

From: September 29, 2014

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From: September 29, 2014

LUMBAR SPINE

Bracing

Spine (Phila Pa 1976). 2014 Oct 1;39(21):1733-42. doi: 10.1097/BRS.0000000000000521.

A randomized clinical trial comparing extensible and inextensible lumbosacral orthoses and standard care alone in the management of lower back pain.

Morrisette DC1, Cholewicki J, Logan S, Seif G, McGowan S.

Abstract

STUDY DESIGN: Single blinded, randomized clinical trial for the evaluation of lumbosacral orthoses (LSOs) in the management of lower back pain (LBP).

OBJECTIVE: To evaluate the effects of two types of LSOs on self-rated disability in patients with LBP.

SUMMARY OF BACKGROUND DATA: LSOs are commonly used for the management of LBP, but their effectiveness may vary because of design. An inextensible LSO (iLSO) reduces trunk motion and increases trunk stiffness, whereas an extensible LSO (eLSO) does not.

METHODS: A total of 98 participants with LBP were randomized to 3 groups: (1) standard care (SC) group, which included medication and physical therapy (n = 29), (2) SC with eLSO (eLSO group) (n = 32), and (3) SC with iLSO (iLSO group) (n = 37). Outcome measures were evaluated before and after 2 weeks of treatment: modified Oswestry Disability Index (ODI), Patient Specific Activity Scale, pain ratings, and Fear Avoidance Beliefs Questionnaire.

RESULTS: There were no statistically significant differences between groups at baseline. Compared with the SC alone, iLSO group showed greater improvement on the ODI scores (P = 0.01) but not the eLSO group. The ODI scores improved by a mean of 2.4 (95% confidence interval [CI], 2.2-7.1), 8.1 (95% CI, 2.8-13.4), and 14.0 (95% CI, 8.2-19.8) points for SC, eLSO, and iLSO groups, respectively. Individuals wearing the iLSO had 4.7 times higher odds of achieving 50% or greater improvement in the ODI scores than those assigned to SC (95% CI, 1.2-18.5, P = 0.03). Both the eLSO and iLSO groups had a greater improvement in the Patient Specific Activity Scale scores than the SC group (P = .05 and P = 0.01, respectively), but the change did not meet the minimal clinically important difference. Pain ratings improved for all 3 groups, with no statistical difference between them. Finally, no significant differences across groups were found for the Fear Avoidance Beliefs Questionnaire.

CONCLUSION: An iLSO led to greater improvement in ODI scores than SC and an eLSO. We surmise that the likely mechanism responsible for this difference in outcome was the added trunk stiffness and motion restriction by the iLSO.

LEVEL OF EVIDENCE: 2. PMID: 25054648

From: September 29, 2014

Low back pain beliefs

Phys Ther. 2014 Sep 25.

Back Pain Beliefs Are Related to the Impact of Low Back Pain in Baby Boomers in the Busselton Healthy Aging Study.

Beales D1, Smith A2, O'Sullivan P3, Hunter M4, Straker L5.

Abstract

BACKGROUND: Back pain beliefs (BPB) are an important modifiable factor related to low back pain (LBP) associated disability. BPB have not been characterized in baby boomers, a group at risk of decreased activity levels and reduced productivity.

OBJECTIVE: Identify factors related to BPB and evaluate the association between LBP disability and beliefs.

DESIGN: Cross-sectional survey of community-dwelling baby boomers (born 1946-1964).

METHODS: 958 baby boomers (mean age=56.2 years) attending the Busselton Healthy Aging Study provided their history of LBP, BPB, LBP behaviours related to care seeking (taking medication, seeking professional help) and activity modification (missing work, interference with normal activities, interference with recreational activities), LBP related disability and additional covariates with known associations with BPB. Regression analyses were used to i) identify factors associated with more positive beliefs and ii) test the association between more positive beliefs and lower LBP disability, independent of other correlates of BPB.

RESULTS: More positive BPB were associated with younger age, better mental wellbeing and higher income, while more negative beliefs were associated with being on sickness/disability benefits and experience of LBP in the last month. In participants reporting experience of LBP within the last month, more positive BPB were associated with lower disability scale scores and a decreased probability of interference with usual activities, independent of pain intensity, age, mental wellbeing, income, and employment status.

LIMITATIONS: Cross-sectional analysis limits assessment of causality.

CONCLUSIONS: Poorer BPB were associated with greater disability. Characterization of the relationships between BPB and LBP associated behaviours and disability in baby boomers can assist in developing interventions to improve activity participation and productivity, potentially reducing the burden of LBP in this age group.

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From: September 29, 2014

LBP

Scheuermann Disease

Radiological Signs of Scheuermann Disease and Low Back Pain: Retrospective Categorization of 188 Hospital Staff Members With 6-Year Follow-up

Liu, Ning; Guo, Xihu; Chen, Zhongqiang;

Spine. 39(20):1666-1675, September 15, 2014.

Study Design. Retrospective cohort study.

Objective. To investigate the relationship between radiological signs of Scheuermann disease (SD) and low back pain (LBP) in a local population using lumbar magnetic resonance (MR) images.

Summary of Background Data. SD is a spinal disorder, and both its classic and atypical (lumbar) forms are associated with LBP. However, radiological signs of SD are present in 18% to 40% of the general population, in whom the clinical significance of “SD-like” spine remains largely unknown.

Methods. This retrospective cohort study included 188 staff members from a single hospital. Participants' lumbar MR images and self-administered questionnaires concerning demographic information, LBP status, consequences, and functional limitations were collected. Participants were classified into 2 groups according to whether lumbar MR images met SD diagnostic criteria, and LBP status, consequences, and functional limitation were compared. Follow-up interviews were conducted after 6 years to compare LBP progression.

Results. Thirty-four participants (18.1%) had SD-like spine. Rates of lifetime, previous 1-year, and point LBP did not significantly differ between groups. However, among participants who had ever had LBP, SD-like spine was associated with higher rates of work absence (42.1% vs. 9.5%, $\chi^2 = 9.620$, $P = 0.002$) and seeking medical care (68.4% vs. 39.2%, $\chi^2 = 5.216$, $P = 0.022$) due to LBP, as well as significantly greater intensity of the most severe LBP episode in the past 2 years (6.4 ± 2.5 vs. 4.1 ± 2.5 , $t = 3.564$, $P = 0.001$). Among the 159 participants who completed the 6-year follow-up, a significantly higher proportion of people with SD-like spine reported aggravated LBP during the follow-up.

Conclusion. Our results suggest that in the general population, lumbar MR images of many people meet SD diagnostic criteria, and having SD-like spine seemed to be associated with the severity and progressive nature of LBP. Our findings should inspire further research in this field.

Level of Evidence: 3

From: September 29, 2014

Isolation and LBP

Eur J Pain. 2014 Sep 3. doi: 10.1002/ejp.578.

Patients' perceived level of social isolation affects the prognosis of low back pain.

Oliveira VC1, Ferreira ML, Morso L, Albert HB, Refshauge KM, Ferreira PH.

Abstract

BACKGROUND:

Perceived social isolation is prevalent among patients with low back pain (LBP) and could be a potential prognostic factor for clinical outcomes following an episode of LBP.

METHODS:

A secondary analysis of an original prospective cohort study, which investigated the validity of the Danish version of the STarT Back Screening Tool (STarT), investigated whether social isolation predicts the clinical outcomes of disability, anxiety, depression and pain catastrophizing in people with LBP. Patients with LBP of any duration (N = 204) from Middelfart, Denmark, were included. Social isolation was measured at baseline using the friendship scale (score ranges from 0 to 24, with lower values meaning higher perceived social isolation), and outcomes were measured at baseline and at 6-month follow-up. Regression models investigated whether social isolation at baseline predicted the outcomes at 6-month follow-up.

RESULTS:

Some level of social isolation was reported by 39.2% of the participants (n = 80) with 5.9% (n = 12) being very socially isolated. One-point difference on social isolation predicted one point on a 100-point disability scale (adjusted unstandardized coefficient: -0.91; 95% confidence interval (CI): -1.56 to -0.26). Social isolation predicted anxiety; however, a change of one point on the social isolation scale represents a difference of only 0.08 points on a 22-point scale in anxiety (95% CI: 0.01-0.15) and is unlikely to denote clinical importance. Social isolation did not predict pain catastrophizing or depression.

CONCLUSIONS:

Patients' perceived social isolation predicts disability related to LBP. Further understanding of the role of social isolation in LBP is warranted.

From: September 29, 2014

In pregnancy

Women's experiences of low back pain during pregnancy

Journal of Back and Musculoskeletal Rehabilitation, 10/01/2014 Evidence Based Medicine Clinical Article

Mota MJ, et al.

This study investigated the self-reported prevalence and impact of low back pain (LBP) during pregnancy in primiparous and multiparous women, and their treatment-seeking rationales and experiences, including their use of physiotherapy. LBP is a prevalent and important clinical condition affecting the daily life of many pregnant women. Nevertheless, few women seek any treatment and physiotherapy is rarely considered so given the significant impact on quality of life, health professionals need to be proactive in asking women about LBP.

Methods

A sample of 105 post-partum women was recruited.

All participants answered a questionnaire; women who experienced LBP during pregnancy (n=71) continue in the study and later they were also interviewed.

Content analysis, descriptive and inferential statistics were used to analyse the data.

Results

Reports of LBP were common (n=71; 67.6%) and slightly more frequent in primiparous (n=40; 56.3%) than multiparous (n=31; 43.7%) women.

Multiparous women with LBP were significantly older ($p < 0.001$) and reported more sleep disturbances ($p = 0.026$) than primiparous women with LBP.

LBP prevented women performing their daily activities (n=41; 57.7%) and worsened with the advance of pregnancy (n=55; 77.5%), yet 93.0% (n=66) of these women received no treatment.

From: September 29, 2014

Pain and parents

Eur J Pain. 2014 Sep 29. doi: 10.1002/ejp.599.

Neck/upper back and low back pain in parents and their adult offspring: Family linkage data from the Norwegian HUNT Study.

Lier R1, Nilsen TI, Vasseljen O, Mork PJ.

Author information

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Abstract

BACKGROUND:

Chronic pain in the neck and low back is highly prevalent. Although heritable components have been identified, knowledge about generational transmission of spinal pain between parents and their adult offspring is sparse.

METHODS:

This study examined the intergenerational association of spinal pain using data from 11,081 parent-offspring trios participating in the population-based HUNT Study in Norway. Logistic regression was used to calculate adjusted odds ratios (ORs) with 95% confidence intervals (CIs) for offspring spinal pain associated with parental spinal pain.

RESULTS:

In total, 3654 (33%) offspring reported spinal pain at participation. Maternal and paternal spinal pain was consistently associated with higher ORs for offspring spinal pain. The results suggest a slightly stronger association for parental multilevel spinal pain (i.e., both neck/upper back pain and low back pain) than for pain localized to the neck/upper back or low back. Multilevel spinal pain in both parents was associated with ORs of 2.6 (95% CI, 2.1-3.3), 2.4 (95% CI, 1.9-3.1) and 3.1 (95% CI, 2.2-4.4) for offspring neck/upper back, low back and multilevel spinal pain, respectively.

CONCLUSION:

Parental chronic spinal pain was consistently associated with increased occurrence of chronic spinal pain in their adult offspring, and this association was particularly strong for multilevel spinal pain.

From: September 29, 2014

DISC

Resorption

Eur Spine J. 2014 Sep 25

Three-dimensional analysis of volumetric changes in herniated discs of the lumbar spine: does spontaneous resorption of herniated discs always occur?

Seo JY1, Roh YH, Kim YH, Ha KY.

Abstract

PURPOSE:

To investigate volumetric changes in lumbar disc herniation (LDH) using three-dimensional measurements obtained by magnetic resonance imaging (MRI) and to identify possible factors affecting such changes.

METHODS:

Between January 2004 and December 2011, 43 patients who underwent conservative treatment for LDH were enrolled. In all, 56 disc levels were investigated. MRI was performed on two or more occasions (minimally, at the initial visit and 6 months later). The volume of each herniated disc was determined. For each patient, disc migration, morphology, initial LDH size, and clinical outcome were evaluated.

RESULTS:

The mean volumes of herniated discs at the initial and follow-up visits were $1,304.57 \pm 837.99$ and 993.84 ± 610.04 mm³, respectively. The mean change in volume from the initial to the follow-up visit was 310.73 ± 743.60 mm³. Volumes decreased at 35 disc levels and increased at 21 levels. The disc containment, the extent of LDH, the initial size of the herniated disc, and the degree of intactness of the posterior longitudinal ligament were significantly correlated with disc resorption and an increase in disc volume ($p = 0.01$, $p = 0.018$, $p = 0.001$, and $p < 0.001$, respectively). No significant association was evident between disc volumetric change and clinical outcome.

CONCLUSIONS:

We observed that LDH is a dynamic disease and that a herniated disc is not always spontaneously resorbed, in contrast to what has been reported previously. Alleviation of clinical symptoms can be achieved via conservative treatment even if the volume of the herniated disc changes. Spinal surgeons should not only present an option of initial non-surgical treatment to LDH patients but should also inform them that the LDH may change in size during daily activity or exercise.

PMID: 25253299

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SURGERY/LBP

Fusions

Spine (Phila Pa 1976). 2014 Sep 1;39(19):1584-9. doi: 10.1097/BRS.0000000000000486.

National trends in the use of fusion techniques to treat degenerative spondylolisthesis.

Kepler CK1, Vaccaro AR, Hilibrand AS, Anderson DG, Rihn JA, Albert TJ, Radcliff KE.

Abstract

STUDY DESIGN:

Retrospective review.

OBJECTIVE:

(1) To describe change in treatment patterns for degenerative spondylolisthesis (DS). (2) To report regional variation in treatment of DS. (3) To describe variation in surgeon-reported outcomes for DS based on treatment.

SUMMARY OF BACKGROUND DATA:

Spinal stenosis associated with DS is commonly treated with decompression and fusion but little is known about the optimal fusion technique. During a 6-month period, American Board of Orthopaedic Surgery step II candidates submit procedure lists; these lists have been stored in an electronic database since 1999.

METHODS:

The American Board of Orthopaedic Surgery database was retrospectively queried to identify patients who underwent surgery for DS from 1999 to 2011. Included patients underwent uninstrumented fusion, fusion with posterior instrumentation, fusion using interbody device, or decompression without fusion. Utilization of these procedures was analyzed by year and geographic region.

RESULTS:

The study period included 5639 cases; the annual number of cases doubled during the study period. The percentage of cases treated with interbody fusion (IF) increased significantly throughout the study period, from 13.6% (1999-2001) to 32% (2009-2011) ($P < 0.001$). The percentage of DS cases treated with posterolateral fusion peaked in 2003 then decreased as the rate of IF increased. In 2011, the rates of posterolateral fusion (40%) and posterolateral fusion with IF (37%) were nearly identical. The Northwest had the highest rate of IF (41%), >10% higher than any other region ($P < 0.001$) and more than 23% higher than the Southeast ($P < 0.001$).

CONCLUSION:

Despite little evidence guiding treatment strategy for DS, national treatment patterns have changed dramatically during the past 13 years. The rapid adoption of IF and substantial regional variation in treatment utilization patterns raises questions about drivers of change including perceptions about associated fusion rates, the importance of sagittal balance and differential reimbursement.

LEVEL OF EVIDENCE: 4. PMID: 24979276

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Minimally invasive fusions

Eur J Radiol. 2014 May 9. pii: S0720-048X(14)00212-5. doi: 10.1016/j.ejrad.2014.04.012.

Minimally-invasive posterior lumbar stabilization for degenerative low back pain and sciatica. A review.

Bonaldi G1, Brembilla C2, Cianfoni A3.

<http://www.ncbi.nlm.nih.gov/pubmed/24906245>

Abstract

The most diffused surgical techniques for stabilization of the painful degenerated and instable lumbar spine, represented by transpedicular screws and rods instrumentation with or without interbody cages or disk replacements, require widely open and/or difficult and poorly anatomical accesses. However, such surgical techniques and approaches, although still considered "standard of care", are burdened by high costs, long recovery times and several potential complications. Hence the effort to open new minimally-invasive surgical approaches to eliminate painful abnormal motion. The surgical and radiological communities are exploring, since more than a decade, alternative, minimally-invasive or even percutaneous techniques to fuse and lock an instable lumbar segment. Another promising line of research is represented by the so-called dynamic stabilization (non-fusion or motion preservation back surgery), which aims to provide stabilization to the lumbar spinal units (SUs), while maintaining their mobility and function. Risk of potential complications of traditional fusion methods (infection, CSF leaks, harvest site pain, instrumentation failure) are reduced, particularly transitional disease (i.e., the biomechanical stresses imposed on the adjacent segments, resulting in delayed degenerative changes in adjacent facet joints and discs).

Dynamic stabilization modifies the distribution of loads within the SU, moving them away from sensitive (painful) areas of the SU. Basic biomechanics of the SU will be discussed, to clarify the mode of action of the different posterior stabilization devices. Most devices are minimally invasive or percutaneous, thus accessible to radiologists' interventional practice. Devices will be described, together with indications for patient selection, surgical approaches and possible complications.

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KEYWORDS: Degenerative disk disease; Dynamic fixation; Interspinous spacer; Low back pain; Lumbar fusion; Lumbar interspinous devices; Minimally invasive surgery; Spinal surgery

PMID: 24906245

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Lumbosacral disc herniations

Spine (Phila Pa 1976). 2014 Oct 1;39(21):1792-800. doi: 10.1097/BRS.0000000000000510.

Pre- and postoperative evaluation of patients with lumbosacral disc herniation by neurophysiological and clinical assessment.

Wojtysiak M1, Huber J, Wiertel-Krawczuk A, Szymankiewicz-Szukała A, Moskal J, Janicki J.

Abstract

STUDY DESIGN:

The application of complex neurophysiological examination including motor evoked potentials (MEP) for pre- and postoperative evaluation of patients experiencing acute sciatica.

OBJECTIVE:

The assessment of sensitivity and specificity of needle electromyography, MEP, and H-reflex examinations. The comparative analysis of preoperative and postoperative neurophysiological examination.

SUMMARY OF BACKGROUND DATA:

In spite of the fact that complex neurophysiological diagnostic tools seem to be important for interpretation of incompatible results of neuroimaging and clinical examination, especially in the patients qualified for surgical treatment, their application has never been completely analyzed and documented.

METHODS:

Pre- and postoperative electromyography, electroneurography, F-waves, H-reflex, and MEP examination were performed in 23 patients with confirmed disc-root conflict at lumbosacral spine. Clinical evaluation included examination of sensory perception for L5-S1 dermatomes, muscles strength with Lovett's scale, deep tendon reflexes, pain intensity with visual analogue scale, and straight leg raising test.

RESULTS:

Sensitivity of electromyography at rest and MEP examination for evaluation of L5-S1 roots injury was 22% to 63% and 31% to 56% whereas specificity was 71% to 83% and 57% to 86%, respectively. H-reflex sensitivity and specificity for evaluation of S1 root injury were 56% and 67%, respectively. A significant improvement of root latency parameter in postoperative MEP studies as compared with preoperative was recorded for L5 ($P = 0.039$) and S1 root's levels ($P = 0.05$).

CONCLUSION:

The analysis of the results from neurophysiological tests together with neuroimaging and clinical examination allow for a precise preoperative indication of the lumbosacral roots injury and accurate postoperative evaluation of patients experiencing sciatica.

LEVEL OF EVIDENCE: 3. PMID: 25010094

From: September 29, 2014

Impact of smoking on fusions

Spine (Phila Pa 1976). 2014 Oct 1;39(21):1765-1770.

Impact of Smoking on Complication and Pseudarthrosis Rates After Single- and 2-Level Posterolateral Fusion of the Lumbar Spine.

Bydon M1, De la Garza-Ramos R, Abt NB, Gokaslan ZL, Wolinsky JP, Sciubba DM, Bydon A, Witham TF.

Abstract

STUDY DESIGN.:

Retrospective study.

OBJECTIVE.:

To study the impact of smoking status on postoperative complications and pseudarthrosis in adult patients undergoing posterolateral fusion (PLF) of the lumbar spine.

SUMMARY OF BACKGROUND DATA.:

Results of studies analyzing the impact of smoking on complication and pseudarthrosis rates after spine surgery are conflicting.

METHODS.:

A retrospective medical record review was performed to identify all adult patients who underwent single- and 2-level instrumented PLF without interbody devices for degenerative spine disease in a 21-year period at a single institution. Patients were divided into smokers and nonsmokers. The main outcome variables were development of at least one postoperative complication and development of pseudarthrosis.

RESULTS.:

A total of 281 patients underwent single- or 2-level PLF in the 21-year period. Of these, 231 (82.21%) patients were nonsmokers and 50 (17.9%) were smokers. For patients undergoing single-level PLF, complication rates in nonsmokers (3.57%) versus smokers (7.69%) were not significantly different ($P = 0.353$); pseudarthrosis in nonsmokers occurred in 9.82% of cases compared with 7.69% in the smokers group ($P = 0.738$). Nonsmokers undergoing 2-level PLF had complication rates of 6.72%, compared with 4.17% in smokers ($P = 0.638$), but pseudarthrosis rates were significantly higher in the smokers group than in the nonsmokers group (29.17% vs. 10.92%; $P = 0.019$). Patients were followed up for an average of 53.5 months.

CONCLUSION.:

The findings in this study suggest that smoking has a significant impact on pseudarthrosis rates after 2-level PLF of the lumbar spine, but not necessarily on single-level PLF.

Level of Evidence: 4. PMID: 25054650

From: September 29, 2014

VISCERA

Painful periods

Eur J Pain. 2014 Sep 25. doi: 10.1002/ejp.597.

Attentional bias for pain- and period-related symptom words in healthy women who experienced a recent painful period.

Schoth DE1, Williams S, Lioffi C.

Abstract

BACKGROUND:

Attentional biases for pain-related information have been commonly reported in patients with chronic pain. Biases may also exist in individuals who recently experienced an episode of acute clinical pain, although limited investigation has been conducted. The present study is the first to explore attentional biases in women who experienced recent menstrual pain.

METHODS:

Seventy healthy women were recruited who experienced a regular menstrual cycle and a recent painful period. All participants completed a visual-probe task with pain-related and period-related symptom words, which were presented at subliminal (14 ms, followed by nonsensical consonant letter string for 286 ms) and supraliminal (300 ms, 1250 ms) exposure durations. Participants then completed a series of self-report measures, including a measure of cyclical perimenstrual symptoms.

RESULTS:

Recent menstrual pain severity was found to be significantly predictive of attentional bias towards pain-related words presented for 1250 ms. However, no significant evidence of bias was found towards period-related symptom words.

CONCLUSIONS:

Pain-related attentional biases are associated with recent menstrual pain severity. The experience and severity of pain, rather than its duration (i.e., whether pain is chronic or acute), may be the primary determinants of pain-related attentional bias. Future research could explore attentional biases in acute clinical pain samples to confirm this notion.

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From: September 29, 2014

Examinations

J Sex Med. 2014 Sep 22. doi: 10.1111/jsm.12701.

Pelvic Examination Experiences in Women With and Without Chronic Pain During Intercourse.

Boyer SC1, Pukall CF.

Abstract

INTRODUCTION:

Although pelvic examinations (PEs) are an important component of women's health, some women experience difficulty during PEs due to anxiety and pain. These difficulties may be heightened in women with chronic pain during sexual intercourse. Some evidence suggests that this population experiences pain and distress during PEs, but their experiences in this context have not been empirically investigated from a multidimensional perspective.

AIMS:

The aims of this study were to compare the PE experiences of women with and without pain during intercourse and to examine predictors of negative experiences in each group.

METHOD:

Women with vulvovaginal pain (n = 90), pelvic pain (n = 89), and women without current intercourse pain (n = 207) completed an online survey including sections assessing demographics, gynecological and medical history, and PE experiences. Respondents completed questionnaires assessing vaginal penetration cognitions and body image.

MAIN OUTCOME MEASURES:

Participants rated their most recent PE on numerical scales for pain, embarrassment, anxiety, and the overall quality of the experience.

RESULTS:

Women with pelvic and vulvovaginal pain during intercourse reported significantly more pain and anxiety during their most recent PE compared with the no pain group, and women with a higher number of lifetime gynecological diagnoses reported significantly more pain. Multiple regression analyses indicated that various predisposing, examination-related, and psychological factors predicted specific PE ratings in each group.

CONCLUSIONS:

The results provide empirical support that PEs are more physically and emotionally difficult for women who experience chronic pain during intercourse. These findings have important clinical implications, as PEs are a critical part of complete reproductive care and play an essential role in the assessment/management of sexual pain, including Genito-Pelvic Pain/Penetration Disorder.

Boyer SC and Pukall CF. Pelvic examination experiences in women with and without chronic pain during intercourse. J Sex Med **:*:*:*.*.*.*.

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KEYWORDS: Anxiety; Genito-Pelvic Pain/Penetration Disorder; Pain During Intercourse; Pelvic Examinations; Sexual Pain PMID: 25243968

From: September 29, 2014

Dysmenorrhea

Pain Manag Nurs. 2013 Nov 11. pii: S1524-9042(13)00104-5. doi: 10.1016/j.pmn.2013.07.012.

Prevalence of Dysmenorrhea in University Students in Turkey: Effect on Daily Activities and Evaluation of Different Pain Management Methods.

Potur DC1, Bilgin NC, Komurcu N.

Abstract

This study was conducted to determine the following among a group of female university students: the prevalence of dysmenorrhea; pain severity ratings; methods used to manage dysmenorrhea; and the effect of dysmenorrhea on daily activities, school attendance, and ability to communicate with friends. This cross-sectional study was conducted between December 2009 and February 2010 at a public university located in Istanbul, in the northwest area of Turkey. The study group included 1515 female students. Data were collected from the female students in the study group using a self-report questionnaire; the severity of dysmenorrhea was determined with the visual analog scale. The data were examined with mean, percentages, chi-square analysis, and logistic regression. The prevalence of dysmenorrhea in the study group was 85.7%. Of this group of subjects with dysmenorrhea, 30.4% described their menstrual pain as severe, 49.8% as moderate, and 19.8% as mild. The mean severity of pain among the students was 6.33 ± 2.32 on the VAS. The majority of participants who experienced moderate or severe pain regularly used analgesics for pain management, and participants who experienced severe pain used analgesics before the beginning of menstruation. Participants who experienced moderate pain used herbal tea, massage, heat application, rest, and distraction for pain management. Participants who experienced severe pain consulted a physician and that a significant difference existed between the dysmenorrhea rating groups in this regard ($p < .001$). Severe pain was significantly associated with school absenteeism and limitations in social activities/functioning ($p < .001$).

Dysmenorrhea is highly prevalent among university students and is related to school absenteeism, ability to participate in and enjoy daily activities, and limitations in social activities/functioning.

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From: September 29, 2014

HEADACHES

Longus coli

J Back Musculoskelet Rehabil. 2014 Sep 29.

Relationship between cross sectional area of Longus Colli muscle and pain laterality in patients with cervicogenic headache.

Abaspour O1, Javanshir K2, Amiri M3, Karimlou M4.

Abstract

BACKGROUND AND OBJECTIVES:

Cervicogenic headache (CGH) originated from impaired cervical musculoskeletal structures. Dysfunction of deep neck flexor muscles has been reported in CGH subjects. The purpose of this study was to assess relationship between the size of these muscles and headache laterality in CGH subjects.

MATERIAL AND METHOD:

A cross sectional single blind study designed to investigate 37 CGH subjects compared with 37 healthy controls. Longus colli (LC) muscle Cross Sectional Area (CSA) in both sides was measured in supine position utilizing diagnostic ultrasonography.

RESULTS:

The mean CSA of LC muscle in healthy subjects was $0.74 \pm 0.06 \text{ cm}^2$ and in patients suffering from CGH was $0.74 \pm 0.06 \text{ cm}^2$ in left and $0.75 \pm 0.06 \text{ cm}^2$ in right side. No significant difference was found between subjects suffering from CGH compared with healthy controls. Also no difference was found between muscle size of affected and non-affected side in unilateral CGH subjects.

CONCLUSIONS:

Results indicated that there was no relationship between size of LC muscle and pain laterality in patients with CGH.

KEYWORDS: CGH; CSA; longus colli muscle; ultrasonography PMID: 25271200

From: September 29, 2014

Bruxism and HA

Headache. 2014 Sep 18. doi: 10.1111/head.12446.

Association Between Tension-Type Headache and Migraine With Sleep Bruxism: A Systematic Review.

De Luca Canto G1, Singh V, Bigal ME, Major PW, Flores-Mir C.

Abstract

AIM:

To evaluate the association between tension-type headache and migraine with sleep bruxism (SB).

BACKGROUND:

The association between SB and headaches has been discussed in both children and adults. Although several studies suggested a possible association, no systematic analysis of the available published studies exists to evaluate the quantity, quality, and risk of bias among those studies.

METHODS:

A systematic review was undertaken, including articles that classified the headaches according to the International Classification of Headache Disorders and SB according to the criteria of the American Association of Sleep Medicine. Only articles in which the objective was to investigate the association between primary headaches (tension-type and migraine) and SB were selected. Detailed individual search strategies for The Cochrane Library, MEDLINE, EMBASE, PubMed, and LILACS were developed. The reference lists from selected articles were also checked. A partial grey literature search was taken by using Google Scholar. The methodology of selected studies was evaluated using the quality in prognosis studies tool.

RESULTS:

Of 449 identified citations, only 2 studies, both studying adults, fulfilled the inclusion criteria. The presence of SB significantly increased the odds (study 1: odds ratio [OR] 3.12 [1.25-7.7] and study 2: OR 3.8; 1.83-7.84) for headaches, although studies reported different headache type.

CONCLUSION:

There is not enough scientific evidence to either support or refute the association between tension-type headache and migraine with SB in children. Adults with SB appear to be more likely to have headache.

© 2014 American Headache Society.

KEYWORDS: headache; migraine; review; sleep bruxism; tension-type headache PMID: 25231339

From: September 29, 2014

Low heat thresholds

Cephalalgia. 2014 Sep 22. pii: 0333102414550417.

Low heat pain thresholds in migraineurs between attacks.

Schwedt TJ1, Zuniga L2, Chong CD2.

Abstract

BACKGROUND/OBJECTIVE:

Between attacks, migraine is associated with hypersensitivities to sensory stimuli. The objective of this study was to investigate hypersensitivity to pain in migraineurs between attacks.

METHODS:

Cutaneous heat pain thresholds were measured in 112 migraineurs, migraine free for ≥ 48 hours, and 75 healthy controls. Pain thresholds at the head and at the arm were compared between migraineurs and controls using two-tailed t-tests. Among migraineurs, correlations between heat pain thresholds and headache frequency, allodynia symptom severity, and time interval until next headache were calculated.

RESULTS:

Migraineurs had lower pain thresholds than controls at the head ($43.9^{\circ}\text{C} \pm 3.2^{\circ}\text{C}$ vs. $45.1^{\circ}\text{C} \pm 3.0^{\circ}\text{C}$, $p = 0.015$) and arm ($43.2^{\circ}\text{C} \pm 3.4^{\circ}\text{C}$ vs. $44.8^{\circ}\text{C} \pm 3.3^{\circ}\text{C}$, $p < 0.001$). There were not significant correlations between pain thresholds and headache frequency or allodynia symptom severity. For the 41 migraineurs for whom time to next headache was known, there were positive correlations between time to next headache and pain thresholds at the head ($r = 0.352$, $p = 0.024$) and arm ($r = 0.312$, $p = 0.047$).

CONCLUSIONS:

This study provides evidence that migraineurs have low heat pain thresholds between migraine attacks. Mechanisms underlying these lower pain thresholds could also predispose migraineurs to their next migraine attack, a hypothesis supported by finding positive correlations between pain thresholds and time to next migraine attack.

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KEYWORDS: Migraine; allodynia; headache; pain thresholds; sensitization

PMID: 25246520

From: September 29, 2014

Likelihood of developing HA with increased blood pressure

Eur J Neurol. 2014 Aug 25. doi: 10.1111/ene.12547.

Blood pressure as a risk factor for headache and migraine: a prospective population-based study.

Fagernaes CF1, Heuch I, Zwart JA, Winsvold BS, Linde M, Hagen K.

Abstract

BACKGROUND AND PURPOSE:

During the past decade, several population-based studies have found an inverse association between blood pressure (BP) and headache. However, most of them have a cross-sectional design or lack a validated definition of a headache-free population at baseline. Therefore, additional population-based studies using a clearly defined headache-free population and a prospective design are warranted.

METHODS:

Data from two large epidemiological studies, the Nord-Trøndelag Health Survey 1995-1997 (HUNT 2) and 2006-2008 (HUNT 3), were used to evaluate the association between BP (systolic, diastolic and pulse pressure) at baseline and headache (migraine and tension type headache) at follow-up.

RESULTS:

An inverse relationship was found between all three BP measures at baseline in HUNT 2 and any headache in HUNT 3, more evident for systolic BP [odds ratio (OR) 0.90 per 10 mmHg increase in systolic BP, 95% confidence interval (CI) 0.87-0.93, $P < 0.001$] and pulse pressure (OR 0.84 per 10 mmHg increase in pulse pressure, 95% CI 0.80-0.89, $P < 0.001$) than for diastolic BP (OR 0.92 per 10 mmHg increase in diastolic BP, 95% CI 0.87-1.00, $P = 0.036$). The most robust finding, evident for both sexes, was that increased pulse pressure was linked to decreased prevalence of both migraine and tension type headache.

CONCLUSION:

An inverse relationship between BP and subsequent development of headache was confirmed in this large-scale population-based cohort study. Nevertheless, further research is needed to investigate the underlying mechanisms explaining these findings.

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KEYWORDS: blood pressure; headache; hypertension-associated hypalgesia; migraine

PMID: 25155744

From: September 29, 2014

ROTATOR CUFF

Tears and conservative care and surgery

J Bone Joint Surg Am. 2014 Sep 17;96(18):1504-14. doi: 10.2106/JBJS.M.01393.

Tendon Repair Compared with Physiotherapy in the Treatment of Rotator Cuff Tears: A Randomized Controlled Study in 103 Cases with a Five-Year Follow-up.

Moosmayer S1, Lund G1, Seljom US1, Haldorsen B1, Svege IC1, Hennig T1, Pripp AH2, Smith HJ3.

Abstract

BACKGROUND:

There is limited Level-I evidence that compares operative and nonoperative treatment of rotator cuff tears. We compared outcomes of patients treated with primary tendon repair with outcomes of those treated with physiotherapy and optional secondary tendon repair if needed.

METHODS:

A single-center, pragmatic, randomized controlled study with follow-ups after six months and one, two, and five years was conducted in a secondary-care institution. One hundred and three patients with a rotator cuff tear not exceeding 3 cm were randomized to primary tendon repair (n = 52) or physiotherapy (n = 51). The primary outcome measure was the Constant score. Secondary outcome measures included the self-report section of the American Shoulder and Elbow Surgeons score; the physical component summary measure of the Short Form 36 Health Survey; the measurement of pain, strength, and shoulder motion; patient satisfaction; and findings from magnetic resonance imaging and sonography. Analysis was by intention to treat.

RESULTS:

The five-year follow-up rate was 98%. Twelve of the fifty-one patients in the physiotherapy group were treated with secondary tendon repair. The results from primary tendon repair were superior to those from physiotherapy plus secondary repair, with between-group mean differences of 5.3 points on the Constant score (p = 0.05), 9.0 points on the American Shoulder and Elbow Surgeons score (p < 0.001), 1.1 cm on a 10-cm visual analog scale for pain (p < 0.001), and 1.0 cm on a 10-cm visual analog scale for patient satisfaction (p = 0.03). In 37% of tears treated with physiotherapy only, there were increasing tear sizes on ultrasound of >5 mm, over five years, associated with an inferior outcome.

CONCLUSIONS:

Although primary repair of small and medium-sized rotator cuff tears was associated with better outcome than physiotherapy treatment, the differences were small and may be below clinical importance. In the physiotherapy treatment group, there were increasing tear sizes and inferior outcomes in one-third of patients who did not undergo repair.

LEVEL OF EVIDENCE: Therapeutic Level I. See Instructions for Authors for a complete description of levels of evidence.

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From: September 29, 2014

Genetics

J Bone Joint Surg Am. 2014 Sep 17;96(18):1558-65. doi: 10.2106/JBJS.M.01585.

Muscle gene expression patterns in human rotator cuff pathology.

Choo A, McCarthy M, Pichika R, Sato EJ, Lieber RL, Schenk S, Lane JG, Ward SR.

Abstract

BACKGROUND:

Rotator cuff pathology is a common source of shoulder pain with variable etiology and pathoanatomical characteristics. Pathological processes of fatty infiltration, muscle atrophy, and fibrosis have all been invoked as causes for poor outcomes after rotator cuff tear repair. The aims of this study were to measure the expression of key genes associated with adipogenesis, myogenesis, and fibrosis in human rotator cuff muscle after injury and to compare the expression among groups of patients with varied severities of rotator cuff pathology.

METHODS:

Biopsies of the supraspinatus muscle were obtained arthroscopically from twenty-seven patients in the following operative groups: bursitis (n = 10), tendinopathy (n = 7), full-thickness rotator cuff tear (n = 8), and massive rotator cuff tear (n = 2). Quantitative polymerase chain reaction (qPCR) was performed to characterize gene expression pathways involved in myogenesis, adipogenesis, and fibrosis.

RESULTS:

Patients with a massive tear demonstrated downregulation of the fibrogenic, adipogenic, and myogenic genes, indicating that the muscle was not in a state of active change and may have difficulty responding to stimuli. Patients with a full-thickness tear showed upregulation of fibrotic and adipogenic genes; at the tissue level, these correspond to the pathologies most detrimental to outcomes of surgical repair. Patients with bursitis or tendinopathy still expressed myogenic genes, indicating that the muscle may be attempting to accommodate the mechanical deficiencies induced by the tendon tear.

CONCLUSIONS:

Gene expression in human rotator cuff muscles varied according to tendon injury severity. Patients with bursitis and tendinopathy appeared to be expressing pro-myogenic genes, whereas patients with a full-thickness tear were expressing genes associated with fatty atrophy and fibrosis. In contrast, patients with a massive tear appeared to have downregulation of all gene programs except inhibition of myogenesis.

CLINICAL RELEVANCE:

These data highlight the difficulty in treating massive tears and suggest that the timing of treatment may be important for muscle recovery. Specifically, earlier interventions to address tendon injury may allow muscles to respond more appropriately to mechanical stimuli.

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From: September 29, 2014

Surgery

BMC Musculoskelet Disord. 2014 Sep 29;15(1):324.

Does arthroscopic sub-acromial decompression really work for sub-acromial impingement syndrome: a cohort study.

Bhattacharyya R, Edwards K, Wallace AW.

Abstract

BACKGROUND:

Health Economists in Denmark have reported poor outcomes and low and delayed return to work for patients treated for Sub-Acromial Impingement syndrome (SAIS) by Arthroscopic Sub-Acromial Decompression (ASAD). In this setting it is important to evaluate outcomes following this commonly performed operation to justify undertaking it on our patients. The purpose of the study was to evaluate the effectiveness of ASAD for patients with SAIS and correlate clinical outcome with rate of return to work.

METHODS:

Prospective cohort study and retrospective review of data from the Nottingham Shoulder database. Inclusion criteria: Patients diagnosed clinically with SAIS by an experienced shoulder surgeon, who have failed conservative treatment (physiotherapy and sub-acromial injection), undergoing ASAD. Pre-operative and 6-month post-operative Oxford Shoulder Score (OSS) and Constant Score (CS) were compared. The rates of return to pre-operative work and hobbies were also analysed. Statistical analysis was carried out using the Wilcoxon signed rank test.

RESULTS:

73 patients with OSS (51 also with CS documentation) were included. The improvement in median OSS between pre-operative (24) and 6-month follow-up (39) was +15 ($Z = -6.726$, $p < 0.0001$, $T = 6$, $r = 0.55$). The difference in median CS between pre-operative (39) and 6-month follow-up (67) was +28 ($Z = -5.435$, $p < 0.0001$, $T = 6$, $r = 0.59$). Improvement in median pain score was +5 (7,12, $p < 0.0001$) median ADL was +5.5 (10.5,16, $p < 0.0001$) median ROM was +13 (18,31, $p < 0.0001$) and median strength was +4 (3,7, $p < 0.0001$). 76% returned to their pre-operative level of work (mean time = 11.5 weeks post surgery). 79% returned to pre-operative hobbies at a mean of 11.8 weeks after surgery.

CONCLUSION:

There is a significant improvement in both subjective and objective outcome 6 months after ASAD in patients with SAIS who have had previous failed conservative treatment. The rate of return to work was good for these patients in contrast to that reported for Danish patients. ASAD is a successful method of treatment for patients with SAIS who have had an initial trial of failed conservative treatment.

PMID: 25266967

From: September 29, 2014

Fear avoidance beliefs and disability

Phys Ther. 2014 Jul 24.

Influence of Fear-Avoidance Beliefs on Disability in Patients With Subacromial Shoulder Pain in Primary Care: A Secondary Analysis.

Kromer TO1, Sieben JM2, de Bie RA3, Bastiaenen CH4.

Abstract

BACKGROUND:

Little information exists about the role of fear-avoidance beliefs and catastrophizing in subacromial pain syndrome.

OBJECTIVE:

The purpose of this study was to investigate the associations among pain, catastrophizing, fear, and disability and the contribution of fear-avoidance beliefs to disability at baseline and at 3-month follow-up.

DESIGN:

A cross-sectional and longitudinal analysis was conducted.

METHODS:

Baseline demographic and clinical data, including fear-avoidance beliefs and catastrophizing, of 90 patients were assessed for this analysis. Disability was measured with the Shoulder Pain and Disability Index at baseline and at 3-month follow-up. First, bivariate and partial correlations were calculated among pain, fear-avoidance beliefs, catastrophizing, and disability, based on the fear-avoidance model. Second, the contribution of fear-avoidance beliefs to disability at baseline and at 3-month follow-up was examined with hierarchical regression analyses.

RESULTS:

Correlations between clinical variables and disability were largely in line with the fear-avoidance model. Regression analyses identified a significant contribution of fear-avoidance beliefs to baseline disability but not to disability at 3 months.

LIMITATIONS:

Patients with subacromial pain syndrome were studied; therefore, the results should be transferred with caution to other diagnoses. A modified version of the Fear-Avoidance Beliefs Questionnaire was used, which was not validated for this patient group.

CONCLUSIONS:

Fear-avoidance beliefs contribute significantly to baseline disability but not to disability change scores after 3-month follow-up. Duration of complaints and baseline disability were the main factors influencing disability change scores. Although the results help to improve understanding of the role of fear-avoidance beliefs, further studies are needed to fully understand the influence of psychological and clinical factors on the development of disability in patients with subacromial shoulder pain.

From: September 29, 2014

Role of kyphosis

J Shoulder Elbow Surg. 2014 Aug 5. pii: S1058-2746(14)00231-6. doi: 10.1016/j.jse.2014.04.010. [

Association between kyphosis and subacromial impingement syndrome: LOHAS study.

Otoshi K1, Takegami M2, Sekiguchi M3, Onishi Y4, Yamazaki S5, Otani K3, Shishido H3, Kikuchi S3, Konno S3.

Abstract

BACKGROUND:

Kyphosis is a cause of scapular dyskinesia, which can induce various shoulder disorders, including subacromial impingement syndrome (SIS). This study aimed to clarify the impact of kyphosis on SIS with use of cross-sectional data from the Locomotive Syndrome and Health Outcome in Aizu Cohort Study (LOHAS).

METHODS:

The study enrolled 2144 participants who were older than 40 years and participated in health checkups in 2010. Kyphosis was assessed by the wall-occiput test (WOT) for thoracic kyphosis and the rib-pelvic distance test (RPDT) for lumbar kyphosis. The associations between kyphosis, SIS, and reduction in shoulder elevation (RSE) were investigated.

RESULTS:

Age- and gender-adjusted logistic regression analysis demonstrated significant association between SIS and WOT (odds ratio, 1.65; 95% confidence interval, 1.02, 2.64; $P < .05$), whereas there was no significant association between SIS and RPDT. Multivariable logistic regression analysis demonstrated no significant association between SIS and both WOT and RPDT, whereas there was significant association between SIS and RSE.

CONCLUSION:

RSE plays a key role in the development of SIS, and thoracic kyphosis might influence the development of SIS indirectly by reducing shoulder elevation induced by the restriction of the thoracic spine extension and scapular dyskinesia.

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KEYWORDS: Epidemiologic study; LOHAS; kyphosis; rib-pelvic distance test; scapular dyskinesia; subacromial impingement syndrome; wall-occiput test PMID: 25107600

From: September 29, 2014

ELBOW

Soft tissues

J Shoulder Elbow Surg. 2014 Jul 15. pii: S1058-2746(14)00243-2. doi: 10.1016/j.jse.2014.05.003.

Three-dimensional analysis of elbow soft tissue footprints and anatomy.

Capo JT1, Collins C2, Beutel BG3, Danna NR1, Manigrasso M1, Uko LA2, Chen LY2.

Abstract

BACKGROUND:

Tendinous and ligamentous injuries commonly occur in the elbow. This study characterized the location, surface areas, and origin and insertional footprints of major elbow capsuloligamentous and tendinous structures in relation to bony landmarks with the use of a precision 3-dimensional modeling system.

METHODS:

Nine unpaired cadaveric elbow specimens were dissected and mounted on a custom jig. Mapping of the medial collateral ligament (MCL), lateral ulnar collateral ligament (LUCL), triceps, biceps, brachialis, and capsular reflections was then performed with 3-dimensional digitizing technology. The location, surface areas, and footprints of the soft tissues were calculated.

RESULTS:

The MCL had a mean origin (humeral) footprint of 216 mm², insertional footprint of 154 mm², and surface area of 421 mm². The LUCL had a mean origin footprint of 136 mm², an insertional footprint of 142 mm², and a surface area of 532 mm². Of the tendons, the triceps maintained the largest insertional footprint, followed by the brachialis and the biceps ($P < .001-.03$). The MCL, LUCL, and biceps footprint locations were consistent, with little variability. The surface areas of the anterior (1251 mm²) and posterior (1147 mm²) capsular reflections were similar ($P = .82$), and the anterior capsule extended farther proximally.

CONCLUSION:

Restoring the normal anatomy of key elbow capsuloligamentous and tendinous structures is crucial for effective reconstruction after bony or soft tissue trauma. This study provides the upper extremity surgeon with information that may aid in restoring elbow biomechanics and preserving range of motion in these patients.

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KEYWORDS: Elbow; anatomy; footprint; ligament; surface area; tendon; three-dimensional
PMID: 25037064

From: September 29, 2014

Pitchers

J Shoulder Elbow Surg. 2014 Oct;23(10):1521-6. doi: 10.1016/j.jse.2014.05.015.

How much valgus instability can be expected with ulnar collateral ligament (UCL) injuries? A review of 273 baseball players with UCL injuries.

Bruce JR1, Hess R2, Joyner P2, Andrews JR2.

Abstract

BACKGROUND:

The dynamic stress radiograph of the elbow was designed to help the clinician better define valgus laxity and instability in the throwing athlete. However, no large study has quantified the amount of laxity in athletes with ulnar collateral ligament (UCL) injuries. We hypothesized that valgus stress radiographs in patients with UCL injuries will demonstrate a significantly greater amount of valgus stress opening of the dominant elbows compared with the nondominant elbow.

METHODS:

Bilateral elbow static and stress radiographs that were taken as part of our standard preoperative workup were retrospectively reviewed in 273 baseball players who had undergone UCL reconstruction. The valgus stress radiograph protocol used a Telos stress device (SE 2000) to provide 15 daN of stress in a standardized fashion.

RESULTS:

The thrower's elbow with a UCL injury opened 0.4 mm more than the uninjured side. Those with complete tears (N = 76), determined by magnetic resonance imaging findings, opened 0.6 mm on average, which was significantly more than in those with partial tears (N = 150), which opened an average of 0.1 mm.

CONCLUSION:

Stress radiography of the dominant elbow in baseball players with UCL injuries showed it to have 0.4 mm greater opening compared with the nondominant arm. Larger average openings (0.6 mm) can be expected with full-thickness UCL tears compared with partial-thickness tears (0.1 mm). This suggests that large openings on stress radiography may not be a critical component for predicting who will require surgical reconstruction for UCL injuries but may be more useful in differentiating complete from partial tears.

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KEYWORDS: Ulnar collateral ligament; elbow imaging; elbow x-ray; valgus stress

PMID: 25220199

From: September 29, 2014

CARPAL TUNNEL SYNDROME

Success of surgery

J Hand Surg Am. 2014 Sep 10. pii: S0363-5023(14)01003-X. doi: 10.1016/j.jhsa.2014.07.017.

An Outcomes Protocol for Carpal Tunnel Release: A Comparison of Outcomes in Patients With and Without Medical Comorbidities.

Cagle PJ Jr1, Reams M2, Agel J2, Bohn D2.

Abstract

PURPOSE:

To prospectively report the outcomes of open carpal tunnel release with respect to patient age and medical comorbidities.

METHODS:

Nine hundred fifty open carpal tunnel procedures in 826 patients (age range, 21-100 y) at a high-volume orthopedic surgery center were evaluated. Self-reported symptom severity and functional scores were collected using the validated Boston Carpal Tunnel Outcomes questionnaire preoperatively, and at 2 weeks, 6 weeks, and 12 weeks postoperatively.

RESULTS:

Patients demonstrated a significant improvement in symptom severity scores at 2 weeks and functional severity scores at 6 weeks. Documented patient medical comorbidities did not affect improvement after surgery. Patients with diabetes improved more slowly but were not significantly different at 6 weeks. Patients with workers' compensation insurance were significantly worse at baseline, 2 weeks, and 6 weeks but were not significantly different at 3 months. The risk of negative postoperative endpoints was slightly higher in patients with a medical comorbidity, though not statistically different.

CONCLUSIONS:

Significant improvements in symptom severity and hand function may be expected after open carpal tunnel release in the general population regardless of age, medical comorbidities, or workers' compensation status.

TYPE OF STUDY/LEVEL OF EVIDENCE: Therapeutic III.

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KEYWORDS: Carpal tunnel complication; carpal tunnel outcomes; carpal tunnel release; carpal tunnel syndrome PMID: 25218142

From: September 29, 2014

Determination for surgery

J Hand Surg Am. 2014 Sep 13. pii: S0363-5023(14)01005-3. doi: 10.1016/j.jhsa.2014.07.019.

Carpal Tunnel Syndrome Diagnosis and Treatment: A Survey of Members of the American Society for Surgery of the Hand.

Lane LB1, Starecki M2, Olson A2, Kohn N2.

Abstract

PURPOSE:

In 2007 and 2009, the American Academy of Orthopaedic Surgeons released Clinical Practice Guidelines (CPG) for diagnosis and treatment of carpal tunnel syndrome (CTS) based upon review of the literature. The lack of consistently high-level evidence resulted in several recommendations, some strongly supported, some weakly supported, and others controversial. We postulated that a survey of American Society for Surgery of the Hand (ASSH) members would provide insight into practice patterns among hand surgeons treating CTS and demonstrate the extent to which the CPG influenced practice behavior.

METHODS:

A multiple-choice questionnaire including detailed commonly observed clinical scenarios was developed, pre-tested, and approved by our institutional review board and the ASSH Web site committee chair. An anonymous electronic survey was emailed to ASSH members.

RESULTS:

Surveys were sent to 2,650 eligible ASSH members, and 27% responded. Seventy-two percent would advise a patient to have carpal tunnel release (CTR) if the patient had both classic history/examination of CTS and complete relief following cortisone injection. Forty-seven percent responded that in this scenario electrodiagnostic testing (EDX) is rarely or never necessary to recommend CTR. Seventy-nine percent of respondents were at least slightly more likely to order EDX based on CPG recommendations. Of these respondents, 57% replied that this was because of potential medicolegal ramifications.

CONCLUSIONS:

Although the CPG recommended EDX before surgery, and although most responding ASSH members use EDX to advise CTR, a majority answered that a supporting history and physical examination alone can be sufficient to recommend surgery, that a positive response to a cortisone injection can be sufficient indication for CTR, that EDX is not necessary in all cases of CTS, and that they would perform CTR in face of normal EDX if cortisone temporarily resolved symptoms. Among respondents more likely to order EDX based on the CPG, 57% answered that it was in some circumstances due to potential medicolegal ramifications.

TYPE OF STUDY/LEVEL OF EVIDENCE:

Economic and decision analysis III.

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KEYWORDS: Carpal tunnel syndrome; clinical practice guideline; cortisone injection; electrodiagnostic testing; survey

PMID: 25227597

From: September 29, 2014

HIP

Trochanteric pain

Eur J Radiol. 2014 Oct;83(10):1850-5. doi: 10.1016/j.ejrad.2014.06.009. Epub 2014 Jun 28.

Greater trochanter pain syndrome: A descriptive MR imaging study.

Klontzas ME1, Karantanas AH2.

Abstract

OBJECTIVE:

Greater trochanter pain syndrome (GTPS) is a diverse clinical entity caused by a variety of underlying conditions. We sought to explore the impact of (1) hip morphology, namely the center-edge angle (CEa) and femoral neck-shaft (NSa) angle, (2) hip abductor tendon degeneration, (3) the dimensions of peritrochanteric edema and (4) bursitis, on the presence of GTPS, using MR imaging.

MATERIALS AND METHODS:

The presence of pain was prospectively assessed blindly by the senior author. CEa and NSa were blindly measured in 174 hip MR examinations, after completion of the clinical evaluation by another evaluator. The existence and dimensions of T2 hyperintensity of the peritrochanteric soft tissues, the existence and dimensions of bursae, as well as degeneration and tearing of gluteus tendons were also recorded.

RESULTS:

Out of 174 examinations, 91 displayed peritrochanteric edema (group A) and 34 bursitis, all with peritrochanteric edema (group B). A number of 78 patients from both A and B groups, showed gluteus medius tendon degeneration and one tendon tear. CEa of groups A and B were 6° higher than those of normals (group C, P=0.0038). The mean age of normals was 16.6 years less than in group A and 19.8 years less than in group B (P<0.0001). Bursitis was associated with pain with a negative predictive value of 97% (P=0.0003).

CONCLUSION:

Acetabular morphology is associated with GTPS and the absence of bursitis was proved to be clinically relevant. Peritrochanteric edema alone was not associated with local pain.

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KEYWORDS: Bursitis; CE angle; Gluteal tendinopathy; Greater trochanter pain syndrome; MR imaging PMID: 25043986

From: September 29, 2014

KNEE

Prevention In adolescent sports

Sports Med. 2014 Oct;44(10):1403-26. doi: 10.1007/s40279-014-0216-4.

Effect of interventions on potential, modifiable risk factors for knee injury in team ball sports: a systematic review.

Ter Stege MH1, Dallinga JM, Benjaminse A, Lemmink KA.

Abstract

BACKGROUND:

Knee injuries are one of the most common types of injuries in team ball sports, and prevention is crucial because of health and economic implications. To set up effective prevention programs, these programs must be designed to target potential, modifiable risk factors. In addition, it is essential to evaluate the effects of these prevention programs.

OBJECTIVE:

The purpose of this study was to provide an overview of the effect of prevention programs on potential, modifiable risk factors for knee injuries in team ball sports.

METHOD:

A systematic review was performed in PUBMED (1978 to December 2013), EMBASE (1973 to December 2013), and CINAHL (1992 to December 2013). The titles, abstracts, and full texts were analyzed according to predefined inclusion criteria to find relevant studies.

RESULTS:

Neuromuscular control training with plyometric and agility exercises with addition of instructions reduced knee valgus angles and moments in female athletes. Knee flexion angles and moments were enhanced by plyometric and resistance exercises with augmented feedback (verbal or video). The specificity of the exercises must match the task that needs to be improved. Hamstring/quadriceps strength ratio and hamstring strength may be improved by isolated hamstring exercises.

CONCLUSION:

Various training components are required to reduce the risk of knee injury. Neuromuscular control training and the use of instructions/feedback (verbal or video) seem promising. However, attention should be given to the target populations and the specificity of the programs. More research is needed with respect to reducing risk factors in male athletes as well as in children.

PMID: 25001208

From: September 29, 2014

KNEE/TOTAL

In adolescents

J Bone Joint Surg Am. 2014 Sep 17;96(18):e159. doi: 10.2106/JBJS.M.01259.

Total Knee Replacement in Young, Active Patients: Long-Term Follow-up and Functional Outcome: A Concise Follow-up of a Previous Report.

Long WJ1, Bryce CD2, Hollenbeak CS3, Benner RW4, Scott WN1.

Abstract

Concern exists regarding the long-term durability and effectiveness of total knee arthroplasty in young patients. We reviewed our experience with total knee arthroplasty in patients fifty-five years old and younger with severe osteoarthritis to determine the long-term outcomes. One hundred and fourteen total knee arthroplasties were performed in eighty-eight patients at an average patient age of fifty-one years. Clinical outcomes, survival analysis, and radiographs were all reviewed at the most recent follow-up. One hundred and eight knees (eighty-four patients) were followed up from May 2011 to 2012. At thirty years, survivorship without revision for any cause was 70.1% (twenty-five revisions) and survivorship with failure defined as aseptic revision of the tibial or femoral components was 82.5%. At thirty years, a significant difference existed in the survivorship free from tibial or femoral aseptic revision ($p = 0.003$) between the non-modular Insall-Burstein I component (92.3%) and the modular Insall-Burstein II component (68.3%). All patients were evaluated at an average time from the index total knee arthroplasty to the latest follow-up of 25.1 years (range, twenty to thirty-five years). Clinical evaluation was obtained in thirty-six patients with forty-five total knee arthroplasties. The average Hospital for Special Surgery score had improved from 57.9 points preoperatively to 85.3 points. The average Knee Society score was 87.4 points and the average Knee Society functional score was 62.1 points; the average knee motion was 110°. The mean Tegner and Lysholm activity score improved from 1.5 points preoperatively to 3.0 points. Radiographic review of forty-two knees that had undergone total knee arthroplasty demonstrated a mean 3.2° of valgus, with no cases of radiographically loose components.

Total knee arthroplasty with use of a cemented posterior stabilized system, particularly a non-modular Insall-Burstein I design, was an effective treatment option with durable results for end-stage symptomatic osteoarthritis in this young cohort. These data should provide comparison for modern total knee arthroplasties and alternative procedures in young patients.

LEVEL OF EVIDENCE: Therapeutic Level IV. See Instructions for Authors for a complete description of levels of evidence. Copyright © 2014 by The Journal of Bone and Joint Surgery, Incorporated. PMID: 25232089

From: September 29, 2014

OSTEOARTHRITIS/KNEE

Impact on stair climbing

BMC Musculoskelet Disord. 2014 Sep 27;15(1):321

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

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

Abstract

BACKGROUND:

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

METHODS:

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

RESULTS:

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

CONCLUSION:

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

PMID: 25262234

From: September 29, 2014

ACHILLES TENDON

Rupture repair or conservative care

J Bone Joint Surg Am. 2014 Sep 17;96(18):1497-503. doi: 10.2106/JBJS.M.01273.

Nonoperative dynamic treatment of acute achilles tendon rupture: the influence of early weight-bearing on clinical outcome: a blinded, randomized controlled trial.

Barfod KW, Bencke J, Lauridsen HB, Ban I, Ebskov L, Troelsen A.

Abstract

BACKGROUND:

Dynamic rehabilitation has been suggested to be an important part of nonoperative treatment of acute Achilles tendon rupture that results in functional outcome and rerupture rates comparable with those of operative treatment. However, the optimal role of weight-bearing during early rehabilitation remains unclear. The purpose of this study was to compare immediate weight-bearing with non-weight-bearing in a nonoperative dynamic treatment protocol for Achilles tendon rupture.

METHODS:

The study was conducted as a blinded, randomized, controlled, parallel superiority trial. Patients eighteen to sixty years of age were eligible for inclusion. Both groups were treated nonoperatively with controlled early motion. The intervention group was allowed full weight-bearing from day one, and the control group was non-weight-bearing for six weeks. The primary outcome was the Achilles tendon Total Rupture Score (ATRS) after one year. Secondary outcomes included heel-rise work, health-related quality of life, and the rerupture rate. Outcome assessors were blinded to the intervention.

RESULTS:

Thirty patients were randomized to each group; twenty-nine in the weight-bearing group and twenty-seven in the control group were analyzed. The only significant difference between the groups was better health-related quality of life in the weight-bearing group at twelve months ($p = 0.009$). The mean ATRS at twelve months was 73 in the weight-bearing group and 74 in the control group ($p = 0.81$). At twelve months, the total heel-rise work performed by the injured limb relative to that by the uninjured limb was 53% in the weight-bearing group and 58% in the control group ($p = 0.37$). There were three reruptures in the weight-bearing group and two in the control group ($p = 1.0$).

CONCLUSIONS:

The ATRS and heel-rise work results did not differ significantly between the groups. The rerupture rate was 9% overall, and both groups had substantial functional deficits in the injured limb compared with the uninjured limb. Immediate weight-bearing can be recommended as an option in the nonoperative treatment of Achilles tendon rupture

LEVEL OF EVIDENCE: Therapeutic Level I. See Instructions for Authors for a complete description of levels of evidence.

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PMID: 25232073

From: September 29, 2014

PLANTAR SURFACE

BMI and pain

Foot Ankle Int. 2014 Sep 18. pii: 1071100714551021

Musculoskeletal and Activity-Related Factors Associated With Plantar Heel Pain.

Sullivan J1, Burns J2, Adams R3, Pappas E3, Crosbie J4.

Abstract

BACKGROUND:

Despite the prevalence and impact of plantar heel pain, its etiology remains poorly understood, and there is no consensus regarding optimum management. The identification of musculoskeletal factors related to the presence of plantar heel pain could lead to the development of better targeted intervention strategies and potentially improve clinical outcomes. The aim of this study was to investigate relationships between a number of musculoskeletal and activity-related measures and plantar heel pain.

METHODS:

In total, 202 people with plantar heel pain and 70 asymptomatic control participants were compared on a variety of musculoskeletal and activity-related measures, including body mass index (BMI), foot and ankle muscle strength, calf endurance, ankle and first metatarsophalangeal (MTP) joint range of motion, foot alignment, occupational standing time, exercise level, and generalized hypermobility. Following a comparison of groups for parity of age, analyses of covariance were performed to detect differences between the 2 groups for any of the variables measured.

RESULTS:

The plantar heel pain group displayed a higher BMI, reduced ankle dorsiflexion range of motion, reduced ankle evertor and toe flexor strength, and an altered inversion/eversion strength ratio. There were no differences between groups for foot alignment, dorsiflexor or invertor strength, ankle inversion or eversion range of motion, first MTP joint extension range of motion, generalized hypermobility, occupational standing time, or exercise level.

CONCLUSION:

Plantar heel pain is associated with higher BMI and reductions in some foot and ankle strength and flexibility measures. Although these factors could be either causal or consequential, they are all potentially modifiable and could be targeted in the management of plantar heel pain.

LEVEL OF EVIDENCE: III, Comparative Study. © The Author(s) 2014.

KEYWORDS: Strength; flexibility; foot alignment; obesity

PMID: 25237175

From: September 29, 2014

HALLUX VALGUS

Second ray adductus

Foot Ankle Int. 2014 Sep 18. pii: 1071100714551022.

Prevalence of Metatarsus Adductus in Patients Undergoing Hallux Valgus Surgery.

Aiyer AA1, Shariff R2, Ying L2, Shub J2, Myerson MS2.

Abstract

BACKGROUND:

Metatarsus adductus (MA) is a congenital condition in which there is adduction of the metatarsals in conjunction with supination of the hindfoot through the subtalar joint. It is generally believed that MA precedes the development of hallux valgus. Historically, studies have demonstrated that patients with a history of MA were ~3.5 times more likely to develop hallux valgus. The purpose of this study was to identify the relative prevalence of MA in patients undergoing surgery for symptomatic hallux valgus.

METHODS:

Between 2002 and 2012, 587 patients who underwent hallux valgus surgery were retrospectively identified following IRB approval and parameters including the hallux valgus angle (HVA), the intermetatarsal angle (IMA), and the metatarsus adductus angle (MAA) were recorded. The MAA was considered abnormal if the value was greater than 20 degrees. Interobserver and intraobserver reliability studies for the measurement of the MAA were completed as well.

RESULTS:

Using the modified Sgarlato technique for measurement of the MAA, there was a high interobserver and intraobserver reliability. The interclass and intraclass coefficients were greater than .90. The prevalence of MA in this patient population was found to be 29.5%. Of those patients with MA, 23 males and 150 females were identified. This gave a male to female ratio of 1:6.5 ($P < .00001$). Lesser toe deformities (claw toes, hammertoes) were the most commonly associated diagnoses identified. When stratified by severity, 113 (65%) patients had an MAA between 21 and 25 degrees, 41 (23.7%) had an MAA between 26 and 30 degrees, 8 (4.6%) patients had an MAA between 31 and 35 degrees, and 11 (6.3%) patients had an MAA greater than 36 degrees.

CONCLUSION:

Historically the prevalence of MA in patients with hallux valgus has been reported to be 35%. The data in this study indicate a comparable prevalence at 29.4%. The presence of concomitant MA may portend different outcomes for operative treatment of hallux valgus. Further research needs to delineate rates of persistence of deformity in this patient population to guide operative management.

LEVEL OF EVIDENCE: Level IV, case series. © The Author(s) 2014.

KEYWORDS: hallux valgus; metatarsus adductus; prevalence

PMID: 25237174

From: September 29, 2014

MANUAL THERAPY

T spine manipulation

Man Ther. 2014 Sep 6. pii: S1356-689X(14)00174-X. doi: 10.1016/j.math.2014.08.008.

Validation of a sham comparator for thoracic spinal manipulation in patients with shoulder pain.

Michener LA1, Kardouni JR2, Sousa CO3, Ely JM4.

Abstract

The evidence to guide use of spinal manipulative therapy (SMT) for patients with shoulder pain is limited. A validated sham comparator is needed to ascertain the unique effects of SMT. We investigated the plausibility of a thoracic sham-SMT comparator for SMT in patients with shoulder pain. Participants (n = 56) with subacromial impingement syndrome were randomized to thoracic SMT or a sham-SMT. An examiner blinded to group assignment took measures pre- and post-treatment of shoulder active range of motion (AROM) and perceived effects of the assigned intervention. Treatment consisted of six upper, middle and lower thoracic SMT or sham-SMT. The sham-SMT was identical to the SMT, except no thrust was applied. Believability as an active treatment was measured post-treatment. Believability as an active treatment was not different between groups ($\chi^2 = 2.19$; $p = 0.15$). Perceptions of effects were not different between groups at pre-treatment ($t = 0.12$; $p = 0.90$) or post-treatment ($t = 0.40$; $p = 0.69$), and demonstrated equivalency with 95% confidence between groups at pre- and post-treatment. There was no significant change in shoulder flexion in either group over time, or in the sham-SMT for internal rotation ($p > 0.05$). The SMT group had an increase of 6.49° in internal rotation over time ($p = 0.04$). The thoracic sham-SMT of this study is a plausible comparator for SMT in patients with shoulder pain.

The sham-SMT was believable as an active treatment, perceived as having equal beneficial effects both when verbally described and after familiarization with the treatment, and has an inert effect on shoulder AROM. This comparator can be considered for used in clinical trials investigating thoracic SMT. IRB number: HM 13182.

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KEYWORDS: Rotator cuff; Sham; Thoracic spinal manipulation; Validity

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From: September 29, 2014

Mulligan and cervicogenic dizziness

Man Ther. 2014 Aug 27. pii: S1356-689X(14)00148-9. doi: 10.1016/j.math.2014.08.003

Manual therapy for cervicogenic dizziness: Long-term outcomes of a randomised trial.

Reid SA1, Callister R2, Snodgrass SJ2, Katekar MG2, Rivett DA2.

Abstract

Manual therapy is effective for reducing cervicogenic dizziness, a disabling and persistent problem, in the short term. This study investigated the effects of sustained natural apophyseal glides (SNAGs) and passive joint mobilisations (PJM) on cervicogenic dizziness compared to a placebo at 12 months post-treatment. Eighty-six participants (mean age 62 years, standard deviation (SD) 12.7) with chronic cervicogenic dizziness were randomised to receive SNAGs with self-SNAGs (n = 29), PJMs with range-of-motion (ROM) exercises (n = 29), or a placebo (n = 28) for 2-6 sessions over 6 weeks. Outcome measures were dizziness intensity, dizziness frequency (rated between 0 [none] and 5 [>once/day]), the Dizziness Handicap Inventory (DHI), pain intensity, head repositioning accuracy (HRA), cervical spine ROM, balance, and global perceived effect (GPE). At 12 months both manual therapy groups had less dizziness frequency (mean difference SNAGs vs placebo -0.7, 95% confidence interval (CI) -1.3, -0.2, p = 0.01; PJMs vs placebo -0.7, -1.2, -0.1, p = 0.02), lower DHI scores (mean difference SNAGs vs placebo -8.9, 95% CI -16.3, -1.6, p = 0.02; PJMs vs placebo -13.6, -20.8, -6.4, p < 0.001) and higher GPE compared to placebo, whereas there were no between-group differences in dizziness intensity, pain intensity or HRA.

There was greater ROM in all six directions for the SNAG group and in four directions for the PJM group compared to placebo, and small improvements in balance for the SNAG group compared to placebo. There were no adverse effects. These results provide evidence that both forms of manual therapy have long-term beneficial effects in the treatment of chronic cervicogenic dizziness.

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KEYWORDS: Cervical vertebrae; Dizziness; Musculoskeletal manipulation; Neck pain

PMID: 25220110

From: September 29, 2014

Manipulation and nitric oxide

Man Ther. 2014 Oct;19(5):411-7. doi: 10.1016/j.math.2014.02.007. Epub 2014 Mar 5.

Immediate effects of spinal manipulation on nitric oxide, substance P and pain perception.

Molina-Ortega F1, Lomas-Vega R1, Hita-Contreras F2, Plaza Manzano G3, Achalandabaso A1, Ramos-Morcillo AJ1, Martínez-Amat A1.

Abstract

Previous studies have analyzed the effects of spinal manipulation on pain sensitivity by using several sensory modalities, but to our knowledge, no studies have focused on serum biomarkers involved in the nociceptive pathway after spinal manipulation. Our objectives were to determine the immediate effect of cervical and dorsal manipulation over the production of nitric oxide and substance P, and establishing their relationship with changes in pressure pain thresholds in asymptomatic subjects. In this single-blind randomized controlled trial, 30 asymptomatic subjects (16 men) were randomly distributed into 3 groups (n = 10 per group): control, cervical and dorsal manipulation groups. Blood samples were extracted to obtain serum. ELISA assay for substance P and chemiluminescence analysis for nitric oxide determination were performed. Pressure pain thresholds were measured with a pressure algometer at the C5-C6 joint, the lateral epicondyle and the tibialis anterior muscle. Outcome measures were obtained before intervention, just after intervention and 2 h after intervention. Our results indicated an increase in substance P plasma level in the cervical manipulation group (70.55%) when compared with other groups ($p < 0.05$). This group also showed an elevation in the pressure pain threshold at C5-C6 (26.75%) and lateral epicondyle level (21.63%) immediately after the intervention ($p < 0.05$).

No changes in nitric oxide production were observed. In conclusion, mechanical stimulus provided by cervical manipulation increases substance P levels and pressure pain threshold but does not change nitric oxide concentrations. Part of the hypoalgesic effect of spinal manipulation may be due to the action of substance P.

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KEYWORDS: Nitric oxide; Pressure pain threshold; Spinal manipulation; Substance P
PMID: 24674816

From: September 29, 2014

Reiki therapy and pain

Pain Manag Nurs. 2014 Feb 27. pii: S1524-9042(13)00080-5. doi: 10.1016/j.pmn.2013.07.008.

Effect of Reiki Therapy on Pain and Anxiety in Adults: An In-Depth Literature Review of Randomized Trials with Effect Size Calculations.

Thrane S1, Cohen SM2.

Abstract

The objective of this study was to calculate the effect of Reiki therapy for pain and anxiety in randomized clinical trials. A systematic search of PubMed, ProQuest, Cochrane, PsychInfo, CINAHL, Web of Science, Global Health, and Medline databases was conducted using the search terms pain, anxiety, and Reiki. The Center for Reiki Research also was examined for articles. Studies that used randomization and a control or usual care group, used Reiki therapy in one arm of the study, were published in 2000 or later in peer-reviewed journals in English, and measured pain or anxiety were included. After removing duplicates, 49 articles were examined and 12 articles received full review. Seven studies met the inclusion criteria: four articles studied cancer patients, one examined post-surgical patients, and two analyzed community dwelling older adults. Effect sizes were calculated for all studies using Cohen's d statistic. Effect sizes for within group differences ranged from $d = 0.24$ for decrease in anxiety in women undergoing breast biopsy to $d = 2.08$ for decreased pain in community dwelling adults. The between group differences ranged from $d = 0.32$ for decrease of pain in a Reiki versus rest intervention for cancer patients to $d = 4.5$ for decrease in pain in community dwelling adults.

Although the number of studies is limited, based on the size Cohen's d statistics calculated in this review, there is evidence to suggest that Reiki therapy may be effective for pain and anxiety. Continued research using Reiki therapy with larger sample sizes, consistently randomized groups, and standardized treatment protocols is recommended.

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PMID: 24582620

From: September 29, 2014

Impact of MT on musculoskeletal pain

Analgesic effects of manual therapy in patients with musculoskeletal pain: A systematic review

Manual Therapy , 09/30/2014 Evidence Based Medicine Review Article
Voogt L, et al.

Moderate evidence indicated that manual therapy increased local pressure pain thresholds in musculoskeletal pain, immediately following the intervention. No consistent result was found on remote pressure pain threshold. No significant changes occurred on thermal pain threshold values. The clinical relevance of these effects remains contradictory and therefore unclear.

Abstract

Background

Current evidence shows that manual therapy elicits analgesic effect in different populations (healthy, pain inflicted and patients with musculoskeletal pain) when carried out at the spinal column, although the clinical significance of these effects remains unclear. Also the analgesic effects of manual therapy on peripheral joints have not been systematically reviewed.

Methods

A systematic review was carried out following the PRISMA-guidelines. Manual therapy was defined as any manual induced articular motion with the aim of inducing analgesic effects. Outcome measure was pain threshold.

Results

A total of 13 randomized trials were included in the review. In 10 studies a significant effect was found. Pressure pain thresholds increased following spinal or peripheral manual techniques. In three studies both a local and widespread analgesic effect was found. No significant effect was found on thermal pain threshold.

Discussion

Moderate evidence indicated that manual therapy increased local pressure pain thresholds in musculoskeletal pain, immediately following the intervention. No consistent result was found on remote pressure pain threshold. No significant changes occurred on thermal pain threshold values. The clinical relevance of these effects remains contradictory and therefore unclear.

From: September 29, 2014

STRETCHING/MUSCLES

Hamstring stretching adding rotation

Man Ther. 2014 Aug 13. pii: S1356-689X(14)00146-5. doi: 10.1016/j.math.2014.07.016.

The effect of hip rotation on shear elastic modulus of the medial and lateral hamstrings during stretching.

Umegaki H1, Ikezoe T2, Nakamura M3, Nishishita S2, Kobayashi T2, Fujita K2, Tanaka H2, Ichihashi N2.

Abstract

Regarding hamstring stretching methods, many studies have investigated the effect of stretching duration or frequency on muscle stiffness. However, the most effective stretching positions for hamstrings are unclear because it is impossible to quantify muscle elongation directly and noninvasively in vivo. Recently, a new ultrasound technology, ultrasonic shear wave elastography, has permitted noninvasive and reliable measurement of muscle shear elastic modulus, which has a strong linear relationship to the amount of muscle elongation. This study aimed to investigate the effect of hip internal and external rotation on shear elastic modulus of the lateral and medial hamstrings, respectively, during stretching in vivo using ultrasonic shear wave elastography. Twenty-three healthy men (age, 23.0 ± 2.1 years) were recruited for this study. To investigate the effect of hip rotation on the elongation of the medial and lateral hamstrings, shear elastic modulus of the biceps femoris (BF) and semitendinosus (ST) was measured at rest (a supine position with 90° knee flexion, 90° hip flexion, and hip neutral rotation) and in seven stretching positions (with 45° knee flexion and hip internal, external, and neutral rotation) using ultrasonic shear wave elastography. In both BF and ST, the shear elastic modulus in the rest position was significantly lower than that in all stretching positions. However, no significant differences were seen among stretching positions.

Our results suggest that adding hip rotation at a stretching position for the hamstrings may not have a significant effect on muscle elongation of the medial and lateral hamstrings.

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KEYWORDS: Hamstrings; Hip rotation; Stretching; Ultrasonic shear wave elastography

PMID: 25194631

From: September 29, 2014

POSTURE

Childrens posture

Man Ther. 2014 Oct;19(5):392-8. doi: 10.1016/j.math.2013.10.005. Epub 2013 Oct 27.

Active self-correction of back posture in children instructed with 'straighten your back' command.

Czaprowski D1, Pawłowska P2, Stoliński L3, Kotwicki T4.

Abstract

The ability to adopt the properly corrected body posture is one of the factors determining the effectiveness of therapeutic programmes. This study determined the active self-correction expressed by the change of sagittal spinal curvatures (in standing and sitting positions) in 249 children (136 females, 113 males, aged 10-14 years) instructed with 'straighten your back' command (SYB). Spinal curvatures (sacral slope-SS, lumbar lordosis-LL, global, lower and upper thoracic kyphosis-TK, LK, UK, respectively) were assessed using Saunders inclinometer. The assessment was done in spontaneous standing and sitting positions and in the positions adopted after the SYB. In a standing position SYB led to the significant ($P < 0.001$) increase in SS, and the significant ($P < 0.01$) decrease in LL, TK, LK, UK. In a sitting position SYB led to significant changes ($P < 0.001$) from kyphotic to lordotic position of SS and LL and to the significant ($P < 0.001$) reduction of TK ($36.5^\circ \pm 10.8$ vs. $23.5^\circ \pm 11$) and the flattening of LK ($15.2^\circ \pm 8.7$ vs. $1.0^\circ \pm 8.4$).

There were gender-based discrepancy regarding active self-correction only for LL in a standing and UK in a sitting position. Females demonstrated a significant decrease in LL ($P < 0.001$). UK significantly increased only in males ($P < 0.001$).

The 'straighten your back' command leads to moving the spine away from mid-range towards end range of motion. Therefore, the command should not be used to elicit the most optimal back posture. Further studies are needed to determine if the active self-correction is different in females and males.

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KEYWORDS: Body posture; Self-correction; Spine curvatures

PMID: 24246905

From: September 29, 2014

ATHLETICS

Vagal response

Med Sci Sports Exerc. 2014 Sep 25.

AEROBIC TRAINING IMPROVES VAGAL REACTIVATION REGARDLESS OF RESTING VAGAL CONTROL.

Duarte A1, Soares PP, Pescatello L, Farinatti P.

Abstract

INTRODUCTION/PURPOSE:

Resting cardiac vagal modulation (RCVM) and postexercise vagal reactivation (PEVR) are markers of parasympathetic activity. We investigated whether adaptations in these markers to aerobic training are influenced by baseline autonomic control.

METHODS:

Forty healthy men (19.2 ± 0.8 yr) of similar cardiorespiratory fitness ($VO_{2peak} = 50.4 \pm 5.7$ ml·kg·min) and matched for autonomic activity were randomized into four groups: Training low-RCVM (TL, n=11, high-frequency power component [HF]= 48.1 ± 8.2 n.u) and high-RCVM (TH, n=11, HF= 63.1 ± 5.9 n.u.); and non-exercise control low-RCVM (CL, n=9, HF= 47.1 ± 7.5 n.u) and high-RCVM (CH, n=9, HF= 65.5 ± 8.3 n.u.). Aerobic training groups exercised 3 d[BULLET OPERATOR]wk for 40 min at 75-85% heart rate reserve for 12 wk. Before and after the training period, sequences of 5 min R-R intervals were recorded at rest and immediately after maximal treadmill test to estimate: a) RCVM (HF); and b) PEVR (root mean square of successive R-R differences - rMSSD3-5min - mean value from 3-5 min recovery).

RESULTS:

Training improved VO_{2peak} in TL ($11.7 \pm 5.4\%$; $P < 0.01$) and TH ($7.0 \pm 2.9\%$; $P < 0.01$) with no difference between groups ($P = 0.70$), but not in CL ($0.8 \pm 3.9\%$) and CH ($1.8 \pm 6.2\%$; $P = 0.90$). Only TL increased RCVM (56.6 ± 13.3 n.u., $P = 0.03$), approaching TH level (58.9 ± 12.3 n.u.; $P = 0.60$); rMSSD3-5min increased in both training groups ($P < 0.01$), but not in controls ($P = 0.99$). Relative changes in RCVM ($\Delta HF\%$) and PEVR ($\Delta rMSSD3-5min\%$) were significantly correlated in TL ($r = 0.61$; $P = 0.04$).

CONCLUSION:

PEVR after exercise increased in both exercise-training groups, whereas RCVM increased only in the group with low vagal activity at baseline. Vagal reactivation may be improved by aerobic training, even when basal activity remains unaltered.

PMID: 25259540

From: September 29, 2014

Interference/varying training

Med Sci Sports Exerc. 2014 Sep 24.

Contextual Interference Effect in Perceptual-Cognitive Skills Training.

Broadbent DP1, Causer J, Ford PR, Mark Williams A.

Abstract

INTRODUCTION:

The contextual interference (CI) effect predicts that a random order of practice for multiple skills is superior for learning compared to a blocked order. We report a novel attempt to examine the CI effect during the acquisition and transfer of anticipatory judgments from simulation training to an applied sport situation.

METHOD:

Participants were required to anticipate tennis shots under either a random or blocked practice schedule. Response accuracy was recorded for both groups at pre-test, during acquisition, and on a 7-day retention test. Transfer of learning was assessed through a field-based tennis protocol that attempted to assess performance in an applied sport setting.

RESULTS:

The random practice group had significantly higher response accuracy scores compared to the blocked group on the 7-day laboratory retention test. Moreover, in the transfer to an applied sport situation the decision times of the random practice group were significantly lower compared to the blocked group.

CONCLUSION:

The CI effect was found to extend to the training of anticipatory judgments through simulation techniques. Furthermore, we demonstrate for the first time that the CI effect increases transfer of learning from simulation training to the applied sport task, highlighting the importance of using appropriate practice schedules during simulation training.

PMID: 25255127

From: September 29, 2014

Water temperature

Med Sci Sports Exerc. 2014 Sep 25.

Temperature of Ingested Water during Exercise Does Not Affect Body Heat Storage.

Lamarche DT1, Meade RD, McGinn R, Poirier MP, Friesen BJ, Kenny GP.

Abstract

PURPOSE:

To examine the effect of ingested water temperature on the heat balance during exercise as assessed by direct calorimetry.

METHODS:

Ten healthy males (25 ± 4 years) cycled at 50% VO_{2peak} [equivalent rate of metabolic heat production (M-W) of 523 ± 84 W] for 75 min in thermocomfortable conditions (25°C , 25% relative humidity) while consuming either hot (50°C) or cold (1.5°C) water. Four 3.2 ml [BULLET OPERATOR]kg boluses of hot or cold water were consumed 5 min prior to and at 15, 30, and 45 min following the onset of exercise. Total heat loss [HL = evaporative heat loss (HE) \pm dry heat exchange (HD)] and M-W were measured by direct and indirect calorimetry, respectively. Change in body heat content ([INCREMENT]Hb) was measured as the temporal summation of M-W and HL and adjusted for changes in heat transfer from the ingested fluid (Hfluid).

RESULTS:

The absolute difference for HL (209 ± 81 kJ) was similar to the absolute difference of Hfluid (204 ± 36 kJ) between conditions ($p=0.785$). Further, the difference in HL was primarily explained by corresponding changes in HE (hot: 1538 ± 393 kJ; cold: 1358 ± 330 kJ) as HD was found to be similar between conditions ($p=0.220$). Consequently, no difference in [INCREMENT]Hb was observed between the hot (364 ± 152 kJ) and cold (363 ± 134 kJ) conditions ($p=0.971$) during exercise.

CONCLUSION:

We show that ingestion of hot water elicits a greater HL relative to cold water ingestion during exercise. However, this response was only to compensate for the heat of the ingested fluid as evidenced by similar [INCREMENT]Hb between conditions. Therefore, our findings indicate that relative to cold water ingestion, consuming hot water does not provide a thermoregulatory advantage. Both hot and cold water ingestion results in the same amount of heat stored during prolonged moderate intensity exercise.

PMID: 25259541

From: September 29, 2014

Cardiometabolic

Med Sci Sports Exerc. 2014 Sep 23

Strength Fitness and Body Weight Status on Markers of Cardiometabolic Health.

Roberts CK1, Lee MM, Katiraie M, Krell SL, Angadi SS, Chronley MK, Oh CS, Ribas V, Harris RA, Hevener AL, Croymans DM.

Abstract

INTRODUCTION:

Recent evidence suggests that resistance training (RT) may reduce metabolic and cardiovascular disease risk. We investigated whether overweight/class I obese individuals by BMI classification with high strength fitness exhibit cardiovascular/metabolic phenotypes similar to those overweight/obese and untrained or those normal-weight with high strength fitness.

METHODS:

90 young males were categorized into 3 groups: overweight untrained (OU, n=30, BMI>27 kg/m), overweight trained (OT, n=30, BMI>27kg/m, RT≥4 d/wk) and normal-weight trained (NT, n=30, BMI<25kg/m, RT≥4 d/wk). Participants were assessed for strength, body composition, central/peripheral blood pressures, arterial stiffness, and markers of cardiovascular and metabolic health.

RESULTS:

Body weight was similar in OT and OU and greater than NT (P<0.00001), and fat mass was different in all groups (P<0.001). Compared to OU, NT and OT groups exhibited higher relative strength (NT:46.7%;OT:44.4%,P<0.00001) and subendocardial viability ratio (NT:21.0%,P<0.001;OT:17.0%,P<0.01) and lower brachial/central blood pressures (NT:P<0.001;OT:P≤0.05); augmentation index and pulse-wave velocity were lower in only OT (P<0.05). Total-cholesterol, low-density lipoprotein (NT:P<0.01,OT:P<0.05), triglycerides (NT:-50.4%,OT:-41.8%;P<0.001), oxidized LDL (NT:-39.8%,OT:-31.8%;P<0.001) and CRP (NT:-63.7%,OT:-67.4%;P<0.01) levels were lower and high-density lipoprotein (NT:26.9%,OT:21.4%;P<0.001) higher in NT and OT compared to OU. NT and OT also exhibited lower amylin (NT:-55.8%,OT:-40.8%) and leptin (NT:-84.6%,OT:-59.4%) and higher adiponectin (NT:87.5%;P<0.001;OT:78.1%;P<0.01) and sex-hormone binding globulin (NT:124.4%,OT:92.3%;P<0.001). Despite greater total and trunk fat in OT compared with NT, other than glucose and insulin, which were lower in NT than both OT and OU (OT:P<0.01,OU:P<0.001), OT did not exhibit any impaired biomarker/phenotype compared to NT.

CONCLUSION:

These findings provide evidence that overweight/class I obese individuals with high strength fitness exhibit metabolic/cardiovascular risk profiles similar to normal-weight, fit rather than overweight/class I obese unfit individuals. Strength training may be important to metabolic and cardiovascular health.

PMID:25251047

From: September 29, 2014

GAIT

Posture and gait

Man Ther. 2014 Sep 6. pii: S1356-689X(14)00173-8. doi: 10.1016/j.math.2014.08.007.

Effect of posture on hip angles and moments during gait.

Lewis CL1, Sahrman SA2.

Abstract

Anterior hip pain is common in young, active adults. Clinically, we have noted that patients with anterior hip pain often walk in a swayback posture, and that their pain is reduced when the posture is corrected. The purpose of this study was to investigate a potential mechanism for the reduction in pain by testing the effect of posture on movement patterns and internal moments during gait in healthy subjects. Fifteen subjects were instructed to walk while maintaining three postures: 1) natural, 2) swayback, and 3) forward flexed. Kinematic and force data were collected using a motion capture system and a force plate. Walking in the swayback posture resulted in a higher peak hip extension angle, hip flexor moment and hip flexion angular impulse compared to natural posture. In contrast, walking in a forward flexed posture resulted in a decreased hip extension angle and decreased hip flexion angular impulse.

Based on these results, walking in a swayback posture may result in increased forces required of the anterior hip structures, potentially contributing to anterior hip pain. This study provides a potential biomechanical mechanism for clinical observations that posture correction in patients with hip pain is beneficial.

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KEYWORDS Gait; Hip; Kinematics; Kinetics; Posture

PMID: 25262565

From: September 29, 2014

RUNNING

Sagittal pain analysis

BRIEF REPORT

Ability of Sagittal Kinematic Variables to Estimate Ground Reaction Forces and Joint Kinetics in Running

Authors: Christa M. Wille¹, Rachel L. Lenhart, MS², Sijian Wang, PhD³, Darryl G. Thelen, PhD^{2,4}, Bryan C. Heiderscheit, PT, PhD^{1,2}

Published: Journal of Orthopaedic & Sports Physical Therapy,
2014, Volume: 44 Issue: 10 Pages: 825-830 doi:10.2519/jospt.2014.5367

Study Design Controlled laboratory study, cross-sectional design.

Objective To determine if sagittal kinematic variables can be used to estimate select running kinetics.

Background Excessive loading during running has been implicated in a variety of injuries, yet this information is typically not assessed during a standard clinical examination. Developing a clinically feasible strategy to estimate ground reaction forces and joint kinetics may improve the ability to identify those at an increased risk of injury.

Methods Three-dimensional kinematics and ground reaction forces of 45 participants were recorded during treadmill running at self-selected speed. Kinematic variables used to estimate specific kinetic metrics included vertical excursion of the center of mass, foot inclination angle at initial contact, horizontal distance between the center of mass and heel at initial contact, knee flexion angle at initial contact, and peak knee flexion angle during stance. Linear mixed-effects models were fitted to explore the association between the kinetic and kinematic measures, including step rate and sex, with final models created using backward variable selection. Results Models were developed to estimate peak knee extensor moment ($R^2 = 0.43$), energy absorbed at the knee during loading response ($R^2 = 0.58$), peak patellofemoral joint reaction force ($R^2 = 0.55$), peak vertical ground reaction force ($R^2 = 0.48$), braking impulse ($R^2 = 0.50$), and average vertical loading rate ($R^2 = 0.04$).

Conclusion Our findings suggest that insights into important running kinetics can be obtained from a subset of sagittal plane kinematics common to a clinical running analysis. Of note, the limb posture at initial contact influenced subsequent loading patterns in stance.

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doi:10.2519/jospt.2014.5367

From: September 29, 2014

Increasing running speed

CLINICAL COMMENTARY

Lower-Limb Muscular Strategies for Increasing Running Speed

Authors: Anthony G. Schache, PhD1, Tim W. Dorn, PhD2, Gavin P. Williams, PhD3,4, Nicholas A.T. Brown, PhD5, Marcus G. Pandy, PhD1

Published: Journal of Orthopaedic & Sports Physical Therapy,
2014, Volume: 44 Issue: 10 Pages: 813-824 doi:10.2519/jospt.2014.5433

Synopsis

This clinical commentary discusses the mechanisms used by the lower-limb musculature to achieve faster running speeds. A variety of methodological approaches have been taken to evaluate lower-limb muscle function during running, including direct recordings of muscle electromyographic signal, inverse dynamics-based analyses, and computational musculoskeletal modeling. Progressing running speed from jogging to sprinting is mostly dependent on ankle and hip muscle performance. For speeds up to approximately 7.0 m/s, the dominant strategy is to push on the ground forcefully to increase stride length, and the major ankle plantar flexors (soleus and gastrocnemius) have a particularly important role in this regard. At speeds beyond approximately 7.0 m/s, the force-generating capacity of these muscles becomes less effective. Therefore, as running speed is progressed toward sprinting, the dominant strategy shifts toward the goal of increasing stride frequency and pushing on the ground more frequently.

This strategy is achieved by generating substantially more power at the hip joint, thereby increasing the biomechanical demand on proximal lower-limb muscles such as the iliopsoas, gluteus maximus, rectus femoris, and hamstrings. Basic science knowledge regarding lower-limb muscle function during running has implications for understanding why sprinting performance declines with age. It is also of great value to the clinician for designing rehabilitation programs to restore running ability in young, previously active adults who have sustained a traumatic brain injury and have severe impairments of muscle function (eg, weakness, spasticity, poor motor control) that limit their capacity to run at any speed.

J Orthop Sports Phys Ther 2014;44(10):813–824. Epub 7 August 2014.
doi:10.2519/jospt.2014.5433

Keyword: joint power, sprinting, traumatic brain injury, work

From: September 29, 2014

Arch height and injury

RESEARCH REPORT

Injury-Reduction Effectiveness of Prescribing Running Shoes on the Basis of Foot Arch Height: Summary of Military Investigations

Authors: Joseph J. Knapik, ScD1, Daniel W. Trone, PhD2, Juste Tchandja, MPH3, Bruce H. Jones, MD1

Published: Journal of Orthopaedic & Sports Physical Therapy,
2014, Volume: 44 Issue: 10 Pages: 805-812 doi:10.2519/jospt.2014.5342

Study Design Secondary analysis of 3 randomized controlled trials.

Objective Analysis of studies that examined whether prescribing running shoes on the basis of foot arch height influenced injury risk during military basic training.

Background Prior to 2007, running magazines and running-shoe companies suggested that imprints of the bottom of the feet (plantar shape) could be used as an indication of foot arch height and that this could be used to select individually appropriate types of running shoes.

Methods Similar studies were conducted in US Army (2168 men, 951 women), Air Force (1955 men, 718 women), and Marine Corps (840 men, 571 women) basic training. After foot examinations, recruits were randomized to either an experimental or a control group. Recruits in the experimental group selected or were assigned motion-control, stability, or cushioned shoes to match their plantar shape, which represented a low, medium, or high foot arch, respectively. The control group received a stability shoe regardless of plantar shape. Injuries during basic training were assessed from outpatient medical records.

Results Meta-analyses that pooled results of the 3 investigations showed little difference between the experimental and control groups in the injury rate (injuries per 1000 person-days) for either men (summary rate ratio = 0.97; 95% confidence interval [CI]: 0.88, 1.06) or women (summary rate ratio = 0.97; 95% CI: 0.85, 1.08). When injury rates for specific types of running shoes were compared, there were no differences.

Conclusion Selecting running shoes based on arch height had little influence on injury risk in military basic training.

Level of Evidence Prevention, level 1b.

J Orthop Sports Phys Ther 2014;44(10):805–812. Epub 25 August 2014.
doi:10.2519/jospt.2014.5342

Keyword: footprints, foot type, pronation

From: September 29, 2014

Trunk posture

RESEARCH REPORT

Sagittal Plane Trunk Posture Influences Patellofemoral Joint Stress During Running

Authors: Hsiang-Ling Teng, PT, PhD^{1,2}, Christopher M. Powers, PT, PhD¹

Published: Journal of Orthopaedic & Sports Physical Therapy,
2014, Volume: 44 Issue: 10 Pages: 785-792 doi:10.2519/jospt.2014.5249

Study Design Cross-sectional, repeated-measures.

Objectives To examine the association between sagittal plane trunk posture and patellofemoral joint (PFJ) stress, and to determine whether modifying sagittal plane trunk posture influences PFJ stress during running.

Background Patellofemoral pain is the most common injury among runners and is thought to be the result of elevated PFJ stress. While sagittal plane trunk posture has been shown to influence tibiofemoral joint mechanics, no study has examined the influence of trunk posture on PFJ kinetics.

Methods Twenty-four asymptomatic recreational runners (12 women, 12 men) ran overground at a speed of 3.4 m/s under 3 trunk-posture conditions: self-selected, flexed, and extended. Trunk and knee kinematics, ground reaction forces, and electromyographic signals from selected lower extremity muscles were obtained. A previously described PFJ biomechanical model was used to quantify PFJ stress.

Results The mean \pm SD trunk flexion angles under the self-selected, flexed, and extended running conditions were $7.3^\circ \pm 3.6^\circ$, $14.1^\circ \pm 4.8^\circ$, and $4.0^\circ \pm 3.9^\circ$, respectively. A significant inverse relationship was observed between mean trunk flexion angle and peak PFJ stress during the self-selected condition ($r = -0.60$, $P = .002$). Peak PFJ stress was significantly lower in the flexed condition (mean \pm SD, 20.2 ± 3.4 MPa; $P < .001$) and significantly higher in the extended condition (23.1 ± 3.4 MPa; $P < .001$) compared to the self-selected condition (21.5 ± 3.2 MPa).

Conclusion Sagittal plane trunk posture has a significant influence on PFJ kinetics during running. Incorporation of a forward trunk lean may be an effective strategy to reduce PFJ stress during running.

J Orthop Sports Phys Ther 2014;44(10):785–792. Epub 25 August 2014.
doi:10.2519/jospt.2014.5249

Keyword: anterior knee pain, chondromalacia, patella

From: September 29, 2014

Stress fractures

J Orthop Sports Phys Ther 2014;44(10):749–765. Epub 7 August 2014.
doi:10.2519/jospt.2014.5334

CLINICAL COMMENTARY

Management and Prevention of Bone Stress Injuries in Long-Distance Runners

Authors: Stuart J. Warden, PT, PhD, FACSM^{1,2}, Irene S. Davis, PT, PhD, FACSM, FAPTA, FASB^{3,4}, Michael Fredericson, MD⁵

Synopsis Bone stress injury (BSI) represents the inability of bone to withstand repetitive loading, which results in structural fatigue and localized bone pain and tenderness. A BSI occurs along a pathology continuum that begins with a stress reaction, which can progress to a stress fracture and, ultimately, a complete bone fracture. Bone stress injuries are a source of concern in long-distance runners, not only because of their frequency and the morbidity they cause but also because of their tendency to recur. While most BSIs readily heal following a period of modified loading and a progressive return to running activities, the high recurrence rate of BSIs signals a need to address their underlying causative factors. A BSI results from disruption of the homeostasis between microdamage formation and its removal. Microdamage accumulation and subsequent risk for development of a BSI are related both to the load applied to a bone and to the ability of the bone to resist load.

The former is more amenable to intervention and may be modified by interventions aimed at training-program design, reducing impact-related forces (eg, instructing an athlete to run “softer” or with a higher stride rate), and increasing the strength and/or endurance of local musculature (eg, strengthening the calf for tibial BSIs and the foot intrinsics for BSIs of the metatarsals). Similarly, malalignments and abnormal movement patterns should be explored and addressed. The current commentary discusses management and prevention of BSIs in runners. In doing so, information is provided on the pathophysiology, epidemiology, risk factors, clinical diagnosis, and classification of BSIs.

Level of Evidence Therapy, level 5.

Keyword: female athlete triad, rehabilitation, risk factors, stress fracture, stress reaction

From: September 29, 2014

Running related injuries

J Orthop Sports Phys Ther 2014;44(10):733–738. Epub 25 August 2014.
doi:10.2519/jospt.2014.5710

RESEARCH REPORT

Excessive Progression in Weekly Running Distance and Risk of Running-Related Injuries: An Association Which Varies According to Type of Injury

Authors: Rasmus Østergaard Nielsen, PT, MHSc1,2, Erik Thorlund Parner, PhD3, Ellen Aagaard Nohr, PhD4,5, Henrik Sørensen, PhD1, Martin Lind, PhD6, Sten Rasmussen, MD2,7

Study Design An explorative, 1-year prospective cohort study.

Objective To examine whether an association between a sudden change in weekly running distance and running-related injury varies according to injury type.

Background It is widely accepted that a sudden increase in running distance is strongly related to injury in runners. But the scientific knowledge supporting this assumption is limited.

Methods A volunteer sample of 874 healthy novice runners who started a self-structured running regimen were provided a global-positioning-system watch. After each running session during the study period, participants were categorized into 1 of the following exposure groups, based on the progression of their weekly running distance: less than 10% or regression, 10% to 30%, or more than 30%. The primary outcome was running-related injury.

Results A total of 202 runners sustained a running-related injury. Using Cox regression analysis, no statistically significant differences in injury rates were found across the 3 exposure groups. An increased rate of distance-related injuries (patellofemoral pain, iliotibial band syndrome, medial tibial stress syndrome, gluteus medius injury, greater trochanteric bursitis, injury to the tensor fascia latae, and patellar tendinopathy) existed in those who progressed their weekly running distance by more than 30% compared with those who progressed less than 10% (hazard ratio = 1.59; 95% confidence interval: 0.96, 2.66; P = .07).

Conclusion Novice runners who progressed their running distance by more than 30% over a 2-week period seem to be more vulnerable to distance-related injuries than runners who increase their running distance by less than 10%. Owing to the exploratory nature of the present study, randomized controlled trials are needed to verify these results, and more experimental studies are needed to validate the assumptions. Still, novice runners may be well advised to progress their weekly distances by less than 30% per week over a 2-week period.

Level of Evidence Prognosis, level 1b-

Keyword: etiology, novice, prospective

From: September 29, 2014

Why I got injured

J Orthop Sports Phys Ther 2014;44(10):733–738. Epub 25 August 2014.
doi:10.2519/jospt.2014.5710

RESEARCH REPORT

What Do Recreational Runners Think About Risk Factors for Running Injuries? A Descriptive Study of Their Beliefs and Opinions

Authors: Bruno Tirotti Saragiotto, PT, MSc1, Tiê Parma Yamato, PT, MSc1, Alexandre Dias Lopes, PT, PhD1

Study Design Qualitative study based on semi-structured interviews.

Objectives To describe the beliefs and opinions of runners about risk factors associated with running injuries.

Background Despite the health benefits of running, a high prevalence of injury has been reported in runners. Preventive strategies for running injuries may be more successful with a better knowledge of runners' beliefs.

Methods A semi-structured interview of recreational runners was based on the question, “What do you think can cause injuries in runners?” Analysis of the interviews was performed in 3 steps: (1) organizing the data into thematic units, (2) reading and reorganizing the data according to frequency of citation, and (3) interpreting and summarizing the data. The runner interviews were continued until no new beliefs and opinions of runners regarding injuries were being added to the data, indicating saturation of the topic.

Results A total of 95 recreational runners (65 men, 30 women) between the ages of 19 and 71 years were interviewed. Of those interviewed, the average running experience was 5.5 years and approximately 45% had experienced a running-related injury in the past. The factors suggested by the runners were divided into extrinsic and intrinsic factors. The most cited extrinsic factors were “not stretching,” “excess of training,” “not warming up,” “lack of strength,” and “wearing the wrong shoes.” For the intrinsic factors, the main terms cited were “not respecting the body's limitations” and “foot-type changes.”

Conclusion Recreational runners mainly attributed injury to factors related to training, running shoes, and exceeding the body's limits. Knowing the factors identified in this study may contribute to the development of better educational strategies to prevent running injuries, as some of the runners' beliefs are not supported by the research literature.

Keyword: prevention, qualitative research, running, shoes

From: September 29, 2014

Core training and running

J Strength Cond Res. 2014 Aug 26

'Functional' inspiratory and core muscle training enhances running performance and economy.

Tong TK1, McConnell AK, Lin H, Nie J, Zhang H, Wang J.

Abstract

We compared the effects of two 6-week high-intensity interval training interventions. Under the control condition (CON), only interval training was undertaken, whilst under the intervention condition (ICT), interval training sessions were followed immediately by core training, which was combined with simultaneous inspiratory muscle training - 'functional' IMT. Sixteen recreational runners were allocated to either ICT or CON groups. Prior to the intervention phase, both groups undertook a 4-week programme of 'foundation' IMT to control for the known ergogenic effect of IMT [30 inspiratory efforts at 50% maximal static inspiratory pressure (P0) per set, 2 sets.d, 6 d.wk]. The subsequent 6-week interval running training phase, consisted of 3-4 sessions.wk. In addition, the ICT group undertook four inspiratory-loaded core exercises [10 repetitions.set, 2 sets.d, inspiratory load set at 50% post-IMT P0] immediately after each interval training session. The CON group received neither core training nor functional IMT. Following the intervention phase, global inspiratory and core muscle functions increased in both groups ($P < 0.05$), as evidenced by P0 and a sport-specific endurance plank test performance (SEPT), respectively. Compared to CON, the ICT group showed larger improvements in SEPT, running economy at the speed of the OBLA, and 1-hr running performance (3.04% vs 1.57%, $P < 0.05$). The changes in these variables were inter-individually correlated ($r \geq 0.57$, $n = 16$, $P < 0.05$).

Such findings suggest that the addition of inspiratory-loaded core conditioning into a high-intensity interval training program augments the influence of the interval program upon endurance running performance, and that this may be underpinned by an improvement in running economy.

From: September 29, 2014

Running rate and hip muscle reaction

J Orthop Sports Phys Ther. 2014 Aug 25:1-30.

Hip Muscle Loads During Running at Various Step Rates.

Lenhart R1, Thelen D, Heiderscheit B.

Abstract

Study Design Controlled laboratory study, cross-sectional.

Objectives To characterize hip muscle forces and powers during running, and to determine how these quantities change when altering step rate for a given running speed.

Background Hip musculature has been implicated in a variety of running related injuries, and as such is often the target of rehabilitation interventions including resistance exercises and gait retraining. The differential contributions of the hip muscles to the task of running is not well understood, and may be important for recognizing the biomechanical mechanisms of running-related injuries and refining current treatment and prevention strategies.

Methods Thirty healthy participants ran at their preferred speed at 3 different step rates: 90%, 100%, and 110% of their preferred step rate. Whole body kinematics and ground reaction forces were recorded. A 3D musculoskeletal model was used to estimate muscle forces needed to produce the measured joint accelerations. Forces and powers of each muscle were compared across step rate conditions.

Results Peak force produced by the gluteus medius during running was substantially greater than any other hip muscle, with the majority of muscles displaying a period of negative work immediately preceding positive work. The higher running step rate led to an increase in hip flexor, hamstring, and hip extensor loading during swing, but conversely substantially diminished peak force and work during loading response for several hip muscles including the gluteal muscles and piriformis.

Conclusion Increasing running step rate for a given running speed heightened hamstring and gluteal muscle loading in late swing, while decreasing stance phase loading in the gluteal muscles and piriformis. These results may enable clinicians to support and refine current treatment strategies including exercise prescription and gait retraining for running-related injuries.

J Orthop Sports Phys Ther, Epub 25 August 2014. doi:10.2519/jospt.2014.5575.

From: September 29, 2014

Change in stress with increase speed

Int J Sports Med. 2014 Aug;35(9):779-84. doi: 10.1055/s-0033-1363236. Epub 2014 Mar 4.

The effects of running cadence manipulation on plantar loading in healthy runners.

Wellenkotter J1, Kernozek TW1, Meardon S2, Suchomel T3.

Abstract

Our purpose was to evaluate effects of cadence manipulation on plantar loading during running. Participants (n=38) ran on a treadmill at their preferred speed in 3 conditions: preferred, 5% increased, and 5% decreased while measured using in-shoe sensors. Data (contact time [CT], peak force [PF], force time integral [FTI], pressure time integral [PTI] and peak pressure [PP]) were recorded for 30 right footfalls. Multivariate analysis was performed to detect differences in loading between cadences in the total foot and 4 plantar regions. Differences in plantar loading occurred between cadence conditions.

Total foot CT and PF were lower with a faster cadence, but no total foot PP differences were observed. Faster cadence reduced CT, pressure and force variables in both the heel and metatarsal regions. Increasing cadence did not elevate metatarsal loads; rather, total foot and all regions were reduced when healthy runners increased their cadence.

If a 5% increase in cadence from preferred were maintained over each mile run the impulse at the heel would be reduced by an estimated 565 body weights*s (BW*s) and the metatarsals 140-170 BW*s per mile run despite the increased steps taken. Increasing cadence may benefit overuse injuries associated with elevated plantar loading.

From: September 29, 2014

PAIN

Hyperalgesia and LBP

Clin J Pain. 2014 Oct;30(10):886-93. doi: 10.1097/AJP.0000000000000045.

Contributions of Mood, Pain Catastrophizing, and Cold Hyperalgesia in Acute and Chronic Low Back Pain: A Comparison With Pain-free Controls.

Hübscher M1, Moloney N, Rebbeck T, Traeger A, Refshauge KM.

Abstract

OBJECTIVES:

Quantitative sensory testing (QST) has been used to elucidate the peripheral and central mechanisms that underlie changes in pain sensitivity associated with low back pain (LBP). However, it remains unclear to what degree peripheral and central changes contribute to the generation and maintenance of LBP. The aim of this study was to compare thermal pain sensitivity, measured using QST, in participants with acute LBP, chronic LBP, and pain-free controls.

MATERIALS AND METHODS:

Participant groups with acute LBP (N=20), chronic LBP (N=30), and pain-free controls (N=30) were assessed by thermal QST. The unique contributions of pain-related psychological and QST variables to predict membership to the acute and chronic pain groups were also determined.

RESULTS:

We found that participants with chronic LBP demonstrated significantly lower cold pain threshold (CPT) in the primary area of pain (low back) as well as in an area anatomically remote from the primary area of pain (forearm) when compared with controls. Participants with acute LBP did not show significantly elevated pain sensitivity. CPT at the remote site was a significant independent predictor of membership to the chronic pain group, after the adjustment for mood and pain catastrophizing. CPT explained 8% of the total variance of 46% related to group membership.

DISCUSSION:

We found evidence for localized and generalized cold hyperalgesia in chronic, but not acute LBP. We might speculate that hyperalgesia develops as a consequence of long-lasting LBP, but prospective studies are needed to confirm this assumption.

PMID: 24145929

From: September 29, 2014

Parents pain patterns

Pain Manag Nurs. 2014 Jan 9. pii: S1524-9042(13)00169-0. doi: 10.1016/j.pmn.2013.11.003.

Ways of Understanding Parental Chronic Pain: A Typology.

Umberger W1, Martsof D2, Jacobson A3, Risko J4, Calabro M3, Patterson M5.

Abstract

Chronic non-cancer pain (CNCP) is a prevalent occurrence and is experienced by adults in their child-rearing years. Communication within the family about parental illness can be formidable, and family members are often uninformed about illness details. To date, there is no research exploring how children and adolescents understand parental chronic pain, a very complex phenomenon, and its related disability. The aim of this study was to develop a substantive theory that describes how adolescents manage the experience of living with a parent suffering with CNCP and environmental factors that help or hinder this process. Grounded theory was used, the focus of which was adolescents' processes of dealing with parental illness in the interpersonal and environmental contexts of their daily lives. A sample of 30 young adults was recruited in northeastern Ohio using theoretical sampling. During open-ended interviews, participants were asked to look back on their adolescence and talk about how they managed living with parental chronic pain. Interview transcripts and field notes were analyzed using constant comparative methods.

Six ways of understanding parental chronic pain emerged from the data: noticing something is different, wrestling with not knowing, searching for answers, questioning the validity of pain, developing insight into the complexity of pain, and learning important life lessons. Findings shed light on how adolescents understand and attach meaning and significance to parental chronic pain and disability and serve as the basis for the development of personalized family interventions. Copyright © 2014 American Society for Pain Management Nursing. Published by Elsevier Inc. All rights reserved. PMID: 24412529

From: September 29, 2014

Fear based stress management

Phys Ther. 2014 Jul 17.

Chronic Stress, Cortisol Dysfunction, and Pain: A Psychoneuroendocrine Rationale for Stress Management in Pain Rehabilitation.

Hannibal KE1, Bishop MD2.

Abstract

Pain is a primary symptom driving patients to seek physical therapy, and its attenuation commonly defines a successful outcome. A large body of evidence is dedicated to elucidating the relationship between chronic stress and pain; however, stress is rarely addressed in pain rehabilitation. A physiologic stress response may be evoked by fear or perceived threat to safety, status, or well-being and elicits the secretion of sympathetic catecholamines (epinephrine and norepinephrine) and neuroendocrine hormones (cortisol) to promote survival and motivate success. Cortisol is a potent anti-inflammatory that functions to mobilize glucose reserves for energy and modulate inflammation. Cortisol also may facilitate the consolidation of fear-based memories for future survival and avoidance of danger. Although short-term stress may be adaptive, maladaptive responses (eg, magnification, rumination, helplessness) to pain or non-pain-related stressors may intensify cortisol secretion and condition a sensitized physiologic stress response that is readily recruited. Ultimately, a prolonged or exaggerated stress response may perpetuate cortisol dysfunction, widespread inflammation, and pain. Stress may be unavoidable in life, and challenges are inherent to success; however, humans have the capability to modify what they perceive as stressful and how they respond to it.

Exaggerated psychological responses (eg, catastrophizing) following maladaptive cognitive appraisals of potential stressors as threatening may exacerbate cortisol secretion and facilitate the consolidation of fear-based memories of pain- or non-pain-related stressors; however, coping, cognitive reappraisal, or confrontation of stressors may minimize cortisol secretion and prevent chronic, recurrent pain. Given the parallel mechanisms underlying the physiologic effects of a maladaptive response to pain and non-pain-related stressors, physical therapists should consider screening for non-pain-related stress to facilitate treatment, prevent chronic disability, and improve quality of life.

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PMID: 25035267

From: September 29, 2014

Stress and pain modulation

Pain. 2014 Sep 20. pii: S0304-3959(14)00446-1. doi: 10.1016/j.pain.2014.09.023

Acute psychosocial stress reduces pain modulation capabilities in healthy men.

Geva N1, Pruessner J2, Defrin R3.

Abstract

Anecdotes on the ability of individuals to continue to function under stressful conditions despite injuries causing excruciating pain, suggest that acute stress may induce analgesia. However, studies exploring the effect of acute experimental stress on pain perception show inconsistent results, possibly due to methodological differences. Our aim was to systematically study the effect of acute stress on pain perception using static and dynamic, state of the art pain measurements. Participants were 29 healthy men who underwent the measurement of heat-pain threshold, heat-pain intolerance, temporal summation of pain and conditioned pain modulation (CPM). Testing was conducted before and during exposure to the Montreal Imaging Stress Task (MIST) inducing acute psychosocial stress. Stress levels were evaluated using perceived ratings of stress and anxiety, autonomic variables and salivary cortisol. The MIST induced a significant stress reaction. Although pain threshold and pain intolerance were unaffected by stress, an increase in temporal summation of pain and a decrease in CPM were observed. These changes were significantly more robust among individuals with stronger reaction to stress ("high responders"), with a significant correlation between the perception of stress and the performance in the pain measurements.

We conclude that acute psychosocial stress seems not to affect the sensitivity to pain, however it significantly reduces the ability to modulate pain in a dose-response manner. Considering the diverse effects of stress in this and other studies, it appears that the type of stress and the magnitude of its appraisal determine its interactions with the pain system.

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KEYWORDS: Acute stress; Conditioned pain modulation; Pain perception; Pain tolerance

PMID: 25250721

From: September 29, 2014

White noise and pain in infants

Pain Manag Nurs. 2014 Feb 19. pii: S1524-9042(14)00023-X. doi: 10.1016/j.pmn.2014.01.002.

Effects of White Noise and Holding on Pain Perception in Newborns.

Karakoç A1, Türker F2.

Abstract

This experimental study on newborns was conducted to compare the effects of various atraumatic care procedures during an infant's crying response to pain. Included in this study were 120 newborns chosen from among healthy infants admitted to the Obstetrics Department of Çanakkale State Hospital between April 2010 and June 2010. The patients were divided into three physically homogeneous groups. Infants in group 1 were held on the mothers' laps, infants in group 2 were held on the mother's laps and listened to white noise, and infants in group 3 lay in their cribs and listened to white noise while undergoing a painful procedure. Data collection included the Neonatal Infant Pain Scale, which was used to evaluate the behavioral responses to pain during a heel prick blood draw and a newborn information sheet developed by the researcher. Changes in cardiac and respiratory rates recorded during the invasive procedure were statistically significant among the three groups ($p < .05$). The shortest crying period and the lowest behavioral reactions were among those infants lying in their cribs and listening to white noise. This group was then followed by the infants who listened to white noise while being held by their mothers. The highest behavioral reaction was reported by those infants who were held by their mothers but did not listen to white noise. According to the results, white noise is an effective nonpharmacologic method to control pain, reduce crying time, and positively effect vital signs.

Therefore, it is recommended that the use of white noise be practiced on newborns when they undergo painful procedures.

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From: September 29, 2014

Visual impact of chronic pain

Visual attention biases in individuals reporting chronic pain

Journal of Pain Research, 09/23/2014 Clinical Article
Fashler SR, et al.

Abstract: The present study used eye-tracking technology to assess whether individuals who report chronic pain direct more attention to sensory pain-related words than do pain-free individuals. A total of 113 participants (51 with chronic pain, 62 pain-free) were recruited. Participants completed a dot-probe task, viewing neutral and sensory pain-related words while their reaction time and eye movements were recorded. Eye-tracking data were analyzed by mixed-design analysis of variance with group (chronic pain versus pain-free) as the between-subjects factor, and word type (sensory pain versus neutral) as the within-subjects factor. Results showed a significant main effect for word type: all participants attended to pain-related words more than neutral words on several eye-tracking parameters.

The group main effect was significant for number of fixations, which was greater in the chronic pain group. Finally, the group by word type interaction effect was significant for average visit duration, number of fixations, and total late-phase duration, all greater for sensory pain versus neutral words in the chronic pain group. As well, participants with chronic pain fixated significantly more frequently on pain words than did pain-free participants. In contrast, none of the effects for reaction time were significant.

The results support the hypothesis that individuals with chronic pain display specific attentional biases toward pain-related stimuli and demonstrate the value of eye-tracking technology in measuring differences in visual attention variables.

Keywords: attention, chronic pain, dot-probe task, eye-tracking

From: September 29, 2014

Chronic pain and suicide

Neuropsychiatr Dis Treat. 2014 Sep 2;10:1613-20. doi: 10.2147/NDT.S66209. eCollection 2014.

Aggression, impulsivity, and suicide risk in benign chronic pain patients - a cross-sectional study.

Margari F1, Lorusso M2, Matera E3, Pastore A1, Zagaria G3, Bruno F4, Puntillo F4, Margari L3.

Abstract

OBJECTIVES:

The objective of this study was to investigate the role that psychopathological dimensions as overt aggression and impulsivity play in determining suicide risk in benign chronic pain patients (CPPs). Furthermore we investigated the possible protective/risk factors which promote these negative feelings, analyzing the relationship between CPPs and their caregivers.

METHODS:

We enrolled a total of 208 patients, divided into CPPs and controls affected by internistic diseases. Assessment included collection of sociodemographic and health care data, pain characteristics, administration of visual analog scale (VAS), Modified Overt Aggression Scale (MOAS), Barratt Impulsiveness Scale Version 11 (BIS), Hamilton Depression Rating Scale (HDRS), and a caregiver self-administered questionnaire. All variables were statistically analyzed.

RESULTS:

A significant difference of VAS, MOAS-total/verbal/auto-aggression, HDRS-total/suicide mean scores between the groups were found. BIS mean score was higher in CPPs misusing analgesics. In CPPs a correlation between MOAS-total/verbal/auto-aggression with BIS mean score, MOAS with HDRS-suicide mean score and BIS with HDRS-suicide mean scores were found. The MOAS and BIS mean scores were significantly higher when caregivers were not supportive.

CONCLUSION:

In CPPs, aggression and impulsivity could increase the risk of suicide. Moreover, impulsivity, overt aggression and pain could be interrelated by a common biological core. Our study supports the importance of a multidisciplinary approach in the CPPs management and the necessity to supervise caregivers, which may become risk/protective factors for the development of feelings interfering with the treatment and rehabilitation of CPPs.

KEYWORDS: chronic pain; impulsivity; overt aggression; suicide

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From: September 29, 2014

COMPLEX REGIONAL PAIN

Children

Pain. 2014 Sep;155(9):1727-42. doi: 10.1016/j.pain.2014.05.023. Epub 2014 May 23.

The responsive amygdala: Treatment-induced alterations in functional connectivity in pediatric complex regional pain syndrome.

Simons LE1, Pielech M2, Erpelding N3, Linnman C3, Moulton E3, Sava S2, Lebel A3, Serrano P2, Sethna N3, Berde C3, Becerra L3, Borsook D3.

Abstract

The amygdala is a key brain region with efferent and afferent neural connections that involve complex behaviors such as pain, reward, fear, and anxiety. This study evaluated resting state functional connectivity of the amygdala with cortical and subcortical regions in a group of chronic pain patients (pediatric complex regional pain syndrome) with age-sex matched control subjects before and after intensive physical-biobehavioral pain treatment. Our main findings include (1) enhanced functional connectivity from the amygdala to multiple cortical, subcortical, and cerebellar regions in patients compared with control subjects, with differences predominantly in the left amygdala in the pretreated condition (disease state); (2) dampened hyperconnectivity from the left amygdala to the motor cortex, parietal lobe, and cingulate cortex after intensive pain rehabilitation treatment within patients with nominal differences observed among healthy control subjects from time 1 to time 2 (treatment effects); (3) functional connectivity to several regions key to fear circuitry (prefrontal cortex, bilateral middle temporal lobe, bilateral cingulate, hippocampus) correlated with higher pain-related fear scores; and (4) decreases in pain-related fear associated with decreased connectivity between the amygdala and the motor and somatosensory cortex, cingulate, and frontal areas.

Our data suggest that there are rapid changes in amygdala connectivity after an aggressive treatment program in children with chronic pain and intrinsic amygdala functional connectivity activity serving as a potential indicator of treatment response.

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KEYWORDS: Brain; Children; Chronic pain; Fear; Neuropathic; Treatment response; fMRI
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FIBROMYALGIA

Energy expenditure

Pain Pract. 2014 Sep 29. doi: 10.1111/papr.12245.

Energy Expenditure during Functional Daily Life Performances in Patients with Fibromyalgia.

Huijnen IP1, Verbunt JA, Meeus M, Smeets RJ.

Abstract

OBJECTIVE:

The objective of this study was to evaluate whether patients with fibromyalgia FM need more oxygen and more time to complete a walking and stair-climbing task than healthy volunteers and perceive the performance of these tasks as more strenuous. Furthermore, it was evaluated whether a less efficient performance is more pronounced in patients reporting a higher level of fear of movement.

METHODS:

Thirty patients with FM and 30 matched healthy volunteers completed a 500-meter walking and a stair-climbing task (60 steps) while wearing a mobile gas analyzing unit. Mean and total oxygen consumption and time needed to complete each task were recorded. After both tasks, a Borg score was used to measure perceived exertion. Fear of movement was measured with the Tampa Scale for Kinesiophobia.

RESULTS:

Patients with FM needed more time to complete the walking and stair-climbing task and reported higher levels of exertion compared to healthy volunteers. However, the total oxygen consumption for performing both tasks was not different. In patients with FM, a higher level of fear of movement was associated with a higher perceived exertion after the walking task. Interestingly, a higher somatic focus is related to a lower mean oxygen consumption needed to perform the stair-climbing task.

CONCLUSION:

In conclusion, patients with FM perceive a walking and stair-climbing task as more strenuous than healthy controls, even though they walked slower and no differences in total O₂ consumption during completion of both tasks were found.

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KEYWORDS: energy expenditure; fear of movement; fibromyalgia; functional daily tasks

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From: September 29, 2014

NUTRITION/VITAMINS

Vit D and athletes

Sports Med. 2014 Sep 25

Vitamin D: Recent Advances and Implications for Athletes.

Todd JJ1, Pourshahidi LK, McSorley EM, Madigan SM, Magee PJ.

Abstract

Athletes may be predisposed to low vitamin D concentrations, with studies reporting a high prevalence of athletes with a vitamin D concentration below 50 nmol/L across a range of sports and geographical locations, particularly over the winter months. It is well documented that vitamin D is important for osseous health by enhancing calcium absorption at the small intestine; however, emerging research suggests that vitamin D may also benefit a plethora of extra-skeletal target tissues and systems. There is strong evidence that vitamin D is capable of regulating both innate and adaptive immune processes via binding of active vitamin D to its complementary receptor. Supplementation with vitamin D may also enhance skeletal muscle function through morphological adaptations and enhanced calcium availability during cross-bridge cycling; however, an exact mechanism of action is yet to be elucidated.

Such findings have prompted research into the importance of maintaining vitamin D concentrations over wintertime and the possible physiological and immunological benefits of vitamin D supplementation in athletes. The following review critically evaluates existing literature and presents novel perspectives on how vitamin D may enhance athletic performance.

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From: September 29, 2014

Vit. C. CRPS

J Hand Surg Am. 2014 Sep 16. pii: S0363-5023(14)01151-4. doi: 10.1016/j.jhsa.2014.08.009.

Testing the Validity of Preventing Chronic Regional Pain Syndrome With Vitamin C After Distal Radius Fracture.

Malay S1, Chung KC2.

Abstract

PURPOSE:

The American Academy of Orthopaedic Surgeons recommends the use of vitamin C to prevent complex regional pain syndrome (CRPS) for patients with distal radius fractures (DRFs). We hypothesized that the evidence for supporting this recommendation is weak, based on epidemiological principles of association and causality. The specific aim of this project was to test the validity of this recommendation.

METHODS:

We conducted a literature review to retrieve articles reporting on the use of vitamin C to prevent CRPS. Data collected included sample size, study design type, dose of vitamin C used, and outcome measures of association expressed as relative risk (RR) and odds ratio. We then applied Hill criteria to evaluate the relationship between vitamin C and CRPS.

RESULTS:

We obtained 225 articles from the database search. After the exclusion of duplicates, unrelated articles, editorial letters, and commentaries, we found 4 articles and 1 systematic review relevant to our topic. Six of the 9 Hill criteria were met, and an earlier meta-analysis showed a quantified reduction in CRPS risk. However, criteria like biological plausibility, specificity, and coherence were not met.

CONCLUSIONS:

The number of causal/association criteria met was adequate to support the scientific premise of the effect of vitamin C in preventing CRPS after DRF. Furthermore, vitamin C administration is of relatively low cost and has few complications unless administered in large doses. Owing to sufficient epidemiological evidence availability, the American Academy of Orthopaedic Surgeons recommendation of vitamin C to prevent CRPS has practical merit.

TYPE OF STUDY/LEVEL OF EVIDENCE: Therapeutic II.

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KEYWORDS: Bradford Hill criteria; CRPS; distal radius; prophylactic; vitamin C

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PHARMACOLOGY

Opioid overdose levels drop in states with medical marijuana

JAMA Intern Med. 2014 Aug 25. doi: 10.1001/jamainternmed.2014.4005.

Medical Cannabis Laws and Opioid Analgesic Overdose Mortality in the United States, 1999-2010.

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

Abstract

IMPORTANCE:

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

OBJECTIVE:

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

DESIGN, SETTING, AND PARTICIPANTS:

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

EXPOSURES:

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

MAIN OUTCOMES AND MEASURES:

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

RESULTS:

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

CONCLUSIONS AND RELEVANCE:

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

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From: September 29, 2014

Opioid use and HA

AAN: Risks of opioids outweigh benefits for headache, low back pain, other conditions

American Academy of Neurology News, 09/30/2014

According to a new position statement from the American Academy of Neurology (AAN), the risk of death, overdose, addiction or serious side effects with prescription opioids outweigh the benefits in chronic, non-cancer conditions such as headache, fibromyalgia and chronic low back pain. The position paper is published in the September 30, 2014, print issue of *Neurology*. “More than 100,000 people have died from prescription opioid use since policies changed in the late 1990s to allow much more liberal long-term use,” said Gary M. Franklin, MD, MPH, research professor in the Department of Environmental & Occupational Health Sciences in the University of Washington School of Public Health in Seattle and a Fellow with the AAN. “There have been more deaths from prescription opioids in the most vulnerable young to middle-aged groups than from firearms and car accidents. Doctors, states, institutions and patients need to work together to stop this epidemic.” Studies have shown that 50 percent of patients taking opioids for at least three months are still on opioids five years later. A review of the available studies showed that while opioids may provide significant short-term pain relief, there is no substantial evidence for maintaining pain relief or improved function over long periods of time without serious risk of overdose, dependence or addiction. The AAN recommends that doctors consult with a pain management specialist if dosage exceeds 80 to 120 (morphine-equivalent dose) milligrams per day, especially if pain and function have not substantially improved in their patients.