwftiIFsz3N_429Mp7II_9FwHiC52e2RFoc9230RRDwGr6uuocGxOCLjgTic6Ak93tG9tvAJ8gr711GLdxgfhmHFQm9XdOUM_mgLHsRBEyGBwvxgQwMm5pKg8VupmjB7wPAxxZPxQETpyHHhRXwr5Lc16HdSR75KnhadbZHJpyTaYYYYJ11ZWIRWDFycS94bwa ePouXdQJ069hQZLcZ0rk43PFbrNolaENPVXBJRrp3hr_vqNAp7qe6H_Vdo5KrKz3JAYNU1Ohc0Qb3dbZdDjg71Y7THqxtJdEn0WsE0-x6zC5fd7M5FHbb-TdsLyu_p-bWeGEULMYEQS870iWTLJFQxrRbb3SLrYJGJ6Z0geCm5tqOq7pWxMGswjRn5s3XXk2XOs mkjyAXPklAzudrKkhtw64ABljVDkuKcVWUfFGI0T0oJjQWB5q5f8ssKeaRqY0qKbRAwSg0xTcN6xxV3MKaxDNsD53g0k9pMLXfYhbgAe1ZgwdWRLfdDOEiP8kpIjSAEtkxxqFDyyY38W Sq3_bGDkN_npFx2LuGVamxT_bZx

C spine

Manual Therapy 2012 Jun 13

Characteristics of a new episode of neck pain

- [Andrew M. Leaver](#), [Christopher G. Maher](#), [James H. McAuley](#), [Gwendolen A. Jull](#), [Kathryn M. Refshauge](#)

Abstract

We report on the demographic and clinical characteristics of patients seeking manual therapy care for a new episode of non-specific neck pain and report on characteristics associated with higher levels of pain and disability in these patients. Demographic and clinical data were collected from patients who enrolled in a clinical trial of manipulation for neck pain. A profile of these patients was formulated using descriptive statistics. Multivariate linear regression models were used to describe the relationship between patient characteristics and severity of pain and disability. Patients with a new episode of non-specific neck pain reported pain intensity of 6.1 ± 2.0 (mean \pm SD) on a 0–10 numerical scale and disability scores of 15.7 ± 7.4 (Neck Disability Index/50). Sixty-three percent had a prior history of neck pain. Concomitant symptoms were highly prevalent including upper limb pain (80%), headache (65%), upper back pain (64%), lower back pain (39%), dizziness (31%) and nausea (23%). There was a strong association between pain intensity and disability ($p < 0.01$). More severe pain was also associated with not having concomitant back pain ($p = 0.01$). More severe disability was also associated with poor general health ($p < 0.01$), nausea ($p < 0.01$), smoking, ($p = 0.02$) low SF-12 mental health score ($p = 0.02$), and shorter duration of symptoms ($p = 0.03$). Patients with a new episode of neck pain, and deemed suitable for treatment with neck manipulation reported moderately high intensity pain and disability with widespread and frequent concomitant symptoms.

Keywords: [Neck pain](#), [Clinical characteristics](#), [Associated factors](#), [Manual therapy](#)

<http://r20.rs6.net/tn.jsp?e=001219mCjoRdIStZP3ncfreDhkVVvI2rigLtFjRnu59ETyPqTO9DOpFlFUgtyZ3KsIRiFq-hPBHc84aqiUSxnm1EYJNHunnUU4cFgkpKAn-VDi1Z0FOuwY1rYj-Z4Ll6rmp0LS3n-KF49BQ6VOMDT0iSE1m1ZEPuwaB4iI3J4q5rpl6RN-ATHiiNsnGlo1L9AyL>

C spine/muscles

Man Ther. 2012 Jun 13.

Ultrasound imaging with speckle tracking of cervical muscle deformation and deformation rate: Isometric contraction of patients after anterior cervical decompression and fusion for cervical disc disease and controls.

Peolsson A, Löfstedt T, Trygg J, Peolsson M.

Source

Department of Medical and Health Sciences, Division of Physiotherapy, Faculty of Health Sciences, Linköping University, SE-58183 Linköping, Sweden.

Abstract

There is currently a lack of information regarding neck muscle activity during specific exercises. The purpose of the present study was to investigate deformation and deformation rate in different layers of dorsal and ventral neck muscles during isometric neck muscle contraction in individuals after anterior cervical decompression and fusion and in healthy controls. This study included 10 individuals (mean age 60 years; SD 7.1) with a verified, long-standing neck disorder and 10 healthy, age- and sex-matched controls. Ultrasonography and post-process speckle tracking analysis was used to investigate the degree and the rate of neck muscles motions at the C4 segmental level during sub-maximal, isometric resistance of the head in a seated position. None of the analyses performed showed significant differences between groups ($p > 0.05$). In the dorsal muscles, both groups exhibited a higher deformation rate in the multifidus than in the trapezius, splenius, and semispinalis capitis ($p \leq 0.01$). In the neck disorder group, the multifidus also showed a higher deformation rate compared to the semispinalis cervicis ($p = 0.02$). In the ventral muscles of patients with neck disorders, the longus colli had a higher deformation rate than the sternocleidomastoid ($p = 0.02$). Among the healthy controls, the multifidus showed a higher degree of deformation ($p = 0.02$) than the trapezius. In conclusion, our results showed no significant differences between the two groups in mechanical neck muscle activation. Larger studies with different exercises, preferably with a standardized measure of resistance, are needed to investigate whether patients and controls show differences in deformation and deformation rates in neck muscles.

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Shoulder

Physiotherapy. 2012 Jun;98(2):101-9.

Exercise for rotator cuff tendinopathy: a systematic review.

Littlewood C, Ashton J, Chance-Larsen K, May S, Sturrock B.

Source

School of Health & Related Research, University of Sheffield, Regent Court, 30 Regent Street, Sheffield S1 4DA, UK. c.littlewood@sheffield.ac.uk

Abstract

BACKGROUND:

Shoulder pain due to rotator cuff tendinopathy is a common problem. Exercise is one intervention used to address this problem but conclusions from previous reviews have been mixed.

OBJECTIVE:

To systematically review the effectiveness of exercise, incorporating loaded exercise (against gravity or resistance), for rotator cuff tendinopathy.

DATA SOURCES:

An electronic search of AMED, CiNAHL, Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, PEDro and SPORTDiscus was undertaken from their inception to November 2010 and supplemented by hand searching related articles and contact with topic experts. **STUDY ELIGIBILITY CRITERIA:** Randomised controlled trials evaluating the effectiveness of exercise, incorporating loaded exercise, in participants with rotator cuff tendinopathy. **STUDY APPRAISAL AND SYNTHESIS METHODS:** Included studies were appraised for risk of bias using the tool developed by the Cochrane Back review Group. Due to heterogeneity of studies, a narrative synthesis was undertaken based upon levels of evidence.

RESULTS:

Five articles detailing four studies were included, all of which were regarded as presenting a low risk of bias. Overall, the literature was supportive of the use of exercise in terms of pain and functional disability.

LIMITATIONS:

The results should be regarded with some degree of caution due to limitations associated with the studies including lack of blinding, no intervention control groups and limitations of the outcome measures used. **CONCLUSION AND IMPLICATIONS OF KEY FINDINGS:** The available literature is supportive of the use of exercise but due to the paucity of research and associated limitations further study is indicated.

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Pain

The influence of children's pain memories on subsequent pain experience

PAIN Volume 153, Issue 8 , Pages 1563-1572, August 2012

Children's pain memories were a better predictor of subsequent pain reporting than initial reporting. Children with negatively estimated pain memories experienced increased pain over time.

Healthy children are often required to repeatedly undergo painful medical procedures (e.g., immunizations). Although memory is often implicated in children's reactions to future pain, there is a dearth of research directly examining the relationship between the 2. The current study investigated the influence of children's memories for a novel pain stimulus on their subsequent pain experience. One hundred ten healthy children (60 boys) between the ages of 8 and 12 years completed a laboratory pain task and provided pain ratings. Two weeks later, children provided pain ratings based on their memories as well as their expectancies about future pain.

One month following the initial laboratory visit, children again completed the pain task and provided pain ratings. Results showed that children's memory of pain intensity was a better predictor of subsequent pain reporting than their actual initial reporting of pain intensity, and mediated the relationship between initial and subsequent pain reporting. Children who had negatively estimated pain memories developed expectations of greater pain prior to a subsequent pain experience and showed greater increases in pain ratings over time than children who had accurate or positively estimated pain memories. These findings highlight the influence of pain memories on healthy children's expectations of future pain and subsequent pain experiences and extend predictive models of subsequent pain reporting.

Pain/exercise

An fMRI study on the acute effects of exercise on pain processing in trained athletes

PAIN Volume 153, Issue 8 , Pages 1702- 1714, August 2012

Endurance exercise is known to promote sustained antinociceptive effects, and there is evidence that the reduction of pain perception mediated by exercise is driven by central opioidergic neurotransmission. To directly investigate the involved brain areas and the underlying neural mechanisms in humans, thermal heat

-pain challenges were applied to 20 athletes during 4 separate functional magnetic resonance imaging (fMRI) scans, i.e., before and after 2 hours of running (exercise condition) and walking (control condition), respectively. Imaging revealed a reproducible pattern of distributed pain-related activation in all 4 conditions, including the mesial and lateral pain systems, and the periaqueductal gray (PAG) as a key region of the descending antinociceptive pathway. At the behavioral level, running as compared with walking decreased affective pain ratings. The influence of exercise on pain-related activation was reflected in a significant time \times treatment interaction in the PAG, along with similar trends in the pregenual anterior cingulate cortex and the middle insular cortex, where pain-induced activation levels were elevated after walking, but decreased or unchanged after running. Our findings indicate that enhanced reactive recruitment of endogenous antinociceptive mechanisms after aversive repeated pain exposure is attenuated by exercise. The fact that running, but not walking, reproducibly elevated β -endorphin levels in plasma indicates involvement of the opioidergic system in exercise. This may argue for an elevated opioidergic tone in the brain of athletes, mediating antinociceptive mechanisms. Our findings provide the first evidence using functional imaging to support the role of endurance exercise in pain modulation.

Asymmetric Degeneration of Paravertebral Muscles in Patients With Degenerative Lumbar Scoliosis

Spine; 15July2012-Volume37-Issue16-p 1398–1406

Objective: To evaluate the paravertebral muscle (PVM) degeneration in patients with degenerative lumbar scoliosis (DLS), using magnetic resonance imaging.

Several studies have described the histological and morphological changes to the PVM in patients with chronic low back pain and lumbar radiculopathy. However, there is little knowledge about the PVM changes in patients with DLS.

Methods: Fifty-seven patients with lumbar spinal stenosis (LSS) with DLS (DLS group) and 50 control patients with LSS without DLS (LSS group) were examined. The cross-sectional area (CSA) and percentage of fat infiltration area (%FIA) of the bilateral multifidus and longissimus muscles at the L1–S1 levels were measured using T2-weighted axial magnetic resonance imaging and computer software. A multifidus muscle biopsy and histological evaluation were performed in some patients.

Results: In the DLS group, the CSA of the multifidus muscle was significantly smaller and the %FIA of both muscles was significantly higher on the concave side than on the convex side at all levels ($P < 0.0001$ for each). These differences were also found in the longissimus muscles at the L4–L5 and L5–S1 levels. Histologically, the multifidus muscle exhibited reductions in the muscle fiber size and number of nuclei on the concave side. In the LSS group, the total CSA and %FIA did not differ significantly between the left and right sides. However, in patients with unilateral radiculopathy, the CSA of the multifidus muscle was significantly smaller and the %FIA of both muscles was significantly higher on the symptomatic side, especially at 1 level below.

Conclusion: This observational study with magnetic resonance imaging and histology showed that muscle degeneration was more common on the concave side in patients with DLS. Radiculopathy and spinal deformity may contribute to the PVM degeneration.

LBP/Multifidus

Dynamic changes of elasticity, cross-sectional area, and fat infiltration of multifidus at different postures in men with chronic low back pain *The Spine Journal* Volume 12, Issue 5, Pages 381-388, May 2012

Multifidus cross-sectional area was often measured in chronic low back pain (LBP) patients to estimate the muscle activity for spinal stability. However, such estimation may be inadequate as the contribution of muscle elasticity in muscle activity is ignored. In vivo quantitative data on multifidus elasticity is therefore important for the study of muscle contractile function in response to motor control for spinal stability in chronic LBP patients.

Purpose: The purpose of this study was to quantify the elasticity, cross-sectional area, and fat area of the multifidus for the contractile function and the distribution of deformable muscle tissue and nondeformable fat tissue at different postures in patients with and without chronic LBP.

Study design/setting: This is a prospective study. Force-deformation data of the multifidus were acquired using ultrasound elastography. The anatomical changes of the multifidus were measured on the cross-sectional images of the multifidus acquired using B-mode ultrasound imaging.

patient sample: The sample comprised 12 adult male patients with chronic LBP and 12 asymptomatic male controls.

Outcome measures: The outcome measure was the elasticity of the multifidus at the L4 level for the assessment of muscle contractile function when patients were in the prone, upright, and 25° and 45° forward stooping positions. The cross-sectional area and fat area were also measured on the B-mode ultrasound images of the multifidus acquired at the same vertebral level and the postures. **Methods:** With the patients in each of the prone, upright, and 25° and 45° forward stooping positions, ultrasound elastography and B-mode ultrasound imaging were performed on the left and right multifidus at the L4 level. The elasticity of multifidus indicated by the effective Young's modulus was derived from the force-deformation data acquired using ultrasound elastography. The cross-sectional area and fat area were assessed on the B-mode ultrasound images. The effective Young's modulus, cross-sectional area, and fat area were analyzed with multivariate general linear model analysis to investigate the possible effects of LBP and posture.

Results: There was an increasing stiffness of multifidus demonstrated by increasing effective Young's modulus from the prone to upright position and 25° and 45° forward stooping positions. Differences in multifidus stiffness between chronic LBP patients and asymptomatic controls were shown in the upright and 25° and 45° forward stooping positions but not in the prone position. The cross-sectional area of the multifidus increased from the prone position to the greatest value in the upright position and decreased in 25° and 45° forward stooping positions. Smaller multifidus cross-sectional area was demonstrated in chronic LBP patients than that in controls at all postures. No effect of posture on fat area within the multifidus was shown although the fat area within the multifidus was larger in chronic LBP patients.

Conclusions: Different, changing patterns of elasticity and cross-sectional area were identified in the multifidus in relation to posture. Increased stiffness of multifidus in response to the physiologic range of static loads and smaller cross-sectional area was characterized in the chronic LBP condition for spinal stability. Ultrasound elastography offers in vivo assessment of muscle contractile function of deep trunk muscles, which benefits the future investigation of the neuromuscular regulating mechanism in LBP. It can also be applied to refine the palpatory skill for the physical assessment in sports training and physical therapy.

Manipulation/Red flags

J Neuroimaging. 2012 Jul 20. doi: 10.1111/j.1552-6569.2012.00706.x.

Cerebral Embolus Following Chiropractic Manipulation in a Patient with a Calcified Carotid Artery.

Dandamudi VS, Thaler DE, Malek AM.

Source

From the Departments of Neurosurgery (VSD, AMM) and Neurology (VSD, DET, AMM), Tufts Medical Center and Tufts University School of Medicine, Boston, MA.

Abstract

BACKGROUND AND PURPOSE:

Dissection of the cervicocranial vessels is the principal cause of ischemic brain injury following cervical spinal manipulation. Cervical spinal manipulation leading to cerebral embolus in the absence of dissection is not described in the literature. Current case documents cerebral embolism originating from extensively calcified internal carotid artery immediately following cervical spinal manipulation in the absence of dissection.

METHODS:

We describe a case and imaging findings of a 63-year-old male who underwent cervical spinal manipulation and developed sudden onset of left-arm numbness and weakness.

RESULTS:

Computed tomography angiography demonstrated extensively calcified right internal carotid artery at the site of redone carotid endarterectomy as well as calcified embolus in the right inferior middle cerebral artery.

CONCLUSIONS:

Calcified carotid artery may be at risk for embolization following cervical spinal manipulation. Our recommendation is that, patients with extensively calcified carotid arteries should refrain from aggressive neck maneuvers and cervical spine manipulation therapy to avoid liberation of cerebral embolus. *J Neuroimaging* 2011;XX:1-2.

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LBP//Pregnancy

Prevalence and Factors Associated With Low Back Pain and Pelvic Girdle Pain During Pregnancy: A Multicenter Study Conducted in the Spanish National Health Service

□ **Spine, 08/06/2012 Clinical Article**

Kovacs FM et al. –

Factors associated with a higher risk vary between low back pain (LBP) and PGP. History of LBP, related or not to previous pregnancy or postpartum, LBP surgery, and anxiety were the factors more strongly associated with pregnancy-related LBP. When these variables are taken into account, obstetrical data from current or previous pregnancies and other variables do not show a significant association with LBP. Stage of pregnancy and depression were associated with pelvic girdle pain (PGP).

Methods

- Sixty-one clinicians across 5 regions in Spain recruited 1158 women with a median (interquartile range) pregnancy of 35 (range, 31–38) weeks.
- Validated methods were used to gather data on the prevalence of LBP, LP, and PGP, anthropometric and sociodemographic characteristics, history of LBP, obstetrical history, physical activity before and during pregnancy, mattress and sleep characteristics, disability, anxiety, and depression.
- Separate multiple logistic regression models were developed to identify the variables associated with LBP, LP, and PGP.

Results

- The 4-week prevalence of LBP, LP, and PGP was 71.3%, 46.2%, and 64.7%, respectively.
- Main factors associated with a higher likelihood of reporting pain for LBP were history of LBP related and unrelated to previous pregnancy and postpartum, pain augmenting with time spent in bed, and anxiety.
- Previous lumbar surgery was associated with a lower risk.

The factors associated with a higher likelihood of reporting LP were reporting LBP, lower academic level, younger age, depression, a lower number of hours of sleep per day, and a higher BMI, and for PGP were higher score for depression, a higher body mass index, and a more advanced stage of pregnancy

LBP/Education

Effectiveness of preventive back educational interventions for low back pain: a critical review of randomized controlled clinical trials □

European Spine Journal, 08/06/2012

Demoulin C et al. –

The results of the RCTs included in this review suggest that educational interventions mainly focused on a biomechanical/biomedical model are not effective in preventing low back pain (LBP). However, taking into account the methodological quality level of the RCTs as well as the very short and heterogeneous interventions often proposed, additional high-quality studies with a longer education period are needed to conclude that such interventions are inefficient.

Methods

- The Pubmed electronic database and the Cochrane Library were searched based on a combination of keywords related to low back pain (LBP) and posture education.
- Only randomized controlled trial (RCT) studying the efficiency on outcomes directly related to LBP of a preventive intervention programme mainly based on education of proper care of the back for subjects not seeking treatment were included.
- References of the articles meeting these inclusion criteria were also checked to identify other potential citations.
- Besides, a methodological study assessment of the included RCTs was performed.
- Nine studies, all conducted at the workplace were included in this review.

Results

- Their mean quality level was low (5.1/12) and among the four studies with a huge sample size ($n > 400$ subjects), only one had an acceptable methodological quality score (6/12).
- The education interventions differed widely from one study to another.

No significant differences between the control and education groups were found at the follow-up in eight out of the nine studies on the incidence of back pain, disability and sick leave.

Disc/End plate

Spine (Phila Pa 1976). 2012 Aug 1;37(17):1490-6.

ISSLS Prize Winner: Lumbar Vertebral Endplate Lesions: Associations With Disc Degeneration and Back Pain History.

Wang Y, Videman T, Battié MC.

Source

*Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, Alberta, Canada

†Department of Orthopedic Surgery, The First Affiliated Hospital of Medical School of Zhejiang University, Hangzhou, People's Republic of China.

Abstract

STUDY DESIGN.: An autopsy study. **OBJECTIVE.:** To investigate associations between various types of lumbar endplate lesions, disc degeneration (DD), and back pain history. **SUMMARY OF BACKGROUND DATA.:** The well-innervated vertebral endplate has been suspected as a source of back pain. Previously, we observed 4 types of lumbar endplate lesions with distinct morphological characteristics. Their roles in DD and back pain remain unclear. **METHODS.:** From a lumbar spine archive of 136 men (mean age, 52 yr), back pain, back injury, and occupation history data for 69 subjects and discography data for 443 discs from 109 subjects were available for study. Back pain history was categorized as none, occasional, or frequent. DD was judged from discography. Endplate lesions were classified as Schmorl's nodes, fracture, erosion, or calcification, and lesion size was rated as none, small, moderate, or large. Associations between endplate lesions and DD, back pain history, back injury, and occupation history were examined. **RESULTS.:** Presence of endplate lesions was associated with frequent (odds ratio [OR] = 2.57) but not occasional back pain. However, large endplate lesions were associated with both occasional (OR = 8.68) and frequent (OR = 17.88) back pain. This association remained after further controlling for DD. Also, the presence of each type of endplate lesion was associated with adjacent DD (OR = 2.40-9.71), with larger lesions associated with more severe DD. Endplate erosion lesions were more strongly associated with adjacent DD than Schmorl's nodes. Although back injury history was associated with the presence of fracture and erosion lesions, heavy occupation was associated with the presence of Schmorl's nodes. **CONCLUSION.:** Endplate lesions are associated with back pain as well as being closely associated with adjacent DD, with a clear dosage effect. Different types of endplate lesions seem to have different magnitudes of associations with DD. Lumbar endplate lesions may be an important key to better understand both DD and back pain

Hip

PM R. 2012 Jul;4(7):479-87. Epub 2012 May 16.

Clinical Outcomes Analysis of Conservative and Surgical Treatment of Patients With Clinical Indications of Prearthritic, Intra-articular Hip Disorders.

Hunt D, Prather H, Harris Hayes M, Clohisy JC.

Abstract

OBJECTIVE:

To describe outcomes of the conservative treatment of patients who had the clinical presentation of a prearthritic, intra-articular hip disorder, including acetabular labral tears, developmental hip dysplasia, and femoroacetabular impingement.

DESIGN:

Prospective observational clinical outcomes study.

SETTING:

Outpatient orthopedic clinic at a tertiary university hospital.

PATIENTS:

Patients presenting with prearthritic, intra-articular hip disorders were recruited. Fifty-eight consecutive patients were enrolled; 6 were lost to follow-up, and 52 subjects completed the study.

METHODS:

Patients were recruited on the basis of symptoms, distribution of pain, and the findings of a physical examination. Radiographic measurements of the hip were obtained for all subjects to describe the presence or absence and extent of deformity and/or osteoarthritis. All subjects completed a directed course of conservative treatment. After 3 months of conservative care, subjects with continued limitations, reduction of symptoms with a diagnostic intra-articular hip injection, and a surgically amenable lesion found on a magnetic resonance arthrogram proceeded to surgery.

MAIN OUTCOME MEASUREMENTS:

Numeric Pain Score (0-10), Short Form-12, Modified Harris Hip Score, Western Ontario and McMaster Universities Osteoarthritis Index, Nonarthritic Hip Score, Baecke Questionnaire of Habitual Activity, and patient choice to have surgery.

RESULTS:

Fifty-eight patients (9 men and 49 women) with a mean age of 35 ± 11 years (range, 18-50 years) enrolled in the study. Fifty-two subjects completed the study. Twenty-three subjects (44%) reported satisfaction with conservative care. Twenty-nine subjects (56%) chose to have surgery. Both groups demonstrated equally significant improvement (P value ranges: $P = .03$ to $P = .0001$) in all outcome measures from baseline to 1-year follow-up. Subjects who chose surgery had higher baseline activity scores compared with the conservative treatment group ($P = .02$).

CONCLUSION:

All subjects with signs and symptoms of prearthritic, intra-articular hip disorders who were treated with conservative treatment alone and with conservative treatment followed by surgery demonstrated significant improvement in pain and functioning from baseline to 1 year. Forty-four percent of patients improved with conservative care alone, and 56% chose to have surgery after receiving conservative care. Persons with more active lifestyles were more likely to choose surgery. These data suggest that a trial of conservative management for persons with prearthritic, intra-articular hip disorders should be considered before engaging in surgical intervention.

Acid Reflux

Multimodality evaluation of patients with gastroesophageal reflux disease symptoms who have failed empiric proton pump inhibitor therapy □ Diseases of the Esophagus, 08/06/2012 **Clinical Article**

Galindo G et al. – Patients with persistent gastroesophageal reflux disease (GERD) symptoms despite empiric proton pump inhibitors (PPIs) therapy benefit from multimodality evaluation that may change the diagnosis and guide therapy in more than one third of such cases. Because symptoms are not specific and overlap diagnoses are frequent and multifaceted, objective evidence–driven therapies should be considered in such patients.

Methods

- Over 3 years, 275 patients (147 men and 128 women) aged 16–89 years underwent complete multimodality testing.
- Forty percent (n=109) had nonerosive reflux disease (esophagogastroduodenoscopy [EGD]–, biopsy–, pH+); 19.3% (n=53) had erosive esophagitis (EGD+); 5.5% (n=15) Barrett's esophagus (EGD+, metaplasia+); 5.5% (n=15) eosinophilic esophagitis (biopsy+); 2.5% (n=7) had achalasia and 5.8% (n=16) other dysmotility (motility+, pH–); 16% (n=44) had functional heartburn (EGD–, pH–), and 5.8% (n=16) had gastroparesis (gastric scan+).
- Cumulative symptom scores for chest pain, heartburn, regurgitation, and dysphagia were similar among the groups (mean range 1.1–1.35 on a 0–3 scale).

Results

- Multimodality evaluation changed the diagnosis of GERD in 34.5% of cases and led to or guided alternative therapies in 42%.

Overlap diagnoses were frequent: 10/15 (67%) of patients with eosinophilic esophagitis, 12/16 (75%) of patients with gastroparesis, and 11/23 (48%) of patients with achalasia or dysmotility had concomitant pathologic acid reflux by pH studies.

Commentary by Adrian Lowe

A Neuroscience View of the Maitland Concept

I am sure this editorial will cause outrage from two different groups. On the one side, the pure pain scientist will take huge issue with comments made in this editorial and at the other end purist manual therapists may think I am trying to tinker with something pure and even holy. Neither of these are my intention. I am preparing a

Adriaan Louw

skilled masters. Techniques can be taught and learned, but how a therapist interacts and views his or her patient is vital. For example, right now there's a huge push for spinal manipulation by physical therapists. Week after week I watch young, go-getter therapists learn the skills to do the technique mechanically very well, but am not sure how their patients may experience these techniques. I watch intently a video from years gone by of Geoff Maitland treating a patient (likely a student needing some extra pocket money) and skill wise – how can you challenge Geoff? But there's more...it's how he does what he does: It's all about...the patient!

2. Severity and irritability: I have heard criticism of the severity and irritability recognition for a while. Many pain therapists believe a large proportion of severity and irritability we have detected for years in a typical Maitland evaluation is due to irritability of symptoms due to nervous system sensitization, rather than tissues. The premise is that careful examination may reveal a patient presenting with tissues injured in such a manner that it causes severe pain (I know...tissues don't cause pain) and processes such as inflammation of the damaged tissues may be aggravated (flared) with aggressive examination and treatment. If we put aside the issue of tissues causing pain and poorly understood biological processes in the original intent of the screening for severity and irritability, Maitland did, however teach therapists to carefully examine patients and follow rule number one in medicine – do no harm. It is also interesting that Maitland did allow for examination and treatment of patients with high severity and irritability – but lighter techniques. SO – no fight through the pain, nor stop short of pain, but gentle, graded exposure to movement, hands-on treatment in a safe, accepting, healing environment.

series of pain lectures for serious manual therapists with a big Maitland influence. Sure, the lecture will feature all the good parts of the neuromatrix: pain as an output; multiple systems; and neuroplastic events surrounding a pain experience. The more I work on the lecture and reflect, and trying to “keep everyone happy” I find myself wondering if what we do now is so much better than before. Yes, we may use fancy words such as neuroscience, periaqueductal grey area and hyperalgesia, but I believe if we carefully view Geoff Maitland's approach, we may find a few neuroscience gems. I found 10 to focus on and I am sure I will be flooded with more:

1. Approach to the patient: The Maitland Concept is an approach to the patient. The patient is the cornerstone of the equation, not the technique. This central theme is very important in pain, especially considering that pain experiences are individual and personal. Focus on a patient, including his and her goals, knowledge, aspirations and expectations, helps treatment to be directed to the individual. In a simple procedural approach such as injection therapy, it's about...the technique. I have watched hundreds of therapists over the years practice, be it students, novice therapists and then the experienced

3. Focusing on signs and symptoms: If therapists buy the Maitland handbook to get updated on the latest pathologies related to spinal disorders they will be in for a surprise. Maitland never really discussed/focused on specific pathological issues, but rather signs and symptoms. Watching Geoff examining a patient with right sided neck pain with limited rotation to the right and extension, they are never

provided a biological explanation of their pain, but rather treatment focuses on clearing the signs and symptoms. Sure, research indicates patients need to be educated, but if we figure how „negative“ biomedical information (herniation, bulges, tear, rip, torn) have induced fear and anxiety, it could be argued that de-emphasizing these anatomical issues may have been an important part in treatment. Day after day I watch therapists displaying their knowledge; look at me, I am so smart and let me tell you everything you need to know (and more) about YOUR bulging disc. De-emphasizing tissue injury is a critical part of therapeutic neuroscience education.

4. Gentle oscillations: Think back to the years Geoff Maitland developed his Concept. The development of the Concept was surrounded by Cyriax, Grieve and Kaltenborn. Have you ever watched a Cyriax manipulation? Sure, Cyriax was skilled beyond anyone, but in an age of aggressive, strong manual therapy. Geoff introduced a gentle series of oscillatory techniques believed to help people recover from pain and disability. This approach has so many neat pain implications. First, the pain gate. Yes, Melzack has exhorted us to move beyond the pain gate, but gentle oscillating large amplitude motions can be seen as a modulation effect on nociceptive input to the CNS. Secondly, gently, always under the patient’s control, mobilizations are safe and allows for movement and therapy in a less fearful environment. Third, and by no means least, could gentle REPETITIVE oscillations on a spinal level, often at various angles help restore body maps in the brain? A patient experiences pain at L4. Gentle oscillations at 30-60 seconds, angled cephalad or caudad may in fact help solidify that level (L4) in the brain thus altering its representation. Ever notice how after a few PA mobilizations as part of the examination a patient moves better, even after receiving “no treatment?”

5. Test and re-test: A cornerstone of the Maitland Concept is test, re-test maneuver. Test a patient’s ability to flex his or her shoulder and it elevates to 90 degrees flexion. Lie down, treat and then re-test. Now the arm rises to 100 degrees. In pain science we know the importance of vision. In the now famous rubber hand illusion, we can trick the brain to feel sensation in a rubber hand. Apart from various complex neuroplastic events in the brain, vision is VERY powerful and often dominates. Think of mirror therapy. Surely a brain is smart to “know” it’s not my hand or foot, but vision wins. How powerful for a brain to see an arm 5 minutes later being raised a lot higher. Change in perception of threat? By the way, for this to work, you better know your stuff and make sure it gets better!!

6. Clinical reasoning: Likely the biggest contribution of The Maitland Concept is clinical reasoning, teaching us to think critically. It’s interesting that every pain class I have taught starts with this – how you think. Critical thinking. Thinking about your thinking. The more complex pain gets the more important this becomes. Making fewer errors in reasoning and judgment. The more complex pain gets the more lateral thinking may be required. Analytical assessment, constant assessment, etc. Since pain is so complex and individualized, recipes are less likely to work for chronic pain, compared to grade I acute ankle sprains and surely clinical reasoning is needed more than ever before. Clinical reasoning includes patient education and changing THE PATIENT’S reasoning about their condition, care and prognosis.

7. Hands-on and Manipulation: Yes, we know...current best-evidence for chronic pain asks us to reconsider hands-on treatment, since chronic pain is less about a specific joint, but bigger, larger systems and issues such as endocrine, immune, brain and more. It must, however, be stated that various hands-on treatment, including manipulation have shown activation of the descending inhibitory mechanisms to help modulate acute pain. Modulating acute pain may just be one of the most potent ways to treat chronic pain...prevent it! Hands-on, human touch and interaction are vital components of treatment in patients with a pain experience. Maitland, as much as he may have been criticized for “not showing exercises” focused on treatment seemingly very beneficial for the acute and sub-acute patients. Did we mention hands-on is important? I love this quote: “The more impressive the procedure, the more powerful the placebo effect.”

8. Placebo: Placebo is not fake; as in fake treatment, but enhancing the endogenous mechanisms in the

brain to modulate pain. Entrenched in this is expectation. My colleague, Louie recently published his clinical prediction rule for cervical spine manipulation and found patient expectations as a critical factor in predicting success. It is proposed that people coming to therapy, expecting to be treated, carry “endogenous healing” inside of them; expecting to get better. Could you imagine what patients must have “carried within them” driving to see....Geoff Maitland!

9. Language: Yes, Aussies have a very unique language, but this is not about that. We are driven by insurance companies and regulatory groups to ask pain ratings. We know asking people pain ratings results in increased pain ratings and heightened sensitivity. In the Maitland Approach, if a patient reported their hip pain as a deep, bruising ache, the therapist was asked to always refer to that complaint as...your deep, bruising ache. We have become accustomed to call everything „pain“. We know the word pain is a powerful activator or propellant of the pain neuromatrix. Could “deep, bruising ache” cause less of a sensitivity response than PAIN? I think so...

10. Slump test: Geoff Maitland in a video interview describes to Mark Jones how he worked out some of the mechanics of the slump test. Neck flexion increased leg pain. Surely there must be more. Yes, the “neural tension” of those days were crude, viewed from our current vantage point, but it shows bigger thinking, looking somewhere else and...clinical reasoning.

If you view this simple editorial about The Maitland Concept, I stand amazed looking back at pioneers like Geoff, our explosion of knowledge, how I have grown as a therapist and now scientist to see a bigger, broader picture of something I have been indoctrinated in for what it is....

If you think there are more of these pain gems from an approach such as Maitland...drop us a line...Adriaan Louw