

ABSTRACTS

Table of Contents

PELVIC GIRDLE	2
PELVIC ORGANS	11
CERVICAL SPINE	16
CRANIUM/TMJ	26
GLENOHUMERAL/SHOULDER	28
HIP	32
FOOT AND ANKLE	51
MANUAL THERAPY/STRETCHING/MUSCLES STM	56
ATHLETICS	75
RUNNING GAIT	77
PAIN	78
NUTRITION/VITAMINS/MEDICATION/TOPICALS	84

2. LBP

LBP, adolescents and activity

BMC Public Health. 2015 Nov 12;15(1):1115. doi: 10.1186/s12889-015-2446-2.

Low back pain and physical activity - A 6.5 year follow-up among young adults in their transition from school to working life.

Lunde LK¹, Koch M², Hanvold TN³, Wærsted M⁴, Veiersted KB⁵.

Abstract

BACKGROUND:

The association between leisure time physical activity and low back pain in young adults is unclear and is in the need of prospectively obtained evidence. This study examined the course of low back pain and the association between low back pain and leisure time physical activity in a cohort of young adults in their transition from school to working life.

METHODS:

Both low back pain and leisure time physical activity was monitored over a 6.5 year period in 420 subjects starting out as students within hairdressing, electrical installation and media/design. The association between physical activity and low back pain was investigated through the follow-up period by using linear mixed models analysis.

RESULTS:

Low back pain was significantly influenced by time and overall there was a decreasing trend of low back pain prevalence throughout the follow-up. Analysis showed a weak trend of decreasing low back pain with moderate/high physical activity levels, but this association was not significant.

CONCLUSIONS:

Low back pain decreased during follow-up with baseline as reference. Findings in our study did show non-significant trends of reduced low back pain with increased leisure time physical activity. Still, we could not support the theory of moderate/high levels of physical activity acting protective against low back pain in young adults entering working life. Our results, in combination with previous relevant research, cannot support a clear relationship between physical activity and low back pain for young adults. Thus, recommendations regarding effect of physical activity on reducing low back pain for this group are not clear.

PMID: 26563136

Obesity and LBP

PLoS One. 2015 Oct 27;10(10):e0141268. doi: 10.1371/journal.pone.0141268. eCollection 2015.

A Comparison of Anthropometric Measures for Assessing the Association between Body Size and Risk of Chronic Low Back Pain: The HUNT Study.

Heuch I¹, Heuch I², Hagen K³, Zwart JA⁴.

Author information

Abstract**BACKGROUND:**

Previous work indicates that overweight and obese individuals carry an increased risk of experiencing chronic low back pain (LBP). It is not known, however, how the association with body size depends on the choice of anthropometric measure used.

OBJECTIVE:

This work compares relationships with LBP for several measures of body size. Different results may indicate underlying mechanisms for the association between body size and risk of LBP.

METHODS:

In a cohort study, baseline information was collected in the community-based HUNT2 (1995-1997) and HUNT3 (2006-2008) surveys in Norway. Participants were 10,059 women and 8725 men aged 30-69 years without LBP, and 3883 women and 2662 men with LBP at baseline. Associations with LBP at end of follow-up were assessed by generalized linear modeling, with adjustment for potential confounders.

RESULTS:

Relationships between waist-hip-ratio and occurrence of LBP at end of follow-up were weak and non-significant after adjustment for age, education, work status, physical activity, smoking, lipid levels and blood pressure. Positive associations with LBP at end of follow-up were all significant for body weight, BMI, waist circumference and hip circumference after similar adjustment, both in women without and with LBP at baseline, and in men without LBP at baseline. After additional mutual adjustment for anthropometric measures, the magnitude of the association with body weight increased in women without LBP at baseline (RR: 1.130 per standard deviation, 95% CI: 0.995-1.284) and in men (RR: 1.124, 95% CI 0.976-1.294), with other measures showing weak associations only.

CONCLUSION:

Central adiposity is unlikely to play a major role in the etiology of LBP. Total fat mass may be one common factor underlying the associations observed. The association with body weight remaining after mutual adjustment may reflect mechanical or structural components behind the relationship between overweight or obesity and LBP.

PMID: 26506618

Elderly women determining fx

Osteoporos Int. 2015 Nov 13.

Using self-reports of pain and other variables to distinguish between older women with back pain due to vertebral fractures and those with back pain due to degenerative changes.

Clark EM¹, Goberman-Hill R², Peters TJ².

Abstract

Women with back pain and vertebral fractures describe different pain experiences than women without vertebral fractures, particularly a shorter duration of back pain, crushing pain and pain that improves on lying down. This suggests a questionnaire could be developed to identify older women who may have osteoporotic vertebral fractures.

INTRODUCTION:

Approximately 12 % of postmenopausal women have vertebral fractures (VFs), but less than a third come to clinical attention. Distinguishing back pain likely to relate to VF from other types of back pain may ensure appropriate diagnostic radiographs, leading to treatment initiation. This study investigated whether characteristics of back pain in women with VF are different from those in women with no VFs.

METHODS:

A case control study was undertaken with women aged ≥ 60 years who had undergone thoracic spinal radiograph in the previous 3 months. Cases were defined as those with VFs identified using the algorithm-based qualitative (ABQ) method. Six hundred eighty-three potential participants were approached. Data were collected by self-completed questionnaire including the McGill Pain Questionnaire. Chi-squared tests assessed univariable associations; logistic regression identified independent predictors of VFs. Receiver operating characteristic (ROC) curves were used to evaluate the ability of the combined independent predictors to differentiate between women with and without VFs via area under the curve (AUC) statistics.

RESULTS:

One hundred ninety-seven women participated: 64 cases and 133 controls. Radiographs of controls were more likely to show moderate/severe degenerative change than cases (54.1 vs 29.7 %, $P = 0.011$). Independent predictors of VF were older age, history of previous fracture, shorter duration of back pain, pain described as crushing, pain improving on lying down and pain not spreading down the legs. AUC for combination of these factors was 0.85 (95 % CI 0.79 to 0.92).

CONCLUSION:

We present the first evidence that back pain experienced by women with osteoporotic VF is different to back pain related solely to degenerative change.

KEYWORDS: Back pain; Case control study; Osteoporotic vertebral fracture; Self-reported pain descriptors

PMID: 26564228

Depression and LBP

Spine J. 2015 Oct 30. pii: S1529-9430(15)01622-8. doi: 10.1016/j.spinee.2015.10.037.

Symptoms of depression as a prognostic factor for low back pain: a systematic review.

Pinheiro MB¹, Ferreira ML², Refshauge K³, Maher CG⁴, Ordoñana JR⁵, Andrade TB³, Tsathas A³, Ferreira PH³.

BACKGROUND CONTEXT:

It has been proposed that depression plays an important role in the course of low back pain, however there is considerable uncertainty regarding its predictive value.

PURPOSE:

To investigate the effect of depression on the course of acute and sub-acute low back pain.

STUDY DESIGN: Systematic review.

METHODS: We searched the following database using optimized search strategies: AMED, CINAHL, EMBASE, Health and Society Database (H&S), LILACS, MEDLINE, PsycINFO, Scopus, Web of Science. We only included prospective studies that investigated a cohort of participants with acute or sub-acute nonspecific low back pain (pain of less than 12 weeks duration). The prognostic factor of interest was depression or symptoms of depression assessed at baseline. The outcome of interest included: pain intensity, chronicity (non-recovery from low back pain), disability, return to work, health related quality of life, and overall patient satisfaction. Two independent reviewers selected studies, extracted data and assessed methodological quality of included studies.

FUNDING: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. The authors declare no conflicts of interest-associated biases.

RESULTS: 17 articles reporting 13 cohort studies were included in this review. There was considerable variability between studies in terms of method of assessment of depression and low back pain, statistical methods, and follow up length, which precluded the quantitative synthesis of the results. Definition of outcomes varied across studies, but overall they could be divided into work-related outcome measures, followed by disability, pain, self-perceived recovery, and mixed outcomes. Eleven out of 17 articles (or 8 out of 13 cohorts) reported that symptoms of depression at baseline are related to worse low back pain outcomes (measured in various ways) at follow up and the effect sizes (odds ratio) ranged from 1.04 to 2.47. Only two studies that did not find a statistical significant association reported quantitative results: OR = 1.03, 95% CI 0.98-1.08 and OR = 1.02, 95% CI 0.99-1.06. All included studies, regardless of the statistical significance, showed an effect in the direction of harm.

CONCLUSIONS: Although a definitive answer on the effect of depression on the course of low back pain is not available, the findings of this systematic review suggest that depression might have an adverse effect on the prognosis of low back pain. Future large studies enrolling an inception cohort and employing a standardized method for assessing depression and low back pain are needed.

KEYWORDS: Depression; Low back pain; Prediction; Prognosis; Prognostic factor; Systematic Review PMID: 26523965

Mood and anxiety disorders

Int J Psychiatry Clin Pract. 2015 Nov 2:1-5.

Mood and anxiety disorders in patients with chronic low back and neck pain caused by disc herniation.

Kayhan F¹, Albayrak Gezer İ², Kayhan A³, Kitiş S⁴, Gölen M⁵.

Author information

Abstract

OBJECTIVE:

We investigated the prevalence of mood and anxiety disorders in patients with chronic low back and neck pain caused by disc herniation and the relationships between pain and mood, and anxiety disorders.

METHODS:

In total, 149 patients with disc herniation and 60 healthy subjects were included. Disc herniation was diagnosed based on a physical examination and magnetic resonance imaging. Mood and anxiety disorders were diagnosed using the Structured Clinical Interview of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition/Clinical Version.

RESULTS:

The mean age of the study subjects (n = 209) was 45.96 ± 11.45 years. Seventy (46.6%) patients with disc herniation met the criteria for at least one mood or anxiety disorder. The prevalence rates of mood and anxiety disorders were 16.6% and 35.8%, respectively. The most common specific diagnoses were major depression (n = 25, 16.9%) and generalised anxiety disorder (n = 19, 12.8%).

CONCLUSIONS:

Mood and anxiety disorders were more commonly seen in patients with lumbar or cervical disc herniation than in those without herniation. No relationship was detected between pain severity and mood or anxiety disorders. However, mood and anxiety disorders were associated with neurological deficits.

KEYWORDS: Anxiety; depression; pain

PMID: 26524007

Fear avoidance and LBP

BMJ Open. 2015 Oct 19;5(10):e008847. doi: 10.1136/bmjopen-2015-008847.

Beliefs underlying pain-related fear and how they evolve: a qualitative investigation in people with chronic back pain and high pain-related fear.

Bunzli S¹, Smith A¹, Schütze R², O'Sullivan P¹.

Abstract

OBJECTIVES:

The fear-avoidance model describes how the belief that pain is a sign of damage leads to pain-related fear and avoidance. But other beliefs may also trigger the fear and avoidance responses described by the model. Experts have called for the next generation of fear avoidance research to explore what beliefs underlie pain-related fear and how they evolve. We have previously described damage beliefs and suffering/functional loss beliefs underlying high pain-related fear in a sample of individuals with chronic back pain. The aim of this study is to identify common and differential factors associated with the beliefs in this sample.

DESIGN:

A qualitative study employing semistructured interviews.

SETTING:

Musculoskeletal clinics in Western Australia.

PARTICIPANTS:

36 individuals with chronic back pain and high scores on the Tampa Scale (mean 47/68).

RESULTS:

The overarching theme was a pain experience that did not make sense to the participants. The experience of pain as unpredictable, uncontrollable and intense made it threatening. Attempting to make sense of the threatening pain, participants with damage beliefs drew on past personal experiences of pain, societal beliefs, and sought diagnostic certainty. Met with diagnostic uncertainty, or diagnoses of an underlying pathology that could not be fixed, they were left fearful of damage and confused about how to 'fix' it. Participants with suffering/functional loss beliefs drew on past personal experiences of pain and sought help from healthcare professionals to control their pain. Failed treatments and the repeated failure to achieve functional goals left them unable to make 'sensible' decisions of what to do about their pain.

CONCLUSIONS:

The findings raise the suggestion that sense-making processes may be implicated in the fear-avoidance model. Future research is needed to explore whether fear reduction may be enhanced by considering beliefs underlying fear and providing targeted intervention to help individuals make sense of their pain.

KEYWORDS: PAIN MANAGEMENT; QUALITATIVE RESEARCH; REHABILITATION MEDICINE

PMID: 26482773

Risk and benefits of LBP and activity

Arch Phys Med Rehabil. 2015 Oct 12. pii: S0003-9993(15)01241-1. doi: 10.1016/j.apmr.2015.09.020.

Putting physical activity whilst experiencing low back pain in context: balancing the risks and benefits.

Darlow B¹, Perry M², Dean S³, Mathieson F⁴, Baxter GD³, Dowell A⁵.

Abstract

OBJECTIVE:

To analyse attitudes and beliefs about movement and physical activity in people with low back pain (LBP) and compare these beliefs between people with acute and chronic LBP.

DESIGN:

Qualitative inductive analysis of data collected via face-to-face semi-structured interviews.

SETTING:

Twelve participants with acute LBP (<6 weeks) and eleven participants with chronic LBP (>3 months) were purposively recruited from one region of New Zealand. Interviews were audio-recorded and transcribed verbatim.

INTERVENTIONS:

Not-applicable.

MAIN OUTCOME MEASURE:

Themes which emerged from participant interview transcripts using analysis based on Interpretative Description.

RESULTS:

Participants with acute and chronic LBP made judgements about physical activity and rest using the same conceptual model. Concerns about creating more pain, tissue damage, or impairment influenced the physical activity judgements of most participants with acute and chronic LBP. These perceived risks were balanced against the perceived benefits, the most important of which were psychological or social rather than physical. Judgements made by those with acute and chronic LBP were context dependent and influenced by the nature and duration of pain, the type of physical activity, the importance of the activity, and the participant's previous experience. Participants with acute pain who had not experienced back pain previously often expressed more uncertainty whereas those with chronic LBP appeared to have developed cognitive rules which determined physical activity decisions.

CONCLUSIONS:

Exploring the perceived risks, benefits, and contextual factors which influence decisions about physical activity and rest may help clinicians to understand the behaviour of patients with acute and chronic LBP. Clinicians may best support their patients to engage in physical activity by providing an informed assessment of risks and explanation about the range of potential benefits.

KEYWORDS: Low back pain; health communication; health promotion; movement; qualitative research

PMID: 26471211

CBT in LBP

Phys Ther. 2015 Nov;95(11):1478-88. doi: 10.2522/ptj.20140406. Epub 2015 Apr 30.

Cognitive Functional Therapy for Disabling Nonspecific Chronic Low Back Pain: Multiple Case-Cohort Study.

O'Sullivan K¹, Dankaerts W², O'Sullivan L³, O'Sullivan PB⁴.

Abstract

BACKGROUND:

Multiple dimensions across the biopsychosocial spectrum are relevant in the management of nonspecific chronic low back pain (NSCLBP). Cognitive functional therapy is a behaviorally targeted intervention that combines normalization of movement and abolition of pain behaviors with cognitive reconceptualization of the NSCLBP problem while targeting psychosocial and lifestyle barriers to recovery.

OBJECTIVE:

The purpose of this study was to examine the effectiveness of cognitive functional therapy for people with disabling NSCLBP who were awaiting an appointment with a specialist medical consultant.

DESIGN:

A multiple case-cohort study (n=26) consisting of 3 phases (A1-B-A2) was conducted.

METHODS:

Measurement phase A1 was a baseline phase during which measurements of pain and functional disability were collected on 3 occasions over 3 months for all participants. During phase B, participants entered a cognitive functional therapy intervention program involving approximately 8 treatments over an average of 12 weeks. Finally, phase A2 was a 12-month, no-treatment follow-up period. Outcomes were analyzed using repeated-measures analysis of variance or Friedman test (with post hoc Bonferroni correction) across 7 time intervals, depending on normality of data distribution.

RESULTS:

Statistically significant reductions in both functional disability and pain were observed immediately postintervention and were maintained over the 12-month follow-up period. These reductions reached clinical significance for both disability and pain. Secondary psychosocial outcomes, including depression, anxiety, back beliefs, fear of physical activity, catastrophizing, and self-efficacy, were significantly improved after the intervention.

LIMITATIONS:

The study was not a randomized controlled trial. Although primary outcome data were self-reported, the assessor was not blinded.

CONCLUSIONS:

These promising results suggest that cognitive functional therapy should be compared with other conservative interventions for the management of disabling NSCLBP in secondary care settings in large randomized clinical trials.

PMID: 25929536

PT better

Br J Sports Med. 2015 Oct 20. pii: bjsports-2015-095058. doi: 10.1136/bjsports-2015-095058.

Individualised physiotherapy as an adjunct to guideline-based advice for low back disorders in primary care: a randomised controlled trial.

Ford JJ¹, Hahne AJ¹, Surkitt LD¹, Chan AY¹, Richards MC¹, Slater SL¹, Hinman RS², Pizzari T¹, Davidson M¹, Taylor NF¹.

Abstract

BACKGROUND:

Many patients with low-back disorders persisting beyond 6 weeks do not recover. This study investigates whether individualised physiotherapy plus guideline-based advice results in superior outcomes to advice alone in participants with low-back disorders.

METHODS:

This prospective parallel group multicentre randomised controlled trial was set in 16 primary care physiotherapy practices in Melbourne, Australia. Random assignment resulted in 156 participants receiving 10 sessions of physiotherapy that was individualised based on pathoanatomical, psychosocial and neurophysiological barriers to recovery combined with guideline-based advice, and 144 participants receiving 2 sessions of physiotherapist-delivered advice alone. Primary outcomes were activity limitation (Oswestry Disability Index) and numerical rating scales for back and leg pain at 5, 10, 26 and 52 weeks postbaseline. Analyses were by intention-to-treat using linear mixed models.

RESULTS:

Between-group differences showed significant effects favouring individualised physiotherapy for back and leg pain at 10 weeks (back: 1.3, 95% CI 0.8 to 1.8; leg: 1.1, 95% CI 0.5 to 1.7) and 26 weeks (back: 0.9, 95% CI 0.4 to 1.4; leg: 1.0, 95% CI 0.4 to 1.6). Oswestry favoured individualised physiotherapy at 10 weeks (4.7; 95% CI 2.0 to 7.5), 26 weeks (5.4; 95% CI 2.6 to 8.2) and 52 weeks (4.3; 95% CI 1.4 to 7.1). Responder analysis at 52 weeks showed participants receiving individualised physiotherapy were more likely to improve by a clinically important amount of 50% from baseline for Oswestry (relative risk (RR)=1.3) 1.5; 95% CI 1.2 to 1.8) and back pain (RR 1.3; 95% CI 1.2 to 1.8) than participants receiving advice alone.

CONCLUSIONS:

10 sessions of individualised physiotherapy was more effective than 2 sessions of advice alone in participants with low-back disorders of ≥ 6 weeks and ≤ 6 months duration. Between-group changes were sustained at 12 months for activity limitation and 6 months for back and leg pain and were likely to be clinically significant.

CLINICAL TRIAL REGISTRATION: ACTRN12609000834257.

KEYWORDS: Physiotherapy; Randomised controlled trial
PMID: 26486585

3. DISC

Oxidative stress

Arthritis Res Ther. 2015 Nov 5;17:316. doi: 10.1186/s13075-015-0834-8.

Excessive reactive oxygen species are therapeutic targets for intervertebral disc degeneration.

Suzuki S¹, Fujita N², Hosogane N³, Watanabe K⁴, Ishii K⁵, Toyama Y⁶, Takubo K⁷, Horiuchi K⁸, Miyamoto T⁹, Nakamura M¹⁰, Matsumoto M¹¹.

Abstract

INTRODUCTION:

Oxidative stress has been reported to be involved in numerous human diseases, including musculoskeletal disorders such as osteoarthritis. However, the interaction between intervertebral disc (IVD) degeneration and oxidative stress is not well understood. The purpose of the present study was to elucidate the contribution of oxidative stress to IVD degeneration and the efficacy of antioxidant treatment for degenerative discs.

METHODS:

The expression level of an oxidative stress marker, nitrotyrosine, was assessed by immunohistochemistry and Western blotting. For evaluating intracellular reactive oxygen species (ROS) levels and oxidative stress in rat annulus fibrosus (AF) cells, flow cytometry and luciferase assay with an OKD48 construct were performed. The grade of IVD degeneration was assessed by magnetic resonance imaging and histological analysis.

RESULTS:

A high frequency of nitrotyrosine-positive cells was observed in rat and human degenerative discs. mRNA expression of catabolic factors such as tumor necrosis factor-alpha (TNF-alpha), matrix metalloproteinase-3 (MMP-3), and cyclooxygenase-2 (COX-2) was significantly induced by treatment with H₂O₂ or buthionine sulfoximine, whereas that of aggrecan, an important chondrogenic proteoglycan, was reduced in a dose-dependent manner. Treatment with mitogen-activated protein kinase (MAPK) inhibitors blocked the inductive effect of excessive ROS on COX-2 mRNA expression. Western blotting confirmed the phosphorylation of MAPKs in H₂O₂ and BSO-treated AF cells. Conversely, we showed that TNF- α induced oxidative stress with increased intracellular ROS levels in AF cells. Treatment with the antioxidant N-acetyl cysteine (NAC) abrogated the catabolic effect of excessive ROS and TNF-alpha in vitro. Finally, we showed that oral administration of NAC prevented IVD degeneration in rat degenerative model.

CONCLUSIONS:

A positive feedback loop was formed between excessive ROS and TNF-alpha in AF cells. Thus, oxidative stress contributes to the progression of IVD degeneration and NAC can be a therapeutic option for IVD degeneration.

PMID: 26542776

Inflammation

Discovery of the drivers of inflammation induced chronic low back pain: from bacteria to diabetes

Discovery Medicine, 11/18/2015

Gorth DJ, et al.

Despite the promise and novelty of this theory, there are other possible inflammatory mediators that need careful consideration. The metabolic environment associated with diabetes and atypical matrix degradation products also have the ability to activate many of the same inflammatory pathways as seen during microbial infection. It is therefore imperative that the research community must investigate the contribution of all possible drivers of inflammation to address the wide spread problem of discogenic chronic low back pain.

- The intervertebral disc is a unique avascular organ that supports axial skeleton flexion and rotation.
- The high proteoglycan content of the nucleus pulposus tissue, present at the center of the disc, is pivotal for its mechanical function, distribution of compressive loads.
- Chronic low back pain, a prevalent and costly condition, is strongly associated with disc degeneration.
- Degenerated discs exhibit high levels of inflammatory cytokines, matrix catabolizing enzymes, and an overall reduction in proteoglycan content.
- Although the cytokine profile of diseased discs has been widely studied, little is known of what initiates and drives inflammation and subsequent low back pain.
- Recent studies have shown that anaerobic bacteria are present in a high percentage of painful, herniated discs and long-term treatment with antibiotics resolves symptoms associated with chronic low back pain.
- It is thought that these anaerobic bacteria in the disc may stimulate inflammation through toll-like receptors to further exacerbate disc degeneration.

6. PELVIC GIRDLE

Coccydynia

The effects of extracorporeal shock wave therapy in patients with coccydynia: A randomized controlled trial

PLOS ONE, 11/19/2015

Lin SF, et al.

The purpose of this study is to evaluate the effects of ESWT on the outcomes of coccydynia. Patients were allocated to ESWT (n = 20) or physical modality (SIT) group (n = 21) randomly, and received total treatment duration of 4 weeks. The authors concluded that ESWT is more effective and satisfactory in reducing discomfort and disability caused by coccydynia than the use of physical modalities. Thus, ESWT is recommended as an alternative treatment option for patients with coccydynia.

- The visual analog scale (VAS), Oswestry disability index (ODI), and self-reported satisfaction score were used to assess treatment effects.
- The VAS and ODI scores were significantly decreased after treatment in both groups, and the decrease in the VAS score was significantly greater in the ESWT group.
- The mean proportional changes in the ODI scores were greater in the ESWT group than in the SIT group, but the between-group difference was not statistically significant.
- The patients in the ESWT group had significantly higher subjective satisfaction scores than SIT group.

7. PELVIC ORGANS/WOMAN'S HEALTH

Breast cancer

BMC Cancer. 2015 Nov 9;15:881. doi: 10.1186/s12885-015-1896-3.

Alcohol consumption, body mass index and breast cancer risk by hormone receptor status: Women' Lifestyle and Health Study.

Shin A¹, Sandin S², Lof M³, Margolis KL⁴, Kim K⁵, Couto E^{6,7}, Adami HO^{8,9}, Weiderpass E^{10,11,12,13}.

BACKGROUND:

We aimed to estimate the effect of alcohol consumption on breast cancer risk and to test whether overweight and obesity modifies this association.

METHODS:

We included in the analysis 45,233 women enrolled in the Swedish Women's Lifestyle and Health study between 1991 and 1992. Participants were followed for occurrence of breast cancer and death until December 2009. Poisson regression models were used, and analyses were done for overall breast cancer and for estrogen receptor positive or negative (ER+, ER-) and progesterone receptor positive and negative (PR+, PR-) tumors separately.

RESULTS:

A total of 1,385 breast cancer cases were ascertained during the follow-up period. Overall, we found no statistically significant association between alcohol intake and breast cancer risk after adjustment for confounding, with an estimated relative risk (RR) of 1.01 (95 % CI: 0.98-1.04) for an increment in alcohol consumption of 5 g/day. A statistically significant elevated breast cancer risk associated with higher alcohol consumption was found only among women with BMI ≤ 25 (RR 1.03, 95 % CI 1.0-1.05 per 5 g/day increase).

CONCLUSION:

An increase in breast cancer risk with higher alcohol consumption was found for breast cancers in women with a BMI ≤ 25 kg/m².

PMID: 26552431

Breast feeding and oral health

PLoS One. 2015 Nov 18;10(11):e0142922. doi: 10.1371/journal.pone.0142922.

Breast and Bottle Feeding as Risk Factors for Dental Caries: A Systematic Review and Meta-Analysis.

Avila WM¹, Pordeus IA¹, Paiva SM¹, Martins CC¹.

Understanding the role that breastfeeding and bottle feeding play in the development of dental caries during childhood is essential in helping dentists and parents and care providers prevent the disease, and also for the development of effective public health policies.

However, the issue is not yet fully understood. The aim of this systematic review and meta-analysis was to search for scientific evidence in response to the question: Do bottle fed children have more dental caries in primary dentition than breastfed children? Seven electronic databases and grey literature were used in the search. The protocol number of the study is PROSPERO CRD 42014006534. Two independent reviewers selected the studies, extracted data and evaluated risk of bias by quality assessment. A random effect model was used for meta-analysis, and the summary effect measure were calculated by odds ratio (OR) and 95% CI. Seven studies were included: five cross-sectional, one case-control and one cohort study. A meta-analysis of cross-sectional studies showed that breastfed children were less affected by dental caries than bottle fed children (OR: 0.43; 95%CI: 0.23-0.80). Four studies showed that bottle fed children had more dental caries ($p < 0.05$), while three studies found no such association ($p > 0.05$).

The scientific evidence therefore indicated that breastfeeding can protect against dental caries in early childhood. The benefits of breastfeeding until age two is recommended by WHO/UNICEF guidelines. Further prospective observational cohort studies are needed to strengthen the evidence.

PMID: 26579710

Yoga and pregnancy

Obstet Gynecol. 2015 Dec;126(6):1237-41. doi: 10.1097/AOG.0000000000001137.

Yoga in Pregnancy: An Examination of Maternal and Fetal Responses to 26 Yoga Postures.

Polis RL¹, Gussman D, Kuo YH.

Abstract

OBJECTIVE:

To examine the acute maternal and fetal effects of yoga postures and suspected contraindicated postures in a prospective cohort of healthy pregnant women in the third trimester.

METHODS:

This was a prospective study that evaluated pregnant women between 35 0/7 and 37 6/7 weeks of gestation in a one-on-one yoga session. A baseline nonstress test, vital signs, and pulse oximetry were performed. Participants then assumed 26 yoga postures. Vital signs, pulse oximetry, tocometry, and continuous fetal heart rate monitoring were obtained in each posture. Postsession nonstress test, vital signs, and pulse oximetry were obtained. Participants were contacted 24 hours postsession.

RESULTS:

Twenty-five healthy pregnant women were evaluated. Ten reported regular yoga practice, eight were familiar with yoga, and seven had no yoga experience. Yoga groups were similar in age, race, body mass index, gestational age, and parity. Pre-session and post-session nonstress tests were reactive. Pre-session and post-session data showed no change in maternal heart rate, temperature, pulse oximetry, or fetal heart rate. During the 26 yoga postures, vital signs, pulse oximetry, and uterine tocometry remained normal in all women and in all postures. The fetal heart rate across all 26 postures was normal. There were no falls or injuries during the total cumulative 650 poses. No participants reported decreased fetal movement, contractions, leakage of fluid, or vaginal bleeding in the 24-hour follow-up.

CONCLUSION:

All 26 yoga postures were well-tolerated with no acute adverse maternal physiologic or fetal heart rate changes.

LEVEL OF EVIDENCE:

III.

PMID: 26551176

Caffeine and pregnancy

Moderate amounts of caffeine during pregnancy do not harm baby's IQ and does not cause behavioral problems, obesity

Nationwide Children's Hospital,
11/25/2015

Women drinking and eating moderate amounts of caffeine during pregnancy should be reassured that they are not harming their child's intelligence, according to a study from The Research Institute at Nationwide Children's Hospital that was published in the American Journal of Epidemiology. The research, one of the first studies to focus on how in utero caffeine exposure affects a child's future intelligence (IQ) and behavior later in childhood, found caffeine did not lead to a reduced IQ or increased behavioral problems.

Menstrual pain

Pain. 2015 Dec;156(12):2468-78. doi: 10.1097/j.pain.0000000000000317.

Heightened cold pain and pressure pain sensitivity in young female adults with moderate-to-severe menstrual pain.

Slater H¹, Paananen M, Smith AJ, O'Sullivan P, Briggs AM, Hickey M, Mountain J, Karppinen J, Beales D.

This study investigated the association between menstrual pain severity and psychophysical measures of cold and pressure pain sensitivity. A cross-sectional design was used with young women (n = 432) from the Western Australian Pregnancy Cohort (Raine) Study.

Menstrual pain severity and oral contraception use was obtained from questionnaires at 20 and 22-year follow-ups. A visual analog scale (VAS; range from 0 [none] to 10 [unbearable]) was used to measure menstrual pain severity at both 20 and 22 years over the 3-year period, with 3 groups created: (1) no pain or mild pain (VAS 0-3), (2) at least moderate pain at a minimum of 1 of the 2 time points (hereafter named "mixed"), and (3) severe pain (VAS 8-10). Cold pain sensitivity (dorsal wrist) and pressure pain sensitivity (lumbar spine, upper trapezius, dorsal wrist, and tibialis anterior) were assessed using standardised quantitative sensory testing protocols. Confounding variables included number of musculoskeletal pain sites, oral contraceptive use, smoking, physical activity, body mass index, psychological distress, and sleep. Severe menstrual pain and mixed menstrual pain were positively associated with heightened cold pain sensitivity (distant from menstrual pain referral site) and pressure pain sensitivity (local to menstrual pain referral site). These associations remained significant after adjusting for potential confounding variables including multisite musculoskeletal pain.

Our findings suggest peripheral and central neurophysiological mechanisms contributing to heightened pain sensitivity in young women with moderate and severe menstrual pain. These data highlight the need for innovative management approaches to attenuate the negative impact of severe menstrual pain in young women.

PMID: 26262827

8. VISCERA

Coffee helps liver disease

Unexpected health benefits of coffee revealed

Monash University News
11/19/2015

Drinking two or more cups of coffee a day may have significant health benefits, according to latest research at Monash University.

Dr Alex Hodge, a consultant gastroenterologist and liver disease specialist at Monash Health revealed his findings this week at The Liver Meeting. “My research interest is in liver disease and the results of my latest study shows that coffee intake has a positive effect on a number of diseases, and in particular, liver diseases,” said Dr Hodge, who also holds an early career practitioner fellowship in the Centre for Inflammatory Diseases at the School of Clinical Sciences at Monash Health (SCS), Monash University. “We collected data from over 1100 liver clinic patients at Monash Medical Centre over 18 months and found that drinking coffee reduced liver stiffness in patients with hepatitis C, hepatitis B and fatty liver,” said Dr Hodge. “These findings were noted even when confounding factors such as weight, alcohol and smoking habits were taken into account.” Dr Hodge’s study did not find the same results when he analysed liver patients’ consumption of tea.

“The most striking results were found in patients with hepatitis C,” added Dr Hodge. “Two or more cups of coffee led to an improvement in their liver disease.”

Depression and IBS

Depression and Somatization are Associated with Increased Postprandial Symptoms in Patients With Irritable Bowel Syndrome

Lukas Van Oudenhove Hans Törnblom Stine Störsrud Jan Tack Magnus Simrén

Abstract**Background & Aims**

Patients with irritable bowel syndrome (IBS) have increased postprandial symptom responses and more psychosocial morbidities than healthy individuals. However, the relationship between psychosocial status and postprandial symptom responses has not been studied in patients with IBS. We investigated this relationship in a prospective study of patients with IBS.

Methods

One hundred and ninety-three IBS patients, diagnosed according to Rome II (n=126) or Rome III (n=67) criteria, consumed a standard breakfast (540 kcal: 36% fat, 15% proteins, 49% carbohydrates, and 8.9 g fiber). They completed visual analogue scales assessing the severity of 5 gastrointestinal symptoms (abdominal pain, bloating, nausea, gas, and fullness) before breakfast and every 30 minutes, up to 240 minutes after eating. All patients completed validated self-report questionnaires for current levels of anxiety and depression; those diagnosed based on Rome II criteria also completed a somatization questionnaire. The relationship between these variables and the course of gastrointestinal symptom scores over time was analyzed using linear mixed models, controlling for co-morbid functional dyspepsia.

Results

We observed a main effect of anxiety levels on fullness and bloating ($P<.04$), and of depression levels on abdominal pain ($P=.007$), reflecting a general upward shift of the entire symptom curve. Depression-by-time interactions were seen for nausea and gas ($P<.03$). Somatization levels had a main effect on all 5 symptoms ($P<.0001$), independent of anxiety and depression. We observed somatization-by-time interaction effects for bloating ($P=.005$), and nausea ($P=.02$), and a non-significant trend was found for pain ($P=.054$), reflecting a steeper early post-prandial increase in symptoms among subjects with higher levels of somatization.

Conclusion

Based on a prospective study of patients with IBS, psychosocial morbidities are associated with increased levels of gastrointestinal symptoms in general. Depression and somatization levels are specifically associated with increased postprandial symptoms.

Keywords: psychologic factors, discomfort, psychiatric, nervous system

Visceral nociception

Pain. 2015 Dec;156(12):2479-91. doi: 10.1097/j.pain.0000000000000318.

Roles of prefrontal cortex and paraventricular thalamus in affective and mechanical components of visceral nociception.

Jurik A¹, Auffenberg E, Klein S, Deussing JM, Schmid RM, Wotjak CT, Thoeringer CK.

Abstract

Visceral pain represents a major clinical challenge in the management of many gastrointestinal disorders, eg, pancreatitis.

However, cerebral neurobiological mechanisms underlying visceral nociception are poorly understood. As a representative model of visceral nociception, we applied cerulein hyperstimulation in C57BL6 mice to induce acute pancreatitis and performed a behavioral test battery and c-Fos staining of brains. We observed a specific pain phenotype and a significant increase in c-Fos immunoreactivity in the paraventricular nucleus of the thalamus (PVT), the periaqueductal gray, and the medial prefrontal cortex (mPFC). Using neuronal tracing, we observed projections of the PVT to cortical layers of the mPFC with contacts to inhibitory GABAergic neurons. These inhibitory neurons showed more activation after cerulein treatment suggesting thalamocortical "feedforward inhibition" in visceral nociception. The activity of neurons in pancreatitis-related pain centers was pharmacogenetically modulated by designer receptors exclusively activated by designer drugs, selectively and cell type specifically expressed in target neurons using adeno-associated virus-mediated gene transfer. Pharmacogenetic inhibition of PVT but not periaqueductal gray neurons attenuated visceral pain and induced an activation of the descending inhibitory pain pathway.

Activation of glutamatergic principle neurons in the mPFC, but not inhibitory neurons, also reversed visceral nociception. These data reveal novel insights into central pain processing that underlies visceral nociception and may trigger the development of novel, potent centrally acting analgesic drugs.

PMID: 26262826

10 A. CERVICAL SPINE**Body composition**

BMC Musculoskelet Disord. 2015 Nov 4;16(1):333. doi: 10.1186/s12891-015-0759-z.

Association between neck and shoulder pain, back pain, low back pain and body composition parameters among the Japanese general population.

Iizuka Y¹, Iizuka H², Mieda T³, Tajika T⁴, Yamamoto A⁵, Ohsawa T⁶, Sasaki T⁷, Takagishi K⁸.

BACKGROUND:

Neck and shoulder pain, back pain and low back pain are common symptoms in Japanese subjects, and it is important to elucidate the pathology and associated factors of these pains due to their frequency and impact on the quality of life (QOL) and activities of daily living (ADL). The purpose of the present study was to investigate whether body composition is associated with these pains.

METHODS:

We collected the data of 273 Japanese subjects regarding the presence and the visual analogue scale (VAS) of neck and shoulder pain, back pain, low back pain and body composition parameters calculated using bioelectrical impedance analysis (BIA) technology. Furthermore, we investigated the association between these pains and the body composition using statistical methods.

RESULTS:

According to a multivariate analysis adjusted for age and gender, lower total body water ratio was significantly associated with the presence of neck and shoulder pain at present ($P < 0.05$); additionally, total body muscle mass (standardized $\beta = -0.26$, 95 % CI, $-0.17 - -0.008$, $P < 0.05$), total body water (standardized $\beta = -0.27$, 95 % CI, $-0.23 - -0.04$, $P < 0.01$), appendicular muscle mass (standardized $\beta = -0.29$, 95 % CI, $-0.36 - -0.04$, $P < 0.05$), and the appendicular muscle mass index (AMI) (standardized $\beta = -0.24$, 95 % CI, $-1.18 - -0.20$, $P < 0.01$) were negatively correlated with the VAS of neck and shoulder pain, whereas no body composition parameters were significantly associated with back pain, low back pain at present and any type of chronic pain.

CONCLUSIONS:

The present study demonstrated that some body composition parameters regarding body water and body muscle were associated or correlated with the presence or intensity of neck and shoulder pain.

PMID: 26537689

Proprioception loss

Phys Ther. 2015 Oct 15.

Evidence of Impaired Proprioception in Chronic, Idiopathic Neck Pain: Systematic Review and Meta-Analysis.

Stanton TR¹, Leake HB², Chalmers KJ³, Moseley GL⁴.

BACKGROUND:

Despite common use of proprioceptive retraining interventions in chronic, idiopathic neck pain, evidence that proprioceptive dysfunction exists in this population is lacking. Determining whether proprioceptive dysfunction exists in chronic neck pain has clear implications for treatment prescription.

PURPOSE:

We aimed to synthesize and critically appraise all evidence evaluating proprioceptive dysfunction in those with chronic, idiopathic neck pain by completing a systematic review and meta-analysis.

DATA SOURCES:

Medline, CINAHL, Pubmed, Allied and Complementary Medicine, EMBASE, Academic Search Premier, Scopus, Physiotherapy Evidence Database (PEDro), and the Cochrane Collaboration databases were searched.

STUDY SELECTION:

All published studies that compared neck proprioception (joint position sense) between a chronic, idiopathic neck pain sample and asymptomatic controls were included.

DATA EXTRACTION:

Two independent reviewers extracted relevant population and proprioception data and assessed methodological quality using a modified STROBE statement.

DATA SYNTHESIS:

Thirteen studies were included in the present review. Meta-analysis on ten studies demonstrated that those with chronic neck pain perform significantly worse on 'head-to-neutral' repositioning tests, with a moderate standardized mean difference (SMD) of 0.44 (95% confidence interval: 0.25 to 0.63). Two studies evaluated head repositioning using trunk movement (no active head movement thus hypothesised to remove vestibular input) and found conflicting results. Three studies evaluated complex/postural repositioning tests: postural repositioning was no different between groups and complex movement tests were only impaired in chronic neck pain if error was continuously evaluated throughout the movement.

LIMITATIONS:

A paucity of studies evaluating complex/postural repositioning tests does not permit us to make any solid conclusions about them.

CONCLUSIONS:

People with chronic, idiopathic neck pain demonstrate a moderate impairment in 'head-to-neutral' repositioning tests, when compared with asymptomatic controls.

PMID: 26472296

12 A. WHIPLASH**Type of symptoms**

Eur J Pain. 2015 Nov 16. doi: 10.1002/ejp.819.

Pain and pain tolerance in whiplash-associated disorders: A population-based study.

Myrtveit SM^{1,2}, Skogen JC^{2,3}, Sivertsen B^{2,4,5}, Steingrimsdóttir ÓA⁶, Stubhaug A⁷, Nielsen CS⁸.

BACKGROUND:

Pain is a cardinal symptom in individuals with whiplash-associated disorders (WAD). We aimed to compare pain characteristics between individuals with WAD and individuals reporting chronic pain from other causes, and to determine whether potential differences were accounted for by experimental pain tolerance.

METHODS:

Data from the 6th Tromsø Study (2007-2008, n = 12,981) were analysed. The number of painful locations was compared between individuals with WAD and individuals reporting chronic pain from other causes using negative binomial regression, pain frequency using multinomial logistic regression and pain intensity using multiple linear regression. Differences in experimental pain tolerance (cold pressor test) were tested using Cox regression; one model compared individuals with WAD to those with chronic pain from other causes, one compared the two groups with chronic pain to individuals without chronic pain. Subsequently, regression models investigating clinical pain characteristics were adjusted for pain tolerance.

RESULTS:

Of individuals with WAD, 96% also reported other causes for pain. Individuals with WAD reported a higher number of painful locations [median (inter-quartile range): 5 (3.5-7) vs. 3 (2-5), p < 0.001] and higher pain intensity (crude mean difference = 0.78, p < 0.001) than individuals with chronic pain from other causes. Pain tolerance did not differ between these two groups. Compared to individuals without chronic pain, individuals with WAD and individuals with chronic pain from other causes had reduced pain tolerance.

CONCLUSIONS:

Individuals with WAD report more additional causes of pain, more painful locations and higher pain intensity than individuals with chronic pain from other causes. The increased pain reporting was not accounted for by pain tolerance.

PMID: 26568528

12 B. CERVICAL SURGERIES**Disc replacement superior**

J Bone Joint Surg Am. 2015 Nov 4;97(21):1738-47. doi: 10.2106/JBJS.N.01186.

ProDisc-C Total Disc Replacement Versus Anterior Cervical Discectomy and Fusion for Single-Level Symptomatic Cervical Disc Disease: Seven-Year Follow-up of the Prospective Randomized U.S. Food and Drug Administration Investigational Device Exemption Study.

Abstract

BACKGROUND:

In patients with single-level cervical degenerative disc disease, total disc arthroplasty can relieve radicular pain and preserve functional motion between two vertebrae. We compared the efficacy and safety of cervical total disc arthroplasty with that of anterior cervical discectomy and fusion (ACDF) for the treatment of single-level cervical degenerative disc disease between C3-C4 and C6-C7.

METHODS:

Two hundred and nine patients at thirteen sites were randomly treated with either total disc arthroplasty with ProDisc-C (n = 103) or with ACDF (n = 106). Patients were assessed preoperatively; at six weeks and three, six, twelve, eighteen, and twenty-four months postoperatively; and then annually until seven years postoperatively. Outcome measures included the Neck Disability Index (NDI), the Short Form-36 (SF-36), postoperative neurologic parameters, secondary surgical procedures, adverse events, neck and arm pain, and satisfaction scores.

RESULTS:

At seven years, the overall follow-up rate was 92% (152 of 165). There were no significant differences in demographic factors, follow-up rate, or patient-reported outcomes between groups. Both procedures were effective in reducing neck and arm pain and improving and maintaining function and health-related quality of life. Neurologic status was improved or maintained in 88% and 89% of the patients in the ProDisc-C and ACDF groups, respectively. After seven years of follow-up, thirty secondary surgical procedures had been performed in nineteen (18%) of 106 patients in the ACDF group compared with seven secondary surgical procedures in seven (7%) of 103 patients in the ProDisc-C group (p = 0.0099). There were no significant differences in the rates of any device-related adverse events between the groups.

CONCLUSIONS:

Total disc arthroplasty with ProDisc-C is a safe and effective surgical treatment of single-level symptomatic cervical degenerative disc disease. Clinical outcomes after total disc arthroplasty with ProDisc-C were similar to those after ACDF. Patients treated with ProDisc-C had a lower probability of subsequent surgery, suggesting that total disc arthroplasty provides durable results and has the potential to slow the rate of adjacent-level disease.

LEVEL OF EVIDENCE:

Therapeutic Level I. See Instructions for Authors for a complete description of levels of evidence.

PMID: 26537161

13. CRANIUM/TMJ

CPRS of the face

Phys Ther. 2015 Nov 19.

Interdisciplinary Management of Complex Regional Pain Syndrome of the Face.

Parkitny L¹, Wand BM², Graham C³, Quintner J⁴, Moseley GL⁵.

BACKGROUND AND PURPOSE:

Orofacial pain disorders are relatively uncommon and present a substantial diagnostic challenge. In this case report we document the diagnosis and management of a patient with hemifacial pain who was referred to an interdisciplinary pain medicine unit. The purpose of this case report is twofold. First, we present complex regional pain syndrome (CRPS) as a potential differential diagnosis in cases of facial pain. Second, we demonstrate that contemporary management approaches for distal extremity CRPS can be successfully adapted to treat people with CRPS of the facial region.

CASE DESCRIPTION:

The patient presented with hemifacial pain and concomitant motor and autonomic symptoms following a small laceration of the eyelid. Extensive specialist medical evaluations were undertaken to exclude an underlying structural pathology. Following detailed clinical assessments by a physical therapist, pain physician, and clinical psychologist, a diagnosis was made of CRPS involving the face.

OUTCOMES:

The patient's pain was largely unresponsive to pharmacological agents. A modified graded motor imagery (GMI) program, together with desensitisation and discrimination training were commenced by the physical therapist and clinical psychologist. A positive clinical response was indicated by a decrease in allodynia, normalisation of motor control, and regained function in activities of daily living.

DISCUSSION:

Complex regional pain syndrome (CRPS) is an infrequently reported differential diagnosis that can be considered in patients presenting with persistent facial pain. In this case report, we highlight how careful examination and clinical decision making led us to employ an innovative therapeutic strategy to manage a challenging condition.

PMID: 26586861

Breast feeding and oral health

PLoS One. 2015 Nov 18;10(11):e0142922. doi: 10.1371/journal.pone.0142922.

Breast and Bottle Feeding as Risk Factors for Dental Caries: A Systematic Review and Meta-Analysis.

Avila WM¹, Pordeus IA¹, Paiva SM¹, Martins CC¹.

Abstract

Understanding the role that breastfeeding and bottle feeding play in the development of dental caries during childhood is essential in helping dentists and parents and care providers prevent the disease, and also for the development of effective public health policies.

However, the issue is not yet fully understood. The aim of this systematic review and meta-analysis was to search for scientific evidence in response to the question: Do bottle fed children have more dental caries in primary dentition than breastfed children? Seven electronic databases and grey literature were used in the search. The protocol number of the study is PROSPERO CRD 42014006534. Two independent reviewers selected the studies, extracted data and evaluated risk of bias by quality assessment. A random effect model was used for meta-analysis, and the summary effect measure were calculated by odds ratio (OR) and 95% CI. Seven studies were included: five cross-sectional, one case-control and one cohort study. A meta-analysis of cross-sectional studies showed that breastfed children were less affected by dental caries than bottle fed children (OR: 0.43; 95%CI: 0.23-0.80). Four studies showed that bottle fed children had more dental caries ($p < 0.05$), while three studies found no such association ($p > 0.05$). The scientific evidence therefore indicated that breastfeeding can protect against dental caries in early childhood.

The benefits of breastfeeding until age two is recommended by WHO/UNICEF guidelines. Further prospective observational cohort studies are needed to strengthen the evidence.

PMID: 26579710

14. HEADACHES

HA's and asthma

Headache. 2015 Nov 19. doi: 10.1111/head.12731.

Asthma is a risk factor for new onset chronic migraine: Results from the American migraine prevalence and prevention study.

Martin VT¹, Fanning KM², Serrano D³, Buse DC⁴, Reed ML², Lipton RB^{4,5}.

OBJECTIVES:

To test the hypothesis that in persons with episodic migraine (EM), asthma is a risk factor for the onset of chronic migraine (CM).

BACKGROUND:

Migraine and asthma are comorbid chronic disorders with episodic attacks thought to involve inflammatory and neurological mechanisms. Herein, we assess the influence of asthma on the clinical course of EM.

METHODS:

To be eligible for this observational cohort study, AMPP Study participants had to meet criteria for EM in 2008, complete the validated six-item asthma questionnaire from the European Community Respiratory Health Survey (ECRHS) in 2008, and provide follow-up data in 2009. Using the ECRHS, we defined asthma as a binary variable (present or absent) based on an empirical cut score and developed a Respiratory Symptom Severity Score (RSSS) based on the number of positive responses (no severity = 0 positive responses, low severity = 1-2 positive responses, moderate severity = 3-4 positive responses, high severity = 5-6 positive responses). Chronic migraine was the primary outcome measure and was defined as those with ≥ 15 headache days per month on the 2009 AMPP Study survey. We used logistic regression in separate models to assess the influence of asthma as a binary variable (Model 1) and RSSS score categories (Model 2 using no respiratory symptoms as the reference) on CM onset after adjusting for sociodemographic factors, headache day frequency, migraine preventive medication use, and medication overuse.

RESULTS:

The eligible sample for this study included 4446 individuals with EM in 2008 of whom 17% had asthma. This group had a mean age of 50.4 and was 80.8% female. In 2009, new onset CM developed in 2.9% (131/4446) of the 2008 EM cohort, including 5.4% (40/746) of the asthma subgroup and 2.5% (91/3700) of the non-asthma subgroup. In comparison to those without asthma, the adjusted odds for individuals with asthma and EM in 2008 to develop CM in 2009 were greater than two (adjusted odds ratio [aOR] 2.1; 95% CI: 1.4-3.1). Using the RSSS, the aOR for CM onset increased with the number of asthma symptoms, but only those in the high RSSS category showed a statistically significant increase in the odds of chronic migraine onset in comparison with the no RSSS reference group (aOR 3.3; 95% CI 1.7-6.2).

CONCLUSIONS:

Asthma is associated with an increased risk of new onset CM 1 year later among individuals with EM, with the highest risk being among those with the greatest number of respiratory symptoms. The exact mechanisms underlying this association are unknown, but could suggest mast cell degranulation, autonomic dysfunction, or shared genetic or environmental factors.

KEYWORDS: asthma; migraine PMID: 26581563

19. GLENOHUMERAL/SHOULDER**PT diagnosis**

Br J Sports Med. 2015 Oct 28. pii: bjsports-2014-094339. doi: 10.1136/bjsports-2014-094339.

Does physiotherapy diagnosis of shoulder pathology compare to arthroscopic findings?

Magarey ME¹, Jones MA¹, Cook CE², Hayes MG³.

Abstract**AIMS:**

To explore the ability of a physiotherapist, using a standardised musculoskeletal physiotherapy assessment protocol, to accurately identify the structures potentially responsible for shoulder symptoms against a standardised arthroscopic shoulder diagnostic assessment, and to determine the physiotherapists' ability to influence post-test diagnostic accuracy.

STUDY DESIGN: Consecutive case-based cohort study.**SUBJECT SELECTION:**

All participants were selected by two orthopaedic surgeons for arthroscopic investigation during a 6-month period.

SETTING:

Private orthopaedic clinic.

METHOD:

All consenting participants selected for arthroscopic investigation were examined by the physiotherapist prior to arthroscopy. Presence and priority of impairments/diagnoses were recorded on a standardised form. Inter and intra-rater reliability and diagnostic accuracy were tabulated.

STATISTICAL ANALYSIS:

Proportional agreement on diagnostic incidence (broad) and priority (strict) using 2x2 contingency tables for sensitivity, specificity, positive and negative predictive value and positive and negative likelihood ratios were calculated. Post-test probabilities were analysed to determine the influence of a positive or a negative finding.

RESULTS:

211 participants, aged 14-79 years were included. Overall prevalence of subacromial pathology was (77%) and, disorders of the passive restraints (29%). For both negative and positive findings, post-test probabilities were not notably altered; although positive findings yielded greater value in the decision-making modelling. The physiotherapist's ability to identify individual pathology (eg, tendon rupture vs tendinopathy, capsular vs labral) was lower than recognition of pathology within the broader diagnostic category.

CONCLUSIONS:

The physiotherapist's ability to diagnose individual pathologies was inconsistent. Indirectly, this raises the issue of whether signs and symptoms identified under arthroscopic surgery are reflective of a lesion/pathology reflective of a specific tissue.

KEYWORDS: Evaluation; Physiotherapy PMID: 26511004

20 A. ROTATOR CUFF**PT as good as surgery in two year follow-up**

J Bone Joint Surg Am. 2015 Nov 4;97(21):1729-37. doi: 10.2106/JBJS.N.01051.

Treatment of Nontraumatic Rotator Cuff Tears: A Randomized Controlled Trial with Two Years of Clinical and Imaging Follow-up.

Kukkonen J¹, Joukainen A², Lehtinen J³, Mattila KT⁴, Tuominen EK⁴, Kauko T⁵, Äärimaa V⁴.
Author information

Abstract

BACKGROUND:

The optimal treatment for symptomatic, nontraumatic rotator cuff tear is unknown. The purpose of this trial was to compare the effectiveness of physiotherapy, acromioplasty, and rotator cuff repair for this condition. We hypothesized that rotator cuff repair yields superior results compared with other treatment modalities.

METHODS:

One hundred and eighty shoulders with symptomatic, nontraumatic, supraspinatus tears were randomized into one of three cumulatively designed intervention groups: the physiotherapy-only group (denoted as Group 1), the acromioplasty and physiotherapy group (denoted as Group 2), and the rotator cuff repair, acromioplasty, and physiotherapy group (denoted as Group 3). The Constant score was the primary outcome measure. Secondary outcome measures were visual analog scale for pain, patient satisfaction, rotator cuff integrity in a control imaging investigation, and cost of treatment.

RESULTS:

One hundred and sixty-seven shoulders (160 patients) were available for analysis at two years. There were no significant differences ($p = 0.38$) in the mean change of Constant score: 18.4 points (95% confidence interval, 14.2 to 22.6 points) in Group 1, 20.5 points (95% confidence interval, 16.4 to 24.6 points) in Group 2, and 22.6 points (95% confidence interval, 18.4 to 26.8 points) in Group 3. There were no significant differences in visual analog scale for pain scores ($p = 0.45$) and patient satisfaction ($p = 0.28$) between the groups. At two years, the mean sagittal size of the tendon tear was significantly smaller ($p < 0.01$) in Group 3 (4.2 mm) compared with Groups 1 and 2 (11.0 mm). Rotator cuff repair and acromioplasty were significantly more expensive than physiotherapy only ($p < 0.01$).

CONCLUSIONS:

There was no significant difference in clinical outcome between the three interventions at the two-year follow-up. The potential progression of the rotator cuff tear, especially in the non-repaired treatment groups, warrants further follow-up. On the basis of our findings, conservative treatment is a reasonable option for the primary initial treatment for isolated, symptomatic, nontraumatic, supraspinatus tears in older patients.

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

PMID: 26537160

22 A. IMPINGEMENT**Exercise****Empty can exercise provokes more pain and has undesirable biomechanics compared with the full can exercise**

Mark K. Timmons, PhD, ATC Jeff J. Ericksen, MD[†] Sevgi S. Yesilyaprak, PhD, PT Lori A. Michener, PhD, PT, ATC

DOI: <http://dx.doi.org/10.1016/j.jse.2015.08.046>

Background

The purpose of this investigation was to characterize the scapular position and scapular muscle activation during the empty can (EC) and full can (FC) exercises. The EC exercise has been shown to produce scapular kinematics associated with the mechanism leading to subacromial impingement syndrome (SAIS) but has not been investigated in patients with (SAIS). This investigation will help improve the treatment of patients with SAIS.

Methods

Participants with SAIS (n = 28) performed 5 consecutive repetitions of FC and EC exercises. Scapular and clavicular 3-dimensional positions and scapular muscle activity were measured during each exercise. Pain was measured with the numeric pain rating 11-point scale.

Results

Participants reported greater pain during the EC exercise vs the FC exercise (difference, 1; $P = .003$). During the EC exercise, participants were in greater scapular upward rotation (difference, 3°; $P < .001$), internal rotation (mean difference, 2°; $P = .017$), and clavicular elevation (difference, 3°, $P < .001$) and in less scapular posterior tilt (difference, 2°; $P < .001$). There was greater activity of upper trapezius (difference, 4%, $P = .002$), middle trapezius (difference, 3%; $P < .001$), and serratus anterior (difference, 0.5%; $P = .035$) during ascent, and during the descent of greater upper trapezius (difference, 2%, $P = .005$), and middle trapezius (difference, 1%; $P = .003$), but less activity of the lower trapezius (difference, 1%; $P = .039$).

Conclusions

The EC exercise was associated with more pain and scapular positions that have been reported to decrease the subacromial space. Scapular muscle activity was generally higher with the EC, which may be an attempt to control the impingement-related scapular motion. The FC exercise of elevation is preferred over the EC exercise.

Level of evidence: **Basic Science Study, Kinesiology**

27. HIP**The capsule**

Sports Med Arthrosc. 2015 Dec;23(4):164-8. doi: 10.1097/JSA.0000000000000089.

Biomechanics of the Hip Capsule and Capsule Management Strategies in Hip Arthroscopy.

Nepple JJ¹, Smith MV.

Recent advances in our understanding of the function of the hip capsule have clarified its importance to normal hip function and kinematics.

The iliofemoral ligament is the primary stabilizing structure for controlling anterior translation and external rotation of the hip, and is violated by the arthroscopic interportal capsulotomy. Microinstability of the hip occurring after surgical trauma remains a poorly defined clinical entity. In certain at-risk populations, capsular repair should be considered as part of an arthroscopic hip procedure to achieve optimal outcomes and avoid iatrogenic instability (dislocation or microinstability).

Despite a lack of conclusive evidence-based indications, we recommend capsular repair in the settings of borderline hip dysplasia (or dysplastic variants such as increased femoral anteversion), hip hypermobility, connective tissue disorders, and traumatic or atraumatic instability. With careful attention to arthroscopic capsular management, adequate exposure can be achieved and reproducibly allow for an effective capsular repair when indicated.

PMID: 26524549

Snapping hip

Sports Med Arthrosc. 2015 Dec;23(4):194-9. doi: 10.1097/JSA.0000000000000095.

Understanding and Treating the Snapping Hip.

Yen YM¹, Lewis CL, Kim YJ.

Author information

Abstract

Snapping hip, or coxa saltans is a palpable or auditory snapping with movement of the hip joint. Extra-articular snapping is divided into external and internal types, and is caused laterally by the iliotibial band and anteriorly by the iliopsoas tendon. Snapping of the iliopsoas usually requires contraction of the hip flexors and may be difficult to distinguish from intra-articular coxa saltans. Ultrasound can be a useful modality to dynamically detect tendon translation during hip movement to support the diagnosis of extra-articular snapping.

Coxa saltans is typically treated with conservative measures including anti-inflammatories, stretching, and avoidance of inciting activities. Recalcitrant cases are treated with surgery to lengthen the iliopsoas or the iliotibial band.

PMID: 26524554

30 A. IMPINGEMENT

Biomechanical implications

Sports Medicine & Arthroscopy Review:
December 2015 - Volume 23 - Issue 4 - p 169–173

doi: 10.1097/JSA.0000000000000092

Biomechanical Implications of Corrective Surgery for FAI: An Evidence-based Review

Sampson, Joshua D. MD; Safran, Marc R. MD

Abstract

Femoroacetabular impingement (FAI) has been identified as a potential cause of hip osteoarthritis.

The goal of FAI surgery is to relieve pain, and hopefully delay or prevent osteoarthritis of the hip. Several studies have now demonstrated favorable clinical outcomes after arthroscopic and open surgical correction of symptomatic FAI. The concept is restoration of normal hip anatomy may result in improved biomechanical function and kinematics of the hip, which may prevent or delay the progression of osteoarthritis. Although many clinical studies demonstrate restoration of “normal” anatomy, there are few studies evaluating improvement of biomechanics and function. To date, only 5 studies have been published in the English literature that study biomechanics and/or kinematics of the hip both preoperatively and postoperatively.

At this point in the understanding of FAI, critical analysis of the literature suggests that FAI surgery can improve several parameters of biomechanical hip function. However, the impact of these improved biomechanics on the natural history and progression of degenerative changes in patients that are treated for symptomatic FAI has not been demonstrated.

Core muscle

Sports Med Arthrosc. 2015 Dec;23(4):213-20. doi: 10.1097/JSA.0000000000000083.

Core Muscle Injury/Sports Hernia/Athletic Pubalgia, and Femoroacetabular Impingement.

Ross JR¹, Stone RM, Larson CM.

Author information

Abstract

Core muscle injury/sports hernia/athletic pubalgia is an increasingly recognized source of pain, disability, and time lost from athletics.

Groin pain among athletes, however, may be secondary to various etiologies. A thorough history and comprehensive physical examination, coupled with appropriate diagnostic imaging, may improve the diagnostic accuracy for patients who present with core muscular injuries. Outcomes of nonoperative management have not been well delineated, and multiple operative procedures have been discussed with varying return-to-athletic activity rates.

In this review, we outline the clinical entity and treatment of core muscle injury and athletic pubalgia. In addition, we describe the relationship between athletic pubalgia and femoroacetabular impingement along with recent studies that have investigated the treatment of these related disorders.

PMID: 26524557

Weakness

J Sci Med Sport. 2015 Oct 22. pii: S1440-2440(15)00202-9. doi: 10.1016/j.jsams.2015.10.002.

Isometric and isokinetic hip strength and agonist/antagonist ratios in symptomatic femoroacetabular impingement.

Diamond LE¹, Wrigley TV², Hinman RS², Hodges PW³, O'Donnell J⁴, Takla A⁵, Bennell KL².

Author information

Abstract

OBJECTIVES:

This study investigated isometric and isokinetic hip strength in individuals with and without symptomatic femoroacetabular impingement (FAI). The specific aims were to: (i) determine whether differences exist in isometric and isokinetic hip strength measures between groups; (ii) compare hip strength agonist/antagonist ratios between groups; and (iii) examine relationships between hip strength and self-reported measures of either hip pain or function in those with FAI.

DESIGN:

Cross-sectional.

METHODS:

Fifteen individuals (11 males; 25±5 years) with symptomatic FAI (clinical examination and imaging (alpha angle >55° (cam FAI), and lateral centre edge angle >39° and/or positive crossover sign (combined FAI))) and 14 age- and sex-matched disease-free controls (no morphological FAI on magnetic resonance imaging) underwent strength testing. Maximal voluntary isometric contraction strength of hip muscle groups and isokinetic hip internal (IR) and external rotation (ER) strength (20°/s) were measured. Groups were compared with independent t-tests and Mann-Whitney U tests.

RESULTS:

Participants with FAI had 20% lower isometric abduction strength than controls (p=0.04). There were no significant differences in isometric strength for other muscle groups or peak isokinetic ER or IR strength. The ratio of isometric, but not isokinetic, ER/IR strength was significantly higher in the FAI group (p=0.01). There were no differences in ratios for other muscle groups. Angle of peak IR torque was the only feature correlated with symptoms.

CONCLUSIONS:

Individuals with symptomatic FAI demonstrate isometric hip abductor muscle weakness and strength imbalance in the hip rotators. Strength measurement, including agonist/antagonist ratios, may be relevant for clinical management of FAI.

KEYWORDS: Femoroacetabular impingement; Hip joint; Hip strength

PMID: 26526760

30 B. LABRUM**Labral repair**

Sports Medicine & Arthroscopy Review:
December 2015 - Volume 23 - Issue 4 - p 205–212
doi: 10.1097/JSA.0000000000000090
Review Articles

Evidence and Approach for Management of Labral Deficiency: The Role for Labral Reconstruction

Mook, William R. MD; Briggs, Karen K. MPH; Philippon, Marc J. MD

Abstract

The acetabular labrum is a complex fibrocartilaginous structure with unique anatomy. Its unique anatomy imparts biomechanical functions important in hip stability, synovial fluid dynamics, contact pressure dissipation, proprioception, and nociception.

Although the importance of labral preservation through surgical repair techniques has been increasingly recognized, situations do occur where the labrum is either absent, deficient, or simply irreparable. In these situations, both open and arthroscopic reconstructive techniques have been described to help restore the function of the native labral tissue. Efforts should be made to maintain or reestablish the native structure and function of the labrum in young patients with at least 2 mm of joint space based on the available biomechanical and clinical evidence. Return to sport, significant improvements in pain and function, high levels of satisfaction, and avoidance of hip arthroplasty have been shown in patients undergoing labral reconstruction.

Although short-term results of labral reconstruction are promising, long-term follow-up and comparative studies will be necessary to further define its indications and contraindications.

31. KNEE**Knee motion in weight bearing**

Knee Surg Sports Traumatol Arthrosc. 2015 Nov 4.

Upright weight-bearing CT of the knee during flexion: changes of the patellofemoral and tibiofemoral articulations between 0° and 120°.

Hirschmann A^{1,2}, Buck FM³, Herschel R⁴, Pfirrmann CW³, Fucentese SF⁴.

PURPOSE:

To prospectively compare patellofemoral and tibiofemoral articulations in the upright weight-bearing position with different degrees of flexion using CT in order to gain a more thorough understanding of the development of diseases of the knee joint in a physiological position.

MATERIALS AND METHODS:

CT scans of the knee in 0°, 30°, 60° flexion in the upright weight-bearing position and in 120° flexion upright without weight-bearing were obtained of 10 volunteers (mean age 33.7 ± 6.1 years; range 24-41) using a cone-beam extremity-CT. Two independent readers quantified tibiofemoral and patellofemoral rotation, tibial tuberosity-trochlear groove distance (TTTG) and patellofemoral distance. Tibiofemoral contact points were assessed in relation to the anteroposterior distance of the tibial plateau. Significant differences between degrees of flexion were sought using Wilcoxon signed-rank test ($P < 0.05$).

RESULTS:

With higher degrees of flexion, internal tibiofemoral rotation increased (0°/120° flexion; mean, $0.5^\circ \pm 4.5/22.4^\circ \pm 7.6$); external patellofemoral rotation decreased ($10.6^\circ \pm 7.6/1.6^\circ \pm 4.2$); TTTG decreased ($11.1 \text{ mm} \pm 3.7/-2.4 \text{ mm} \pm 6.4$) and patellofemoral distance decreased ($38.7 \text{ mm} \pm 3.0/21.0 \text{ mm} \pm 7.0$). The CP shifted posterior, more pronounced laterally. Significant differences were found for all measurements at all degrees of flexion ($P = 0.005-0.037$), except between 30° and 60°. ICC was almost perfect (0.80-0.99), except for the assessment of the CP (0.20-0.96).

CONCLUSION:

Knee joint articulations change significantly during flexion using upright weight-bearing CT. Progressive internal tibiofemoral rotation leads to a decrease in the TTTG and a posterior shift of the contact points in higher degrees of flexion. This elucidates patellar malalignment predominantly close to extension and meniscal tears commonly affecting the posterior horns.

KEYWORDS: Contact point; Patellofemoral; Tibiofemoral; Upright weight-bearing CT; Weight-bearing knee joint alignment

PMID: 26537597

32 A. KNEE/ACL**Diagnosis not improving**

Knee. 2015 Nov 6. pii: S0968-0160(15)00226-4. doi: 10.1016/j.knee.2015.09.016.

Anterior cruciate ligament injury: A persistently difficult diagnosis.

Parwaiz H¹, Teo AQ², Servant C².

BACKGROUND:

Historically anterior cruciate ligament (ACL) injuries have been poorly diagnosed. A paper published in *Injury* in 1996 showed that less than 10% of patients with an ACL injury had the diagnosis made by the first physician to see them and that the average delay in surgery was 21 months. The aim of our study was to investigate whether an improvement has been made over the last two decades in diagnosing ACL injuries.

METHODS:

We identified 160 patients who had an ACL reconstruction performed by a single surgeon between October 2004 and December 2011 and for whom a complete data set was available. Data were extracted retrospectively from the hospital notes and a dedicated patient database.

RESULTS:

There were 75.1% (120/160) of patients who presented first to an emergency department (ED) or to their general practitioner (GP), but only 14.4% (23/160) were diagnosed on initial presentation. The median number of healthcare professionals a patient saw prior to a diagnosis of ACL injury was three. The median delay from injury to diagnosis was 13 weeks (0 to 926), and the median total time from injury to surgery was 42 weeks (0 to 1047).

CONCLUSION:

Over the past two decades there appears to have been little improvement in the early diagnosis of ACL injuries. We recommend further education of emergency and primary care clinicians in the diagnosis of ACL injuries. The implementation of an acute knee injury clinic may help minimize delays to surgery, which should result in better patient outcomes.

KEYWORDS: Anterior cruciate ligament; Diagnosis; Reconstruction
PMID: 26552783

Muscle co-activation

BMC Musculoskelet Disord. 2015 Nov 12;16(1):348. doi: 10.1186/s12891-015-0804-y.

Medial and lateral hamstrings and quadriceps co-activation affects knee joint kinematics and ACL elongation: a pilot study.

Serpell BG^{1,2}, Scarvell JM^{3,4}, Pickering MR^{5,6}, Ball NB⁷, Newman P⁸, Perriman D⁹, Warmenhoven J¹⁰, Smith PN^{11,12}.

BACKGROUND:

Many injury prevention and rehabilitation programs aim to train hamstring and quadriceps co-activation to constrain excessive anterior tibial translation and protect the anterior cruciate ligament (ACL) from injury. However, despite strong clinical belief in its efficacy, primary evidence supporting training co-activation of the hamstrings and quadriceps muscles for ACL injury prevention and rehabilitation is quite limited. Therefore, the purpose of the study presented in this paper was to determine if hamstring-quadriceps co-activation alters knee joint kinematics, and also establish if it affects ACL elongation.

METHODS:

A computed tomography (CT) scan from each participant's dominant leg was acquired prior to performing two step-ups under fluoroscopy: one with 'natural' hamstring-quadriceps co-activation, one with deliberate co-activation. Electromyography was used to confirm increased motor unit recruitment. The CT scan was registered to fluoroscopy for 4-D modeling, and knee joint kinematics subsequently measured. Anterior cruciate ligament attachments were mapped to the 4-D models and its length was assumed from the distance between attachments. Anterior cruciate ligament elongation was derived from the change in distance between those points as they moved relative to each other.

RESULTS:

Reduced ACL elongation as well as knee joint rotation, abduction, translation, and distraction was observed for the step up with increased co-activation. A relationship was shown to exist for change in ACL length with knee abduction ($r = 0.91$; $p \leq 0.001$), with distraction ($r = -0.70$; $p = 0.02$ for relationship with compression), and with anterior tibial translation ($r = 0.52$; $p = 0.01$). However, ACL elongation was not associated with internal rotation or medial translation. Medial hamstring-quadriceps co-activation was associated with a shorter ACL ($r = -0.71$; $p = 0.01$), and lateral hamstring-quadriceps co-activation was related to ACL elongation ($r = 0.46$; $p = 0.05$).

CONCLUSION: Net co-activation of the hamstrings and quadriceps muscles will likely reduce ACL elongation provided that the proportion of medial hamstring-quadriceps co-activation exceeds lateral.

PMID: 26563153

Graphs**Analysis of biomechanical properties of patellar ligament graft and quadruple hamstring tendon graph**

Zoran Zelić Saša Rapan Goran Ćurić Dubravka Biuk Radivoje Radić

DOI: <http://dx.doi.org/10.1016/j.injury.2015.10.040>

Abstract**Introduction**

Two types of transplant are commonly used in the surgical management of anterior cruciate ligament lesions: the central part of the patellar ligament and quadruple tendons of the gracilis muscle and semitendinosus muscle.

Aims

The aim of this study was to determine the biomechanical characteristics of patellar ligament transplants and transplants of the quadruple tendons of the hamstring muscles under tensile force in the laboratory, and to compare the results in each group of samples.

Materials and methods

The study comprised 160 specimens: 40 specimens of gracilis muscle tendons, 40 of semitendinosus muscle tendons, 40 of quadruple tendons and 40 of the patellar ligament, approximately equally distributed according to sex, age (50–70 years) and the side of the body from which the specimen had been taken.

Results

The working curve analysis of the specimens under tensile load of a maximum force of 30 N showed the least elongation (0.31%) in the quadruple tendon, followed by the gracilis muscle tendon (1.48%) and patellar ligament tendon (3.91%).

Conclusions

The quadruple tendon specimen showed greater strength and higher elasticity compared with the patellar ligament specimen, which proved the starting hypothesis.

Keywords: Patellar ligament, Quadruple tendons, Biomechanical, Anterior cruciate ligament

Early OA

Am J Sports Med. 2015 Oct 22. pii: 0363546515608475.

Decreased Knee Joint Loading Associated With Early Knee Osteoarthritis After Anterior Cruciate Ligament Injury.

Wellsandt E1, Gardinier ES2, Manal K3, Axe MJ4, Buchanan TS3, Snyder-Mackler L3.

Abstract**BACKGROUND:**

Anterior cruciate ligament (ACL) injury predisposes individuals to early-onset knee joint osteoarthritis (OA). Abnormal joint loading is apparent after ACL injury and reconstruction. The relationship between altered joint biomechanics and the development of knee OA is unknown.

HYPOTHESIS:

Altered knee joint kinetics and medial compartment contact forces initially after injury and reconstruction are associated with radiographic knee OA 5 years after reconstruction.

STUDY DESIGN:

Case-control study; Level of evidence, 3.

METHODS:

Individuals with acute, unilateral ACL injury completed gait analysis before (baseline) and after (posttraining) preoperative rehabilitation and at 6 months, 1 year, and 2 years after reconstruction. Surface electromyographic and knee biomechanical data served as inputs to an electromyographically driven musculoskeletal model to estimate knee joint contact forces. Patients completed radiographic testing 5 years after reconstruction. Differences in knee joint kinetics and contact forces were compared between patients with and those without radiographic knee OA.

RESULTS:

Patients with OA walked with greater frontal plane interlimb differences than those without OA (nonOA) at baseline (peak knee adduction moment difference: 0.00 ± 0.08 N·m/kg·m [nonOA] vs -0.15 ± 0.09 N·m/kg·m [OA], $P = .014$; peak knee adduction moment impulse difference: -0.001 ± 0.032 N·m·s/kg·m [nonOA] vs -0.048 ± 0.031 N·m·s/kg·m [OA], $P = .042$). The involved limb knee adduction moment impulse of the group with osteoarthritis was also lower than that of the group without osteoarthritis at baseline (0.087 ± 0.023 N·m·s/kg·m [nonOA] vs 0.049 ± 0.018 N·m·s/kg·m [OA], $P = .023$). Significant group differences were absent at posttraining but reemerged 6 months after reconstruction (peak knee adduction moment difference: 0.02 ± 0.04 N·m/kg·m [nonOA] vs -0.06 ± 0.11 N·m/kg·m [OA], $P = .043$). In addition, the OA group walked with lower peak medial compartment contact forces of the involved limb than did the group without OA at 6 months (2.89 ± 0.52 body weight [nonOA] vs 2.10 ± 0.69 body weight [OA], $P = .036$).

CONCLUSION:

Patients who had radiographic knee OA 5 years after ACL reconstruction walked with lower knee adduction moments and medial compartment joint contact forces than did those patients without OA early after injury and reconstruction.

© 2015 The Author(s).

KEYWORDS: anterior cruciate ligament; contact force; knee moment; loading; osteoarthritis

34. PATELLA

Infrapatellar fat pad

Arthritis Res Ther. 2015 Nov 10;17:318. doi: 10.1186/s13075-015-0831-y.

A large infrapatellar fat pad protects against knee pain and lateral tibial cartilage volume loss.

Teichtahl AJ^{1,2}, Wulidasari E³, Brady SR⁴, Wang Y⁵, Wluka AE⁶, Ding C^{7,8}, Giles GG^{9,10,11}, Cicuttini FM¹².

INTRODUCTION:

The infrapatellar fat pad (IPFP) is commonly resected during knee joint arthroplasty, but the ramifications of doing so are unclear. This longitudinal study determined whether the size of the IPFP (maximum cross-sectional area (CSA)) was associated with knee cartilage loss and the development of knee pain in adults without knee osteoarthritis (OA).

METHODS:

A total of 297 adults without American College of Rheumatology clinical criteria for a diagnosis of knee OA were recruited. Knee MRI was performed at baseline and an average of 2.3 years later. IPFP maximal CSA and tibial cartilage volume were measured from MRI. A large and small IPFP were defined by the median split, with a large IPFP defined by being in the highest 50 %. Body composition was performed at baseline using bio-impedance. Knee pain was assessed at follow-up using the Western Ontario and McMaster University Osteoarthritis Index (WOMAC).

RESULTS:

A larger IPFP at baseline was associated with reduced knee pain at follow-up (OR 0.5, 95 % CI: 0.3 to 0.9, $p = 0.02$) and lateral tibial cartilage volume loss (β : -0.9 % (95 % CI: -1.6, -0.1 %) per annum, $p = 0.03$). The maximal CSA of the IPFP was predominantly located in the lateral (54.2 %), rather than the medial tibiofemoral compartment (1.7 %). Male gender (OR 12.0, 95 % CI: 6.5 to 22.0, $p < 0.001$) and fat free mass (OR 1.15, 95 % CI 1.04 to 1.28, $p = 0.007$) were both associated with a large IPFP.

CONCLUSION:

A larger IPFP predicts reduced lateral tibial cartilage volume loss and development of knee pain and mechanistically might function as a local shock-absorber. The lack of association between measures of adiposity and the size of the IPFP might suggest that the IPFP size is not simply a marker of systemic obesity.

PMID: 26555322

Exhaustive running and knee

J Biomech. 2015 Oct 25. pii: S0021-9290(15)00569-2. doi: 10.1016/j.jbiomech.2015.10.021.

Sex differences in running mechanics and patellofemoral joint kinetics following an exhaustive run.

Willson JD¹, Loss JR², Willy RW³, Meardon SA³.

Patellofemoral joint pain (PFP) is a common running-related injury that is more prevalent in females and thought to be associated with altered running mechanics. Changes in running mechanics have been observed following an exhaustive run but have not been analyzed relative to the sex bias for PFP.

The purpose of this study was to test if females demonstrate unique changes in running mechanics associated with PFP following an exhaustive run. For this study, 18 females and 17 males ran to volitional exhaustion. Peak PFJ contact force and stress, PFJ contact force and stress loading rates, hip adduction excursion, and hip and knee joint frontal plane angular impulse were analyzed between females and males using separate 2 factor ANOVAs (2 (male/female)×2 (before/after exhaustion)). We observed similar changes in running mechanics among males and females over the course of the exhaustive run. Specifically, greater peak PFJ contact force loading rate (5%, P=.01), PFJ stress loading rate (5%, P<.01), hip adduction excursion (1.3°, P<.01), hip abduction angular impulse (4%, P<.01), knee abduction angular impulse (5%, P=.03), average vertical ground reaction force loading rate (10%, P<.01) and step length (2.1cm, P=.001) were observed during exhausted running. These small changes in suspected PFP pathomechanical factors may increase a runner's propensity for PFP. However, unique changes in female running mechanics due to exhaustion do not appear to contribute to the sex bias for PFP.

KEYWORDS: Exertion; Female; Kinematics; Male; Patella

PMID:26525514

Hip strength and PF pain

Am J Sports Med. 2015 Nov;43(11):2747-52. doi: 10.1177/0363546515599628. Epub 2015 Sep 1.

Hip Strength Is Greater in Athletes Who Subsequently Develop Patellofemoral Pain.

Herbst KA¹, Barber Foss KD², Fader L³, Hewett TE⁴, Witvrouw E⁵, Stanfield D⁶, Myer GD⁷.
Author information

Abstract

BACKGROUND:

Hip and knee strength abnormalities have been implicated in patellofemoral pain (PFP) in multiple studies. However, the relationship is unclear, as many of these studies have been retrospective.

PURPOSE:

To compare prospective hip and knee isokinetic strength in young female athletes who subsequently went on to develop PFP relative to their uninjured, healthy peers.

STUDY DESIGN:

Descriptive epidemiology study.

METHODS:

Adolescent female athletes (N = 329) were tested for isokinetic strength of the knee (flexion and extension) and hip (abduction) and screened for the prevalence of PFP before their basketball seasons. After exclusion based on current PFP symptoms, 255 participants were prospectively enrolled in the study. A 1-way analysis of variance was used to determine between-group differences in incident PFP and the referent (no incident PFP) participants.

RESULTS:

The cumulative incidence rate for the development of PFP was 0.97 per 1000 athlete-exposures. Female athletes who developed PFP demonstrated increased normalized hip abduction strength (normalized torque, 0.013 ± 0.003) relative to the referent control group (normalized torque, 0.011 ± 0.003) ($P < .05$). Unlike hip strength, normalized knee extension and knee flexion strength were not different between the 2 groups ($P > .05$).

CONCLUSION:

The findings in this study indicate that young female athletes with greater hip abduction strength may be at an increased risk for the development of PFP. Previous studies that have looked at biomechanics indicated that those with PFP have greater hip adduction dynamic mechanics.

CLINICAL RELEVANCE:

Combining the study data with previous literature, we theorize that greater hip abduction strength may be a resultant symptom of increased eccentric loading of the hip abductors associated with increased dynamic valgus biomechanics, demonstrated to underlie increased PFP incidence. Further research is needed to verify the proposed mechanistic link to the incidence of PFP.

KEYWORDS: anterior knee pain; female athlete; hip strength; patellofemoral pain

PMID: 26330570

Q angle

Clin Biomech (Bristol, Avon). 2015 Sep 8. pii: S0268-0033(15)00243-0. doi: 10.1016/j.clinbiomech.2015.09.002.

Q-angle static or dynamic measurements, which is the best choice for patellofemoral pain?

de Oliveira Silva D1, Briani RV1, Pazzinatto MF1, Gonçalves AV2, Ferrari D3, Aragão FA2, de Azevedo FM4.

Author information**Abstract****BACKGROUND:**

The elevated Q-angle seems to be one of the most suggested factors contributing to patellofemoral pain. Females with patellofemoral pain are often evaluated through static clinical tests in clinical practice. However, the adaptations seem to appear more frequently in dynamic conditions. Performing static vs. dynamic evaluations of widely used measures would add to the knowledge in this area. Therefore, the aim of this study was to determine the reliability and discriminatory capability of three Q-angle measurements: a static clinical test, peak dynamic knee valgus during stair ascent and a static measurement using a three-dimensional system.

METHOD:

Twenty-nine females with patellofemoral pain and twenty-five pain-free females underwent clinical Q-angle measurement and static and dynamic knee valgus measurements during stair ascent, using a three-dimensional system. All measurements were obtained and comparisons between groups, reliability and discriminatory capability were calculated.

FINDINGS:

Peak dynamic knee valgus was found to be greater in the patellofemoral pain group. On the other hand, no significant effects were found for static knee valgus or clinical Q-angle measurements between groups. The dynamic variable demonstrated the best discriminatory capability. Low values of reliability were found for clinical Q-angle, in contrast to the high values found for the three-dimensional system measurements.

INTERPRETATION:

Based on our findings, avoiding or correcting dynamic knee valgus during stair ascent may be an important component of rehabilitation programs in females with patellofemoral pain who demonstrate excessive dynamic knee valgus. Q-angle static measurements were not different between groups and presented poor values of discriminatory capability.

KEYWORDS: Anterior knee pain; Kinematic; Lateral patellar maltracking; Patellofemoral joint; Quadriceps angle (Q-angle)

Adults and adolescents

Sports Med. 2015 Nov;45(11):1489-95. doi: 10.1007/s40279-015-0364-1.

Patellofemoral Pain in Adolescence and Adulthood: Same Same, but Different?

Rathleff MS^{1,2}, Vicenzino B³, Middelkoop M⁴, Graven-Nielsen T⁵, van Linschoten R⁶, Hölmich P⁷, Thorborg K⁷.

Author information

Abstract

The mainstay of patellofemoral pain (PFP) treatment is exercise therapy, often in combination with adjunct treatments such as patient education, orthoses, patella taping and stretching, making the intervention multimodal in nature. The vast majority of randomised controlled trials among patients with PFP have investigated the effect of treatment among adults (>18 years of age). So, while systematic reviews and meta-analyses provide evidence-based recommendations for treating PFP, these recommendations are largely based upon the trials in adults. In the present article, we have summarised the findings on the efficacy of multimodal treatment (predominantly exercise) from the three largest trials concerning patients with PFP, focusing on the long-term success-rate 1 year after receiving multimodal treatment, and with a particular focus on the success rate across the different age groups, including both adolescents, young adults and adults.

The results of this paper show that there appears to be a difference in the success rate between adolescents and adults, despite providing similar exercise treatment and having similar exercise compliance. While PFP may present in a similar fashion in adolescence and adults, it may not be the same underlying condition or stage, and different treatments may be required. Collectively, this highlights the importance of increasing our understanding of the underlying pathology, pain mechanisms and why treatment may-or may not-work in adolescents and adults with PFP.

PMID:26178330

Infrapatella fat pad

Sports Health. 2015 Oct 20. pii: 1941738115611413.

Evaluation, Treatment, and Rehabilitation Implications of the Infrapatellar Fat Pad.

Hannon J¹, Bardenett S², Singleton S³, Garrison JC⁴.

Author information

Abstract

CONTEXT:

The infrapatellar fat pad (IFP) is in the anterior knee compartment and may be a major pain generator.

EVIDENCE ACQUISITION:

A PubMed database search using the terms Hoffas fat pad, anterior interval, and infrapatellar fat pad was performed from the years 1970 to 2015.

STUDY DESIGN:

Clinical review.

LEVEL OF EVIDENCE:

Level 5.

RESULTS:

Limited research exists examining the role of the IFP in relation to potential treatment and rehabilitation implications.

CONCLUSIONS:

Alterations in IFP mobility, whether the result of postsurgical scarring or faulty movement patterns, result in pain and disability in a variety of patient populations. The majority of treatment approaches are driven by the surgical technique.

KEYWORDS: Hoffas fat pad; anterior knee pain; infrapatellar fat pad

PMID: 26502189

Braces keep muscle function**The Effect of Knee Braces on Quadriceps Strength and Inhibition in Subjects With Patellofemoral Osteoarthritis**

Authors: Michael J. Callaghan, PhD, MPhil, MCSP¹, Matthew J. Parkes, MSc¹, David T. Felson, MD, MPH^{1,2,3}

Study Design Secondary analysis of a randomized controlled trial.

Background The use of external supports has been questioned because they may lead to weakness in the surrounding muscles. To our knowledge, there is no investigation into the effect of knee supports or braces on quadriceps muscle strength and quadriceps inhibition in individuals with PFJOA.

Objective To investigate the effects of a flexible knee support on quadriceps maximum voluntary contraction (MVC) and arthrogenous muscle inhibition (AMI) in patients with patellofemoral joint osteoarthritis (PFJOA).

Methods 108 participants were included with at least 3 months of patellofemoral pain and a K-L score 2 or 3 for PFJOA. Each was randomized to wear a flexible knee support ('brace') or no support ('no brace') in a 6 weeks RCT, after which followed an open label trial with all participants wearing the brace for a total of 12 weeks. At the 6 and 12 weeks' time points quadriceps MVC was measured isometrically and quadriceps AMI was measured by twitch interpolation.

Results After 6 weeks, MVC did not differ between the 'brace' and 'no brace' group (9.09Nm; 95% CI -4.89Nm to 23.07Nm, $p = 0.20$). AMI significantly decreased in the brace group (-8.62%; 95% CI -13.90 to -3.33%, $p = 0.002$). After 12 weeks of all participants wearing a flexible knee support, MVC increased by 7.98Nm (95% CI 2.52Nm to 13.45Nm, $p = 0.004$). AMI decreased by -8.42% (95% CI -11.48% to -5.36%; $p < 0.001$). Although statistically significant, these results have doubtful clinical significance.

Conclusion A patellofemoral flexible knee support in participants with PFJOA does not have an adverse effect on quadriceps MVC or AMI. Using a knee support should not be discouraged because of concerns about deleterious effects on quadriceps strength and inhibition.

Level of Evidence Therapy, level 1b. *J Orthop Sports Phys Ther*, Epub 10 Nov 2015. doi:10.2519/jospt.2016.5093

Keyword: AMI, arthrogenous muscle inhibition, isometric strength, MVC

35. KNEE/TOTAL**PT and total knee**

Current Orthopaedic Practice:

November/December 2015 - Volume 26 - Issue 6 - p E13–E24

doi: 10.1097/BCO.0000000000000298

Review Article

A critical review of the literature regarding physical therapy management of patients with total knee arthroplasty

Kohia, Mohamed PT, PhD; Reyes, Ashley De Los DPT; Koehler, Amy DPT; Schnabel, Samantha DPT; Wirsig, Bethany DPT

Abstract

This review analyzes the research literature on physical therapy management of patients anticipating or recovering from total knee arthroplasty (TKA). Using databases and keywords, several relevant studies were found. Twenty-four studies met the criteria and were classified according to Sackett's levels of evidence. Fifteen studies were graded as level I, five studies as level II, one as level IV, and three as level V. From the levels of evidence, seven grade A, four grade B, and one grade C recommendations were developed, with grade A being the most significant. The results of this review found that there is a potential benefit to using accelerated procedures (initiation of rehabilitation within 24 hr after TKA). Encouraging patients to perform active range of motion exercise would be a better option than passive range of motion and that physiotherapy can focus on more functional rehabilitation, such as preparing to return to daily activities. Eccentric exercise of the hamstring is one of the effective methods to recover knee extension after TKA. A multidisciplinary rehabilitation program, including a physician specializing in physical medicine and rehabilitation, a physical therapist, a psychologist, a social worker, a nutritionist, and an orthopaedic surgeon in the outpatient setting, does not reduce the use of rehabilitation services or yield faster achievement of functional recovery or quality of life. Functional training and balance training are safe treatment methods and have the potential to decrease functional limitations. Clinical recommendations and future research directions also are provided.

38 A. FOOT AND ANKLE**Foot sensitivity****Foot sole skin vibration perceptual thresholds are elevated in a standing posture compared to sitting**

Robyn L. Mildren Nicholas D.J. Strzalkowski Leah R. Bent

Highlights

- We measured skin vibration thresholds at the foot sole while standing and sitting.
- Multiple frequencies were used to activate different cutaneous afferent populations.
- Thresholds across all frequencies were increased during standing.

Abstract

Foot sole sensitivity is commonly assessed while individuals are seated or prone; however the primary role of foot sole cutaneous feedback is for the control of upright stance and gait. The aim of this study was to compare vibration perceptual thresholds across the foot sole between sitting and standing postures. Vibration perceptual thresholds were measured in sitting and standing postures in 18 healthy participants (8 male) using a custom vibration device. Two foot sole locations (heels and metatarsals) were tested at four vibration frequencies (3, 15, 40, and 250 Hz) selected to target different cutaneous afferent populations. At each frequency, perceptual thresholds across the foot sole were significantly higher in the standing posture compared to the sitting posture; this is indicative of lower sensitivity while standing. In addition, threshold differences between the heels and metatarsals for lower frequency vibratory stimuli were more pronounced while standing, with higher thresholds observed at the heels. Our results demonstrate that standing significantly alters sensitivity across the foot sole. Therefore, conducting perceptual tests at the foot sole during stance could potentially provide more direct information about the ability of cutaneous afferents to signal tactile information in a state where this feedback can contribute to postural control.

Keywords: *Foot sole, Cutaneous afferent, Vibration, Standing, Skin sensitivity*

Clubfoot

J Pediatr Orthop. 2015 Dec;35(8):e104-9. doi: 10.1097/BPO.0000000000000449.

Factors Associated With Increased Risk of Clubfoot: A Norwegian National Cohort Analysis.

Dodwell E¹, Risoe P, Wright J.

Abstract

BACKGROUND:

Previous studies investigating the causes of clubfoot have shown conflicting results, potentially because of retrospective study designs or incomplete assessment of causative factors. The study aim was to examine risk factors for clubfoot in a large prospective Norwegian cohort.

METHODS:

Exposures prior and during pregnancy were identified through the Norwegian Mother and Child Cohort Study (MoBa) conducted by the Norwegian Institute of Public Health. This was linked to the Norwegian Medical Birth Registry, which provided clubfoot diagnosis through ICD-10 code Q66.0. Logistic regression analysis investigated associations between potential risk factors and development of clubfoot.

RESULTS:

A total of 121 clubfoot cases were identified; 1.1 per 1000 births. Parental diagnosis of clubfoot [odds ratio (OR): 31.5; 95% confidence interval (CI):9.61-103.3] and cigarette smoking, both in the three months prior to pregnancy (OR:1.82; 95%CI:1.05-3.18) and the first trimester (OR:2.67; 95% CI:1.28-5.55) were associated with clubfoot. Infants with clubfoot had greater solvent exposure (OR:1.66; 95% CI:1.00-2.76). Oligohydramnios, parental age, parental education, parity, maternal anxiety or depression, alcohol use, season of birth did not have statistically significant associations.

CONCLUSIONS:

In addition to parental diagnosis of clubfoot, results confirm the previously reported association between clubfoot and smoking, and counter previous evidence supporting season of birth, parental education, and other risk factors. Further studies are needed to investigate solvent exposure as a risk factor for clubfoot. Exposure to smoke and solvents can be controlled; this study highlights the importance of public health initiatives to limit these exposures both during pregnancy and in those considering conceiving in the future.

LEVEL OF EVIDENCE: Level I-prospective cohort study.

PMID: 26539903

Foot Alignment**The influence of knee malalignment on the ankle alignment in varus and valgus gonarthrosis based on radiographic measurement**

Fuqiang Gao¹ Jinhui Ma¹ Wei Sun Wanshou Guo Zirong Li Weiguo Wang

Abstract**Purpose**

The lower limb misalignment as calculated by radiography has an evident effect on the development and progression of knee osteoarthritis (OA). However, whether the knee malalignment has an influence on ankle alignment is unknown. The purpose of this study was to discuss the correlation between knee and ankle alignment in varus and valgus gonarthrosis.

Methods

This is a retrospective study of 149 patients with symptomatic varus and valgus knee OA who intend to take total knee arthroplasty (TKA) between January and October 2013. A protocol for the measurement of knee-ankle alignment and angles on full-length standing anteroposterior radiographs of the lower extremity was outlined in detail with step-by-step instructions. Two observers measured the angles chosen. The Pearson's correlation tests were used for the statistical analysis.

Results

Pearson's correlation test results for unilateral varus or valgus gonarthrosis showed that the varus or valgus deformity of the knee can influence the tilt angle and tibiotalar angle of the ankle in operative side significantly ($p < 0.05$), and the tilt angle of the ankle can also be affected in nonoperative side ($p < 0.05$). Moreover, the tilt angle of the bilateral ankle can be simultaneously affected in bilateral varus gonarthrosis ($p < 0.05$).

Conclusion

These findings suggest that the varus and valgus deformity of the knee can induce the tilt of the ankle and influence the ankle alignment, which may further accelerate the degeneration of the ankle. Moreover, the knee alignment in the nonoperative side can also result in the change of ankle alignment at the same time.

Keywords: radiographs, ankle, knee, alignment, varus and valgus, gonarthrosis

39 B. SHOES**The effect of Masai Barefoot Technology (MBT) footwear on lower limb biomechanics: a systematic review**

Jade M. Tan Maria Auhl Hylton B. Menz Pazit Levinger Shannon E. Munteanu

Highlights

- We included symptomatic and asymptomatic populations in our review
- Evidence of smaller stride length, reduced hip flexion, hip and knee joint ROM
- Evidence of decreases in internal joint moments and power at hip and knee
- Evidence of increases in plantar force within the foot

Abstract

This systematic review evaluated the available evidence for the effects of Masai Barefoot Technology (MBT) footwear on lower limb biomechanics during gait. Electronic databases (MEDLINE, EMBASE, CINAHL, SPORTDiscus, and PubMed) were searched in January 2015. Methodological quality of included studies was evaluated using the Quality Index. Standardised mean differences and 95% confidence intervals were calculated, and meta-analysis was conducted where possible. 17 studies satisfied the inclusion criteria; 16 cross-sectional studies and one randomised control trial (RCT). Quality index scores ranged from 7 to 12 (out of 15). All 17 studies investigated walking gait only. Evidence showed that MBT footwear caused asymptomatic individuals to walk with a shorter stride length, *reduced* peak hip flexion, *increased* peak knee extension, and *reduced* hip and knee range of motion throughout gait. All kinematic effects occurred in the sagittal plane. There was a trend towards a *decrease* in internal and external joint moments and power, except for the foot, where *increases* in force were observed. There were only a small number of changes to lower limb muscle amplitude and timing. No statistically significant effects were observed in symptomatic individuals with knee osteoarthritis or following total knee replacement, but there was an *increase* in cadence and a *decrease* in step length in individuals following tibiotalar arthrodesis. These findings suggest that MBT footwear does change lower limb biomechanics in both asymptomatic and symptomatic individuals during gait. However, further clinical trials need to be undertaken to determine whether these changes are therapeutically beneficial.

Keywords: Masai Barefoot Technology (MBT), Footwear
Spatiotemporal, Kinematic, Kinetic, Gait

43. HALLUX VALGUS

Metatarsalgia

Foot Ankle Int. 2015 Nov 5. pii: 1071100715615323.

Effect of First Ray Insufficiency and Metatarsal Index on Metatarsalgia in Hallux Valgus.

Slullitel G¹, Lopez V², Calvi JP¹, Seletti M¹, Bartolucci C³, Pinton G³.

Author information

Abstract

BACKGROUND:

Two concepts have been proposed to explain the etiology of metatarsalgia in hallux valgus patients: First, as the magnitude of hallux valgus increases, there is a mechanical overload of the lesser metatarsals. Second, increased relative lesser metatarsal length is a factor in the development of metatarsalgia. However, there is no current evidence that these structural factors lead to primary metatarsalgia. The purpose of the study was to evaluate the factors associated with metatarsalgia in hallux valgus patients.

METHODS:

A cross-sectional study of 121 consecutive adult patients with non-arthritis hallux valgus was carried out. Binary logistic regression was performed to identify the effect of the clinical and demographic factors on the occurrence of metatarsalgia. One hundred twenty-one patients (184 feet) with hallux valgus were analyzed. The median weight was 65 kg (interquartile range 58-72).

RESULTS:

Metatarsalgia was present in 84 (45.6%) feet. The binary logistic regression showed that lesser toe deformity (OR 2.6, 95% CI 0.2-0.5), gastrocnemius shortening (OR 5.8, 95% CI 2.8-12.3), metatarsal index (OR 0.3, 95% CI 0.2-0.5), and weight (OR 2.5, 95% CI 1.2-5.3) were significantly associated.

CONCLUSION:

Metatarsalgia occurs in almost half of hallux valgus patients. It has a multifactorial etiology. Our findings contradict the common theory that both the magnitude of hallux valgus deformity and an increased length of the lesser metatarsals, by themselves, lead to primary metatarsalgia. Metatarsalgia was associated with Achilles shortening, excessive weight, and associated lesser toe deformity. These factors should be addressed in order to treat this disorder adequately.

LEVEL OF EVIDENCE:

Level III, comparative series.

KEYWORDS: hallux valgus; metatarsal index; metatarsalgia; transfer metatarsalgia

PMID: 26542161

45 A. MANUAL THERAPY LUMBAR & GENERAL**OMT for LBP**

J Back Musculoskelet Rehabil. 2015 Sep 6.

Evidence based orthopaedic manual therapy for patients with nonspecific low back pain: An integrative approach.

Hidalgo B^{1,2}.

Author information

Abstract

BACKGROUND AND OBJECTIVES:

Orthopaedic manual therapy (OMT) should be based not only on the best available evidence but also on patient values and clinician expertise. Low back pain (LBP) is a complex issue as the majority of people who suffer from LBP cannot be given a specific diagnosis based on imaging studies but kinematic analyses appear to be useful to determine dysfunctional patterns. In physical therapy, various forms of OMT are currently used to manage LBP and there is growing evidence for its use. The underlying principles of OMT are to treat neuro-musculo-skeletal disorders, the aim of which is to reduce pain, as well as improve movement and function. Manual physical therapists use a range of treatment approaches including passive techniques ("hands on") as well as different active techniques ("hands off") and communication skills. Systems of stratification are available for classification of people with LBP into specific sub-groups (with sub-group specific OMT intervention). This approach has been shown to be more efficient than generic treatment, although subgroups are not mutually exclusive. Various mechanisms of action are reported in the literature concerning OMT effects. These effects may be biomechanical, neurophysiological and psychological. Moreover, it is essential that the treatment, regardless of the concept of OMT, is carried out on the basis of a systematic and valid clinical examination protocol aimed to correctly classify LBP. The use of pain provocative tests during combined movement examination provides confidence that examination findings are valid and can therefore be confidently used in clinical practice to manage patient.

The integrative approach presented in this article is a mix of previously developed classification systems (i.e. based on pain mechanisms, prognosis, treatment responsiveness) and new tools, as kinematic analyses for LBP, and a novel validated combined movements examination. **CONCLUSION:** As LBP is a complex and multidimensional problem, the integrative approach may help clinicians and researchers to better understand and then to treat patients with non-specific LBP. The efficacy of OMT treatments using an integrative approach in specific patients subgroups should be objectively analyzed according to validated kinematic analyses in future studies.

KEYWORDS: Orthopedic manual therapy; classification systems; evidence based; integrative approach; kinematic analysis; low back pain; stratification care

PMID: 26406198

LBP

Mil Med. 2015 Oct;180(10):e1132-5. doi: 10.7205/MILMED-D-14-00712.

Manual Therapy for Chronic Low Back Pain in an F-5 Pilot.

Andicochea CT¹, Fulkerson J¹, Taylor BM², Portouw SJ³.

Author information

Abstract

INTRODUCTION:

Low back pain (LBP) in the aviator can be a significant safety risk because of distraction during flight. Flight Surgeons are tasked with seeking out appropriate medical care that reduces pilot risk while providing squadron-specific mission support.

CASE:

An F-5 pilot presented with chronic LBP seeking nonpharmacological and noninvasive therapy. After 3 days of manual treatment that corrected sacral, pelvic, and lumbar dysfunction, this pilot reported greater than 80% reduction in overall pain and was able to return to flight.

DISCUSSION:

Although underreported, a radiographic study and multiple case reports, identify LBP as a significant problem among tactical air (tac air) pilots. As such, LBP can become an in-flight distraction increasing the risk of a mishap. Benefits of osteopathic manipulative therapy (OMT) as an adjunct to treatment of LBP in civilian population were recently demonstrated. This case identified a tac air pilot with chronic LBP that responded to three OMT sessions focused at the sacrum, lumbar, and pelvis.

CONCLUSION:

The use of manual therapy in the form of OMT significantly reduced this pilot's pain in three visits and maintained flight status per aeromedical waiver guidelines.

PMID:26444483

McKenzie

Phys Ther. 2015 Oct 22.

Identifying Patients With Chronic Low Back Pain Who Respond Best to Mechanical Diagnosis and Therapy: Secondary Analysis of a Randomized Controlled Trial.

Garcia AN¹, Costa LD², Hancock M³, Costa LO⁴.

Author information

Abstract

BACKGROUND:

"Mechanical Diagnosis and Therapy (MDT)" also known as McKenzie method like other interventions for low back pain (LBP) has been found to have small effects for people with LBP. It is possible that a group of patients respond best to MDT and have larger effects. Identification of patients who respond best to MDT compared to other interventions would be an important finding.

METHODS:

This study was a secondary analysis of data from a previous trial comparing MDT to Back School in 148 patients with chronic LBP. Only patients classified at baseline assessment as being in the directional preference group (n=140) were included. The effect modifiers tested were: Clear centralization vs directional preference only; Baseline pain location; Baseline pain intensity; and Age. The primary outcomes for this study were pain intensity and disability at the end of treatment (1 month). Treatment effect modification was evaluated by assessing the group versus predictor interaction terms from linear regression models. An interaction ≥ 1.0 for pain and ≥ 3 for disability were considered clinically important.

RESULTS:

Being older met our criteria for being a potentially important effect modifier; however, the effect occurred in the opposite direction to our hypothesis. Older people had 1.27 points more benefit in pain reduction from MDT (compared to Back School) than younger participants after 1 month of treatment.

CONCLUSIONS:

Our study suggests older age may be an important factor that can be considered as a treatment effect modifier for patients with chronic LBP receiving MDT. As the main trial was not powered for the investigation of subgroups, the results of this secondary analysis have to be interpreted cautiously and replication is required.

PMID:26494768

45 B. MANUAL THERAPY CERVICAL**CG headaches manual assessment****Volume 23, Issue 4 (September 2015), pp. 210-218****Manual examination in the diagnosis of cervicogenic headache: a systematic literature review**Paul D. Howard^{1,2}; William Behrns¹; Melanie Di Martino¹; Amanda DiMambro¹; Kristin McIntyre¹; Catherine Shurer¹DOI: <http://dx.doi.org/10.1179/2042618614Y.0000000097>**Abstract****Study Design:**

Systematic literature review.

Objective:

To evaluate the diagnostic validity of manual examination techniques used to diagnose cervicogenic headache (CGH).

Background:

Cervicogenic headache is a specific type of headache that originates from the cervical spine and is typically chronic in nature. Diagnostic criteria for CGH have been established by the International Headache Society (IHS) and are cited extensively in the literature. Diagnosis of CGH through manual examination is a more recent practice. To our knowledge, no systematic review of manual diagnosis of CGH has been performed.

Methods:

Searches of electronic databases (CINAHL, Cochrane Library, Medline, PEDro, Scopus, and SPORTDiscus) were conducted for research studies from July 2003 to February 2014. The GRADE approach was used to determine the quality of each paper.

Results:

Twelve papers that fulfilled the inclusion and exclusion criteria were identified (12 observational studies). The level of evidence ranged from very low to low, and recommendations for use of specific manual techniques ranged from weak to strong.

Conclusions:

Despite low levels of evidence, manual examination of the cervical spine appears to aid the diagnostic process related to CGH and can be implemented by both experienced and inexperienced examiners.

Keywords: Cervicogenic headache, Cervical headache, Diagnosis, Manual examination, Physical examination

TMJ

J Oral Rehabil. 2015 Nov;42(11):847-61. doi: 10.1111/joor.12321. Epub 2015 Jun 7.

Manual therapy for the management of pain and limited range of motion in subjects with signs and symptoms of temporomandibular disorder: a systematic review of randomised controlled trials.

Calixtre LB¹, Moreira RF¹, Franchini GH¹, Albuquerque-Sendín F², Oliveira AB¹.
Author information

Abstract

There is a lack of knowledge about the effectiveness of manual therapy (MT) on subjects with temporomandibular disorders (TMD). The aim of this systematic review is to synthesise evidence regarding the isolated effect of MT in improving maximum mouth opening (MMO) and pain in subjects with signs and symptoms of TMD. MEDLINE(®), Cochrane, Web of Science, SciELO and EMBASE(™) electronic databases were consulted, searching for randomised controlled trials applying MT for TMD compared to other intervention, no intervention or placebo. Two authors independently extracted data, PEDro scale was used to assess risk of bias, and GRADE (Grading of Recommendations Assessment, Development and Evaluation) was applied to synthesise overall quality of the body of evidence. Treatment effect size was calculated for pain, MMO and pressure pain threshold (PPT). Eight trials were included, seven of high methodological quality. Myofascial release and massage techniques applied on the masticatory muscles are more effective than control (low to moderate evidence) but as effective as toxin botulinum injections (moderate evidence). Upper cervical spine thrust manipulation or mobilisation techniques are more effective than control (low to high evidence), while thoracic manipulations are not. There is moderate-to-high evidence that MT techniques protocols are effective. The methodological heterogeneity across trials protocols frequently contributed to decrease quality of evidence. In conclusion, there is widely varying evidence that MT improves pain, MMO and PPT in subjects with TMD signs and symptoms, depending on the technique. Further studies should consider using standardised evaluations and better study designs to strengthen clinical relevance.

KEYWORDS: articular range of motion; craniomandibular disorders; facial pain; musculoskeletal manipulations; physical therapy modalities; temporomandibular joint disorders
PMID: 26059857

45 D. MANUAL THERAPY EXTREMITIES**Carpal tunnel syndrome helped by MT**

J Pain. 2015 Nov;16(11):1087-94. doi: 10.1016/j.jpain.2015.07.012. Epub 2015 Aug 15.

Manual Physical Therapy Versus Surgery for Carpal Tunnel Syndrome: A Randomized Parallel-Group Trial.

Fernández-de-Las Peñas C¹, Ortega-Santiago R², de la Llave-Rincón AI², Martínez-Perez A³, Fahandezh-Saddi Díaz H⁴, Martínez-Martín J⁴, Pareja JA³, Cuadrado-Pérez ML⁵.

Author information

Abstract

This randomized clinical trial investigated the effectiveness of surgery compared with physical therapy consisting of manual therapies including desensitization maneuvers in carpal tunnel syndrome (CTS). The setting was a public hospital and 2 physical therapy practices in Madrid, Spain. One hundred twenty women with CTS were enrolled between February 2013 and January 2014, with 1-year follow-up completed in January 2015. Interventions consisted of 3 sessions of manual therapies including desensitization maneuvers of the central nervous system (physical therapy group, n = 60) or decompression/release of the carpal tunnel (surgical group, n = 60). The primary outcome was pain intensity (mean pain and the worst pain), and secondary outcomes included functional status and symptoms severity subscales of the Boston Carpal Tunnel Questionnaire and the self-perceived improvement. They were assessed at baseline and 1, 3, 6, and 12 months by a blinded assessor. Analysis was by intention to treat. At 12 months, 111 (92%) women completed the follow-up (55/60 physical therapy, 56/60 surgery). Adjusted analyses showed an advantage (all, $P < .01$) for physical therapy at 1 and 3 months in mean pain (Δ -2.0 [95% confidence interval (CI) -2.8 to -1.2]/-1.3 [95% CI -2.1 to -.6]), the worst pain (Δ -2.9 [-4.0 to -2.0]/-2.0 [-3.0 to -.9]), and function (Δ -.8 [-1.0 to -.6]/-.3 [-.5 to -.1]), respectively. Changes in pain and function were similar between the groups at 6 and 12 months. The 2 groups had similar improvements in the symptoms severity subscale of the Boston Carpal Tunnel Questionnaire at all follow-ups. In women with CTS, physical therapy may result in similar outcomes on pain and function to surgery.

TRIAL REGISTRATION:

<http://www.clinicaltrials.gov>, ClinicalTrials.gov, NCT01789645.

PERSPECTIVE:

This study found that surgery and physical manual therapies including desensitization maneuvers of the central nervous system were similarly effective at medium-term and long-term follow-ups for improving pain and function but that physical therapy led to better outcomes in the short term.

KEYWORDS: Carpal tunnel syndrome; manual therapy; pain; physical therapy; surgery

PMID: 26281946

Hip MWM helps impingement**Immediate effects of hip mobilization with movement in patients with hip osteoarthritis: A randomised controlled trial**

Carlos Beselga Francisco Neto Francisco Albuquerque-Sendín Toby Hall Natália Oliveira-Campelo

Highlights

- Immediate effects of hip MWM and placebo were evaluated in patients with hip OA.
- MWM decreased pain, improved ROM, and physical function greater than placebo.
- These results direct future studies to investigate long-term efficacy.

Abstract

Background

Mobilization with movement (MWM) has been shown to reduce pain, increase range of motion (ROM) and physical function in a range of different musculoskeletal disorders. Despite this evidence, there is a lack of studies evaluating the effects of MWM for hip osteoarthritis (OA).

Objectives

To determine the immediate effects of MWM on pain, ROM and functional performance in patients with hip OA.

Design

Randomized controlled trial with immediate follow-up.

Method

Forty consenting patients (mean age 78 ± 6 years; 54% female) satisfied the eligibility criteria. All participants completed the study. Two forms of MWM techniques ($n = 20$) or a simulated MWM (sham) ($n = 20$) were applied. Primary outcomes: pain recorded by numerical rating scale (NRS). Secondary outcomes: hip flexion and internal rotation ROM, and physical performance (timed up and go, sit to stand, and 40 m self placed walk test) were assessed before and after the intervention.

Results

For the MWM group, pain decreased by 2 points on the NRS, hip flexion increased by 12.2° , internal rotation by 4.4° , and functional tests were also improved with clinically relevant effects following the MWM. There were no significant changes in the sham group for any outcome variable.

Conclusions

Pain, hip flexion ROM and physical performance immediately improved after the application of MWM in elderly patients suffering hip OA. The observed immediate changes were of clinical relevance. Future studies are required to determine the long-term effects of this intervention.

Keywords:

Manual therapy, Osteoarthritis hip, Pain, Range of motion, Articular

MT for extremities limited evidence

Chiropr Man Therap. 2015 Oct 27;23:30. doi: 10.1186/s12998-015-0075-6. eCollection 2015.

The effectiveness of manual therapy for the management of musculoskeletal disorders of the upper and lower extremities: a systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration.

Southerst D¹, Yu H², Randhawa K³, Côté P⁴, D'Angelo K⁵, Shearer HM², Wong JJ⁶, Sutton D², Varatharajan S³, Goldgrub R⁷, Dion S⁵, Cox J⁵, Menta R⁵, Brown CK⁵, Stern PJ⁸, Stupar M², Carroll LJ⁹, Taylor-Vaisey A¹⁰.

Author information

Abstract

BACKGROUND: Musculoskeletal disorders (MSDs) of the upper and lower extremities are common in the general population and place a significant burden on the health care system. Manual therapy is recommended by clinical practice guidelines for the management of these injuries; however, there is limited evidence to support its effectiveness. The purpose of our review was to investigate the effectiveness of manual therapy in adults or children with MSDs of the upper or lower extremity.

METHODS: Randomized controlled trials (RCTs), cohort studies, and case-control studies evaluating the effectiveness of manual therapy were eligible. We searched MEDLINE, EMBASE, PsycINFO, CINAHL, and the Cochrane Central Register of Controlled Trials from 1990 to 2015. Paired reviewers screened studies for relevance and critically appraised relevant studies using the Scottish Intercollegiate Guidelines Network criteria. Studies with low risk of bias were synthesized following best-evidence synthesis principles. Where available, we computed mean changes between groups, relative risks and 95 % CI.

RESULTS: We screened 6047 articles. Seven RCTs were critically appraised and three had low risk of bias. For adults with nonspecific shoulder pain of variable duration, cervicothoracic spinal manipulation and mobilization in addition to usual care may improve self-perceived recovery compared to usual care alone. For adults with subacromial impingement syndrome of variable duration, neck mobilization in addition to a multimodal shoulder program of care provides no added benefit. Finally, for adults with grade I-II ankle sprains of variable duration, lower extremity mobilization in addition to home exercise and advice provides greater short-term improvements in activities and function over home exercise and advice alone. No studies were included that evaluated the effectiveness of manual therapy in children or for the management of other extremity injuries in adults.

CONCLUSIONS: The current evidence on the effectiveness of manual therapy for MSDs of the upper and lower extremities is limited. The available evidence supports the use of manual therapy for non-specific shoulder pain and ankle sprains, but not for subacromial impingement syndrome in adults. Future research is needed to determine the effectiveness of manual therapy and guide clinical practice.

SYSTEMATIC REVIEW REGISTRATION NUMBER: CRD42014009899.

KEYWORDS: Manual therapy; Musculoskeletal disorders; Outcome; Recovery; Rehabilitation; Systematic review; Treatment; Upper and lower extremities
PMID:26512315

48 A. STM**Superficial fascia**

Surg Radiol Anat. 2006 Dec;28(6):606-19. Epub 2006 Oct 24.

The membranous layer of superficial fascia: evidence for its widespread distribution in the body.

Abu-Hijleh MF¹, Roshier AL, Al-Shboul Q, Dharap AS, Harris PF.

Abstract

A discrete membranous layer, "stratum membranosum", in human subcutaneous tissue is classically described as confined to the lower anterior abdominal wall and perineum and referred to as Scarpa's and Colles' fasciae, respectively.

Evidence for its existence elsewhere in the body is scanty and therefore the present study was undertaken. Dissection of six embalmed adult cadavers, along with ultrasound imaging on four living subjects, were carried out to determine the existence, topography, and thickness of the membranous layer of superficial fascia in different regions of the body. In all six cadavers, a continuous layer of fibrous membrane in the superficial fascia was found consistently in all the dissected regions of the body and was also confirmed by ultrasonography. The arrangement and thickness of this membranous layer varied according to body region, body surface, and gender. It was thicker in the lower than in the upper extremity, on the posterior than anterior aspect of the body, and in females than in males. The mean thickness of the membranous layer ranged from 39 to 189 μm , being thickest in the leg and thinnest over the dorsum of the hand. The membranous layer was observed to have two or even three components in regions such as the breast, back, thigh, and arm and was seen to split, forming special compartments around subcutaneous major veins of upper and lower extremities, with fibrous septa extending to attach to the vessel wall.

Functionally, the membranous superficial fascia may play a role in the integrity of the skin and support for subcutaneous structures particularly veins, by ensuring their patency. Understanding the topographic anatomy of this fascial layer may help explain body-contour deformities and provide the anatomic basis for surgical correction.

PMID: 17061033

48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE**Acupuncture and stenosis****Effect of Acupuncture on Pain and Quality of Life in Patients with Lumbar Spinal Stenosis: A Case Series Study**

Mohammad Javad Hadianfard, Ali Aminlari, Arghavan Daneshian, Ali Reza Safarpour

Abstract

Lumbar spinal stenosis (LSS) is a major cause of debilitation in adults, and acupuncture is a recommended treatment. We assessed the effect of acupuncture on pain and quality of life in patients with LSS. Twenty-four patients with LSS who had symptoms of neurogenic claudication were randomly selected and underwent 10 sessions of acupuncture. Pain and quality of life were evaluated before and immediately after the intervention and six weeks later by using the Visual Analogue Scale (VAS) and SF-36. Paired t-tests and repeated measure tests were used to analyze the data. $p < 0.05$ was considered significant. The mean age of the patients was 48.2 ± 10.8 years. The mean VAS scores before and immediately after intervention, 7.9 ± 1.3 and 4.3 ± 2.1 , were statistically different ($p < 0.001$), as was the mean score, 3.08 ± 2.3 , six weeks later ($p = 0.01$). Five aspects of the SF-36 score were associated with significant improvements immediately after acupuncture ($p < 0.05$). Comparisons of the scores before and six weeks after intervention showed significant improvements in emotions, vitality, general health, bodily pain, and physical well-being. Therefore, acupuncture had a significant short-term effect on pain and quality of life in patients with LSS.

Keywords: acupuncture, canal stenosis, pain, quality of life

48 C. MUSCLES**Hamstring tears**

Am J Sports Med. 2015 Nov;43(11):2671-9. doi: 10.1177/0363546515599631. Epub 2015 Sep 1.

Epidemiology of Hamstring Strains in 25 NCAA Sports in the 2009-2010 to 2013-2014 Academic Years.

Dalton SL¹, Kerr ZY², Dompier TP³.

Author information

Abstract

BACKGROUND:

The epidemiology of hamstring strains among student-athletes has been extensively researched. However, there is a paucity of recent data describing patterns of hamstring strains.

PURPOSE:

To describe the epidemiology of hamstring strains in 25 National Collegiate Athletic Association (NCAA) championship sports.

STUDY DESIGN:

Descriptive epidemiology study.

METHODS:

Hamstring strains data were analyzed from the NCAA Injury Surveillance Program during the 2009-2010 to 2013-2014 academic years. Hamstring strain injury rates, rate ratios (RRs), and injury proportion ratios were reported with 95% CIs.

RESULTS:

During the study period, 1142 hamstring strains were reported, leading to an injury rate of 3.05 per 10,000 athlete-exposures (AEs). Most hamstring strains occurred during practices (68.2%). However, the competition rate (5.24 per 10,000 AEs) was larger than the practice rate (2.56 per 10,000 AEs; RR = 2.05; 95% CI, 1.81-2.32). A slight majority occurred during the regular season (52.9%). However, the preseason rate (5.00 per 10,000 AEs) was larger than the regular season/postseason rate (2.34 per 10,000 AEs; RR = 2.14; 95% CI, 1.90-2.40). Men's football, men's soccer, and women's soccer contributed the greatest proportion of hamstring strains (35.3%, 9.9%, and 8.3%, respectively). Most hamstring strains were due to noncontact (72.3%). Of all hamstring strains, 12.6% were recurrent, 37.7% resulted in a time loss of <24 hours, and 6.3% resulted in a time loss >3 weeks. Variations in hamstring strain patterns existed by sport. The hamstring strain rate was larger in men than in women in soccer (RR = 1.60; 95% CI, 1.22-2.11), baseball/softball (RR = 1.66; 95% CI, 1.07-2.59), and indoor track (RR = 1.88; 95% CI, 1.26-2.78). In addition, proportions of hamstring strains that were recurrent were higher among men in most sex-comparable sports, but this difference was not significant.

CONCLUSION:

Hamstring strain rates were higher in the preseason and in competition. Student-athletes should be acclimatized to the rigors of preseason participation. Meanwhile, further surveillance should investigate the effectiveness of prospective prevention programs in an effort to reduce the prevalence of initial and recurrent hamstring strain injuries.

KEYWORDS: athlete-exposure; athletic trainers; epidemiology; hamstring strain; recurrent
PMID:26330571

49. STRETCHING

Impact of stretching on knee laxity

Clin J Sport Med. 2015 Nov;25(6):541-5. doi: 10.1097/JSM.000000000000174.

Effects of Static Stretching and Playing Soccer on Knee Laxity.

Baumgart C¹, Gokeler A, Donath L, Hoppe MW, Freiwald J.
Author information

Abstract

OBJECTIVE: This study investigated exercise-induced effects of static stretching and playing soccer on anterior tibial translation (ATT) of the knee joint.

DESIGN: Randomized controlled trial.

SETTING: University biomechanics laboratory.

PARTICIPANTS: Thirty-one athletes were randomly assigned into a stretching (26.9 ± 6.2 years, 1.77 ± 0.09 m, 67.9 ± 10.7 kg) and a control group (27.9 ± 7.4 years, 1.75 ± 0.08 m, 72.0 ± 14.9 kg). Thirty-one amateur soccer players in an additional soccer group (25.1 ± 5.6 years, 1.74 ± 0.10 m, 71.8 ± 14.8 kg). All participants had no history of knee injury requiring surgery and any previous knee ligament or cartilage injury.

INTERVENTIONS: The stretching group performed 4 different static stretching exercises with a duration of 2 × 20 seconds interspersed with breaks of 10 seconds. The soccer group completed a 90-minute soccer-specific training program. The control group did not perform any physical activity for approximately 30 minutes.

MAIN OUTCOME MEASURES: Anterior tibial translation was measured with the KT-1000 knee arthrometer at forces of 67 N, 89 N, and maximal manual force (Max) before and after the intervention.

RESULTS: There was a significant increase in ATT after static stretching and playing soccer at all applied forces. Maximal manual testing revealed a mean increase of ATT after static stretching of 2.1 ± 1.6 mm (P < 0.0005) and after playing soccer of 1.0 ± 1.5 mm (P = 0.001). The ATT increase after static stretching at 67 and 89 N is significantly higher than in controls. At maximum manual testing, significant differences were evident between all groups.

CONCLUSIONS: Static stretching and playing soccer increase ATT and may consequently influence mechanical factors of the anterior cruciate ligament. The ATT increase after static stretching was greater than after playing soccer.

CLINICAL RELEVANCE: The observed increase in ATT after static stretching and playing soccer may be associated with changes in kinesthetic perception and sensorimotor control, activation of muscles, joint stability, overall performance, and higher injury risk.

PMID: 25647536

50 B. PNF**Frozen shoulder**

J Exerc Rehabil. 2015 Oct 30;11(5):276-81. doi: 10.12965/jer.150229. eCollection 2015.

Effects of the combined PNF and deep breathing exercises on the ROM and the VAS score of a frozen shoulder patient: Single case study.

Lee BK¹.

Author information

Abstract

This study was conducted to examine the influence of combined exercise using proprioceptive neuromuscular facilitation (PNF) and deep breathing exercise on range of motion (ROM) and visual analog scale (VAS) score in acute frozen shoulder patient. The subject of this study was woman complained disabilities in daily routine due as a frozen left shoulder. The exercise program was composed of 11 sessions and continued four weeks. The program was composed of PNF and deep breathing exercise, and the subject was compared by passive ROM (shoulder flexion, abduction, and internal and external rotation) test and VAS score in shoulder movement before and after the exercise. The results showed that patient who practiced this program, the ROM of the shoulder joint increased and the VAS score decreased. Thus, this program was shown to be effective in suppressing pain and increasing the ROM of the shoulder joint in acute frozen shoulder patient.

KEYWORDS: Closed kinetic chain exercise; Deep breathing exercise; Frozen shoulder; Proprioceptive neuromuscular facilitation; Range of motion; Visual analog scale
PMID: 26535219

52. EXERCISE**Joint loading in LE exercise**

J Athl Train. 2015 Oct;50(10):1011-8. doi: 10.4085/1062-6050-50.9.05. Epub 2015 Sep 29.

Joint Kinetics and Kinematics During Common Lower Limb Rehabilitation Exercises.

Comfort P1, Jones PA1, Smith LC1, Herrington L1.

Author information**Abstract****CONTEXT:**

Unilateral body-weight exercises are commonly used to strengthen the lower limbs during rehabilitation after injury, but data comparing the loading of the limbs during these tasks are limited.

OBJECTIVE: To compare joint kinetics and kinematics during 3 commonly used rehabilitation exercises.

DESIGN: Descriptive laboratory study.

SETTING: Laboratory.

PATIENTS OR OTHER PARTICIPANTS: A total of 9 men (age = 22.1 ± 1.3 years, height = 1.76 ± 0.08 m, mass = 80.1 ± 12.2 kg) participated.

INTERVENTION(S): Participants performed the single-legged squat, forward lunge, and reverse lunge with kinetic data captured via 2 force plates and 3-dimensional kinematic data collected using a motion-capture system.

MAIN OUTCOME MEASURE(S): Peak ground reaction forces, maximum joint angles, and peak sagittal-joint moments.

RESULTS: We observed greater eccentric and concentric peak vertical ground reaction forces during the single-legged squat than during both lunge variations ($P \leq .001$). Both lunge variations demonstrated greater knee and hip angles than did the single-legged squat ($P < .001$), but we observed no differences between lunges ($P > .05$). Greater dorsiflexion occurred during the single-legged squat than during both lunge variations ($P < .05$), but we noted no differences between lunge variations ($P = .70$). Hip-joint moments were greater during the forward lunge than during the reverse lunge ($P = .003$) and the single-legged squat ($P = .011$). Knee-joint moments were greater in the single-legged squat than in the reverse lunge ($P < .001$) but not greater in the single-legged squat than in the forward lunge ($P = .41$). Ankle-joint moments were greater during the single-legged squat than during the forward lunge ($P = .002$) and reverse lunge ($P < .001$).

CONCLUSIONS: Appropriate loading progressions for the hip should begin with the single-legged squat and progress to the reverse lunge and then the forward lunge. In contrast, loading progressions for the knee and ankle should begin with the reverse lunge and progress to the forward lunge and then the single-legged squat.

KEYWORDS: joint moment; loading; lunge; peak force; single-legged squat

53. CORE**Trunk Strength**

Sports Med. 2015 Nov 20.

The Role of Trunk Muscle Strength for Physical Fitness and Athletic Performance in Trained Individuals: A Systematic Review and Meta-Analysis.

Prieske O¹, Muehlbauer T², Granacher U².

Abstract

BACKGROUND:

The importance of trunk muscle strength (TMS) for physical fitness and athletic performance has been demonstrated by studies reporting significant correlations between those capacities. However, evidence-based knowledge regarding the magnitude of correlations between TMS and proxies of physical fitness and athletic performance as well as potential effects of core strength training (CST) on TMS, physical fitness and athletic performance variables is currently lacking for trained individuals.

OBJECTIVE:

The aims of this systematic review and meta-analysis were to quantify associations between variables of TMS, physical fitness and athletic performance and effects of CST on these measures in healthy trained individuals.

DATA SOURCES:

PubMed, Web of Science, and SPORTDiscus were systematically screened from January 1984 to March 2015.

STUDY ELIGIBILITY CRITERIA:

Studies were included that investigated healthy trained individuals aged 16-44 years and tested at least one measure of TMS, muscle strength, muscle power, balance, and/or athletic performance.

STUDY APPRAISAL AND SYNTHESIS METHODS:

Z-transformed Pearson's correlation coefficients between measures of TMS and physical performance were aggregated and back-transformed to r values. Further, to quantify the effects of CST, weighted standardized mean differences (SMDs) of TMS and physical performance were calculated using random effects models. The methodological quality of CST studies was assessed by the Physiotherapy Evidence Database (PEDro) scale.

RESULTS:

Small-sized relationships of TMS with physical performance measures ($-0.05 \leq r \leq 0.18$) were found in 15 correlation studies. Sixteen intervention studies revealed large effects of CST on measures of TMS (SMD = 1.07) but small-to-medium-sized effects on proxies of physical performance ($0 \leq \text{SMD} \leq 0.71$) compared with no training or regular training only. The methodological quality of CST studies was low (median PEDro score = 4).

CONCLUSIONS:

Our findings indicate that TMS plays only a minor role for physical fitness and athletic performance in trained individuals. In fact, CST appears to be an effective means to increase TMS and was associated with only limited gains in physical fitness and athletic performance measures when compared with no or only regular training.

PMID: 26589515

Back extensor fatigue greater in LBP

J Electromyogr Kinesiol. 2015 Oct 23. pii: S1050-6411(15)00193-5. doi: 10.1016/j.jelekin.2015.10.003.

Back muscle fatigue of younger and older adults with and without chronic low back pain using two protocols: A case-control study.

da Silva RA¹, Vieira ER², Cabrera M³, Altimari LR³, Aguiar AF⁴, Nowotny AH⁴, Carvalho AF⁴, Oliveira MR⁴.

Author information

Abstract

The purpose of this study was to compare back muscle fatigue of younger and older participants with and without chronic low back pain (CLBP). Twenty participants without and 20 with nonspecific CLBP participated in this study. Each group contained 10 younger (50% males; mean age: 31±6yrs) and 10 older adults (50% males; age mean: 71±7yrs). Two isometric fatigue protocols were presented randomly: (1) to maintain the unsupported trunk at the horizontal position while on a 45° Roman chair for a minute, and (2) to maintain a 10% of body weight box close to the trunk in the upright position for a minute. Surface electromyography (EMG) signals from the back (multifidus and iliocostalis) and one hip (biceps femoris) muscles were recorded bilaterally, and the median frequency fatigue estimate from linear regression slopes of the EMG time-series was computed. There were no significant ($P>0.05$) age effects, and group-by-age interaction in both isometric and functional fatigue tasks. However, the CLBP groups (both younger and old) displayed more back fatigue than people without CLBP in both fatigue protocols ($P<0.01$; effect size varying of $d=0.17-0.32$). This study was sensitive to discriminate that individuals with CLBP did present significantly more pronounced EMG back fatigue than people without CLBP, in both younger and older adults. These results have significant clinical implications for low back pain rehabilitation programs with regard to endurance assessment in both younger and older.

KEYWORDS: Aging; EMG; Low back pain; Muscle fatigue

PMID: 26542483

Fiber type

J Manipulative Physiol Ther. 2015 Nov 4. pii: S0161-4754(15)00182-7. doi: 10.1016/j.jmpt.2015.10.004.

Fiber Typing of the Erector Spinae and Multifidus Muscles in Healthy Controls and Back Pain Patients: A Systematic Literature Review.

Cagnie B¹, Dhooge F², Schumacher C², De Meulemeester K², Petrovic M³, van Oosterwijck J⁴, Danneels L⁵.

Author information

Abstract

OBJECTIVE:

Understanding the changes in muscle fiber typing is relevant in the context of muscle disorders because it provides information on the metabolic profile and functional capacity. The aim of this study was to systematically review the literature comparing muscle fiber typing in the back muscles of healthy subjects with low back pain (LBP) patients.

METHODS:

Predefined keywords regarding muscle fiber typing and back muscles were combined in PubMed and Web of Science electronic search engines from inception to August 2014. Full-text articles were independently screened by 2 independent, blinded researchers. Full texts fulfilling the predefined inclusion criteria were assessed on risk of bias by 2 independent researchers, and relative data were extracted. Data were not pooled because of heterogeneity in biopsy locations and population.

RESULTS:

From the 214 articles that were identified, 18 met the inclusion criteria. These articles evaluated the muscle fiber type distribution or proportional fiber type area between muscles, muscle layers, men, and women or healthy subjects and LBP patients. Regarding muscle fiber type distribution, findings in healthy subjects and LBP patients show no or inconclusive evidence for intermuscular and interindividual differentiation. Studies evaluating the proportional fiber type area also suggest little intermuscular differentiation but provide plausible evidence that the proportional area occupied by type I fibers is higher in women compared to men. The evidence for differentiation based on the presence of low back pain is conflicting.

CONCLUSION:

This study found that the evidence regarding muscle fiber typing in back muscles is either inconclusive or shows little differences. The most plausible evidence exists for differentiation in proportional fiber type area depending on sex.

KEYWORDS: Low Back Pain; Muscle Fibers; Paraspinal Muscles; Skeletal
PMID:26547762

54. POSTURE

Adolescent postural grouping

Reproducibility of the low back clinical postural grouping in adolescents

Ney Meziat-Filho, PT, PhD Roberta Mendonça, PT Adriano Pezolato, PT, MSc Felipe J.J. Reis, PT, PhD Leandro Alberto Calazans Nogueira, PT, PhD

Summary

Objective

The purpose of this study was to analyze the intra- and inter-rater reliability of the Low Back Clinical Postural Grouping (LBCPG).

Methods

Fifty-eight school adolescents were evaluated by lateral photography. The examiners classified the posture of the participants as: hyperlordotic, sway back, flat back or neutral. The intra- and inter-rater reliability were quantified by the percentage agreement between clinicians and the kappa coefficient with 95% confidence intervals (95% CI).

Results

The intra-rater percentage agreement was 91.4%, $k = 0.87$ (95% IC 0.77 – 0.98, $p < 0.001$) for the more experienced rater, and 86.2% $k = 0.79$ (IC 95% 0.62 – 0.96, $p < 0.001$) for the less experienced rater. The percentage agreement between clinicians was 55.17% $k = 0.39$ (95% CI: 0.23 – 0.55, $p < 0.001$). The agreement rose to 70.69%, $k = 0.58$ (95% CI 0.41 – 0.74, $p < 0.001$) when an optional second opinion of the raters was also considered. Conclusion: The LBCPG was reliable when used by the same clinician. The strategy of a second opinion could be used to improve the inter-rater reliability in epidemiological studies with large samples.

Keywords: posture, spine, reproducibility, physiotherapy

55. SCOLIOSIS

Vestibular and scoliosis

PLoS One. 2015 Nov 18;10(11):e0143124. doi: 10.1371/journal.pone.0143124.

The Vestibular-Evoked Postural Response of Adolescents with Idiopathic Scoliosis Is Altered.

Pialasse JP^{1,2}, Descarreaux M³, Mercier P⁴, Blouin J⁵, Simoneau M^{1,2}.

Author information

Abstract

Adolescent idiopathic scoliosis is a multifactorial disorder including neurological factors. A dysfunction of the sensorimotor networks processing vestibular information could be related to spine deformation. This study investigates whether feed-forward vestibulomotor control or sensory reweighting mechanisms are impaired in adolescent scoliosis patients. Vestibular evoked postural responses were obtained using galvanic vestibular stimulation while participants stood with their eyes closed and head facing forward. Lateral forces under each foot and lateral displacement of the upper body of adolescents with mild (n = 20) or severe (n = 16) spine deformation were compared to those of healthy control adolescents (n = 16). Adolescent idiopathic scoliosis patients demonstrated greater lateral displacement and net lateral forces than controls both during and immediately after vestibular stimulation. Altered sensory reweighting of vestibular and proprioceptive information changed balance control of AIS patients during and after vestibular stimulation. Therefore, scoliosis onset could be related to abnormal sensory reweighting, leading to altered sensorimotor processes.

PMID: 26580068

56. ATHLETICS**Functional movement screening**

Current Orthopaedic Practice:

November/December 2015 - Volume 26 - Issue 6 - p 619–623

doi: 10.1097/BCO.0000000000000296

The Functional Movement Screen as a predictor of injury in professional basketball players

Azzam, Michael G. MD^a; Throckmorton, Thomas W. MD^a; Smith, Richard A. PhD^a; Graham, Drew BS, MS^b; Scholler, Jim BS, MS^b; Azar, Frederick M. MD^a

Abstract

Background: The Functional Movement Screen (FMS) is designed to detect deficits and asymmetries in the movement patterns of athletes that predispose them to injury. This tool has been found to be predictive of injury in select populations but has not been studied in professional basketball players. Our hypothesis was that injured players have lower FMS scores than noninjured players, and an FMS score of 14 is predictive of injury in this population.

Methods: Preseason FMS testing was performed on all members of a single team in the National Basketball Association (NBA) over the course of four seasons. Injury was defined as a musculoskeletal condition that prevented an athlete from participating in practices or games for at least 1 wk. The data were retrospectively analyzed to determine the ability of the FMS to accurately predict future injury over the course of a season.

Results: A total of 34 players met inclusion criteria, of whom 17 went on to sustain injuries and 17 did not. The mean FMS score for all subjects was 13.2 (minimum-maximum: 7-19; standard deviation=2.6). Injured players did not have a significantly lower mean FMS score than noninjured players ($P=0.16$). A positive correlation existed between the hurdle test and injury ($P=0.004$); however, no other subscore of the FMS correlated with injury.

Conclusions: While the FMS is a valuable tool for identifying deficits and asymmetries of movement in some athletic activities, it is not predictive of injury in male professional basketball players.

Groin pain

Br J Sports Med. 2015 Nov;49(22):1447-51. doi: 10.1136/bjsports-2014-093715. Epub 2015 Jun 30.

Athletic groin pain: a systematic review and meta-analysis of surgical versus physical therapy rehabilitation outcomes.

King E¹, Ward J², Small L³, Falvey E⁴, Franklyn-Miller A⁵.

Author information

Abstract

BACKGROUND:

Athletic groin pain (AGP) is an encompassing term for the multitude of chronic conditions presenting as pain in the inguinal region. The purpose of this review was to compare the return to play rates (RTPrate) and return to play times (RTPtime) between surgical and rehabilitation interventions in the treatment of AGP.

METHODS:

A systematic review of English language peer review journals was carried out between 1980 to June 2013 using PubMed, Embase, CINHALL and Google Scholar searching for all papers relating to AGP (and its various pseudonyms) and all surgical and rehabilitative interventions which reported RTPrate and/or RTPtime. AGP literature has been subdivided by many eponymous diagnoses but anatomical diagnostic groupings of (1) abdominal wall, (2) adductor and (3) pubic related pain were used in this review. Meta-analysis was then carried out on the data to compare results between the surgical and rehabilitation groups.

RESULTS:

Fifty-six papers out of the 561 discovered in the initial search were included in the review with 3332 athletes included. Evidence was mostly level IV. Using the Black and Downs checklist we found poor study quality overall with a high risk of bias especially among surgical studies. The results showed comparable RTPrate between surgical and rehabilitative interventions within the three diagnostic groups. Rehabilitation had significantly quicker RTPtime for pubic related groin pain compared to surgery (10.5 weeks and 23.1 weeks respectively). The abdominal group had the fastest return of the three groups for the rehabilitation and surgery.

CONCLUSIONS:

The review suggested better outcomes with rehabilitation for pubic-related groin pain with no difference between the adductor and abdominal groups. The review highlighted the poor quality and risk of bias in the literature making accurate comparison difficult.

KEYWORDS: Exercise rehabilitation; Groin; Lower limb surgery; Physiotherapy
PMID: 26130700

58. RUNNING**Training**

Br J Sports Med. 2015 Nov;49(21):1382-8. doi: 10.1136/bjsports-2014-094393. Epub 2015 Jun 23.

Gait modifications to change lower extremity gait biomechanics in runners: a systematic review.

Napier C¹, Cochrane CK¹, Taunton JE², Hunt MA¹.
Author information

Abstract

BACKGROUND:

Abnormal biomechanics have been cited as a potential risk factor for running-related injury. Many modifiable biomechanical risk factors have also been proposed in the literature as interventions via gait retraining.

AIM:

To determine which interventions have successfully modified biomechanical variables linked to running-related injury.

STUDY DESIGN:

Systematic literature review.

METHODS:

MEDLINE, EMBASE, CINAHL, SportDiscus and PSYCINFO were searched using key terms related to running biomechanics and gait retraining. Quality of included studies was assessed using the modified Downs and Black Quality Index and a best evidence synthesis was performed.

RESULTS:

27 studies investigating the effect of biomechanical interventions on kinetic, kinematic and spatiotemporal variables were included in this review. Foot strike manipulation had the greatest effect on kinematic measures (conflicting evidence for proximal joint angles; strong evidence for distal joint angles), real-time feedback had the greatest effect on kinetic measures (ranging from conflicting to strong evidence), and combined training protocols had the greatest effect on spatiotemporal measures (limited to moderate evidence).

CONCLUSIONS:

Overall, this systematic review shows that many biomechanical parameters can be altered by running modification training programmes. These interventions result in short term small to large effects on kinetic, kinematic and spatiotemporal outcomes during running. In general, runners tend to employ a distal strategy of gait modification unless given specific cues. The most effective strategy for reducing high-risk factors for running-related injury-such as impact loading-was through real-time feedback of kinetics and/or kinematics.

KEYWORDS: Running; Sports & exercise medicine
PMID: 26105016

58. RUNNING**Aging runners maintain economy**

Med Sci Sports Exerc. 2015 Nov 19.

Older Runners Retain Youthful Running Economy Despite Biomechanical Differences.

Beck ON¹, Kipp S, Roby JM, Grabowski AM, Kram R, Ortega JD.

PURPOSE:

Sixty-five years of age typically marks the onset of impaired walking economy. However, running economy has not been assessed beyond the age of 65 years. Furthermore, a critical determinant of running economy is the spring-like storage and return of elastic energy from the leg during stance, which is related to leg stiffness. Therefore, we investigated whether runners over the age of 65 years retain youthful running economy and/or leg stiffness across running speeds.

METHODS:

Fifteen young and fifteen older runners ran on a force-instrumented treadmill at 2.01, 2.46, and 2.91 m·s. We measured their rates of metabolic energy consumption (i.e. metabolic power), ground reaction forces, and stride kinematics.

RESULTS:

There were only small differences in running economy between young and older runners across the range of speeds. Statistically, the older runners consumed 2-9% less metabolic energy than the young runners across speeds ($p=0.012$). Also, the leg stiffness of older runners was 10-20% lower than that of young runners across the range of speeds ($p=0.002$) and in contrast to the younger runners, the leg stiffness of older runners decreased with speed ($p<0.001$).

CONCLUSION:

Runners beyond 65 years of age maintain youthful running economy despite biomechanical differences. It may be that vigorous exercise, such as running, prevents the age related deterioration of muscular efficiency, and therefore may make everyday activities easier.

PMID: 26587844

59. PAIN**Brain trauma and pain**

J Head Trauma Rehabil. 2015 Nov-Dec;30(6):E40-6. doi: 10.1097/HTR.000000000000121.

The Relation Between Injury of the Spinothalamocortical Tract and Central Pain in Chronic Patients With Mild Traumatic Brain Injury.

Kim JH¹, Ahn SH, Cho YW, Kim SH, Jang SH.

OBJECTIVES:

Little is known about the pathogenetic etiology of central pain in patients with traumatic brain injury (TBI). We investigated the relation between injury of the spinothalamocortical tract (STT) and chronic central pain in patients with mild TBI.

DESIGN:

Retrospective survey.

PARTICIPANTS:

We recruited 40 consecutive chronic patients with mild TBI and 21 normal control subjects: 8 patients were excluded by the inclusion criteria and the remaining 32 patients were finally recruited. The patients were classified according to 2 groups based on the presence of central pain: the pain group (22 patients) and the nonpain group (10 patients).

METHODS:

Diffusion tensor tractography for the STT was performed using the Functional Magnetic Resonance Imaging of the Brain Software Library. Values of fractional anisotropy (FA), mean diffusivity (MD), and tract volume of each STT were measured.

RESULTS:

Lower FA value and tract volume were observed in the pain group than in the nonpain group and the control group ($P < .05$). By contrast, higher MD value was observed in the pain group than in the nonpain group and the control group ($P < .05$). However, no significant differences in all diffusion tensor imaging parameters were observed between the nonpain group and the control group ($P > .05$).

CONCLUSIONS:

Decreased FA and tract volume and increased MD of the STTs in the pain group appeared to indicate injury of the STT. As a result, we found that injury of the STT is related to the occurrence of central pain in patients with mild TBI. We believe that injury of the STT is a pathogenetic etiology of central pain following mild TBI.

PMID: 25699625

Chronic fatigue syndrome and TMJ

J Oral Rehabil. 2015 Nov 9. doi: 10.1111/joor.12367.

A systematic review of the comorbidity between Temporomandibular Disorders and Chronic Fatigue Syndrome.

Robinson LJ^{1,2}, Durham J³, Newton JL^{4,5}.

Author information

Abstract

The most common cause of chronic oro-facial pain is a group of disorders collectively termed temporomandibular disorders (TMDs). Chronic painful TMD is thought to be a 'central sensitivity syndrome' related to hypersensitivity of the nervous system, but the cause is unknown. A similar understanding is proposed for other unexplained conditions, including chronic fatigue syndrome (CFS). Exploring the comorbidity of the two conditions is a valuable first step in identifying potential common aetiological mechanisms or treatment targets.

METHOD:

Systematic literature review. Studies were included if they recruited community or control samples and identified how many reported having both TMD and CFS, or if they recruited a sample of patients with either TMD or CFS and measured the presence of the other condition.

RESULTS:

Six papers met inclusion criteria. In studies of patients with CFS (n = 3), 21-32% reported having TMD. In a sample of people with CFS and fibromyalgia, 50% reported having TMD. Studies in people with TMD (n = 3) reported 0-43% having CFS. Studies in samples recruited from oro-facial pain clinics (n = 2) reported a lower comorbidity with CFS (0-10%) than a study that recruited individuals from a TMD self-help organisation (43%).

CONCLUSION:

The review highlights the limited standard of evidence addressing the comorbidity between oro-facial pain and CFS. There is a valuable signal that the potential overlap in these two conditions could be high; however, studies employing more rigorous methodology including standardised clinical assessments rather than self-report of prior diagnosis are needed.

KEYWORDS: central sensitivity syndrome; chronic fatigue syndrome; diagnostic overlap; phenotyping; systematic review; temporo-mandibular disorder

PMID: 26549386

RLS and MS pain

BMC Musculoskelet Disord. 2015 Oct 14;16(1):294. doi: 10.1186/s12891-015-0765-1.

Musculoskeletal pain is associated with restless legs syndrome in young adults.

Hoogwout SJ^{1,2}, Paananen MV³, Smith AJ⁴, Beales DJ⁵, O'Sullivan PB⁶, Straker LM⁷, Eastwood PR⁸, McArdle N⁹, Champion D^{10,11}.

Author information

Abstract

BACKGROUND:

In recent years, there is considerable evidence of a relationship between the sensorimotor disorder restless legs syndrome (RLS) and pain disorders, including migraine and fibromyalgia. An association between multi-site pain and RLS has been reported in adult women. In the current study, we explored the association between musculoskeletal (MSK) pain and RLS in a large cohort of young adults.

METHODS:

Twenty two year olds (n = 1072), followed since birth of part of the Western Australian Pregnancy Cohort (Raine) Study, provided data on MSK pain (duration, severity, frequency, number of pain sites). RLS was considered present when 4 diagnostic criteria recommended by the International Restless Legs Syndrome Study Group were met (urge to move, dysaesthesia, relief by movement, worsening symptoms during the evening/night) and participants had these symptoms at least 5 times per month. Associations between MSK pain and RLS were analyzed by multivariable logistic regression with bias-corrected bootstrapped confidence intervals, with final models adjusted for sex, psychological distress and sleep quality.

RESULTS:

The prevalence of RLS was 3.0 % and MSK pain was reported by 37.4 % of the participants. In multivariable logistic regression models, strong associations were found between RLS-diagnosis and long duration (three months or more) of MSK pain (odds ratio 3.6, 95 % confidence interval 1.4-9.2) and reporting three or more pain sites (4.9, 1.6-14.6).

CONCLUSIONS:

Different dimensions of MSK pain were associated with RLS in young adults, suggestive of shared pathophysiological mechanisms. Overlap between these conditions requires more clinical and research attention.

PMID: 26467305

Empathy

Neuropsychologia. 2015 Oct 26;79(Pt A):97-105. doi: 10.1016/j.neuropsychologia.2015.10.028.

Perceived trustworthiness shapes neural empathic responses toward others' pain.

Sessa P¹, Meconi F².

Author information

Abstract

As might be expected, neural empathic responses toward someone in pain are shaped by the affective/social relationship between the observer and the suffering person. Brain activity associated with empathy is sensitive to previous knowledge on the other's social conduct, such that, for instance, an unfair person in pain elicits in the observer reduced activations of empathy-related brain regions compared to a fair person. We conjectured that even in the absence of information on the personality and social behavior of an individual, empathy might be modulated by the 'first impression' based on other's physical facial features, such that the other is perceived as trustworthy or untrustworthy. By means of event-related potentials technique, we monitored in two experiments the neural empathic responses associated with the pain of trustworthy and untrustworthy faces, either computerized and parametrically manipulated (Experiment 1) and real faces (Experiment 2) in a cue-based paradigm. We observed P3 empathic reactions towards individuals looking trustworthy whereas the reactions towards individuals looking untrustworthy were negligible, if not null. An additional experiment (Experiment 3) was conducted in order to substantiate our conclusions by demonstrating that the experimental paradigm we designed did very likely activate an empathic response.

KEYWORDS: Empathy; Event-related potentials; Faces; P3; Trustworthiness

PMID: 26514617

Motor imagery

J Pain. 2015 Nov 6. pii: S1526-5900(15)00930-X. doi: 10.1016/j.jpain.2015.10.015.

The efficacy of movement representation techniques for treating limb pain - a systematic review and metaanalysis.

Thieme H¹, Morkisch N², Rietz C³, Dohle C², Borgetto B⁴.

Author information

Abstract

Relatively new evidence suggests that movement representation techniques, i.e. therapies that use the observation and/or imagination of normal pain-free movements, such as Mirror Therapy, Motor Imagery or Movement/ Action Observation may be effective in reducing some types of limb pain. To summarize the evidence regarding the efficacy of those techniques, a systematic review with metaanalysis was performed. We searched CENTRAL, MEDLINE, EMBASE, CINAHL, AMED, PsychINFO, PEDro and OT-seeker up to August 2014 and handsearched further relevant resources for randomised controlled trials that studied the efficacy of movement representation techniques in reducing limb pain. The outcomes of interest were pain, disability, and quality of life. Study selection and data extraction were performed by 2 reviewers independently. We included 15 trials on the effects of Mirror Therapy, (Graded) Motor Imagery, and Action Observation in patients with Complex Regional Pain Syndrome, Phantom Limb Pain, post-stroke pain, and non-pathological (acute) pain. Overall, movement representation techniques were found to be effective in reducing pain (SMD=-0.82, 95%CI [-1.32...-0.31] p=0.001) and disability (SMD=0.72, 95%CI [0.22...1.22], p=0.004) and showed a positive but non-significant effect on quality of life (SMD=2.61, 85%CI [-3.32...8.54], p=0.39). Especially Mirror Therapy and Graded Motor Imagery should be considered for the treatment of patients with Complex Regional Pain Syndrome. Furthermore, the results indicate that Motor Imagery could be considered as a potential effective treatment in patients with acute pain after trauma and surgery. To date, there is no evidence for a pain reducing effects of movement representation techniques in patients with Phantom Limb Pain and Post Stroke Pain other than Complex Regional Pain Syndrome.

PMID: 26552501

62 A. NUTRITION/VITAMINS

Youth diet can determine later CV disease

Diet during young adulthood linked to later cardiovascular disease

Northwestern Medicine News,
11/20/2015

People who ate more fruits and vegetables as young adults were less likely to develop coronary atherosclerosis 20 years later, according to a recent study co-authored by Northwestern Medicine investigator Philip Greenland, MD. The findings, published in *Circulation*, provide evidence that adopting a healthy diet early in life – rather than later – may decrease the odds of future cardiovascular disease. The study found that people who said they ate an average of seven to nine servings of fruit and vegetables a day were 25 percent less likely to have a significant coronary calcium in their arteries at the 20-year follow-up compared to those who only ate two to four servings a day.

Coffee reduces premature death rate

Moderate coffee drinking may lower risk of premature death

Harvard School of Public Health News,
11/19/2015

People who drink about three to five cups of coffee a day may be less likely to die prematurely from some illnesses than those who don't drink or drink less coffee, according to a new study by Harvard T.H. Chan School of Public Health researchers and colleagues.

Drinkers of both caffeinated and decaffeinated coffee saw benefits, including a lower risk of death from cardiovascular disease, neurological diseases, type 2 diabetes, and suicide. "Bioactive compounds in coffee reduce insulin resistance and systematic inflammation," said first author Ming Ding, a doctoral student in the Department of Nutrition. "That could explain some of our findings. However, more studies are needed to investigate the biological mechanisms producing these effects." The study appeared online in *Circulation* on November 16, 2015.

62 B. CRYOTHERAPY**Cold immersion**

Sports Med. 2015 Nov 18.

Can Water Temperature and Immersion Time Influence the Effect of Cold Water Immersion on Muscle Soreness? A Systematic Review and Meta-Analysis.

Machado AF¹, Ferreira PH², Micheletti JK¹, de Almeida AC³, Lemes ÍR¹, Vanderlei FM¹, Netto Junior J¹, Pastre CM⁴.

Author information

Abstract

BACKGROUND:

Cold water immersion (CWI) is a technique commonly used in post-exercise recovery. However, the procedures involved in the technique may vary, particularly in terms of water temperature and immersion time, and the most effective approach remains unclear.

OBJECTIVES:

The objective of this systematic review was to determine the efficacy of CWI in muscle soreness management compared with passive recovery. We also aimed to identify which water temperature and immersion time provides the best results.

METHODS:

The MEDLINE, EMBASE, SPORTDiscus, PEDro [Physiotherapy Evidence Database], and CENTRAL (Cochrane Central Register of Controlled Trials) databases were searched up to January 2015. Only randomized controlled trials that compared CWI to passive recovery were included in this review. Data were pooled in a meta-analysis and described as weighted mean differences (MDs) with 95 % confidence intervals (CIs).

RESULTS:

Nine studies were included for review and meta-analysis. The results of the meta-analysis revealed that CWI has a more positive effect than passive recovery in terms of immediate (MD = 0.290, 95 % CI 0.037, 0.543; p = 0.025) and delayed effects (MD = 0.315, 95 % CI 0.048, 0.581; p = 0.021). Water temperature of between 10 and 15 °C demonstrated the best results for immediate (MD = 0.273, 95 % CI 0.107, 0.440; p = 0.001) and delayed effects (MD = 0.317, 95 % CI 0.102, 0.532; p = 0.004). In terms of immersion time, immersion of between 10 and 15 min had the best results for immediate (MD = 0.227, 95 % CI 0.139, 0.314; p < 0.001) and delayed effects (MD = 0.317, 95 % CI 0.102, 0.532, p = 0.004).

CONCLUSIONS:

The available evidence suggests that CWI can be slightly better than passive recovery in the management of muscle soreness. The results also demonstrated the presence of a dose-response relationship, indicating that CWI with a water temperature of between 11 and 15 °C and an immersion time of 11-15 min can provide the best results.

PMID: 26581833

Cold and heat

J Strength Cond Res. 2015 Nov;29(11):3245-52. doi: 10.1519/JSC.0000000000001127.

Cold Vs. Heat After Exercise-Is There a Clear Winner for Muscle Soreness.

Petrofsky JS¹, Khowailed IA, Lee H, Berk L, Bains GS, Akerkar S, Shah J, Al-Dabbak F, Laymon MS.
Author information

Abstract

Petrofsky, JS, Khowailed, IA, Lee, H, Berk, L, Bains, GS, Akerkar, S, Shah, J, Al-Dabbak, F, and Laymon, MS. Cold vs. heat after exercise-is there a clear winner for muscle soreness. J Strength Cond Res 29(11): 3245-3252, 2015-Because of the differences in the exercise type, temperature, and timing of the use of cold and heat after exercise in different studies, there is no clear conclusion as to the efficacy of either modality on reducing delayed onset muscle soreness. One hundred subjects at similar fitness levels were examined. They accomplished leg squats for 15 minutes and heat and cold were applied after or 24 hours after exercise using ThermaCare heat or cold wraps. Measurements obtained were strength, the force to passively move the knee, analog visual pain scales, and blood myoglobin. Control subjects lost 24% strength after exercise. Subjects with heat or cold just after exercise only lost 4% strength ($p < 0.01$). For strength recovery, cold applied after 24 hours was better than heat at 24 hours. Heat or cold applied after exercise was significantly better to prevent elastic tissue damage ($p < 0.01$), whereas heat and cold immediately after exercise caused no loss in muscle myoglobin and heat or cold after 24 hours showed no less muscle damage from myoglobin than in control subjects. Myoglobin in the control and heat and cold 24-hour groups averaged 135.1% of the baseline data but averaged 106.1% of baseline in the immediate heat and cold groups. For reducing pain, control subjects showed a significant amount of pain the days after exercise. But cold immediately after exercise or 24 hours later was superior to heat in reducing pain. In conclusion, both cold and heat appear to be efficacious in reducing muscle damage after exercise.
PMID: 26502272

63. PHARMACOLOGY

Opioid use and lumbar surgery

Spine (Phila Pa 1976). 2015 Jul 17.

Chronic Opioid Therapy after Lumbar Fusion Surgery for Degenerative Disc Disease in a Workers' Compensation Setting.

Anderson JT¹, Haas AR, Percy R, Woods ST, Ahn UM, Ahn NU.

Author information

Abstract

STUDY DESIGN:

Retrospective cohort studyObjective. Evaluate prescription opioid utilization after lumbar fusion for degenerative disc disease (DDD) in a workers' compensation (WC) settingSummary of Background Data. Use of opioids for treating chronic low-back pain has increased greatly. Few studies have evaluated risk factors for chronic opioid therapy (COT) among the clinically-distinct WC population.

METHODS:

We utilized CPT and ICD-9 codes to identify 1002 Ohio WC subjects who underwent lumbar fusion for DDD from 1993-2013. Postoperative COT was defined as being supplied with opioid analgesics for greater than 1 year after the 6 week acute period following fusion. 575 subjects fit these criteria, forming the COT group. The remaining 427 subjects formed a temporary opioid group. To identify prognostic factors associated with COT after fusion, we utilized a multivariate logistic regression analysis.

RESULTS:

Returning to work (RTW) was negatively associated with COT ($p < 0.001$; OR 0.38). COT before fusion ($p < 0.001$; OR 6.15), failed back syndrome ($p < 0.001$; OR 3.40), additional surgery ($p < 0.001$; OR 2.84), clinically diagnosed depression ($p < 0.001$; OR 2.34), and extended work loss before fusion ($p = 0.038$; OR 1.61) were positively associated with COT. The rates of postoperative COT associated with these factors were 27.8%, 79.6%, 85.0%, 76.4%, 77.1%, and 61.3%, respectively. Higher preoperative opioid load ($p < 0.001$) and duration of use ($p < 0.001$) were positively associated with higher postoperative rates of postoperative COT. Within 3 years after fusion, the COT group was supplied with an average of 1083.4 days of opioids and 49.0 opioid prescriptions, 86.2% of which were Schedule II. The COT group had an 11.0% RTW rate, \$27,952 higher medical costs per subject, 43.5% rate of psychiatric comorbidity, 16.7% rate of failed back syndrome, and 27.7% rate of additional lumbar surgery.

CONCLUSIONS:

The majority of the study population was on COT after fusion. COT was associated with considerably worse outcomes. The poor outcomes of this study could suggest a more limited role for discogenic fusion among WC patients.

PMID: 26192725