

ABSTRACTS

Table of Contents	
LUMBAR SPINE	2
PELVIC GIRDLE	4
PELVIC ORGANS	8
VISCERA	Error! Bookmark not defined.
THORACIC SPINE	17
CERVICAL SPINE	19
CRANIUM/TMJ	21
HEADACHES	23
CONCUSSIONS	Error! Bookmark not defined.
SHOULDER GIRDLE	Error! Bookmark not defined.
GLENOHUMERAL/SHOULDER	26
ELBOW	Error! Bookmark not defined.
WRIST AND HAND	29
HIP	Error! Bookmark not defined.
KNEE	33
FOOT AND ANKLE	Error! Bookmark not defined.
MANUAL THERAPY/STRETCHING/MUSCLES STM	48
CFS/BET	Error! Bookmark not defined.
ATHLETICS	52
RUNNING GAIT	53
PAIN	54
COMPLEX REGIONAL PAIN	58
FIBROMYALGIA	59
NUTRITION/VITAMINS/MEDICATION/TOPICALS	61
NEUROLOGICAL CONDITIONS	64

1. LUMBAR SPINE

Combined motions

Eur Spine J. 2015 Jun 24.

Individual characteristics of reliable lumbar coupling motions.

Yun WS¹, Kim H, Ahn JH, Park YB, Park YJ.

Author information

Abstract

INTRODUCTION:

Coupling motions (CMs) are the motions occurring in different directions around the primary motion. As low back pain (LBP) is known to be associated with lumbar CMs, some studies measured lumbar CMs using the microelectromechanical system inertial measurement unit (MEMS-IMU) because of its low cost and small size. This study aimed to examine the reliability of lumbar CM measurements using the MEMS-IMU and to classify the individual characteristics of lumbar CMs.

METHODS:

MEMS-IMUs were attached to the two lumbar points (L₁, L₅) of 19 male volunteers (age, 24.3 ± 1.2 years). Following an instructional video and audio recording, they conducted the six lumbar movements three times: flexion and extension, left and right lateral bending, and left and right rotation. The six lumbar movements were repeated after 1 h. Raw data were transformed into angle data using MATLAB. Intraclass correlation coefficients (ICCs) were calculated to evaluate intratest repeatability and test-retest reliability. Finally, angle data were analyzed to examine whether individual characteristics of lumbar CMs could be identified.

RESULTS:

Lumbar CM measurements showed fair to good or excellent intratest repeatability and test-retest reliability, ranging from 0.669 to 0.997 of the ICCs. All lumbar CMs could be categorized into six types, and flexion and extension CMs were more prominent than other CMs.

CONCLUSIONS:

Lumbar CM measurements obtained using the MEMS-IMU are reliable, and identifying the individual variations of lumbar CMs may be helpful for alleviating chronic or recurrent LBP.

PMID: 26100279

Evaluation

Best Pract Res Clin Rheumatol. 2014 Dec;28(6):875-87. doi: 10.1016/j.berh.2015.04.031. Epub 2015 May 28.

Assessment of spinal pain.

Braun J¹, Baraliakos X², Regel A², Kiltz U².
Author information

Abstract

Spinal pain or back pain is a very common symptom that can have many reasons. The most studied location is low back pain, and it is considered to be nonspecific in the majority of cases. Only a small proportion of patients have axial inflammation as the major cause of their back complaints with chronic inflammatory back pain (IBP) as the most prominent clinical feature of spondyloarthritis (SpA). The recognition of IBP and patients with axial spondyloarthritis (axSpA) is challenging in primary care, and it is important to further facilitate the early diagnosis of SpA. Proposals for improving the referral of patients with a possible diagnosis of axSpA include clinical parameters, human leukocyte antigen (HLA) B27, and imaging parameters. Imaging is crucial for the visualization, objective validation, and understanding of back pain. Numerous diseases such as degenerative disk disease, degenerative changes in the intervertebral (facet) joints and the associated ligaments, spinal instability, herniation of the intervertebral disk, and spinal stenosis have to be differentiated in interpreting imaging of the spine.

The sacroiliac joints and the spine are of major importance for the diagnosis and classification of axSpA. Conventional radiographs and magnetic resonance imaging (MRI) are the most important imaging technologies for visualization of structural changes such as syndesmophytes and axial inflammation such as sacroiliitis and spondylitis. The pathogenesis of axSpA is largely genetically determined. HLA B27 has the strongest contribution to the total genetic burden, but other major contributors such as endoplasmic reticulum aminopeptidase (ERAP)-1 and interleukin (IL)-23R have also been identified.

KEYWORDS: Axial spondyloarthritis; HLA B27; Imaging; Spinal pain

PMID: 26096091

2. LBP

QOL and stenosis

Eur Spine J. 2015 Jul 3.

Predictors of improvement in quality of life and pain relief in lumbar spinal stenosis relative to patient age: a study based on the Spine Tango registry.

Sobottke R¹, Herren C, Siewe J, Mannion AF, Röder C, Aghayev E.
Author information

Abstract

BACKGROUND:

An open decompression is the most common treatment for lumbar spinal canal stenosis (LSS), even in the elderly. However, it is not clear whether the treatment outcome is age dependent. The main purpose of this study was to evaluate the improvement in quality of life (QoL) and pain relief, after open decompression for LSS in relation to patient age.

METHODS:

The study was performed on the basis of Spine Tango registry data. The database query resulted in 4768 patients from 40 international Spine Tango centres. The patients were subdivided into three age groups: (1) 20-64, (2) 65-74, and (3) ≥ 75 years. In multivariate logistic regression models, predictors for improvement in QoL and achievement of the minimum clinically relevant change in pain of two points were analysed.

RESULTS:

All groups benefited from significant improvement in QoL and back and leg pain relief. Age group had no significant influence on the outcomes. The preoperative status of each outcome was a predictor for its own postoperative outcome. Fewer previous surgeries, rigid or dynamic stabilization, and lower patient comorbidity also had a partially predictive influence for one or the other outcome.

CONCLUSIONS:

Our results confirm that all age groups significantly benefit from the open decompressive treatment of LSS. Age group had no significant influence on any outcome.

PMID: 26138216

CBT and LBP

BMC Musculoskelet Disord. 2015 Jun 16;16:147. doi: 10.1186/s12891-015-0594-2.

Delivering an Optimised Behavioural Intervention (OBI) to people with low back pain with high psychological risk; results and lessons learnt from a feasibility randomised controlled trial of Contextual Cognitive Behavioural Therapy (CCBT) vs. Physiotherapy.

Pincus T¹, Anwar S², McCracken LM³, McGregor A⁴, Graham L⁵, Collinson M⁶, McBeth J⁷, Watson P⁸, Morley S⁹, Henderson J¹⁰, Farrin AJ¹¹; OBI Trial Management Team.

Collaborators (5)

Author information

Abstract

BACKGROUND:

Low Back Pain (LBP) remains a common and costly problem. Psychological obstacles to recovery have been identified, but psychological and behavioural interventions have produced only moderate improvements. Reviews of trials have suggested that the interventions lack clear theoretical basis, are often compromised by low dose, lack of fidelity, and delivery by non-experts. In addition, interventions do not directly target known risk mechanisms. We identified a theory driven intervention (Contextual Cognitive Behavioural Therapy, CCBT) that directly targets an evidence-based risk mechanism (avoidance and ensured dose and delivery were optimised. This feasibility study was designed to test the credibility and acceptability of optimised CCBT against physiotherapy for avoidant LBP patients, and to test recruitment, delivery of the intervention and response rates prior to moving to a full definitive trial.

METHODS:

A randomised controlled feasibility trial with patients randomised to receive CCBT or physiotherapy. CCBT was delivered by trained supervised psychologists on a one to one basis and comprised up to 8 one-hour sessions. Physiotherapy comprised back to fitness group exercises with at least 60 % of content exercise-based. Patients were eligible to take part if they had back pain for more than 3 months, and scored above a threshold indicating fear avoidance, catastrophic beliefs and distress.

RESULTS:

89 patients were recruited. Uptake rates were above those predicted. Scores for credibility and acceptability of the interventions met the set criteria. Response rates at three and six months fell short of the 75 % target. Problems associated with poor response rates were identified and successfully resolved, rates increased to 77 % at 3 months, and 68 % at 6 months. Independent ratings of treatment sessions indicated that CCBT was delivered to fidelity. Numbers were too small for formal analysis. Although average scores for acceptance were higher in the CCBT group than in the group attending physiotherapy (increase of 7.9 versus 5.1) and change in disability and pain from baseline to 6 months were greater in the CCBT group than in the physiotherapy group, these findings should be interpreted with caution.

CONCLUSIONS:

CCBT is a credible and acceptable intervention for LBP patients who exhibit psychological obstacles to recovery.

PMID: 26076755

LBP and sleep

Am J Ind Med. 2015 Jun 29. doi: 10.1002/ajim.22493.

Disabling low back pain associated with night shift duration: Sleep problems as a potentiator.

Takahashi M¹, Matsudaira K^{2,3}, Shimazu A⁴.
Author information

Abstract

BACKGROUND:

We investigated how night shift duration and sleep problems were jointly associated with disabling low back pain (LBP) among workers in different occupations.

METHODS:

An online-survey was conducted regarding work schedules, disabling LBP, sleep problems, and other relevant factors in 5,008 workers who were randomly selected from a market research panel. Multiple logistic regression analyses determined the joint associations of night shift duration (0 [permanent day shift], <8, 8-9.9, 10-15.9, ≥ 16 hr) and sleep problems (no, yes) with disabling LBP adjusted for potential confounders.

RESULTS:

A night shift ≥ 16 hr was associated with a significant increase in the likelihood of disabling LBP. The magnitude of this association was elevated when participants perceived sleep problems including both sleep duration and quality.

CONCLUSION:

Associations between extended night shifts and disabling LBP became stronger in the presence of short or poor quality sleep.

KEYWORDS: insomnia symptoms; musculoskeletal disorders; shift schedules; sleep duration

PMID:26122920

LBP in adolescents

Eur Spine J. 2015 Jun 13.

Accumulation of psychosocial and lifestyle factors and risk of low back pain in adolescence: a cohort study.

Mikkonen P¹, Heikkala E, Paananen M, Remes J, Taimela S, Auvinen J, Karppinen J.
Author information

Abstract

PURPOSE:

Low back pain (LBP) is common already in adolescence, and many risk indicators including both psychosocial and lifestyle factors have been recognized. Our purpose was to assess whether the co-occurrence of psychosocial (externalizing and internalizing) problems and lifestyle factors (leisure time physical activity, sedentary behaviour, sleep, smoking, and overweight/obesity) associate with LBP at 16 years cross-sectionally or with new LBP at 18-year follow-up.

METHODS:

The study population, drawn from the Northern Finland Birth Cohort 1986, consisted of 1625 participants (712 boys and 913 girls) who completed a questionnaire on potential explanatory factors at 16 years and on LBP at 16 and 18 years. The outcome measure was 'reporting LBP' or 'consultation for LBP' during the past 6 months. Latent Class Analysis (LCA) was utilized to study the co-occurrence of the explanatory factors.

RESULTS:

Among both genders, four clusters were found. Externalizing behaviour problems were associated with 'reporting LBP' (RR 1.5, boys 1.4, girls) and 'consultation for LBP' (RR 1.6 for both genders) at baseline among both genders. In addition, the cluster of multiple risk behaviours was associated with both 'reporting LBP' (RR 1.3) and 'consultation for LBP' (RR 2.5) and the obese cluster with 'consultation for LBP' (RR 1.7) among girls. Externalizing behaviour problems at 16 years predicted 'consultation for LBP' at 18 years among girls (RR 3.6).

CONCLUSIONS:

Our results stress the role of psychosocial factors in reporting and seeking care for adolescent LBP.

PMID: 26070550

3. DISC

Modic changes

Spine J. 2015 Jun 29. pii: S1529-9430(15)00649-X. doi: 10.1016/j.spinee.2015.06.056.

Phenotype profiling of Modic changes of the lumbar spine and its association with other MRI phenotypes: a large-scale, population-based study.

Määttä J¹, Karppinen J², Luk KD³, Cheung KM⁴, Samartzis D⁵.

Author information

Abstract

BACKGROUND CONTEXT: Modic changes (MC) are associated with low back pain. They represent vertebral endplate and adjacent vertebral marrow changes on magnetic resonance imaging (MRI), classified into three types. Due to small sample sizes, patient cohorts, and limited phenotype assessment, the morphology, involvement of MC and their association with other spinal phenotypes remains speculative.

PURPOSE: We addressed and proposed a phenotypic profiling of MC and their relationship with lumbar MRI phenotypes in a large-scale population-based study.

STUDY DESIGN/SETTING: A cross-sectional study of the Hong Kong Disc Degeneration Cohort.

PATIENT SAMPLE: 1,546 Southern Chinese volunteers.

OUTCOME MEASURES: Topographical and morphological dimensions of MC, presence of disc degeneration (DD) and displacement, and Schmorl's nodes (SN) were evaluated.

METHODS: Axial T1- and sagittal T2-weighted MRIs (3T) were assessed.

RESULTS: 62.4% were females (mean age: 49 years). The overall prevalence of MC was 21.9% (6.3% Type I, 15.5% Type II). Of all MC, 76% were located at the two lowest lumbar levels. MC at the two lowest lumbar levels were more commonly located laterally ($p < 0.001$), less commonly anteriorly ($p < 0.001$), and were more extensive horizontally ($p = 0.006$) but not in vertical height compared to the upper levels. Type I MC were less common in the anterior part ($p = 0.022$), larger in size (height $p = 0.004$) and affected more likely the whole horizontal plane ($p = 0.016$) than 'Type II' MC. MC were associated with disc displacement, SN and DD at the affected level (all $p < 0.001$), and the strength of association increased with the size of the lesion. Type I MC were associated more strongly with disc displacement ($p = 0.008$) and DD ($p = 0.022$) than Type II MC. **CONCLUSIONS:** Our large-scale MRI study is the first to definitely note that MC were size- and type-dependently significantly associated with disc pathology and endplate abnormalities. Our phenotype profiling of MC may have clinical utility.

KEYWORDS: Modic changes; Schmorl's nodes; degeneration; disc; displacement; endplate; epidemiology; magnetic resonance imaging; phenotype

PMID: 26133258

6. PELVIC GIRDLE

Iliac crests and L5 DJD

Eur Spine J. 2015 Jun 25.

L5-S1 disc degeneration and the anatomic parameters of the iliac crest: imaging study.

Wang YL¹, Wang XY, Fang BD, Chi YL, Xu HZ, Wu LJ, Lin ZK.

Author information

Abstract

PURPOSE:

To evaluate the relationship between height ratio of the iliac crest to L4 (HR), width ratio of the iliac crest to L4 (WR) and L5-S1 disc degeneration.

METHODS:

On T2-weighted sagittal images of the 50 randomly selected patients, two observers graded L5-S1 discs and some other parameters were measured. Then, relative signal intensity (RSI) of the L5-S1 nucleus pulposus was calculated. On anteroposterior and lateral radiographs of the same 50 patients' lumbar spine, the parameters such as the height of the iliac crest were measured and then HR and WR were calculated. Finally, HR, WR and the percentage of the sROM of L5-S1 in L1-S1 segments of the other 51 randomly selected patients were calculated.

RESULTS:

Positive correlations were found between HR, WR and RSI of the L5-S1 disc. Negative correlations were found between HR, WR and modified Pfirrmann scores of L5-S1 nucleus pulposus. A statistically significant negative correlation was found between HR and the percentage of sROM of L5-S1 in L1-S1 segments.

CONCLUSIONS:

Low HR and (or) WR were the risk factors for L5-S1 disc degeneration. High HR could reduce the percentage of sROM of L5-S1 in L1-S1 segments and high HR and (or) WR could reduce the incidence of L5-S1 disc degeneration.

PMID: 26108389

7. PELVIC ORGANS

Vulvodynia and impingement

J Low Genit Tract Dis. 2015 Jul;19(3):253-6. doi: 10.1097/LGT.000000000000108.

Vulvodynia and Concomitant Femoro-Acetabular Impingement: Long-Term Follow-up After Hip Arthroscopy.

Coady D¹, Futterman S, Harris D, Coleman SH.
Author information

Abstract

OBJECTIVE:

We hypothesized that in patients with vulvodynia and femoro-acetabular impingement (FAI), vulvar pain may be generated by the effect of FAI on pelvic floor structures, and treatment with arthroscopy may improve vulvodynia. We also sought to identify characteristics of patients whose vulvodynia improved after arthroscopy.

MATERIALS AND METHODS:

A case series of patients with vulvodynia and FAI underwent physical therapy, and, if hip symptoms did not improve, arthroscopy. Three to 5 years postoperatively, follow-up of outcomes after arthroscopy on vulvodynia was performed using chart review and patient questionnaire. Clinical characteristics and pain scores describing patients with and without vulvodynia improvement were assessed.

RESULTS:

Twenty-six patients with generalized unprovoked vulvodynia (GUV) or clitorodynia underwent arthroscopy for FAI. Six patients, all younger than 30 years, experienced lasting improvement in vulvodynia. Twenty patients, with an older mean age, longer mean vulvodynia duration, and mainly severe pain scores, did not experience vulvar pain improvement after arthroscopy.

CONCLUSION:

This case series describes improved vulvodynia outcomes after arthroscopy for FAI in women younger than 30 years. Patients with vulvar pain and coexisting FAI had GUV and clitorodynia.

PMID: 25853634

Bone formation in menstrual dysfunction

Bone. 2015 Jun 27;81:24-30. doi: 10.1016/j.bone.2015.06.021.

Altered trabecular bone morphology in adolescent and young adult athletes with menstrual dysfunction.

Mitchell DM¹, Tuck P², Ackerman KE³, Cano Sokoloff N⁴, Woolley R⁴, Slattery M⁴, Lee H⁵, Bouxsein ML², Misra M⁶.

Author information

Abstract

CONTEXT:

Young amenorrheic athletes (AA) have lower bone mineral density (BMD) and an increased prevalence of fracture compared with eumenorrheic athletes (EA) and non-athletes. Trabecular morphology is a determinant of skeletal strength and may contribute to fracture risk.

OBJECTIVES:

To determine the variation in trabecular morphology among AA, EA, and non-athletes and to determine the association of trabecular morphology with fracture among AA.

DESIGN AND SETTING:

A cross-sectional study performed at an academic clinical research center.

PARTICIPANTS:

161 girls and young women aged 14-26years (97 AA, 32 EA, and 32 non-athletes).

MAIN OUTCOME MEASURE:

We measured volumetric BMD (vBMD) and skeletal microarchitecture using high-resolution peripheral quantitative computed tomography. We evaluated trabecular morphology (plate-like vs. rod-like), orientation, and connectivity by individual trabecula segmentation.

RESULTS:

At the non-weight-bearing distal radius, the groups did not differ for trabecular vBMD. However, plate-like trabecular bone volume fraction (pBV/TV) was lower in AA vs. EA (p=0.03), as were plate number (p=0.03) and connectivity (p=0.03). At the weight-bearing distal tibia, trabecular vBMD was higher in athletes vs. non-athletes (p=0.05 for AA and p=0.009 for EA vs. non-athletes, respectively). pBV/TV was higher in athletes vs. non-athletes (p=0.04 AA and p=0.005 EA vs. non-athletes), as were axially-aligned trabeculae, plate number, and connectivity. Among AA, those with a history of recurrent stress fracture had lower pBV/TV, axially-aligned trabeculae, plate number, plate thickness, and connectivity at the distal radius.

CONCLUSIONS:

Trabecular morphology and alignment differ among AA, EA, and non-athletes. These differences may be associated with increased fracture risk.

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KEYWORDS: Amenorrhea; Athlete; Bone density; Microarchitecture

PMID: 26123592

Exercise during pregnancy

Br J Sports Med. 2015 Jul 1. pii: bjsports-2015-094756. doi: 10.1136/bjsports-2015-094756.

Exercise during pregnancy. A narrative review asking: what do we know?

Barakat R¹, Perales M¹, Garatachea N², Ruiz JR³, Lucia A⁴.
Author information

Abstract

Although there is no consensus as to whether exercise is beneficial during pregnancy, most studies report it poses no risk to either the mother or the fetus, and many suggest it to be beneficial to both. This review, which examines the evidence available, also reveals the many differences in study design followed, the type of exercise undertaken and the variables measured, which make it difficult to compare results. Advances in our understanding of the effects of exercise during pregnancy might best be made by undertaking randomised clinical trials with standardised protocols. However, most of the studies examining the relationship between exercise and pregnancy report no complications on maternal or fetal well-being. This is also in line with recent review studies advising that the pregnant population without obstetric contraindications should be encouraged to exercise during pregnancy. Therefore, the results of the present review stimulate those responsible for the healthcare of the pregnant woman to recommend moderate exercise throughout pregnancy without risk to maternal and fetal health.

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PMID: 26135742

Soy and urogenital health

Menopause. 2015 Jul;22(7):741-9. doi: 10.1097/GME.0000000000000380.

Effects of a soy-based dietary supplement compared with low-dose hormone therapy on the urogenital system: a randomized, double-blind, controlled clinical trial.

Carmignani LO¹, Pedro AO, Montemor EB, Arias VA, Costa-Paiva LH, Pinto-Neto AM.
Author information

Abstract

OBJECTIVE:

This study aims to compare the effects of a soy-based dietary supplement, low-dose hormone therapy (HT), and placebo on the urogenital system in postmenopausal women.

METHODS:

In this double-blind, randomized, placebo-controlled trial, 60 healthy postmenopausal women aged 40 to 60 years (mean time since menopause, 4.1 y) were randomized into three groups: a soy dietary supplement group (90 mg of isoflavone), a low-dose HT group (1 mg of estradiol plus 0.5 mg of norethisterone), and a placebo group. Urinary, vaginal, and sexual complaints were evaluated using the urogenital subscale of the Menopause Rating Scale. Vaginal maturation value was calculated. Transvaginal sonography was performed to evaluate endometrial thickness. Genital bleeding pattern was assessed. Statistical analysis was performed using χ test, Fisher's exact test, paired Student's t test, Kruskal-Wallis test, Kruskal-Wallis nonparametric test, and analysis of variance. For intergroup comparisons, Kruskal-Wallis nonparametric test (followed by Mann-Whitney U test) was used.

RESULTS:

Vaginal dryness improved significantly in the soy and HT groups ($P = 0.04$). Urinary and sexual symptoms did not change with treatment in the three groups. After 16 weeks of treatment, there was a significant increase in maturation value only in the HT group ($P < 0.01$). Vaginal pH decreased only in this group ($P < 0.01$). There were no statistically significant differences in endometrial thickness between the three groups, and the adverse effects evaluated were similar.

CONCLUSIONS:

This study shows that a soy-based dietary supplement used for 16 weeks fails to exert estrogenic action on the urogenital tract but improves vaginal dryness.

PMID: 25423326

8. VISCERA

Acid reflux and diet

Dis Esophagus. 2015 Jul 14. doi: 10.1111/dote.12384.

Adherence to a predominantly Mediterranean diet decreases the risk of gastroesophageal reflux disease: a cross-sectional study in a South Eastern European population.

Mone I^{1,2}, Kraja B^{1,2}, Bregu A³, Duraj V², Sadiku E^{1,2}, Hyska J^{1,3}, Burazeri G⁴.

Author information

Abstract

Our aim was to assess the association of a Mediterranean diet and gastroesophageal reflux disease among adult men and women in Albania, a former communist country in South Eastern Europe with a predominantly Muslim population. A cross-sectional study was conducted in 2012, which included a population-based sample of 817 individuals (≥ 18 years) residing in Tirana, the Albanian capital (333 men; overall mean age: 50.2 ± 18.7 years; overall response rate: 82%). Assessment of gastroesophageal reflux disease was based on Montreal definition. Participants were interviewed about their dietary patterns, which in the analysis was dichotomized into: predominantly Mediterranean (frequent consumption of composite/traditional dishes, fresh fruit and vegetables, olive oil, and fish) versus largely non-Mediterranean (frequent consumption of red meat, fried food, sweets, and junk/fast food). Logistic regression was used to assess the association of gastroesophageal reflux disease with the dietary patterns. Irrespective of demographic and socioeconomic characteristics and lifestyle factors including eating habits (meal regularity, eating rate, and meal-to-sleep interval), employment of a non-Mediterranean diet was positively related to gastroesophageal reflux disease risk (fully adjusted odds ratio = 2.3, 95% confidence interval = 1.2-4.5).

Our findings point to a beneficial effect of a Mediterranean diet in the occurrence of gastroesophageal reflux disease in transitional Albania. Findings from this study should be confirmed and expanded further in prospective studies in Albania and in other Mediterranean countries.

KEYWORDS: Albania; Mediterranean diet; South Eastern Europe; gastroesophageal reflux disease; non-Mediterranean diet

PMID:26175057

IBS

BMJ. 2015 Jun 18;350:h1622. doi: 10.1136/bmj.h1622.

Irritable bowel syndrome: new and emerging treatments.

Halland M¹, Saito YA².

Author information

Abstract

Irritable bowel syndrome is one of the most common gastrointestinal disorders in developed nations. It is characterized by abdominal pain, altered bowel habits, and bloating. Several non-pharmacological and pharmacological agents, which target the peripheral gastrointestinal system and central nervous system, are used to treat the syndrome. The individual and societal impact of investigating and managing the syndrome is substantial, and despite newer treatments, many patients have unmet needs. Intense research at many international sites has improved the understanding of pathophysiology of the syndrome, but developing treatments that are effective, safe, and that have tolerable side effects remains a challenge.

This review briefly summarizes the currently available treatments for irritable bowel syndrome then focuses on newer non-pharmacological and pharmacological therapies and recent evidence for older treatments. Recent guidelines on the treatment of irritable bowel syndrome are also discussed.

PMID:26088265

Epithelial cells in IBS

J Gastroenterol. 2015 Jul 3.

Role of epithelial cells in the pathogenesis and treatment of inflammatory bowel disease.

Okamoto R¹, Watanabe M.
Author information

Abstract

In the past decades, continuous effort has been paid to deeply understanding the pathophysiology of inflammatory bowel diseases (IBD), such as ulcerative colitis or Crohn's disease. As the disease typically arises as chronic inflammation of the gastrointestinal mucosa, research has been focused on how such an uncontrolled, deleterious immune response may arise and persist in a certain cohort of patients. Based on those immunologic analyses, the establishment of anti-TNF- α therapy, and the following series of biologic agents achieved great success and dramatically changed the therapeutic strategy of IBD patients.

However, to guarantee long-term remission of the disease, the therapeutic standard has been raised to achieve "mucosal healing", which requires complete repair of the gastrointestinal mucosa. Recent studies have revealed the unexpected importance of epithelial cells in the pathophysiology of IBD. The general barrier function as well as the cell lineage-specific functions have been deeply attributed to the development of chronic intestinal inflammation. Also, the groundbreaking establishment of the in vitro intestinal stem cell culture system has opened up a way of developing stem cell transplantation therapy to treat otherwise refractory ulcers that may persist in IBD patients.

In this review, we would like to focus on the role of epithelial cells in the pathophysiology of IBD, and also give a perspective to the upcoming development of regenerative therapies that may become one of the therapeutic choices to achieve mucosal healing in refractory patients of IBD.

PMID: 26138071

9. THORACIC SPINE

Trauma

J Manipulative Physiol Ther. 2015 Jun 30. pii: S0161-4754(15)00063-9. doi:

The Effectiveness of Noninvasive Interventions for Musculoskeletal Thoracic Spine and Chest Wall Pain: A Systematic Review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration.

Southerst D¹, Marchand AA², Côté P³, Shearer HM⁴, Wong JJ⁵, Varatharajan S⁶, Randhawa K⁶, Sutton D⁷, Yu H⁸, Gross DP⁹, Jacobs C¹⁰, Goldgrub R¹¹, Stupar M¹², Mior S¹³, Carroll LJ¹⁴, Taylor-Vaisey A¹⁵.

Author information

Abstract

OBJECTIVE: The purpose of this study was to critically appraise and synthesize evidence on the effectiveness of noninvasive interventions, excluding pharmacological treatments, for musculoskeletal thoracic pain.

METHODS: Randomized controlled trials (RCTs), cohort studies, and case-control studies evaluating the effectiveness of noninvasive interventions were eligible. We searched MEDLINE, EMBASE, PsycINFO, and the Cochrane Central Register of Controlled Trials accessed through Ovid Technologies, Inc, and CINAHL Plus with Full Text accessed through EBSCOhost from 1990 to 2015. Our search strategies combined controlled vocabulary relevant to each database (eg, MeSH for MEDLINE) and text words relevant to our research question and the inclusion criteria. Random pairs of independent reviewers screened studies for relevance and critically appraised relevant studies using the Scottish Intercollegiate Guidelines Network criteria. Studies with a low risk of bias were synthesized following best evidence synthesis principles.

RESULTS: We screened 6988 articles and critically appraised 2 studies. Both studies had a low risk of bias and were included in our synthesis. One RCT compared thoracic spinal manipulation, needle acupuncture, and placebo electrotherapy for recent thoracic spine pain. There were statistically significant but clinically nonimportant short-term reductions in pain favoring manipulation. There were no differences between acupuncture and placebo electrotherapy. Another RCT compared a multimodal program of care and a session of education for recent musculoskeletal chest wall pain. The multimodal care resulted in statistically significant but clinically nonimportant short-term reductions in pain over education. However, participants receiving multimodal care were more likely to report important improvements in chest pain.

CONCLUSIONS: Quality evidence on the management of musculoskeletal thoracic pain is sparse. The current evidence suggests that compared to placebo, spinal manipulation is associated with a small and clinically nonimportant reduction in pain intensity and that acupuncture leads to similar outcomes as placebo. Furthermore, a multimodal program of care (ie, manual therapy, soft tissue therapy, exercises, heat/ice, and advice) and a single education session lead to similar pain reduction for recent-onset musculoskeletal chest wall pain. However, patients who receive multimodal care are more likely to report pain improvements.

KEYWORDS: Acupuncture; Musculoskeletal Manipulations; Musculoskeletal Pain; Patient Education as Topic; Physical Therapy Modalities; Review Literature as Topic; Thoracic Vertebrae; Thoracic Wall

PMID: 26141077

Management of T spine**Understanding why the thoracic region is the ‘Cinderella’ region of the spine**

Dr N.R. Heneghan (Lecturer Physiotherapy), Dr A. Rushton (Senior Lecturer Physiotherapy)
Manual Therapy DOI: <http://dx.doi.org/10.1016/j.math.2015.06.010>

Highlights

- Limited research of the thoracic spine, ‘Cinderella’ region
- Reasons for under-exploration of thoracic dysfunction are presented.
- Thoracic spine manipulation is beneficial for managing neck and shoulder pain
- The thoracic spine may be viewed as a ‘silent contributor’ to clinical presentations
- Further research of thoracic spine pain and dysfunction is needed

Abstract

The thoracic spine has for a long time been the ‘Cinderella’ region of the spine. There has been a lesser research focus to the thoracic region compared with the cervical and lumbar spine, and there continues to be a limited understanding of the aetiology and epidemiology of a range of neuromusculoskeletal presentations which have an anatomical connection to the thoracic spine. This paper firstly, provides a critical evaluation of the available evidence to provide some understanding for this under-exploration of the thoracic spine. Secondly the paper provides an evaluation of an emerging interest in this spinal region, with a body of evidence supporting the use of thoracic spine manipulation in the management of upper quadrant presentations. This has been linked to the theory of regional interdependence with the thoracic spine being viewed as a silent contributor to clinical presentations where a pain source lies elsewhere. Finally, a case for further research is made. Identified gaps in the current evidence base include, aetiology and epidemiology of thoracic spine pain and thoracic spine dysfunction, and to investigate mechanisms of action of currently used interventions.

Keywords: thoracic spine dysfunction, professional issue, regional interdependence

10 A. CERVICAL SPINE**PT and neck pain**

Arch Phys Med Rehabil. 2015 Jul 9. pii: S0003-9993(15)00541-9. doi:

Description of Common Clinical Presentations and Associated Short Term Physical Therapy Clinical Outcomes and Utilization in Patients with Neck Pain.

Horn ME¹, Brennan GP², George SZ³, Harman JS⁴, Bishop MD⁵.

Author information

Abstract

OBJECTIVE:

To determine the effect of clinical presentations of neck pain on short term physical therapy outcomes.

DESIGN:

Retrospective analysis of pair matched groups from a clinical cohort SETTING: 13 outpatient physical therapy clinics in one healthcare system.

PARTICIPANTS:

1069 patients grouped by common clinical presentations of neck pain: Nonspecific neck pain (NSNP) with a duration less than 4weeks, NSNP greater than 4weeks, neck pain with arm pain, neck pain with headache and whiplash.

INTERVENTION:

Conservative interventions provided by physical therapists MAIN OUTCOME MEASURES: Neck Disability Index (NDI) and Numerical Pain Rating Scale (NPRS) recorded at the initial and last visits. The main outcome of interest was achieving recovery status on the NDI. Change in NDI and NPRS were compared between clinical presentation groups.

RESULTS:

Compared to patients presenting with NSNP >4weeks, patients with NSNP <4weeks had increased odds of achieving recovery status on the NDI ($p<0.0001$), demonstrated the greatest changes in clinical outcomes of pain ($p<0.0001$) and disability ($p<0.0001$). Patients with neck pain and arm pain demonstrated an increased odds of achieving recovery status on the NDI ($p=0.03$) compared to patients presenting with NSNP >4weeks.

CONCLUSIONS:

Treating patients with NSNP within <4weeks of onset of symptoms may lead to improved clinical outcomes from physical therapy compared to other common clinical presentations.

PMID: 26166733

12 A. WHIPLASH**Work ability**

J Rehabil Med. 2015 Jun 24;47(6):546-51. doi: 10.2340/16501977-1960.

Factors associated with work ability in patients with chronic whiplash-associated disorder grade II-III: A cross-sectional analysis.

Agnew L¹, Johnston V, Landén Ludvigsson M, Peterson G, Overmeer T, Johansson G, Peolsson A.

Author information

Abstract

OBJECTIVE:

To investigate the factors related to self-perceived work ability in patients with chronic whiplash-associated disorder grades II-III.

DESIGN:

Cross-sectional analysis.

PATIENTS:

A total of 166 working age patients with chronic whiplash-associated disorder.

METHODS:

A comprehensive survey collected data on work ability (using the Work Ability Index); demographic, psychosocial, personal, work- and condition-related factors. Forward, stepwise regression modelling was used to assess the factors related to work ability.

RESULTS:

The proportion of patients in each work ability category were as follows: poor (12.7%); moderate (39.8%); good (38.5%); excellent (9%). Seven factors explained 65% (adjusted R² = 0.65, $p < 0.01$) of the variance in work ability. In descending order of strength of association, these factors are: greater neck disability due to pain; reduced self-rated health status and health-related quality of life; increased frequency of concentration problems; poor workplace satisfaction; lower self-efficacy for performing daily tasks; and greater work-related stress.

CONCLUSION:

Condition-specific and psychosocial factors are associated with self-perceived work ability of individuals with chronic whiplash-associated disorder.

PMID:25882646

13. CRANIUM/TMJ

Sleep Apnea

Racial/ethnic differences in the associations between obesity measures and severity of sleep-disordered breathing: the multi-ethnic study of atherosclerosis

Sleep Medicine, 07/13/2015 Chen X, et al.

The study aim to evaluate associations between obesity measures and sleep-disordered breathing severity among White, Black, Hispanic, and Chinese Americans. Associations of BMI and waist circumference with apnea-hypopnea index (AHI) were stronger among Chinese than other racial/ethnic groups. These findings highlight a potential emergence of elevated sleep-disordered breathing prevalence occurring in association with increasing obesity in Asian populations.

Methods

- A community-based cross-sectional study of 2053 racially/ethnically diverse adults in the Multiethnic Study of Atherosclerosis.
- Anthropometry and polysomnography were used to measure obesity and apnea-hypopnea index (AHI).
- Linear regression models were fitted to investigate associations of BMI and waist circumference with AHI (log-transformed) with adjustment for sociodemographics, lifestyle factors, and comorbidities.

Results

- Mean participant age was 68.4 (range: 54-93) years; 53.6% of participants were women.
- Median AHI was 9.1 events/hour.
- There were significant associations of BMI and waist circumference with AHI in the overall cohort and within each racial/ethnic group.
- A significant interaction was observed between race/ethnicity and BMI ($P_{\text{interaction}} = 0.017$).
- Models predicted that for each unit increase in BMI (kg/m^2), mean AHI increased by 19.7% for Chinese, 11.6% for Whites and Blacks, and 10.5% for Hispanics.
- Similarly, incremental changes in waist circumference were associated with larger increases in AHI among Chinese than other groups.

Milk and inflammation

Dent Traumatol. 2015 Jun 18. doi: 10.1111/edt.12188.

Milk activates the expression of cytokines via Nrf2/HO-1 pathway in human periodontal ligament cells.

Choi SC¹, Seo YH¹, Bae WJ², Lee HS¹, Choi YC¹, Kim EC².

Author information

Abstract

BACKGROUND:

Milk is known as a suitable storage medium for avulsed teeth during emergency situations, but its potential toxicity on human periodontal ligament (PDL) cells has not been reported. The purpose of this study was to investigate the milk-induced gene profiles of PDL cells in vitro by microarray analysis after storage in milk. We additionally determined whether milk activates the cytoprotective defense mechanisms via the NF-E2-related factor-2 (Nrf2) and heme oxygenase-1 (HO-1) pathway.

MATERIAL AND METHODS:

Gene induction in cultured human PDL cells after exposure to milk for 1 and 3 h as compared with non-treated PDL cells was analyzed by microarray analysis and subsequent RT-PCR. Reactive oxygen species (ROS) and Western blot analysis were used to determine whether milk activates the cytoprotective defense mechanisms using the Nrf2 and HO-1 pathway.

RESULT:

Microarray data analysis identified 868 (1 h per control) and 1782 (3 h per control) differentially expressed genes related to the duration of storage in milk. Exposure to milk for 3 and 1 h resulted in the upregulation of specific inflammatory cytokines, chemokines, and MMPs concomitant with downregulation of extracellular matrix-related genes. Exposure to milk increased the expression of peroxiredoxin-1, thioredoxin-1 and heme oxygenase (HO)-1 and stimulated the nuclear translocation of Nrf2. HO-1 inhibitor and Nrf2 siRNA blocked the milk-induced inflammatory response such as production of ROS, expression of cytokines, chemokines, and MMPs.

CONCLUSION:

Within the limit of this study, this study demonstrates that exposure of PDL cells to milk is associated with an upregulated expression of several pro-inflammatory proteins and key antioxidant proteins via the activation of Nrf2/ARE pathway in PDL cells.

KEYWORDS: HO-1; Nrf2; avulsion; cytokine; microarray; milk; periodontal ligament cells; reactive oxygen species

PMID: 26087413

14. HEADACHES

Aura's

Cephalalgia. 2015 Jul 8. pii: 0333102415593089.

Migraine aura symptoms: Duration, succession and temporal relationship to headache.

Viana M¹, Linde M², Sances G³, Ghiotto N³, Guaschino E³, Allena M³, Terrazzino S⁴, Nappi G³, Goadsby PJ⁵, Tassorelli C⁶.

Author information

Abstract

BACKGROUND:

As there are no biological markers, a detailed description of symptoms, particularly temporal characteristics, is crucial when diagnosing migraine aura. Hitherto these temporal aspects have not been studied in detail.

METHODS:

We conducted a prospective diary-aided study of the duration and the succession of aura symptoms and their temporal relationship with headache.

RESULTS:

Fifty-four patients completed the study recording in a diary the characteristics of three consecutive auras (n = 162 auras). The median duration of visual, sensory and dysphasic symptoms were 30, 20 and 20 minutes, respectively. Visual symptoms lasted for more than one hour in 14% of auras (n = 158), sensory symptoms in 21% of auras (n = 52), and dysphasic symptoms in 17% of auras (n = 18). Twenty-six percent of patients had at least one aura out of three with one symptom lasting for more than one hour. In aura with multiple symptoms the subsequent symptom, second versus first one or third versus second, might either start simultaneously (34 and 18%), during (37 and 55%), with the end (5 and 9%), or after (24 and 18%) the previous aura symptom. The headache phase started before the aura (9%), simultaneously with the onset of aura (14%), during the aura (26%), simultaneously with the end of aura (15%) or after the end of aura (36%).

CONCLUSION:

We provide data to suggest that symptoms may last longer than one hour in a relevant proportion of auras or migraine with aura patients, and that there is a high variability of scenarios in terms of time relationship among aura symptoms and between aura and headache.

KEYWORDS: Migraine with aura; duration; headache; symptoms; temporal features; time

PMID: 26156076

Tobacco exposure and HA's

Headache. 2015 Jul 3. doi: 10.1111/head.12620.

Tobacco, Nicotine, and Headache.

Taylor FR¹.

Author information

Abstract

BACKGROUND:

Migraineurs variably attribute the cause of their headache to tobacco exposure, whereas tobacco is often stated to cause headache-related disability worldwide. Given tobacco's physiological and emotional addictiveness and migraine's substantial economic impact, improved functionality can be difficult for those with migraine exposed to tobacco products. Environmental tobacco exposure in indoor spaces and workplaces is associated with exacerbation of headache. Avoidance of headache triggers is included in most comprehensive migraine treatment programs, yet tobacco awareness, avoidance, or coping is rarely emphasized as part of that regimen.

OBJECTIVE:

The aims of this study were to examine the various types of tobacco products to which headache sufferers are exposed and the known basic mechanisms by which tobacco (nicotine) exposure promotes headache pain, and to review the extensive literature on tobacco related to headache with a detailed descriptive narrative providing the basis for conclusions regarding association of noncluster headache-related tobacco exposure. Tobacco-related recommendations are offered.

METHODS:

MEDLINE, EMBASE, and Google Scholar databases were searched without yearly restriction through the date of submission (May 2015), using the MeSH terms "tobacco," "tobacco products," "smoking," "tobacco use," "headache," and "headache disorders." The selection of articles was not limited to English studies or to humans. Articles were excluded when "headache" and "tobacco" were not both mentioned with data provided. Case series were included. Bibliographies of all articles were screened for additional relevant articles.

RESULTS:

Although migraineurs worldwide report tobacco smoke among triggers, it is rarely among the highest in frequency, and biases abound with predominantly noncontrolled retrospective data. Prospective population-based diary data are extremely limited, and no controlled trials exist to confirm a cause and effect for headache of any type. Although some studies are nonsupportive and even conflicting, headache, pain, and tobacco exposure currently remain associated.

CONCLUSION:

Conflicting data support the validity of patient-reported environmental tobacco exposure as a headache trigger. Prospective controlled studies are needed, but unlikely to be performed, to determine the extent that tobacco influences the headache process, in addition to other under-recognized factors. Meanwhile, because of numerous other negative health effects, decreased tobacco exposure should be recommended to headache patients of all ages in hopes of decreasing disability and improving functionality.

KEYWORDS: headache; migraine; nicotine; smoke; smokeless; tobacco
PMID: 26140522

15. VESTIBULAR**Cervicogenic dizziness**

J Sci Med Sport. 2015 Jul;18(4):366-72. doi: 10.1016/j.jsams.2014.05.002. Epub 2014 May 17.

The diagnostic utility of clinical tests for differentiating between cervicogenic and other causes of dizziness after a sports-related concussion: An international Delphi study.

Reneker JC¹, Clay Moughiman M², Cook CE³.

Author information

Abstract

OBJECTIVES:

Dizziness after a sports-related concussion is very common and is associated with prolonged recovery. The events in sports that cause concussion include strong mechanical forces exerted to the head and neck, potentially injuring the cervical region, the peripheral vestibular and central nervous system, all of which can contribute to a sensation of dizziness. The purpose of this study was to identify proper clinically administered tests and measures that are useful in differentiating between cervicogenic and other causes of dizziness after a sports-related concussion.

DESIGN:

The Delphi method.

METHODS:

The workgroup identified the initial list of suggested clinical tests and the initial list of content experts on dizziness and/or concussion through a search of peer-reviewed and grey literature. The respondent group included all invited experts who opted to participate. A sequential three-round process was used for elicitation of consensus opinions from the targeted content experts.

RESULTS:

The respondent group included 25 members from several medical disciplines who were experts in concussion and dizziness. At the conclusion of the study, ten clinical tests achieved the designation of strong clinical utility, six were determined to have weak clinical utility and seven achieved no consensus among the experts.

CONCLUSIONS:

The majority of clinical tests identified as having strong clinical utility are tests used to identify dizziness originating from the vestibular or central nervous system. No clinical tests specific for the cervical region achieved consensus. Expert opinion from different medical professions and even within professions was widely divergent regarding the utility of clinical tests to assess cervical dysfunction.

Published by Elsevier Ltd.

KEYWORDS: Cervical dizziness differential diagnosis; Delphi method; Sports-related concussion

PMID: 24933505

19. GLENOHUMERAL/SHOULDER**Behind the back mobilization**

J Manipulative Physiol Ther. 2015 Jun 19. pii: S0161-4754(15)00066-4. doi:

Efficacy of Hand Behind Back Mobilization With Movement for Acute Shoulder Pain and Movement Impairment: A Randomized Controlled Trial.

Satpute KH¹, Bhandari P², Hall T³.
Author information

Abstract

OBJECTIVE:

The aim of this study was to investigate the effects of hand-behind-back (HBB) Mulligan mobilization with movement (MWM) techniques on acute shoulder pain, impairment, and disability.

METHODS:

This double-blind, randomized, controlled trial recruited 44 patients with acute shoulder pain and movement impairment presenting to an Indian general hospital. Participants were allocated to receive either MWM and exercise/hot pack (n = 22) or exercise/hot pack alone (n = 22). The average duration of symptoms was 4.1 and 4.7 weeks in the exercise and MWM groups, respectively. The primary outcome was HBB range of motion (ROM). Secondary variables were shoulder internal rotation ROM, pain intensity score, and shoulder disability identified by the shoulder pain and disability index. All variables were evaluated by a blinded assessor before and immediately after 9 treatment sessions over 3 weeks.

RESULTS:

Paired t tests revealed that both groups demonstrated statistically significant improvements (P < .001) with large effect sizes for all variables. However, for all variables, the MWM-with-exercise group showed significantly greater improvements (P < .05) than the exercise group. Hand-behind-back ROM showed a mean difference of 9.31° (95% confidence interval, 7.38-11.27), favoring greater improvement in the MWM-with-exercise group.

CONCLUSIONS:

In this study, the outcomes of patients with acute shoulder pain and disability receiving shoulder HBB MWM with exercise improved greater than those receiving exercise/hot packs alone.

KEYWORDS: Articular; Musculoskeletal Manipulations; Pain; Range of Motion; Shoulder
PMID: 26099206

20 A. ROTATOR CUFF**Inflammatory mechanisms**

Arthritis Res Ther. 2015 Jul 10;17:176. doi: 10.1186/s13075-015-0691-5.

Differences in glutamate receptors and inflammatory cell numbers are associated with the resolution of pain in human rotator cuff tendinopathy.

Dean BJ¹, Snelling SJ², Dakin SG³, Murphy RJ⁴, Javaid MK⁵, Carr AJ⁶.

Author information

Abstract

INTRODUCTION:

The relationship between peripheral tissue characteristics and pain symptoms in soft tissue inflammation is poorly understood. The primary aim of this study was to determine immunohistochemical differences in tissue obtained from patients with persistent pain and patients who had become pain-free after surgical treatment for rotator cuff tendinopathy. The secondary aim was to investigate whether there would be differences in glutaminergic and inflammatory gene expression between disease-derived and healthy control cells in vitro.

METHODS:

Supraspinatus tendon biopsies were obtained from nine patients with tendon pain before shoulder surgery and from nine further patients whose pain had resolved completely following shoulder surgery. Histological markers relating to the basic tendon characteristics, inflammation and glutaminergic signalling were quantified by immunohistochemical analysis. Gene expression of glutaminergic and inflammatory markers was determined in tenocyte explants derived from painful rotator cuff tendon tears in a separate cohort of patients and compared to that of explants from healthy control tendons. Dual labelling was performed to identify cell types expressing nociceptive neuromodulators.

RESULTS:

Tendon samples from patients with persistent pain demonstrated increased levels of metabotropic glutamate receptor 2 (mGluR2), kainate receptor 1 (KA1), protein gene product 9.5 (PGP9.5), CD206 (macrophage marker) and CD45 (pan-leucocyte marker) versus pain-free controls ($p < 0.05$). NMDAR1 co-localised with CD206-positive cells, whereas PGP9.5 and glutamate were predominantly expressed by resident tendon cells. These results were validated by in vitro increases in the expression of mGluR2, N-methyl-D-aspartate receptor (NMDAR1), KA1, CD45, CD206 and tumour necrosis factor alpha (TNF- α) genes ($p < 0.05$) in disease-derived versus control cells.

CONCLUSIONS:

We conclude that differences in glutamate receptors and inflammatory cell numbers are associated with the resolution of shoulder pain in rotator cuff tendinopathy, and that disease-derived cells exhibit a distinctly different neuro-inflammatory gene expression profile to healthy control cells.

PMID: 26160609

22 B. INSTABILITY**Factors of instability**

Br J Sports Med. 2015 Jul;49(14):913-22. doi: 10.1136/bjsports-2014-094342. Epub 2015 Apr 21.

Risk factors which predispose first-time traumatic anterior shoulder dislocations to recurrent instability in adults: a systematic review and meta-analysis.

Olds M¹, Ellis R², Donaldson K¹, Parmar P¹, Kersten P³.

Author information

Abstract

BACKGROUND:

Recurrent instability following a first-time anterior traumatic shoulder dislocation may exceed 26%. We systematically reviewed risk factors which predispose this population to events of recurrence.

METHODS:

A systematic review of studies published before 1 July 2014. Risk factors which predispose recurrence following a first-time traumatic anterior shoulder dislocation were documented and rates of recurrence were compared. Pooled ORs were analysed using random-effects meta-analysis.

RESULTS:

Ten studies comprising 1324 participants met the criteria for inclusion. Recurrent instability following a first-time traumatic anterior shoulder dislocation was 39%. Increased risk of recurrent instability was reported in people aged 40 years and under (OR=13.46), in men (OR=3.18) and in people with hyperlaxity (OR=2.68). Decreased risk of recurrent instability was reported in people with a greater tuberosity fracture (OR=0.13). The rate of recurrent instability decreased as time from the initial dislocation increased. Other factors such as a bony Bankart lesion, nerve palsy and occupation influenced rates of recurrent instability.

CONCLUSIONS:

Sex, age at initial dislocation, time from initial dislocation, hyperlaxity and greater tuberosity fractures were key risk factors in at least two good quality cohort studies resulting in strong evidence as concluded in the GRADE criteria. Although bony Bankart lesions, Hill Sachs lesions, occupation, physiotherapy treatment and nerve palsy were risk factors for recurrent instability, the evidence was weak using the GRADE criteria-these findings relied on poorer quality studies or were inconsistent among studies.

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KEYWORDS: Epidemiology; Meta-analysis; Recurrent; Risk factor; Shoulder

PMID: 25900943

25. WRIST AND HAND**Flexor tendon strength**

J Hand Surg Eur Vol. 2015 Jun 26. pii: 1753193415591491.

In vivo flexor tendon forces generated during different rehabilitation exercises.

Edsfeldt S¹, Rempel D¹, Kursa K¹, Diao E¹, Lattanza L².

Author information

Abstract

We measured in vivo forces in the flexor digitorum profundus and the flexor digitorum superficialis tendons during commonly used rehabilitation manoeuvres after flexor tendon repair by placing a buckle force transducer on the tendons of the index finger in the carpal canal during open carpal tunnel release of 12 patients. We compared peak forces for each manoeuvre with the reported strength of a flexor tendon repair.

Median flexor digitorum profundus force (24 N) during isolated flexor digitorum profundus flexion and median flexor digitorum superficialis force (13 N) during isolated flexor digitorum superficialis flexion were significantly higher than during the other manoeuvres. Significantly higher median forces were observed in the flexor digitorum superficialis with the wrist at 30° flexion (6 N) compared with the neutral wrist position (5 N). Median flexor digitorum profundus forces were significantly higher during active finger flexion (6 N) compared with place and hold (3 N).

Place and hold and active finger flexion with the wrist in the neutral position or tenodesis generated the lowest forces; isolated flexion of these tendons generated higher forces along the flexor tendons.

LEVEL OF EVIDENCE: III (controlled trial without randomization).

KEYWORDS: Flexor tendon; force; in vivo; rehabilitation; repair

PMID: 26115682

Stability

J Hand Surg Eur Vol. 2015 Jun 26. pii: 1753193415590390.

The role of proprioception and neuromuscular stability in carpal instabilities.

Hagert E¹, Lluch A², Rein S³.

Author information

Abstract

Carpal stability has traditionally been defined as dependent on the articular congruity of joint surfaces, the static stability maintained by intact ligaments, and the dynamic stability caused by muscle contractions resulting in a compression of joint surfaces. In the past decade, a fourth factor in carpal stability has been proposed, involving the neuromuscular and proprioceptive control of joints. The proprioception of the wrist originates from afferent signals elicited by sensory end organs (mechanoreceptors) in ligaments and joint capsules that elicit spinal reflexes for immediate joint stability, as well as higher order neuromuscular influx to the cerebellum and sensorimotor cortices for planning and executing joint control. The aim of this review is to provide an understanding of the role of proprioception and neuromuscular control in carpal instabilities by delineating the sensory innervation and the neuromuscular control of the carpus, as well as descriptions of clinical applications of proprioception in carpal instabilities.

KEYWORDS: Carpal instability; joint innervation; mechanoreceptors; neuromuscular control; proprioception; wrist

PMID: 26115684

Increasing ROM through the pelvis

J Bodyw Mov Ther. 2015 Jul;19(3):442-6. doi: 10.1016/j.jbmt.2014.11.005. Epub 2014 Nov 11.

Effect of remote after-effects of resistive static contraction of the pelvic depressors on improvement of restricted wrist flexion range of motion in patients with restricted wrist flexion range of motion.

Arai M¹, Shiratani T².

Author information

Abstract

The objective of the study was to compare the effects of remote after-effects of resistive static contraction of the pelvic depressors (RSCPD) with after-effects of static contraction of upper extremity muscles (SCUE) on improvement of the maximal active range of motion (MAROM) for patients with restricted wrist flexion range of motion (ROM) due to upper limb pain and dysfunction. The participants were 10 outpatients with restricted wrist joints. The mean (SD) age was 53.7 (4.4) years (range, 34-81). The subjects performed two exercise protocols (SCUE and RSCPD) in random order. One-way repeated measures ANOVA showed significant main effects in evaluation of the change in MAROM and IEMG activities for different conditions (after rest, after SCUE, and after RSCPD). The remote after-effects of RSCPD, but not those of SCUE, caused significant improvement in MAROM for restricted wrist flexion ROM.

KEYWORDS: Active range of motion; PNF; Pain; Pelvic depressors; Remote after-effect; Resistive static contraction
PMID: 26118515

30 A. IMPINGEMENT**Vulvodynia and impingement**

J Low Genit Tract Dis. 2015 Jul;19(3):253-6. doi: 10.1097/LGT.000000000000108.

Vulvodynia and Concomitant Femoro-Acetabular Impingement: Long-Term Follow-up After Hip Arthroscopy.

Coady D¹, Futterman S, Harris D, Coleman SH.
Author information

Abstract

OBJECTIVE:

We hypothesized that in patients with vulvodynia and femoro-acetabular impingement (FAI), vulvar pain may be generated by the effect of FAI on pelvic floor structures, and treatment with arthroscopy may improve vulvodynia. We also sought to identify characteristics of patients whose vulvodynia improved after arthroscopy.

MATERIALS AND METHODS:

A case series of patients with vulvodynia and FAI underwent physical therapy, and, if hip symptoms did not improve, arthroscopy. Three to 5 years postoperatively, follow-up of outcomes after arthroscopy on vulvodynia was performed using chart review and patient questionnaire. Clinical characteristics and pain scores describing patients with and without vulvodynia improvement were assessed.

RESULTS:

Twenty-six patients with generalized unprovoked vulvodynia (GUV) or clitorodynia underwent arthroscopy for FAI. Six patients, all younger than 30 years, experienced lasting improvement in vulvodynia. Twenty patients, with an older mean age, longer mean vulvodynia duration, and mainly severe pain scores, did not experience vulvar pain improvement after arthroscopy.

CONCLUSION:

This case series describes improved vulvodynia outcomes after arthroscopy for FAI in women younger than 30 years. Patients with vulvar pain and coexisting FAI had GUV and clitorodynia.
PMID:25853634

31. KNEE**Squats power angle**

Scand J Med Sci Sports. 2015 Jun 24. doi: 10.1111/sms.12508.

Deconstructing the power resistance relationship for squats: A joint-level analysis.

Farris DJ^{1,2}, Lichtwark GA¹, Brown NA², Cresswell AG¹.

Author information


Abstract

Generating high leg power outputs is important for executing rapid movements. Squats are commonly used to increase leg strength and power. Therefore, it is useful to understand factors affecting power output in squatting. We aimed to deconstruct the mechanisms behind why power is maximized at certain resistances in squatting. Ten male rowers (age = 20 ± 2.2 years; height = 1.82 ± 0.03 m; mass = 86 ± 11 kg) performed maximal power squats with resistances ranging from body weight to 80% of their one repetition maximum (1RM). Three-dimensional kinematics was combined with ground reaction force (GRF) data in an inverse dynamics analysis to calculate leg joint moments and powers. System center of mass (COM) velocity and power were computed from GRF data. COM power was maximized across a range of resistances from 40% to 60% 1RM. This range was identified because a trade-off in hip and knee joint powers existed across this range, with maximal knee joint power occurring at 40% 1RM and maximal hip joint power at 60% 1RM. A non-linear system force-velocity relationship was observed that dictated large reductions in COM power below 20% 1RM and above 60% 1RM. These reductions were due to constraints on the control of the movement.

KEYWORDS: Joint power; biomechanics; force-velocity; weightlifting

PMID: 26103786

Fat infiltration of VMO**Vastus Medialis Fat Infiltration – A Modifiable Determinant of Knee Cartilage Loss**

Andrew J. Teichtahl, MBBS, B.Physio, PhD, FRACP Anita E. Wluka, MBBS, FRACP, PhD Yuanyuan Wang, MBBS, MD, PhD Pushpika N. Wijethilake, MBBS, MSc, MD Boyd J. Strauss, MBBS, FRACP, PhD Joseph Proietto, MBBS, FRACP, PhD John B. Dixon, MBBS, FRACP, PhD Graeme Jones, MBBS, FRACP, PhD Andrew Forbes, BSc(Hon), MSc, hD Professor Flavia M. Cicuttini, MBBS, FRACP, PhD 

Background

There is growing interest in the role of intramuscular fat and how it may influence clinical outcomes. Vastus medialis (VM) is a functionally important quadriceps muscle that helps to stabilise the knee joint. This longitudinal study examined the determinants of VM fat infiltration and whether VM fat infiltration influenced knee cartilage volume.

Methods

250 participants without any diagnosed arthropathy were assessed at baseline between 2005 and 2008, and 197 participants at follow-up between 2008 and 2010. Ambulatory and sporting activity were assessed and magnetic resonance imaging was used to determine knee cartilage volume and VM fat infiltration.

Results

Age, female gender, BMI and weight were positively associated with baseline VM fat infiltration ($p \leq 0.03$), while ambulatory and sporting activity were negatively associated with VM fat infiltration ($p \leq 0.05$). After adjusting for confounders, a reduction in VM fat infiltration was associated with a reduced annual loss of medial tibial ($\beta = -10\text{mm}^3$; 95% CI -19 to 0 mm^3 ; $p = 0.04$) and patella ($\beta = -18\text{mm}^3$; 95% CI -36 to 0 mm^3 ; $p = 0.04$) cartilage volume.

Conclusion

This community-based study of healthy adults has shown that VM fat infiltration can be modified by lifestyle factors including weight loss and exercise, and reducing fat infiltration in VM has beneficial effect on knee cartilage preservation. The findings suggest that modifying VM fat infiltration via lifestyle interventions may have the potential to reduce the risk of knee OA.

Keywords: obesity, muscle, fat, exercise, knee

32 A. KNEE/ACL**Adolescent slope**

Am J Sports Med. 2015 Jul;43(7):1632-9. doi: 10.1177/0363546515579182.

Increased Lateral Tibial Slope Is a Risk Factor for Pediatric Anterior Cruciate Ligament Injury: An MRI-Based Case-Control Study of 152 Patients.

Dare DM¹, Fabricant PD², McCarthy MM², Rebolledo BJ², Green DW², Cordasco FA², Jones KJ³.

Author information

Abstract

BACKGROUND: Increased posterior tibial slope is associated with increased risk of anterior cruciate ligament (ACL) injury in adults. A similar association has not been rigorously examined in children and adolescents.

PURPOSE: To determine whether alterations in posterior tibial slope are associated with ACL tears in pediatric and adolescent patients and to quantify changes in tibial slope by age.

STUDY DESIGN: Case-control study; Level of evidence, 3.

METHODS: Magnetic resonance imaging (MRI) studies of the knee were reviewed by 3 raters blinded to each other in a 1:1 sample of cases and age- and sex-matched controls. A total of 76 skeletally immature ACL-injured knees were compared with 76 knees without ACL injury; the mean age of the study population was 14.8 ± 1.3 years. The posterior slope of the articular surface of the medial tibial plateau and lateral tibial plateau was measured by use of a method similar to that used in previous studies in adult populations. The current study technique differed in that the slope was measured on the cartilage surface, not the subchondral bone. Comparisons between knees were made with t tests, and Spearman correlation analysis was used to assess changes in tibial slope with advancing age.

RESULTS: Increased slope of the lateral tibial plateau (LTS) was significantly increased in ACL-injured patients compared with controls ($5.7^\circ \pm 2.4^\circ$ vs $3.4^\circ \pm 1.7^\circ$; $P < .001$). There was no statistically significant difference in the slope of the medial tibial plateau (MTS) in the ACL-injured and control knees ($5.4^\circ \pm 2.2^\circ$ vs $5.1^\circ \pm 2.3^\circ$; $P = .42$). There was no difference in LTS between male and female patients (4.46° vs 4.58° ; $P = .75$). Receiver operating characteristic (ROC) analysis of the LTS revealed that a posterior tibial slope cutoff of $>4^\circ$ resulted in a sensitivity of 76% and a specificity of 75% for predicting ACL tears in this cohort. Spearman correlation analysis revealed that MTS and LTS decreased, or flattened, by 0.31° ($P = .028$, correlation coefficient $r = -0.18$) and 0.37° ($P = .009$, correlation coefficient $r = -0.21$) per year, respectively, as adolescents age.

CONCLUSION: The LTS was significantly associated with an increased risk of ACL injury in pediatric and adolescent patients. The MTS was not associated with risk of injury. Posterior slope was found to decrease, or flatten, with age. A cutoff of $>4^\circ$ for the posterior slope of the lateral compartment is 76% sensitive and 75% specific for predicting ACL injury in this cohort. The LTS did not influence the incidence of ACL injury differently between sexes.

KEYWORDS: MRI; injury prevention; pediatric ACL; tibial plateau geometry

PMID: 26129958

Meniscal status

Am J Sports Med. 2015 Jul;43(7):1616-22. doi: 10.1177/0363546515578838. Epub 2015 Apr 21.

Association of Meniscal Status, Lower Extremity Alignment, and Body Mass Index With Chondrosis at Revision Anterior Cruciate Ligament Reconstruction.

Brophy RH, Haas AK, Huston LJ, Nwosu SK; MARS Group, Wright RW.
Collaborators (95)

Abstract

BACKGROUND:

Knees undergoing revision anterior cruciate ligament reconstruction (rACL) have a high prevalence of articular cartilage lesions.

HYPOTHESIS:

The prevalence of chondrosis at the time of rACL is associated with meniscal status and lower extremity alignment.

STUDY DESIGN:

Cross-sectional study; Level of evidence, 3.

METHODS:

Data from the prospective Multicenter ACL Revision Study (MARS) cohort were reviewed to identify patients with preoperative lower extremity alignment films. Lower extremity alignment was defined by the weightbearing line (WBL) as a percentage of the tibial plateau width, while the chondral and meniscal status of each weightbearing compartment was recorded at the time of surgery. Multivariable proportional odds models were constructed and adjusted for relevant factors to examine which risk factors were independently associated with the degree of medial and lateral compartment chondrosis.

RESULTS:

The cohort included 246 patients with lower extremity alignment films at the time of rACL. Mean (\pm SD) patient age was 26.9 ± 9.5 years and body mass index (BMI) was 26.4 ± 4.6 . The medial compartment had more chondrosis (grade 2/3, 42%; grade 4, 6.5%) than did the lateral compartment (grade 2/3, 26%; grade 4, 6.5%). Disruption of the meniscus was noted in 35% of patients on the medial side and 16% in the lateral side. The mean WBL was 0.43 ± 0.13 . Medial compartment chondrosis was associated with BMI ($P = .025$), alignment ($P = .002$), and medial meniscal status ($P = .001$). None of the knees with the WBL lateral to 0.625 had grade 4 chondrosis in the medial compartment. Lateral compartment chondrosis was significantly associated with age ($P = .013$) and lateral meniscal status ($P < .001$). Subjects with "intact" menisci were found to decrease their odds of having chondrosis by 64% to 84%.

CONCLUSION:

The status of articular cartilage in the tibiofemoral compartments at the time of rACL is related to meniscal status. Lower extremity alignment and BMI are associated with medial compartment chondrosis.

KEYWORDS: ACL reconstruction; meniscectomy; meniscus; osteoarthritis; valgus; varus

PMID: 25899434

Knee brace

Knee. 2015 Jun 24. pii: S0968-0160(15)00110-6. doi: 10.1016/j.knee.2015.05.006.

Effects of an unloader knee brace on knee-related symptoms and function in people with post-traumatic knee osteoarthritis after anterior cruciate ligament reconstruction.

Hart HF¹, Crossley KM², Ackland DC³, Cowan SM⁴, Collins NJ³.

Author information

Abstract

BACKGROUND AND PURPOSE:

This pilot study evaluated the immediate and four-week effects of an unloader knee brace on knee-related symptoms and performance-based function in people with knee osteoarthritis (OA) after anterior cruciate ligament reconstruction (ACLR).

METHODS:

Individuals with knee OA, five to 20 years post-ACLR, were recruited for two within-subject randomized studies: immediate effects (n=18) and four-week effects (n=11). Patient-reported knee-related symptoms (knee pain, perceived task difficulty, confidence, stability) were assessed during hop for distance and step-down tests, while performance-based function was assessed with hopping distance under three conditions: i) no brace; ii) unadjusted brace (sagittal plane support); and iii) adjusted brace (sagittal plane support with varus/valgus readjustment). Participants in the four-week brace effect study were randomized to wear the unadjusted or adjusted brace for four weeks after baseline (no brace) testing, and repeated tests in their allocated brace at four-week follow-up. Friedman tests evaluated differences between the three brace conditions for each variable for the immediate brace effect study ($p < 0.05$), and Wilcoxon signed-rank tests evaluated differences between no brace and allocated brace for the four-week study ($p < 0.05$).

RESULTS:

The adjusted and unadjusted unloader braces produced immediate improvements in knee confidence during hop for distance, and knee pain during step-down. Following the four-week brace intervention, the allocated brace improved knee confidence, perceived task difficulty and stability during hop for distance; and knee pain, perceived task difficulty, confidence, and stability during step-down.

CONCLUSIONS:

The unloader knee brace, adjusted or unadjusted, has the potential to improve knee-related symptoms associated with knee OA after ACLR.

KEYWORDS: Function; Knee brace; Osteoarthritis; Rehabilitation; Symptoms

PMID: 26117486

33. MENISCUS

Cartilage repairs

Knee. 2015 Jun 23. pii: S0968-0160(15)00129-5. doi: 10.1016/j.knee.2015.06.001.

The surgical management of symptomatic articular cartilage defects of the knee: Consensus statements from United Kingdom knee surgeons.

Biant LC¹, McNicholas MJ², Sprowson AP³, Spalding T³.

Author information

Abstract

BACKGROUND:

Symptomatic articular cartilage and osteochondral lesions in the knee are an important source of pain and disability, and may lead to osteoarthritis. There are several surgical treatments for the condition, with emerging data evaluating their clinical effectiveness and longer-term clinical outcome. Health care providers have challenged the indications for the use of expensive techniques and have been reluctant to authorize funding or reimbursement.

METHODS:

The UK Cartilage Consensus Meeting was convened, involving clinicians in the UK with experience in the treatment options, decision-making and evaluation of the literature on the subject.

RESULTS:

This paper reports the consensus of attendees regarding appropriate surgical options for managing articular cartilage defects in the knee, validated by a large cohort of surgeons in the UK who are active in the field of articular cartilage surgery.

CONCLUSIONS:

An evidence-based United Kingdom Consensus of 104 clinicians on the surgical management of symptomatic articular cartilage lesions of the knee. Several techniques may be suitable for small defects. Cell therapy has the best evidence-based outcomes for larger defects. Responsible innovation, pooled data collection and improvement in physical therapies are important. Surgeons should have access to the most appropriate evidence-based therapies for first-line treatment.

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KEYWORDS: Articular cartilage; Cartilage repair; Consensus; Knee

PMID: 26116040

Tears with fx

J Orthop Trauma. 2015 Jul;29(7):322-4. doi: 10.1097/BOT.0000000000000290.

Operatively Treated Meniscal Tears Associated With Tibial Plateau Fractures: A Report on 661 Patients.

Stahl D¹, Serrano-Riera R, Collin K, Griffing R, Defenbaugh B, Sagi HC.
Author information

Abstract

OBJECTIVE:

To describe the incidence and common patterns of lateral meniscal tears detected intraoperatively and surgically treated based on tibial plateau fracture patterns.

DESIGN:

Retrospective analysis of a prospective database.

SETTING:

Level One Regional Trauma Center.

METHODS:

All tibial plateau fractures in skeletally mature patients treated operatively between 2002 and 2011 were included. All operative notes and radiographs were reviewed to determine type of tibial plateau fracture, mechanism of injury, intraoperative detection of a lateral meniscal tear, and operative repair/partial resection of the meniscus itself. Patients were excluded if there was no mention of a submeniscal arthrotomy, if fracture stabilization was performed percutaneously, or if the fracture was an isolated medial condyle fracture. Statistical analysis was performed using χ analysis and Fisher exact test to determine the overall incidence of lateral meniscal tears and any correlation between meniscal tear and fracture pattern.

RESULTS:

A total of 602 patients were included in the final analysis. Lateral meniscal tears requiring operative repair were detected intraoperatively in 179 patients (30%). This could be broken down into 12% for pure lateral split fractures, 45% for split depression fractures ($P < 0.001$), 18% for pure depression fractures, 22% for bicondylar fractures, and 26% for intraarticular plus shaft fractures. Lateral meniscal tears associated with a split depression fracture pattern were most commonly peripheral rim tears (83%). For all other fracture patterns, the type of meniscal injury was evenly distributed between peripheral and radial tear. Young males demonstrated a statistically higher rate of lateral meniscal tears (33%).

CONCLUSIONS:

In our series, the incidence of a lateral meniscal tear detected intraoperatively requiring repair was 30%. These tears occurred more frequently in young males, with peripheral rim tears most commonly associated with split depression fractures. Based on our data, we believe that preoperative imaging for meniscal injury overstates the true incidence of meniscal tears requiring operative intervention.

LEVEL OF EVIDENCE:

Prognostic Level IV. See Instructions for Authors for a complete description of levels of evidence.

PMID: 25635356

34. PATELLA**Management of PFP**

Br J Sports Med. 2015 Jul;49(14):923-34. doi: 10.1136/bjsports-2014-093637. Epub 2015 Feb 25.

The 'Best Practice Guide to Conservative Management of Patellofemoral Pain': incorporating level 1 evidence with expert clinical reasoning.

Barton CJ¹, Lack S², Hemmings S², Tufail S², Morrissey D³.

Author information

Abstract

IMPORTANCE: Patellofemoral pain (PFP) is both chronic and prevalent; it has complex aetiology and many conservative treatment options.

OBJECTIVE: Develop a comprehensive contemporary guide to conservative management of PFP outlining key considerations for clinicians to follow.

DESIGN: Mixed methods.

METHODS: We synthesised the findings from six high-quality systematic reviews to September 2013 with the opinions of 17 experts obtained via semistructured interviews. Experts had at least 5 years clinical experience with PFP as a specialist focus, were actively involved in PFP research and contributed to specialist international meetings. The interviews covered clinical reasoning, perception of current evidence and research priorities.

RESULTS: Multimodal intervention including exercise to strengthen the gluteal and quadriceps musculature, manual therapy and taping possessed the strongest evidence. Evidence also supports use of foot orthoses and acupuncture. Interview transcript analysis identified 23 themes and 58 subthemes. Four key over-arching principles to ensure effective management included-(1) PFP is a multifactorial condition requiring an individually tailored multimodal approach. (2) Immediate pain relief should be a priority to gain patient trust. (3) Patient empowerment by emphasising active over passive interventions is important. (4) Good patient education and activity modification is essential. Future research priorities include identifying risk factors, testing effective prevention, developing education strategies, evaluating the influence of psychosocial factors on treatment outcomes and how to address them, evaluating the efficacy of movement pattern retraining and improving clinicians' assessment skills to facilitate optimal individual prescription.

CONCLUSIONS AND RELEVANCE: Effective management of PFP requires consideration of a number of proven conservative interventions. An individually tailored multimodal intervention programme including gluteal and quadriceps strengthening, patellar taping and an emphasis on education and activity modification should be prescribed for patients with PFP. We provide a 'Best Practice Guide to Conservative Management of Patellofemoral Pain' outlining key considerations.

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KEYWORDS: Knee; Lower extremity; Sports physiotherapy

PMID: 25716151

Taping and PFP

J Sci Med Sport. 2015 Jul;18(4):388-93. doi: 10.1016/j.jsams.2014.07.009. Epub 2014 Jul 24.

Effects of femoral rotational taping on pain, lower extremity kinematics, and muscle activation in female patients with patellofemoral pain.

Song CY¹, Huang HY¹, Chen SC², Lin JJ³, Chang AH⁴.

Author information

Abstract

OBJECTIVES:

To explore the hip and knee joint kinematics as well as muscle activation between participants with patellofemoral pain syndrome (PFPS) and controls, and to investigate the immediate effect of proximal femoral rotational taping on pain, joint kinematics, and muscle activation during single-leg squat (SLS).

DESIGN:

Cross-sectional study.

METHODS:

Sixteen female participants with PFPS, and eight healthy female controls participated. Three-dimensional hip and patellar kinematics measured by electromagnetic tracking system, hip (gluteus maximus and gluteus medius) and thigh (rectus femoris) muscle activation measured by EMG, and subjective report of pain were recorded during SLS in three randomized conditions of no tape, sham taping, and femoral rotational taping with kinesiotape.

RESULTS:

Without taping, compared with controls, PFPS group had increased hip adduction angle ($23.5\pm 11.3^\circ$ vs. $15.8\pm 7.3^\circ$) during SLS. Additionally, PFPS group exhibited lesser rectus femoris activity during the initial 0-15° of SLS. Application of both femoral rotational and sham tapes reduced pain for PFPS group. Compared with no tape or sham tape, femoral rotational tape significantly shifted the patella into more posterior ($1.59\pm 0.83\text{cm}$ in no tape vs. $1.54\pm 0.87\text{cm}$ in sham tape vs. $1.32\pm 0.72\text{cm}$ in femoral rotational tape) and distal ($-2.49\pm 0.95\text{cm}$ vs. $-2.64\pm 0.80\text{cm}$ vs. $-3.11\pm 0.77\text{cm}$) positions in the PFPS group.

CONCLUSIONS:

Femoral rotational taping could alter patellofemoral kinematics and decrease pain in treatment of young female participants with PFPS.

KEYWORDS: Anterior knee pain; Hip; Medial collapse; Patella; Single-leg squat

PMID: 25127530

Muscle atrophy

J Orthop Sports Phys Ther. 2015 Jun 25:1-22.

Atrophy of the Quadriceps is Not Isolated to Vastus Medialis Oblique in Individuals With Patellofemoral Pain.

Giles LS¹, Webster KE, McClelland JA, Cook J.
Author information

Abstract

Study Design Cross-sectional.

Objectives To determine if quadriceps atrophy was present in people with patellofemoral pain (PFP), and whether vastus medialis oblique (VMO) was selectively involved. Background It has been suggested that selective atrophy of VMO relative to vastus lateralis could be associated with PFP, despite a lack of studies investigating individual quadriceps muscle size in individuals with PFP.

Methods The quadriceps muscle size of 35 participants with PFP (22 with unilateral and 13 with bilateral symptoms) and 35 asymptomatic control participants matched for age and gender were measured using real-time ultrasound. The thickness of the VMO, vastus lateralis, vastus medialis, rectus femoris, and vastus intermedius were measured. Paired samples t-tests were used to compare muscle thickness between limbs in those with unilateral PFP, and independent t-tests were used to compare muscle thickness between groups with and without PFP.

Results In those with unilateral PFP, the thickness of all portions of the quadriceps muscle was statistically smaller in the symptomatic compared to the asymptomatic limb: VMO ($P = .038$), vastus medialis ($P < .001$), vastus lateralis ($P = .005$), vastus intermedius ($P = .013$), rectus femoris ($P = .045$). No difference was found for the thickness of any portions of the quadriceps in people with PFP compared to asymptomatic controls: VMO ($P = .148$), vastus medialis ($P = .474$), vastus lateralis ($P = .122$), vastus intermedius ($P = .466$), rectus femoris ($P = .508$).

Conclusion Atrophy of all portions of the quadriceps muscles is present in the affected limb of people with unilateral PFP. There was no atrophy of the quadriceps in individuals with PFP compared to those without pathology. Selective atrophy of VMO relative to vastus lateralis was not identified in people with PFP. J Orthop Sports Phys Ther, Epub 25 Jun 2015.
doi:10.2519/jospt.2015.5852.

KEYWORDS: VMO; anterior knee pain; chondromalacia; quadriceps femoris; ultrasound imaging
PMID: 26110547

35. KNEE/TOTAL**Skiing and TKR**

Scand J Med Sci Sports. 2015 Aug;25 Suppl 2:26-32. doi: 10.1111/sms.12451.

Alpine Skiing With total knee ArthroPlasty (ASWAP): muscular adaptations.

Rieder F1, Kösters A1, Wiesinger HP1, Dorn U2, Hofstaedter T2, Fink C3, Seynnes OR4, Müller E1.

Author information**Abstract**

This study investigated the effectiveness of recreational skiing as an intervention to improve quadriceps muscle architecture, strength, and antagonistic co-activation in patients with unilateral total knee arthroplasty (TKA). Hence, patients with TKA were assigned to either an intervention group (IG) or control group (CG). The IG completed a 12-week guided skiing program whereas the CG was instructed not to change their daily routines for the same period and was not allowed to ski. Before, after the intervention/after an 8-week retention period m. rectus femoris (RF) cross-sectional area (CSA), m. vastus lateralis muscle thickness, fascicle length, and pennation angle were measured with ultrasonography, while isometric (90° knee angle) knee extension, flexion torque and m. biceps femoris co-activation were assessed on an isokinetic dynamometer in 26 patients.

There were significant and stable increases in RF CSA for the operated (10%; $P < 0.05$) and non-operated leg (12%; $P < 0.01$) after the training period in the IG whereas no changes were observed for the CG (all $P > 0.05$). There were no significant effects for other parameters (all $P > 0.05$). Overall, the skiing intervention was successful in increasing muscle mass in TKA older patients.

KEYWORDS: Strength; aging; muscle weakness; sarcopenia

37. OSTEOARTHRITIS/KNEE**OA and balance****Factors associated with dynamic balance in people with knee osteoarthritis**

Archives of Physical Medicine and Rehabilitation, 07/15/2015 Takacs J, et al.

The aim of this study is to identify potential neuromuscular factors associated with dynamic balance in individuals with knee osteoarthritis (OA). These results suggest that muscle strength and, to a lesser extent, knee joint range of motion are important factors associated with dynamic balance as measured by the CB&M and should be considered in dynamic balance interventions.

Methods

- A cross-sectional observational study. Backwards stepwise multiple linear regression was used to identify factors associated with dynamic balance in two statistical models.
- Fifty-two individuals aged 50 and older with osteoarthritic changes on radiograph participated.
- Dynamic balance was assessed using the Community Balance and Mobility Scale (CB&M), and potentially modifiable neuromuscular factors associated with dynamic balance were measured, including: sum of concentric and eccentric lower extremity muscle strength, two quadriceps-hamstrings muscle strength ratios, knee joint proprioception, anticipatory postural control velocity, and knee joint range of motion.

Results

- The first model for explaining variance in CB&M scores consisted of eccentric lower extremity muscle strength and knee joint range of motion as factors.
- The model containing these two variables explained 50% of the variance in CB&M scores.

The second model adjusted for descriptive variables including age, BMI and knee pain, and contained only the neuromuscular variable eccentric lower extremity muscle strength.

40. ANKLE SPRAINS AND INSTABILITY

Sprains and impact on upper extremities

J Foot Ankle Res. 2015 Jun 18;8:23. doi: 10.1186/s13047-015-0082-9. eCollection 2015.

The correlation between postural control and upper limb position sense in people with chronic ankle instability.

Springer S¹, Gottlieb U², Moran U², Verhovsky G², Yanovich R³.
Author information

Abstract

BACKGROUND:

Chronic ankle instability (CAI) is attributed to functional instability driven by insufficient proprioception. However, it is not clear whether the deficits are related to global impaired performance or to specific decrease in ankle motor-control. The aim of this study was to assess the correlation between lower limb postural control and upper limb position sense among people with CAI, in order to further explore the function of the central neural control in people with CAI.

METHODS:

Fourteen participants (10 males, 4 females) with self-reported CAI and 14 age- and gender-matched, healthy controls participated in this study. Each participant completed single-limb stance postural control tests and shoulder position sense tests. The Overall Stability Index (OSI) was used as a measure of postural stability. The average of the absolute error score (AES) was calculated as a measure of shoulder position sense. Pearson correlations between the scores of the four body sites -lower limb postural stability (preferred/non-preferred), shoulder (preferred/non-preferred) were determined separately for each group.

RESULTS:

In the control group, significant correlations were found between the OSI score of the right and left ankles ($r = 0.887$, $p < 0.001$), between the AES of the right and left shoulders ($r = 0.656$, $p = 0.011$), as well as between the OSI score and the AES of the non-preferred side ($r = 0.649$, $p = 0.012$). In the CAI group, significant correlation was found only between the OSI score at both ankles ($r = 0.6$, $p = 0.002$).

CONCLUSIONS:

Individuals with CAI demonstrated lower limb postural control and upper limb position sense similar to those shown in healthy controls. However, correlations between the lower and upper limbs were observed only in the healthy controls. Clinicians can use this information and employ activities that focus on coordinating the upper and lower extremities when designing neuromuscular control training programs for people with CAI.

KEYWORDS: Ankle-sprain; Chronic ankle instability; Proprioception
PMID:26097509

41 B. COMPARTMENT SYNDROME**Measurements**

J Orthop Trauma. 2015 Jul;29(7):316-21. doi: 10.1097/BOT.0000000000000317.

Interobserver Variability in the Measurement of Lower Leg Compartment Pressures.

Large TM¹, Agel J, Holtzman DJ, Benirschke SK, Krieg JC.

Author information

Abstract

OBJECTIVES:

To determine whether interobserver technical variations and errors in the measurement of compartment pressures may affect measurement accuracy.

METHODS:

Four above-knee cadaveric specimens were used to create a consistent model of lower leg compartment syndrome. Thirty-eight physicians examined the limbs and measured 4 compartment pressures using the Intra-Compartmental Pressure Monitor (Stryker Orthopaedics). They were observed for correct assembly and use of the monitor. Measurements obtained were compared with known pressures.

RESULTS:

Of the total number of compartment measurements, 31% were made using the correct technique, 39% were made with lesser errors in technique, and 30% were made with catastrophic errors. Only 60% of measurements made with the correct technique were within 5 mm Hg of the standard pressure. Accuracy dropped to 42% for measurements taken with small errors in technique and 22% when a catastrophic error was committed.

CONCLUSIONS:

Variations in use of a commercially available pressure monitor exist, and errors are common. Proper use improved accuracy, but even with proper technique, 40% of the measurements were >5 mm Hg from the actual pressure. Based on our data, measurement accuracy with this device should be questioned and viewed within a range. Regular review and education of technique is strongly recommended. PMID: 25756911

Development after fx

J Orthop Trauma. 2015 Jul;29(7):312-5. doi: 10.1097/BOT.0000000000000253.

Development of Compartment Syndrome Negatively Impacts Length of Stay and Cost After Tibia Fracture.

Crespo AM¹, Manoli A 3rd, Konda SR, Egol KA.
Author information

Abstract

OBJECTIVES:

To quantify the impact of compartment syndrome in the setting of tibial shaft fracture on hospital length of stay (LOS) and total hospital charges.

DESIGN:

Retrospective case-control study.

SETTING:

All New York State hospital admissions from 2001 to 2011, as recorded by the New York Statewide Planning and Research Cooperative System database.

PATIENTS:

Thirty three thousand six hundred twenty-nine inpatients with isolated open or closed fractures of the tibia and/or fibula (AO/OTA 41-43). Six hundred ninety-two patients developed a compartment syndrome in the setting of tibia fracture. All patients were filtered to ensure none had other complications or medical comorbidities that would increase LOS or total hospital charges.

INTERVENTION:

Fasciotomy and delayed closure in patients who developed a compartment syndrome.

MAIN OUTCOME MEASURE:

Hospital LOS (days) and total inflation-adjusted hospital charges.

RESULTS:

A total of 33,629 patients with tibial shaft fracture were included in the study. There were 32,937 patients who did not develop a compartment syndrome. For this group, the mean LOS was 6 days, and the mean inflation-adjusted hospital charges were \$34,000. Patients who developed compartment syndrome remained in-house for an average of 14 days with average charges totaling \$79,000. These differences were highly significant for both lengths of stay and hospital charges ($P < 0.001$).

CONCLUSIONS:

Besides the obvious physical detriment experienced by patients with compartment syndrome, there is also a significant economic impact to the healthcare system. Compartment syndrome after a tibial fracture more than doubles LOS and total hospital charges. These findings highlight the need for a standardized care algorithm aimed toward efficiently and adequately treating acute compartment syndrome. Such an algorithm would optimize cost of care and presumably decrease LOS.

PMID: 25463427

45 B. MANUAL THERAPY CERVICAL**Cranial manip in LBP relaxation**

BMC Complement Altern Med. 2015 Jul 13;15:223. doi: 10.1186/s12906-015-0732-2.

Immediate changes in electroencephalography activity in individuals with nonspecific chronic low back pain after cranial osteopathic manipulative treatment: study protocol of a randomized, controlled crossover trial.

Martins WR¹, Diniz LR², Blasczyk JC³, Lagoa KF⁴, Thomaz S⁵, Rodrigues ME⁶, de Oliveira RJ⁷, Bonini-Rocha AC⁸.

Author information

Abstract

BACKGROUND:

Osteopathic medicine is based on a diagnostic and therapeutic system to treat tissue mobility/motility dysfunctions in general, using different approaches (depending on the target tissue) known as osteopathic manipulative treatment. Among the available techniques those ones addressed to the cranial field are the most questioned because of the lack of scientific evidence; but the compression of the 4th ventricle technique has been largely studied in clinical trials. Studies have shown that the technique may affect both central and autonomous nervous system, modulating some reflexes (Traube-Hering baro signal), and modifying brain cortex electrical activity through central sensitization in subjects with chronic low back pain. Thus, investigators hypothesize that the compression of the 4th ventricle may modulate peak alpha frequency (electroencephalographic assessment) and promote physical relaxation in subjects in vigil.

METHODS/DESIGN:

A randomized, controlled crossover trial with blinded assessor was designed to test the hypothesis. A total of 81 participants will be assigned to three treatment conditions, with seven days of washout: (I) compression of the 4th ventricle; (II) sham compression of the fourth ventricle; (III) control (no intervention). The (I) power amplitude and the (II) frequencies of the dominant peak in the alpha band will be the primary outcome measures of the study. All participants will be recruited at the Outpatient Rehabilitation Service of the University Hospital of Brasília - University of Brasília. All the electroencephalographic exams will be conducted by a blinded assessor.

DISCUSSION:

The investigators hypothesize that patients with chronic low back pain submitted to the technique would have the peak alpha frequency modulated and, thus, would experience physical relaxation.

PMID: 26165865

45 D. MANUAL THERAPY EXTREMITIES**Shoulder acute MWM**

J Manipulative Physiol Ther. 2015 Jun 19. pii: S0161-4754(15)00066-4. doi: 10.1016/j.jmpt.2015.04.003.

Efficacy of Hand Behind Back Mobilization With Movement for Acute Shoulder Pain and Movement Impairment: A Randomized Controlled Trial.

Satpute KH¹, Bhandari P², Hall T³.
Author information

Abstract

OBJECTIVE:

The aim of this study was to investigate the effects of hand-behind-back (HBB) Mulligan mobilization with movement (MWM) techniques on acute shoulder pain, impairment, and disability.

METHODS:

This double-blind, randomized, controlled trial recruited 44 patients with acute shoulder pain and movement impairment presenting to an Indian general hospital. Participants were allocated to receive either MWM and exercise/hot pack (n = 22) or exercise/hot pack alone (n = 22). The average duration of symptoms was 4.1 and 4.7 weeks in the exercise and MWM groups, respectively. The primary outcome was HBB range of motion (ROM). Secondary variables were shoulder internal rotation ROM, pain intensity score, and shoulder disability identified by the shoulder pain and disability index. All variables were evaluated by a blinded assessor before and immediately after 9 treatment sessions over 3 weeks.

RESULTS:

Paired t tests revealed that both groups demonstrated statistically significant improvements (P < .001) with large effect sizes for all variables. However, for all variables, the MWM-with-exercise group showed significantly greater improvements (P < .05) than the exercise group. Hand-behind-back ROM showed a mean difference of 9.31° (95% confidence interval, 7.38-11.27), favoring greater improvement in the MWM-with-exercise group.

CONCLUSIONS:

In this study, the outcomes of patients with acute shoulder pain and disability receiving shoulder HBB MWM with exercise improved greater than those receiving exercise/hot packs alone.

KEYWORDS: Articular; Musculoskeletal Manipulations; Pain; Range of Motion; Shoulder
PMID: 26099206

MT for LBP

Med. Sci. 2015, 3(3), 55-63; doi:10.3390/medsci3030055

Efficacy of Manual Therapy versus Conventional Physical Therapy in Chronic Low Back Pain Due to Lumbar Spondylosis. A Pilot Study

Arti Sharma , Khalid Alahmari and Irshad Ahmed *

Department of Medical Rehabilitation Sciences, College of Applied Medical Science, King Khalid University, Abha 61321, Saudi Arabia; E-

Objectives: The objective of this work was to compare the efficacy of Maitland mobilization and conventional physical therapy on pain response, range of motion (ROM) and functional ability in patients with chronic low back pain due to lumbar spondylosis.

Methods: A total sample of 30 subjects (40–70 years of age) with complaints of slow insidious onset of low back pain (LBP), with or without radiation not less than three months duration and decrease ROM were randomly assigned to: group-I, Maitland mobilization and lumbar stabilization exercises; group-II conventional physical therapy (traction, strengthening, stretching exercises.) and outcomes were assessed for dependent variables.

Results: There is statically a significant difference between pre and post measurement readings with time ($p = 0.00$) and between groups ($p < 0.05$) with respect to pain and function, but, with respect to ROM readings, showed statistical significance with time ($p = 0.00$) and no significance between groups ($p > 0.05$), indicating manual therapy group-I is improving faster and better than conventional physical therapy group-II.

Conclusion: Our results showed that manual therapy interventions are more effective in managing low back pain, and function and range of motion of the lumbar spine than conventional physical therapy treatment.

Keywords: maitland; mobilization; exercise; traction; low back pain

46 B. LOWER LIMB NEUROMOILIZATION**Slump sitting test**

J Orthop Sports Phys Ther. 2015 Jun 24:1-28.

Diagnostic Accuracy of the Slump Test for Identifying Neuropathic Pain in the Lower Limb.

Urban LM¹, MacNeil BJ.
Author information

Abstract

Study Design Diagnostic accuracy study with non-consecutive enrollment. **Objectives** Assess diagnostic accuracy of the slump test for neuropathic pain (NeP) in those with low to moderate levels of chronic low back pain (LBP). Determine whether accuracy of the slump test improves by adding anatomical or qualitative pain descriptors. **Background** NeP has been linked with poor outcomes likely due to inadequate diagnosis which precludes treatment specific for NeP. Current diagnostic approaches are time consuming or lack accuracy. **Methods** A convenience sample of 21 individuals with LBP with or without radiating leg pain was recruited. A standardized neurosensory examination was used to determine the reference diagnosis for NeP. Afterwards, the slump test was administered to all participants. Reports of pain location and quality produced during the slump test were recorded. **Results** The neurosensory examination designated 11 of the 21 participants with LBP/sciatica as having NeP. The slump test displayed high sensitivity (0.91), moderate specificity (0.70), a positive likelihood ratio of 3.03, and a negative likelihood ratio of 0.13. Adding the criterion of pain below the knee significantly increased specificity to 1.00 (positive likelihood ratio = 11.9). Pain quality descriptors did not improve diagnostic accuracy. **Conclusion** The slump test was highly sensitive in identifying NeP within the study sample. Adding a pain location criterion improved specificity.

Combining the diagnostic outcomes was very effective in identifying all those without NeP and half of those with NeP. Limitations arising from the small and narrow spectrum of participants with LBP/sciatica sampled within the study prevent application of the findings to a wider population. **Level of Evidence** Diagnosis, level 3b. J Orthop Sports Phys Ther, Epub 24 Jun 2015. doi:10.2519/jospt.2015.5414.

KEYWORDS: neurodynamic testing; sensitivity; specificity
PMID: 26107044

56. ATHLETICS**Upper body warm ups and enhanced performance**

Br J Sports Med. 2015 Jul;49(14):935-42. doi: 10.1136/bjsports-2014-094228. Epub 2015 Feb 18.

A systematic review of the effects of upper body warm-up on performance and injury.

McCrary JM¹, Ackermann BJ¹, Halaki M².

Author information

¹School of Medical Sciences, Sydney Medical School, The University of Sydney, Sydney, New South Wales, Australia.

²Discipline of Exercise and Sport Science, The University of Sydney, Sydney, New South Wales, Australia.

Abstract**PURPOSE:**

This systematic review was conducted to identify the impact of upper body warm-up on performance and injury prevention outcomes.

METHODS:

Web of Science, MEDLINE, SPORTDiscus, PsycINFO and Cochrane databases were searched using terms related to upper extremity warm-up. Inclusion criteria were English language randomised controlled trials from peer-reviewed journals in which investigation of upper body warm-up on performance and injury prevention outcomes was a primary aim. Included studies were assessed for methodological quality using the PEDro scale. A wide variety of warm-up modes and outcomes precluded meta-analysis except for one group of studies. The majority of warm-ups were assessed as having 'positive', 'neutral', 'negative' or 'specific' effects on outcomes.

RESULTS:

Thirty-one studies met the inclusion criteria with 21 rated as having 'good' methodological quality. The studies investigated a total of 25 warm-up modes and 43 outcome factors that could be grouped into eight mode and performance outcome categories. No studies of upper body warm-up effects on injury prevention were discovered.

CONCLUSIONS:

Strong research-based evidence was found for the following: high-load dynamic warm-ups enhance power and strength performance; warm-up swings with a standard weight baseball bat are most effective for enhancing bat speed; short-duration static stretching warm-up has no effect on power outcomes; and passive heating/cooling is a largely ineffective warm-up mode. A clear knowledge gap in upper body warm-up literature is the lack of investigation of injury prevention outcomes.

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KEYWORDS: Prevention; Review; Sports & exercise medicine; Upper extremity

PMID: 25694615

58. RUNNING**Endurance and increase anti-inflammatory cells**

Int J Sports Med. 2015 Jun 3.

Increased Circulating Anti-inflammatory Cells in Marathon-trained Runners.

Rehm K1, Sunesara I2, Marshall GD1.

Author information**Abstract**

Exercise training can alter immune function. Marathon training has been associated with an increased susceptibility to infectious diseases and an increased activity of inflammatory-based diseases, but the precise mechanisms are unknown. The purpose of this study was to compare levels of circulating CD4 + T cell subsets in the periphery of marathon-trained runners and matched non-marathon controls. 19 recreational marathoners that were 4 weeks from running a marathon and 19 demographically-matched healthy control subjects had the percentage of CD4 + T cell subpopulations (T helper 1, T helper 2, T helper 1/T helper 2 ratio, regulatory T cells, CD4+IL10+, and CD4+TGFβ+ (Transforming Growth Factor-beta) measured by flow cytometry. Marathon-trained runners had significantly less T helper 1 and regulatory T cells and significantly more T helper 2, CD4 + IL10 + , and TGFβ + cells than the control subjects.

The alterations in the percentage of T helper 1 and T helper 2 cells led to a significantly lower T helper 1/T helper 2 ratio in the marathon-trained runners. These data suggest that endurance-based training can increase the number of anti-inflammatory cells. This may be a potential mechanism for the increased incidence of both infectious and inflammatory diseases observed in endurance athletes.

59. PAIN**Defensiveness and chronic pain**

Pain Pract. 2015 Jul 16. doi: 10.1111/papr.12337.

Influence of Defensiveness on Disability in a Chronic Musculoskeletal Pain Population.

Franklin ZC¹, Smith NC¹, Fowler NE¹.

Author information

Abstract

OBJECTIVE:

This study aimed to identify the following: (1) the proportion of the defensive high-anxious personality type in a chronic pain population; (2) whether personality type affects the relationships between cognitive factors and disability.

METHOD:

Sixty patients with chronic musculoskeletal pain, referred to a hospital for treatment, completed questionnaires assessing defensiveness, trait anxiety, pain intensity, disability, depression, catastrophizing, self-efficacy, and kinesiophobia. Personality type was assessed using the State-Trait Anxiety Inventory and the Marlowe-Crowne Social Desirability Scale.

RESULTS:

Within the defensive high-anxious group, lower levels of self-efficacy, and high levels of depression and catastrophizing most strongly predicted perceptions of disability. Interestingly, the cognitive variables failed to significantly predict disability for individuals lower in anxiety and defensiveness; however, pain intensity did have a greater effect, explaining 36% of the variance.

CONCLUSIONS:

The interaction between defensiveness and anxiety plays an important role in patients' perceptions of, and outcomes from, chronic pain. Differentiating the defensive high-anxious group revealed different patterns of relationship between a range of cognitive factors and disability. This highlights the necessity of assessing personality characteristics that include defensiveness in order to identify those individuals who may be more vulnerable to cognitive factors influencing their perceptions of disability. If personality type is identified as a predictor of poor adjustment, interventions could be customized to the unique needs of this group (eg. high defensive and anxious individuals).

KEYWORDS: chronic pain; defensive high-anxious; disability; musculoskeletal pain; personality type

PMID: 26179825

Central sensitization syndromes

Psychosocial Factors and Central Sensitivity Syndromes**Authors:** M. Adams, Leah; C. Turk, Dennis**Source:** Current Rheumatology Reviews, Volume 11, Number 2, August 2015, pp. 96-108(13)**Publisher:** Bentham Science Publishers**Abstract:**

Central sensitivity syndromes (CSSs) represent a heterogeneous group of disorders (e.g., fibromyalgia [FM], irritable bowel syndrome [IBS], chronic headache, temporomandibular disorders [TMDs], pelvic pain syndromes) that share many common symptoms, with persistent pain being the most prominent feature.

Although the etiology and pathophysiology of CSSs are currently incompletely understood, central sensitization has emerged as one of the significant mechanisms. Given that there are currently no known cures for CSSs, people living with these disorders must learn to cope with and manage their symptoms throughout their lives. Medical interventions alone have not proven to be sufficient for helping people with CSSs manage their symptoms. A biopsychosocial perspective that considers the ways that biological, psychological, and social factors work independently and jointly to affect a person's experience is the most effective conceptualization and guide for effective treatment. In this article, we discuss several psychological and social features that may influence the experience of a person with CSS and their symptom management, regardless of their specific diagnosis.

We highlight the longitudinal aspect of adjustment to illness, the distinction between psychosocial factors as causes of symptoms versus modifiers and perpetrators of symptoms, dispel the notion that all patients with the same diagnosis are a homogeneous group (the "patient-uniformity myth"), and acknowledge the importance of environmental and situational context on symptom management for individuals with any CSS.

Keywords: Central sensitivity syndromes (CSS); biopsychosocial; chronic pain; cognitive-behavior therapy; fear avoidance; post-traumatic stress disorder; psychological factors; social factors

Chronic pain and obesity**The association between chronic pain and obesity****Authors** Okifuji A, Hare BD**Published Date** July 2015 Volume 2015:8 Pages 399—408**DOI** <http://dx.doi.org/10.2147/JPR.S55598> Journal of Pain and Research**Received** 1 May 2015, **Accepted** 28 May 2015, **Published** 14 July 2015**Approved for publication by** Dr Michael Schatman

Akiko Okifuji, Bradford D Hare

Pain Research and Management Center, Department of Anesthesiology, University of Utah, Salt Lake City, UT, USA

Abstract: Obesity and pain present serious public health concerns in our society. Evidence strongly suggests that comorbid obesity is common in chronic pain conditions, and pain complaints are common in obese individuals. In this paper, we review the association between obesity and pain in the general population as well as chronic pain patients. We also review the relationship between obesity and pain response to noxious stimulation in animals and humans. Based upon the existing research, we present several potential mechanisms that may link the two phenomena, including mechanical/structural factors, chemical mediators, depression, sleep, and lifestyle. We discuss the clinical implications of obesity and pain, focusing on the effect of weight loss, both surgical and noninvasive, on pain.

The literature suggests that the two conditions are significant comorbidities, adversely impacting each other. The nature of the relationship however is not likely to be direct, but many interacting factors appear to contribute. Weight loss for obese pain patients appears to be an important aspect of overall pain rehabilitation, although more efforts are needed to determine strategies to maintain long-term benefit.

Keywords: comorbidity, BMI, chronic pain, obesity, lifestyle, weight loss, headaches, fibromyalgia

Interventions for chronic pain – mindfulness

Disabil Rehabil. 2015 Jun 30:1-9.

Health-related quality of life improvements among women with chronic pain: comparison of two multidisciplinary interventions.

Björnsdóttir SV¹, Arnljótsdóttir M, Tómasson G, Triebel J, Valdimarsdóttir UA.
Author information

Abstract

PURPOSE:

To measure the effect of 4 weeks traditional multidisciplinary pain management program (TMP) versus neuroscience education and mindfulness-based cognitive therapy (NEM) on quality of life (HRQL) among women with chronic pain.

METHOD:

This observational longitudinal cohort study conducted in an Icelandic rehabilitation centre included 122 women who received TMP, 90 receiving NEM, and 57 waiting list controls. Pain intensity (visual analogue scale) and HRQL (Icelandic Quality of Life scale) were measured before and after interventions. ANOVA and linear regression were used for comparisons.

RESULTS:

Compared with controls we observed statistically significant changes in pain intensity ($p < 0.001$) and HRQL ($p < 0.001$) among women receiving both interventions, while NEM participants reported significant improvements in sleep (8.0 versus 4.4 in TMP; $p = 0.008$). Head to head comparison between study groups revealed that pain intensity improved more among TMP participants (21.8 versus 17.2 mm; $p = 0.013$ adjusted). Women with low HRQL at baseline improved more than those with higher HRQL (mean TMP = 13.4; NEM = 12.9 if HRQL ≤ 35 versus mean TMP = 6.6 and NEM = 7.8 if HRQL > 35).

CONCLUSIONS:

Our non-randomized study suggests that both NEM and TMP programs improve pain and HRQL among women with chronic pain. Sleep quality showed more improvements in NEM while pain intensity in TMP. Longer-term follow-ups are needed to address whether improvements sustain. Implications for Rehabilitation Chronic pain is a debilitating condition affecting quality of life and restricting societal participation. Intensive multidisciplinary bio-psycho-social rehabilitation is essential for this patient group. This study shows improvement in health-related quality of life and pain intensity following such rehabilitation. Emphasizing mindfulness based cognitive therapy and neuroscience patient education improves sleep to more extend than more traditional approach.

KEYWORDS: Chronic pain; health-related quality of life; mindfulness; multidisciplinary rehabilitation; neuroscience patient education
PMID: 26122546

60. COMPLEX REGIONAL PAIN

In children

Curr Opin Pediatr. 2015 Aug;26(4):448-52. doi: 10.1097/MOP.0000000000000250.

An update on complex regional pain syndromes in children and adolescents.

Borucki AN¹, Greco CD.

Author information

Abstract

PURPOSE OF REVIEW:

Complex regional pain syndrome (CRPS) is a chronic pain condition typically involving a limb, which is characterized by neuropathic pain, sensory abnormalities and neurovascular findings. The exact cause of CRPS is unknown; however, proposed theories include alterations in the sympathetic and central nervous system (CNS), small fibre changes in the peripheral nervous system and psychological factors. Although this condition was previously considered rare among children and adolescents, it has been increasingly recognized in paediatric patients and can result in significant disability.

RECENT FINDINGS:

The diagnosis of paediatric CRPS is based upon clinical criteria obtained from a thorough history and physical examination. Other possible causes, such as orthopaedic, infectious, vascular and rheumatologic disorders, should be ruled out prior to making the diagnosis. Treatment focuses on a rehabilitative strategy consisting of physical therapy, occupational therapy and cognitive-behavioural therapy with an overall focus on return to functioning.

SUMMARY:

CRPS in children and adolescents is characterized by a painful, mottled appearing, swollen limb with allodynia and hyperalgesia. For most patients, pain is severe, resulting in significant functional disability. More recent evidence suggests that a rehabilitative programme results in improvement in both pain and functional measures.

PMID: 26087424

61. FIBROMYALGIA

in RA

Rheumatology (Oxford). 2015 Jul 14. pii: kev254.

The effect on treatment response of fibromyalgic symptoms in early rheumatoid arthritis patients: results from the ESPOIR cohort.

Durán J¹, Combe B², Niu J³, Rincheval N², Gaujoux-Viala C⁴, Felson DT⁵.

Author information

Abstract

OBJECTIVE:

To evaluate whether patients with RA who belong to the spectrum of fibromyalgic RA (FRA) have an impaired response to treatment measured by traditional activity scores.

METHODS:

Patients from the ESPOIR cohort were analysed. This prospective cohort included 813 patients with early arthritis not initially receiving DMARDs. Among the 697 patients who met RA classification criteria, we studied two groups, one with and the other without FRA. The following endpoints were compared at 6, 12 and 18 months using a mixed linear regression model: 28-joint DAS (DAS28), Simple Disease Activity Index (SDAI), Clinical Disease Activity Index (CDAI) and HAQ. In addition, attainment of low disease activity (LDA; DAS28 <3.2) and remission (DAS28 <2.6, SDAI <3.3, CDAI <2.8) at these time points was analysed.

RESULTS:

Patients with FRA (n = 120) had higher DAS28, SDAI, CDAI and HAQ scores than patients with RA and no fibromyalgic characteristics (n = 548). DAS28 and other DASs started out higher in subjects with FRA, and while they improved to a similar extent to in the isolated RA group, they remained consistently higher among FRA patients. Achievement of LDA and remission was significantly less likely in subjects with FRA.

CONCLUSION:

Patients with FRA and RA will have a similar response to treatment according to the decrease in indexes of disease activity, but may miss the target of remission or LDA.

KEYWORDS: DMARDs; disease activity scores; early rheumatoid arthritis; fibromyalgia; fibromyalgic RA; outcome measures; rheumatoid arthritis; therapy; treat to target

PMID: 26175470

Progressive resistance exercise

Arthritis Res Ther. 2015 Jun 18;17:161. doi: 10.1186/s13075-015-0679-1.

Resistance exercise improves muscle strength, health status and pain intensity in fibromyalgia-a randomized controlled trial.

Larsson A^{1,2}, Palstam A^{3,4}, Löfgren M⁵, Ernberg M⁶, Bjersing J⁷, Bileviciute-Ljungar I⁸, Gerdle B^{9,10}, Kosek E¹¹, Mannerkorpi K^{12,13,14}.

Author information

Abstract

INTRODUCTION:

Fibromyalgia (FM) is characterized by persistent widespread pain, increased pain sensitivity and tenderness. Muscle strength in women with FM is reduced compared to healthy women. The aim of this study was to examine the effects of a progressive resistance exercise program on muscle strength, health status, and current pain intensity in women with FM.

METHODS:

A total of 130 women with FM (age 22-64 years, symptom duration 0-35 years) were included in this assessor-blinded randomized controlled multi-center trial examining the effects of progressive resistance group exercise compared with an active control group. A person-centred model of exercise was used to support the participants' self-confidence for management of exercise because of known risks of activity-induced pain in FM. The intervention was performed twice a week for 15 weeks and was supervised by experienced physiotherapists. Primary outcome measure was isometric knee-extension force (Steve Strong®), secondary outcome measures were health status (FIQ total score), current pain intensity (VAS), 6MWT, isometric elbow-flexion force, hand-grip force, health related quality of life, pain disability, pain acceptance, fear avoidance beliefs, and patient global impression of change (PGIC). Outcomes were assessed at baseline and immediately after the intervention. Long-term follow up comprised the self-reported questionnaires only and was conducted after 13-18 months. Between-group and within-group differences were calculated using non-parametric statistics.

RESULTS:

Significant improvements were found for isometric knee-extension force ($p = 0.010$), health status ($p = 0.038$), current pain intensity ($p = 0.033$), 6MWT ($p = 0.003$), isometric elbow flexion force ($p = 0.02$), pain disability ($p = 0.005$), and pain acceptance ($p = 0.043$) in the resistance exercise group ($n = 56$) when compared to the control group ($n = 49$). PGIC differed significantly ($p = 0.001$) in favor of the resistance exercise group at post-treatment examinations. No significant differences between the resistance exercise group and the active control group were found regarding change in self-reported questionnaires from baseline to 13-18 months.

CONCLUSIONS:

Person-centered progressive resistance exercise was found to be a feasible mode of exercise for women with FM, improving muscle strength, health status, and current pain intensity when assessed immediately after the intervention.

PMID: 2608428

62 A. NUTRITION/VITAMINS**Citrus consumption and increased risk of melanoma**

J Clin Oncol. 2015 Jun 29. pii: JCO.2014.57.4111.

Citrus Consumption and Risk of Cutaneous Malignant Melanoma.

Wu S¹, Han J¹, Feskanich D¹, Cho E¹, Stampfer MJ¹, Willett WC¹, Qureshi AA².

Author information

Abstract

PURPOSE:

Citrus products are widely consumed foods that are rich in psoralens and furocoumarins, a group of naturally occurring chemicals with potential photocarcinogenic properties. We prospectively evaluated the risk of cutaneous malignant melanoma associated with citrus consumption.

METHODS:

A total of 63,810 women in the Nurses' Health Study (1984 to 2010) and 41,622 men in the Health Professionals Follow-Up Study (1986 to 2010) were included. Dietary information was repeatedly assessed every 2 to 4 years during follow-up. Incident melanoma cases were identified through self-report and confirmed by pathologic records.

RESULTS:

Over 24 to 26 years of follow-up, we documented 1,840 incident melanomas. After adjustment for other risk factors, the pooled multivariable hazard ratios for melanoma were 1.00 for overall citrus consumption < twice per week (reference), 1.10 (95% CI, 0.94 to 1.30) for two to four times per week, 1.26 (95% CI, 1.08 to 1.47) for five to six times per week, 1.27 (95% CI, 1.09 to 1.49) for once to 1.5 times per day, and 1.36 (95% CI, 1.14 to 1.63) for ≥ 1.6 times per day ($P_{\text{trend}} < .001$). Among individual citrus products, grapefruit showed the most apparent association with risk of melanoma, which was independent of other lifestyle and dietary factors. The pooled multivariable hazard ratio for melanoma comparing the extreme consumption categories of grapefruit (\geq three times per week v never) was 1.41 (95% CI, 1.10 to 1.82; $P_{\text{trend}} < .001$).

CONCLUSION:

Citrus consumption was associated with an increased risk of malignant melanoma in two cohorts of women and men. Nevertheless, further investigation is needed to confirm our findings and explore related health implications.

PMID: 26124488

Tree nuts and decreased body weight

Nutr J. 2015 Jun 28;14(1):64. doi: 10.1186/s12937-015-0052-x.

Tree Nut consumption is associated with better adiposity measures and cardiovascular and metabolic syndrome health risk factors in U.S. Adults: NHANES 2005-2010.

O'Neil CE¹, Fulgoni VL 3rd², Nicklas TA³.
Author information

Abstract

INTRODUCTION:

Previous research has shown inconsistencies in the association of tree nut consumption with risk factors for cardiovascular disease (CVD) and metabolic syndrome (MetS).

OBJECTIVE:

To determine the association of tree nut consumption with risk factors for CVD and for MetS in adults.

METHODS:

NHANES 2005-2010 data were used to examine the associations of tree nut consumption with health risks in adults 19+ years (n = 14,386; 51 % males). Tree nuts were: almonds, Brazil nuts, cashews, filberts [hazelnuts], macadamias, pecans, pine nuts, pistachios, and walnuts. Group definitions were non-consumers < ¼ ounce/day and consumers of ≥ ¼ ounce/day tree nuts using data from 24-h dietary recalls. Means and ANOVA (covariate adjusted) were determined using appropriate sample weights. Using logistic regression, odds ratios of being overweight (OW)/obese (OB) (body mass index [BMI] >25/<30 and ≥30, respectively) and having CVRF or MetS, were determined.

RESULTS:

Tree nut consumption was associated with lower BMI (p = 0.004), waist circumference (WC) (p = 0.008), systolic blood pressure (BP) (p = 0.001), Homeostatic Model Assessment-Insulin Resistance (p = 0.043), and higher high density lipoprotein-cholesterol (p = 0.022), compared with no consumption, and a lower likelihood of OB (-25 %), OW/OB (-23 %), and elevated WC (-21 %).

CONCLUSIONS:

Tree nut consumption was associated with better weight status and some CVRF and MetS components.

PMID:26123047

63. PHARMACOLOGY**Pain killers**

Pain Med. 2015 Jul 14. doi: 10.1111/pme.12830.

Comparative Analgesic Efficacy of Oxycodone/Acetaminophen vs Codeine/Acetaminophen for Short-Term Pain Management Following ED Discharge.

Chang AK¹, Bijur PE¹, Lupow JB¹, Gallagher EJ¹.
Author information

Abstract

OBJECTIVE:

To test the hypothesis that oxycodone/acetaminophen provides analgesia superior to codeine/acetaminophen following emergency department (ED) discharge.

DESIGN:

Prospective, randomized, double-blind, trial SETTING: Adult inner city ED SUBJECTS: ED patients with acute extremity pain who were discharged home METHODS: Patients randomized to oxycodone/acetaminophen (5 mg/325 mg) or codeine/acetaminophen (30 mg/300 mg). The primary outcome, obtained via telephone one day after ED discharge, was the between-group difference in improvement in numerical rating scale (NRS) pain scores over a 2-hour period following the most recent ingestion of study drug. Secondary outcomes included proportion of patients with >50% pain reduction, side-effect profile, and patient satisfaction.

RESULTS:

Two hundred and forty patients were enrolled. Mean baseline NRS scores were 7.9 in both groups. Mean decrease over 2 hours was 4.5 NRS units in the oxycodone/acetaminophen group vs 4.2 NRS units in the codeine/acetaminophen group, for a clinically and statistically nonsignificant difference of 0.2 NRS units (95% CI -0.4-0.9 NRS units). Similarly, 66% vs 61% achieved >50% pain relief for a nonsignificant difference of 5% (95% CI -8% to 17%). Side-effect profile and patient satisfaction were similar.

CONCLUSION:

Our hypothesis that oxycodone/acetaminophen provides analgesia superior to codeine/acetaminophen was rejected. Although pain within each group was reduced by more than half, the between-group difference was not significant. Pending independent validation, these unexpected findings suggest that codeine/acetaminophen, a Schedule III agent, may be a clinically reasonable outpatient opioid alternative to oxycodone/acetaminophen, a more tightly restricted Schedule II agent thought to be more prone to misuse.

KEYWORDS: Codeine/Acetaminophen; Emergency Department; Oxycodone/Acetaminophen; Pain

PMID:26176973

65. NEUROLOGICAL CONDITIONS**Second hand smoke and increased risk of stroke**

Am J Prev Med. 2015 Jun 16. pii: S0749-3797(15)00198-1. doi: 10.1016/j.amepre.2015.04.014.

Secondhand Smoke Exposure and Stroke: The Reasons for Geographic and Racial Differences in Stroke (REGARDS) Study.

Malek AM¹, Cushman M², Lackland DT³, Howard G⁴, McClure LA⁴.
Author information

Abstract

INTRODUCTION:

Stroke is a major public health concern worldwide given the associated morbidity and mortality. Smoking is a risk factor for stroke, but the relationship between secondhand smoke (SHS) exposure and stroke has been inconsistent to date. The aim of the current study was to examine the association of SHS exposure and risk of stroke and its subtypes (ischemic and hemorrhagic stroke) among nonsmokers.

METHODS:

Demographic and clinical characteristics were compared by SHS exposure status for African American and white nonsmokers aged ≥ 45 years in the Reasons for Geographic and Racial Differences in Stroke (REGARDS) study in 2014. Hazard ratios (HRs) and corresponding 95% CIs were calculated by Cox proportional hazards models to assess the relationship between SHS exposure and stroke risk.

RESULTS:

Of the 21,743 participants (38% African American, 45% male), SHS exposure in the past year was reported by 23%. Compared with those without SHS exposure, exposed participants were more likely to be female, white, younger, and reside with a smoker (all $p < 0.001$). A total of 428 incident strokes were observed from April 2003 to March 2012 during a mean follow-up of 5.6 years. The risk of overall stroke was increased 30% among those with SHS exposure after adjustment for other stroke risk factors (95% CI=2%, 67%). This relationship appeared to be driven by ischemic strokes.

CONCLUSIONS:

SHS exposure is independently associated with an increased risk of stroke. Future studies are needed to confirm these findings and examine the role of long-term effects of SHS exposure on stroke outcomes.

PMID: 26117341