

ABSTRACTS

Table of Contents	
PELVIC GIRDLE	2
PELVIC ORGANS	3
CRANIUM/TMJ	13
HEADACHES	16
CONCUSSIONS	18
WRIST AND HAND	26
KNEE	28
FOOT AND ANKLE	38
MANUAL THERAPY/STRETCHING/MUSCLES STM	44
ATHLETICS	58
PAIN	59
FIBROMYALGIA	62
NUTRITION/VITAMINS/MEDICATION/TOPICALS	63

2. LBP

Hospitalization and LBP

Rheumatol Int. 2016 Jan 12.

The non-silent epidemic: low back pain as a primary cause of hospitalisation.

Laffont M¹, Sequeira G², Kerzberg EM¹, Marconi E³, Guevel C³, de Las Mercedes Fernández M³.
Author information

Abstract

Low back pain (LBP) is the most common cause of pain in adults and the second health condition that prompts patients to seek ambulatory medical care visits. To analyse the impact of LBP on hospitalisations in healthcare facilities within the official subsector in Argentina between 2006 and 2010. Discharges in which the original diagnosis had been either adult LBP or lumbosciatica were assessed. The data comprised age, gender, province of residence, average length of stay (LOS) in the hospital, intra-hospital death, and the Provincial Human Development Index (PHDI). 17,859 discharges had an original diagnosis of LBP and 10,948 of lumbosciatica, which jointly accounted for 18.7 % of all the discharges documented for Diseases of Osteomuscular System and Connective Tissue (DOMS). Hospital discharges of female patients represented 53.7 %. The average age upon admission was 47.7 years in men versus 47.9 in women. The average LOS was slightly higher in men (4.2 vs. 3.8 days, $p < 0.01$). In provinces with a PHDI below the national average, a surgical procedure was performed in 3.1 % of the discharges versus 4.1 % in the provinces with a PHDI above the national average ($p < 0.001$). LBP was the most frequent cause of hospitalisation due to DOMS.

It occurred with a slightly higher frequency in women and prompted short hospitalisations. A surgical procedure was carried out during hospitalisation in very few cases, but the percentage of surgeries during hospitalisation was higher in provinces with a PHDI above the national average.

KEYWORDS: Hospitalisations; Low back pain; Provincial Human Development Index; Surgical procedure
PMID:26759129

3. DISC

GAG's in disc

Spine (Phila Pa 1976). 2016 Jan;41(2):146-52. doi: 10.1097/BRS.0000000000001144.

Glycosaminoglycan Chemical Exchange Saturation Transfer of Lumbar Intervertebral Discs in Healthy Volunteers.

Schleich C¹, Müller-Lutz A, Eichner M, Schmitt B, Matuschke F, Bittersohl B, Zilkens C, Wittsack HJ, Antoch G, Miese F.

Author information

Abstract

STUDY DESIGN: Evaluation of a new quantitative imaging technique in a prospective study design.

OBJECTIVE: To assess glycosaminoglycan (GAG) content of lumbar intervertebral discs (IVDs) in healthy volunteers with chemical exchange saturation transfer (CEST).

SUMMARY OF BACKGROUND DATA: Biochemical alterations of lumbar discs are present before the appearance of morphological changes. GAG loss plays a central role in these degenerative processes.

METHODS: Lumbar intervertebral discs of healthy controls (26 women, 22 men; mean age 31±8 years; range: 21-49 years) without lumbar back pain were examined at a 3 Tesla magnetic resonance imaging (MRI) scanner in this prospective study. None of the participants were overweight or had previous surgery of the lumbar spine. The MRI protocol included standard morphological, sagittal and transversal T2-weighted (T2w) images to assess Pfirrmann score and to detect disc disorders according to the Combined Task Force classification of five lumbar IVDs (L1 to S1). A prototype glycosaminoglycan chemical exchange saturation transfer (gagCEST) sequence was applied to measure GAG content of the nucleus pulposus (NP) and annulus fibrosus (AF) by identifying the magnetization transfer asymmetry ratio (MTR_{asym}) in a region-of-interest analysis. Morphological and biochemical imaging analysis were statistically tested for quantitative differences between different grades of IVD degeneration and disc disorders.

RESULTS: gagCEST values of NP demonstrated a significant negative correlation with morphological Pfirrmann score ($r=-0.562$; $P<0.0001$). The MTR_{asym} values were higher in non-degenerative lumbar IVDs (Pfirrmann 1-2) compared with degenerative lumbar discs (Pfirrmann 3-5; $2.92\% \pm 1.42\%$ vs. $0.78\% \pm 1.38\%$; $P<0.0001$). The MTR_{asym} values of NP were significantly higher in normal appearing discs compared with herniated IVDs ($2.83\% \pm 1.52\%$ vs. $1.55\% \pm 1.61\%$; $P<0.0001$). We found a significant negative correlation between gagCEST values and the graduation of disc herniation ($r=-0.372$; $P<0.0001$).

CONCLUSION: Biochemical imaging with gagCEST distinguished morphologically degenerative from non-degenerative lumbar IVDs (in NP and AF) of healthy volunteers at a clinical 3T-MRI system. The depletion of GAG content in degenerative lumbar discs correlated significantly with the morphological disc classification. We could demonstrate that disc disorders, such as protrusion and extrusion, were accompanied by lower GAG content.

LEVEL OF EVIDENCE: 2.

PMID: 26583472

5. SURGERY

Second surgery ok

Spine (Phila Pa 1976). 2016 Jan;41(2):E101-6. doi: 10.1097/BRS.0000000000001094.

Primary and Revision Posterior Lumbar Fusion Have Similar Short-Term Complication Rates.

Basques BA¹, Diaz-Collado PJ, Geddes BJ, Samuel AM, Lukasiewicz AM, Webb ML, Bohl DD, Ahn J, Singh K, Grauer JN.

Author information

Abstract

STUDY DESIGN:

Retrospective cohort study.

OBJECTIVE:

To compare short-term morbidity for primary and revision posterior lumbar fusions.

SUMMARY OF BACKGROUND DATA:

Revision lumbar fusions are unfortunately relatively common. Previous studies have described an increased risk of postoperative complications after revision lumbar fusion; however, these studies have been limited by small sample sizes, poor data quality, and/or narrow outcome measures. There is a need to validate these findings using a high-quality, national cohort of patients to have an accurate assessment of the relative risk of revision posterior lumbar fusions compared with primary lumbar fusion.

METHODS:

The prospectively-collected American College of Surgeons National Surgical Quality Improvement Program database was used to identify patients that underwent primary and revision posterior lumbar fusion from 2005 to 2013. The occurrence of individual and aggregated postoperative complications within 30 days, along with rates of blood transfusion and readmission, were compared between primary and revision procedures using bivariate and multivariate Poisson regression with robust error variance to control for patient and operative characteristics. Operative time and postoperative length of stay were compared between groups using bivariate and multivariate linear regression.

RESULTS:

Of the 14,873 posterior lumbar fusion procedures that met inclusion criteria, 1287 (8.7%) were revision cases. There were no differences in the rates of 30-day postoperative complications or readmission between primary and revision posterior lumbar fusion using multivariate analysis to control for patient and operative characteristics. Similarly, no significant differences were found for operative time or postoperative length of stay. There was an increased rate of blood transfusion for revision surgery compared with primary surgery (relative risk 1.4, $P < 0.001$).

CONCLUSION:

This study suggests that revision posterior lumbar fusion does not carry significantly increased risk of complications or readmission compared with a primary posterior lumbar fusion. Patients undergoing revision surgery were more likely to receive a blood transfusion. This information suggests that general health risk stratification for revision procedures can be similar to that considered for primary cases.

Stenosis and radiology

Spine (Phila Pa 1976). 2016 Jan;41(2):E78-83. doi: 10.1097/BRS.0000000000001166.

Is There an Association Between Radiological Severity of Lumbar Spinal Stenosis and Disability, Pain, or Surgical Outcome?: A Multicenter Observational Study.

Weber C¹, Giannadakis C, Rao V, Jakola AS, Nerland U, Nygaard ØP, Solberg TK, Gulati S, Solheim O.

[Author information](#)

Abstract**STUDY DESIGN:**

Observational multicenter study.

OBJECTIVE:

To evaluate if the severity of lumbar spinal stenosis (LSS) on magnetic resonance imaging (MRI) correlates with preoperative disability, pain, or surgical outcomes.

SUMMARY OF BACKGROUND DATA:

Surgeons use the morphological appearance of LSS on MRI for clinical decision making. However, the associations between radiological severity of LSS and disability, pain, or surgical outcomes remain unclear.

METHODS:

Evaluation of severity of LSS on preoperative MRI according to the Schizas morphological classification. Patient and treatment data were retrieved from the Norwegian Registry for Spine Surgery. Preoperative outcome measures were Oswestry disability index (ODI) and numeric rating scale (NRS) scores for back and leg pain. Postoperative outcome measures were ODI and NRS scores for back and leg pain at 1 year, changes in ODI and NRS scores after treatment, duration of surgery, length of hospital stay, and perioperative complications.

RESULTS:

Of 202 patients included, 7 were found to have mild stenosis, 38 had moderate stenosis, 108 had severe stenosis, and 49 had extreme stenosis. The radiological severity of LSS was not linked to preoperative ODI ($P=0.089$), NRS back pain ($P=0.273$), or NRS leg pain ($P=0.282$) scores. There were no differences in ODI ($P=0.933$), NRS back pain ($P=0.652$), or NRS leg pain ($P=0.912$) scores after 1 year. The radiological severity of stenosis was not associated with change in ODI ($P=0.494$), NRS back pain ($P=0.235$), NRS leg pain ($P=0.790$), duration of surgery ($P=0.661$), length of hospital stay ($P=0.739$), or perioperative complication rates ($P=0.467$).

CONCLUSION:

Among patients who underwent decompressive surgery for LSS, radiological severity of stenosis was not associated with preoperative disability and pain, or clinical outcomes 1 year after surgery. In this patient group, the radiological severity of LSS has no clear clinical correlation and should therefore not be overemphasized in clinical decision making.

LEVEL OF EVIDENCE: 2.

PMID:26352747

Spondylo surgery

Bone Joint J. 2016 Jan;98-B(1):88-96. doi: 10.1302/0301-620X.98B1.35672.

Radiographic and functional outcome of posterolateral lumbosacral fusion for low grade isthmic spondylolisthesis in children and adolescents.

Tsirikos AI¹, Sud A¹, McGurk SM¹.

Author information

Abstract

AIMS:

We reviewed 34 consecutive patients (18 female-16 male) with isthmic spondylolysis and grade I to II lumbosacral spondylolisthesis who underwent in situ posterolateral arthodesis between the L5 transverse processes and the sacral ala with the use of iliac crest autograft. Ten patients had an associated scoliosis which required surgical correction at a later stage only in two patients with idiopathic curves unrelated to the spondylolisthesis.

METHODS:

No patient underwent spinal decompression or instrumentation placement. Mean surgical time was 1.5 hours (1 to 1.8) and intra-operative blood loss 200 ml (150 to 340). There was one wound infection treated with antibiotics but no other complication. Radiological assessment included standing posteroanterior and lateral, Ferguson and lateral flexion/extension views, as well as CT scans.

RESULTS:

A solid posterolateral fusion was confirmed in all patients at mean latest follow-up of 4.7 years (3.4 to 9.8) beyond skeletal maturity into early adult life. Fusion of the isthmic lesion was documented in nine patients bilaterally and eight patients unilaterally. The poor fusion rate across the spondylolysis has not affected the excellent functional results of the procedure, which in our series depended on achieving a stable lumbosacral junction.

CONCLUSION:

Quality of life assessment demonstrated significant improvement in all functional scores and high patient satisfaction with 28 patients returning to previous sports activities at an elite competitive level.

TAKE HOME MESSAGE:

Posterolateral arthrodesis in situ with autologous iliac crest bone without instrumentation has achieved a solid fusion between the L5 transverse processes and the sacral ala in patients with grade I to II isthmic lumbosacral spondylolisthesis and this has produced excellent clinical outcomes and high patient satisfaction. Cite this article: Bone Joint J 2016;98-B:88-96.

KEYWORDS: isthmic; outcomes; postero-lateral fusion; spondylolisthesis; spondylolysis
PMID: 26733520

7. PELVIC ORGANS/WOMAN'S HEALTH

Pregnancy and RA

Arthritis Res Ther. 2016 Jan 22;18(1):26. doi: 10.1186/s13075-016-0925-1.

Reduced pro-inflammatory profile of $\gamma\delta$ T cells in pregnant patients with rheumatoid arthritis.

Tham M^{1,2}, Schlör GR³, Yerly D⁴, Mueller C⁵, Surbek D⁶, Villiger PM⁷, Förger F⁸.
Author information

Abstract

BACKGROUND:

During pregnancy, many patients with rheumatoid arthritis (RA) experience disease improvement, whereas patients with ankylosing spondylitis often suffer from persistent active disease. Here we investigated whether pregnancy-related changes in disease activity were associated with changes in the proportion and function of $\gamma\delta$ T cells.

METHODS:

The study population comprised 55 patients with RA, 31 patients with ankylosing spondylitis, and 35 healthy controls. Among these participants, 28 RA patients, 21 ankylosing spondylitis patients, and 23 healthy controls were investigated once before conception when possible, at each trimester of pregnancy, and at 8 weeks postpartum. Data were compared with age-matched non-pregnant patients to obtain disease-related background. In all subjects, peripheral V δ 1 and V δ 2 T cells were analyzed for cell frequencies, the activation marker CD69, the cytotoxicity markers NKG2D and NKG2A, and the intracellular cytokines tumor necrosis factor (TNF) α , interferon (IFN) γ , interleukin (IL)-17 and IL-10.

RESULTS:

Pregnant patients showed a decreased V δ 2/V δ 1 ratio in the third trimester, which resulted from a slightly reduced proportion of V δ 2 cells. Changes in RA disease activity during pregnancy and postpartum were not associated with numerical proportions of $\gamma\delta$ T cells but with changes of the cell activation marker CD69 on V δ 1 and V δ 2 cells. Only RA patients showed reduced proportions of TNF α -positive V δ 1 and V δ 2 cells and IFN γ -positive V δ 2 cells at the third trimester of pregnancy, a finding that was not apparent in the entire population of CD3 T cells. The proportions of IL-17-positive $\gamma\delta$ T cells and IL-10-positive $\gamma\delta$ T cells did not differ between pregnant and non-pregnant women of the different groups.

CONCLUSIONS:

Changes of disease activity in pregnant RA patients were associated with functional changes in both $\gamma\delta$ T cell subsets. This reduced pro-inflammatory profile of $\gamma\delta$ T cells might contribute to the immunomodulation resulting in pregnancy-induced improvement of RA.

PMID:26795030

Breast testing

Ann Intern Med. 2016 Jan 12. doi: 10.7326/M15-0970.

Harms of Breast Cancer Screening: Systematic Review to Update the 2009 U.S. Preventive Services Task Force Recommendation.

Nelson HD, Pappas M, Cantor A, Griffin J, Daeges M, Humphrey L.
Abstract

BACKGROUND:

In 2009, the U.S. Preventive Services Task Force recommended biennial mammography screening for women aged 50 to 74 years and selective screening for those aged 40 to 49 years.

PURPOSE:

To review studies of screening in average-risk women with mammography, magnetic resonance imaging, or ultrasonography that reported on false-positive results, overdiagnosis, anxiety, pain, and radiation exposure.

DATA SOURCES:

MEDLINE and Cochrane databases through December 2014.

STUDY SELECTION:

English-language systematic reviews, randomized trials, and observational studies of screening.

DATA EXTRACTION:

Investigators extracted and confirmed data from studies and dual-rated study quality. Discrepancies were resolved through consensus.

DATA SYNTHESIS:

Based on 2 studies of U.S. data, 10-year cumulative rates of false-positive mammography results and biopsies were higher with annual than biennial screening (61% vs. 42% and 7% vs. 5%, respectively) and for women aged 40 to 49 years, those with dense breasts, and those using combination hormone therapy. Twenty-nine studies using different methods reported overdiagnosis rates of 0% to 54%; rates from randomized trials were 11% to 22%. Women with false-positive results reported more anxiety, distress, and breast cancer-specific worry, although results varied across 80 observational studies. Thirty-nine observational studies indicated that some women reported pain during mammography (1% to 77%); of these, 11% to 46% declined future screening. Models estimated 2 to 11 screening-related deaths from radiation-induced cancer per 100 000 women using digital mammography, depending on age and screening interval. Five observational studies of tomosynthesis and mammography indicated increased biopsies but reduced recalls compared with mammography alone.

LIMITATIONS:

Studies of overdiagnosis were highly heterogeneous, and estimates varied depending on the analytic approach. Studies of anxiety and pain used different outcome measures. Radiation exposure was based on models.

CONCLUSION:

False-positive results are common and are higher for annual screening, younger women, and women with dense breasts. Although overdiagnosis, anxiety, pain, and radiation exposure may cause harm, their effects on individual women are difficult to estimate and vary widely.

PRIMARY FUNDING SOURCE:

Agency for Healthcare Research and Quality.

8. VISCERA

Opioid use and constipation

Opioid-induced constipation, use of laxatives, and health-related quality of life

Scandinavian Journal of Pain, 01/27/2016 Christensen HN, et al.

The authors' aim was to describe laxative utilization and quality of life in participants in Norway who ever experienced OIC. The results suggest a high degree of moderate to very severe abdominal symptoms, a high degree of self-management of opioid-induced constipation, a low degree of satisfaction with laxative, and low health-related quality of life of patients suffering from chronic pain necessitating long-term opioid treatment, subsequent constipation and laxatives use.

Methods

- This was a cross-sectional online survey conducted between 27th of June and 3rd of July 2014 among participants above 18 years with self-reported OIC and who had agreed to receive information from the pharmacy chain (Boots A/S, Norway).
- The questionnaire comprised a series of multiple choice, close-ended, and free text questions on abdominal symptoms, laxative use and health-related quality of life.

Results

- A total of 417 participants met the study eligibility criteria: (1) treated with opioid for a minimum of 4 weeks, (2) actively accepted participation, and (3) confirmed ever experiencing OIC and in addition completed the survey.
- Among the eligible participants, 86% were females, 85% were younger than 60 years of age, and 57% were currently suffering OIC.
- More than half of the currently constipated participants were experiencing moderate to very severe abdominal bloating (63%), abdominal pain (55%) and/or pain during bowel movement (50%).
- Less than every fourth participant (23%) had consulted health care professionals (HCPs) about their constipation.
- Up to 39% reported that they handled their OIC by self-management, e.g., bought laxative, reduced the dose and/or changed opioid without consulting HCP or pharmacy.
- Less than half (48%) of the laxative users were satisfied with the laxative they were using to relieve their constipation.
- The EQ-5D health-related quality of life score was mean (SD): 0.587 (0.272).

Probiotics and functional bowel disease

Probiotics in Functional Bowel Disorders

Keren Hod Yehuda Ringel, MD

DOI: <http://dx.doi.org/10.1016/j.bpg.2016.01.003>

Abstract

Functional bowel disorders (FBDs) are the most common gastrointestinal (GI) disorders seen by gastroenterologists and primary care physicians. The disorders affect patients functioning and quality of life (QOL) and are associated with significant health care burden. The current theory regarding the development of FBDs suggests brain-gut axis dysfunctions associated abnormal GI motility and sensation. Recent data suggest that alterations in the intestinal microbiota may have a role in the pathogenesis of FBDs; or at least have the potential to affect intestinal functions that are thought to be relevant to the development of functional GI symptoms. This has led to growing interest of healthcare providers and patients in targeting the intestinal microbiota for the treatment of FBDs. In this article we discuss the potential role probiotic interventions in the treatment of FBDs.

We review the evidence from pre-clinical and clinical studies and discuss the current recommendations for the use of probiotics for FBDs in clinical practice.

Keywords:

Probiotics, Functional Bowel Disorders, Irritable Bowel Syndrome, Intestinal Microbiota

IBS and Gluten free diet

Clin Gastroenterol Hepatol. 2015 Dec 31. pii: S1542-3565(15)01715-2. doi: 10.1016/j.cgh.2015.12.031.

Efficacy of a Gluten-free Diet in Subjects With Irritable Bowel Syndrome-Diarrhea Unaware of Their HLA-DQ2/8 Genotype.

Aziz I¹, Trott N², Briggs R², North JR², Hadjivassiliou M², Sanders DS².
Author information

Abstract

BACKGROUND & AIMS:

A gluten-containing diet alters bowel barrier function in patients with irritable bowel syndrome-diarrhea (IBS-D), particularly those who are positive for human leukocyte antigen (HLA) allele DQ2/8. We studied the effects of a gluten-free diet (GFD) in patients with IBS-D who have not previously considered the effects of gluten in their diet and were unaware of their HLA-DQ2/8 genotype.

METHODS:

We performed a prospective study of 41 patients with IBS-D (20 HLA-DQ2/8-positive and 21 HLA-DQ2/8-negative) at the Royal Hallamshire Hospital in Sheffield, United Kingdom, from September 2012 through July 2015. All subjects were placed on a 6 week GFD following evaluation by a dietician. Subjects completed validated questionnaires at baseline and week 6 of the GFD. The primary endpoint was mean change in IBS symptom severity score (IBS-SSS); a 50 point reduction was considered to indicate a clinical response. Secondary endpoints were changes in hospital anxiety and depression score, fatigue impact score, and short form 36 results. Clinical responders who chose to continue a GFD after the study period were evaluated on average 18 months later to assess diet durability, symptom scores, and anthropometric and biochemical status.

RESULTS:

A 6 week GFD reduced IBS-SSS by ≥ 50 points in 29 patients overall (71%). The mean total IBS-SSS decreased from 286 before the diet to 131 points after 6 weeks on the diet ($P < .001$)-the reduction was similar in each HLA-DQ group. However, HLA-DQ2/8-negative subjects had a greater reduction in abdominal distension ($P = .04$). Both groups had marked mean improvements in hospital anxiety and depression scores, fatigue impact score, and short form 36 results, although HLA-DQ2/8-positive subjects had a greater reduction in depression score and increase in vitality score than HLA-DQ2/8-negative subjects ($P = .02$ and $P = .03$, respectively). Twenty-one of the 29 subjects with a clinical response (72%) planned to continue the GFD long term; 18 months after the study they were still on a GFD, with maintained symptom reductions, and demonstrated similar anthropometric and biochemical features compared to baseline.

CONCLUSION:

A dietitian-led GFD provided sustained benefit to patients with IBS-D. The symptoms that improved differed in magnitude according to HLA-DQ status.

KEYWORDS: carbohydrates; clinical trial; food; gastrointestinal symptoms
PMID: 26748221

IBS and depression

Symptoms of depression and anxiety are independently associated with clinical recurrence of inflammatory bowel disease

Clinical Gastroenterology and Hepatology , 01/26/2016 Mikocka-Walus A, et al. –

The authors examined the relationship between symptoms of depression and anxiety and clinical recurrence of inflammatory bowel disease (IBD) in a large patient cohort and considered the progression of depression and anxiety over time. In an analysis of a large cohort of subjects with IBD, they found a significant association between symptoms of depression or anxiety and clinical recurrence. Patients with IBD should therefore be screened for clinically relevant levels of depression and anxiety and referred to psychologists or psychiatrists for further evaluation and treatment.

Methods

- The authors collected clinical and treatment data on 2007 adult participants in an IBD study (56% with Crohn's disease [CD], 48% male) performed in Switzerland from 2006 through 2015.
- Depression and anxiety symptoms were quantified using the Hospital Anxiety and Depression Scale.
- The relationship between depression and anxiety scores and the clinical recurrence was analyzed using survival-time techniques.

Results

- The authors found a significant association between symptoms of depression and clinical recurrence over time (for all patients with IBD, $P=.000001$; for subjects with CD, $P=.0007$; for subjects with ulcerative colitis, $P=.005$).
- There was also a significant relationship between symptoms of anxiety and clinical recurrence over time in all subjects with IBD ($P=.0014$) and in subjects with CD ($P=.031$), but not ulcerative colitis ($P=.066$).

13. CRANIUM/TMJ

Orthodontics

Eur J Oral Sci. 2016 Feb;124(1):26-32. doi: 10.1111/eos.12234. Epub 2015 Dec 30.

Fixed orthodontic appliances cause pain and disturbance in somatosensory function.

Shen H^{1,2}, Shao S^{1,2}, Zhang J¹, Wang Z^{1,2}, Lv D^{1,2}, Chen W^{1,2}, Svensson P^{3,4}, Wang K^{1,5}.

[Author information](#)

Abstract

This study aimed to assess the short-term effects of orthodontic pain on quantitative sensory testing (QST) in subjects receiving fixed orthodontic treatment. Twenty patients and 12 healthy volunteers (as controls) participated. All 20 patients had bonded AO self-ligating brackets, with a 0.014 super elastic nickel-titanium arch wire placed in the brackets. Pain [self-reported on a visual analog scale (VAS)], and thermal and mechanical thresholds, were tested at six time points - before (baseline), and 2 h, 24 h, 7 d, 14 d, and 30 d after, force application - in the treatment group. The attached gingiva adjacent to the left upper central incisor (21 gingiva) was hypersensitive to cold stimuli (i.e. increased cold detection thresholds were detected) in the treatment group. The pressure pain thresholds of the left upper central incisor (21) and 21 gingiva were significantly reduced. Our results suggest clear signs of sensitization of the trigeminal nociceptive system up to 1 month after force application and orthodontic pain. Quantitative assessment of somatosensory function may help to provide a better understanding and profiling of the underlying neurobiological mechanisms related to orthodontic pain.

KEYWORDS: orthodontic pain; quantitative sensory testing; somatosensory function; trigeminal system

PMID:26715259

Emotional impact of malocclusion

Eur J Orthod. 2015 Dec 26. pii: cjv093.

The psycho-social impact of malocclusions and treatment expectations of adolescent orthodontic patients.

Twigge E¹, Roberts RM², Jamieson L³, Dreyer CW⁴, Sampson WJ⁵.
Author information

Abstract

OBJECTIVES:

To evaluate the short- and long-term orthodontic treatment (OT) expectations, malocclusion severity, and oral health-related quality of life (OHRQoL) status of adolescent patients using qualitative and quantitative methodology.

MATERIALS AND METHODS:

Adolescents (n = 105; 42 males and 63 females) aged between 12 and 17 years participated in this interview and questionnaire-based study. The Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ) and the Oral Impacts on Daily Performances (OIDP) scale evaluated OHRQoL status. Study casts were analysed using the Dental Aesthetics Index (DAI) and the Index of Complexity, Outcome and Need (ICON). Mann-Whitney test and Spearman's correlations tested various univariate variables.

RESULTS:

With similar index-determined OT need (DAI, P = 0.371 and ICON, P = 0.932) females tended to have worse OHRQoL status (PIDAQ scores, P-values ranged from 0.006 to 0.0001 and scores for the OIDP question related to smiling, laughing, and showing teeth without embarrassment, P-value = 0.015). Occlusal index scores did not have statistically significant associations with the OHRQoL scales. Better dental appearance was expected by 85 per cent of the adolescents in the short-term and by 51 per cent in the long-term after OT. The associated psycho-social expectations were: 1. improved dental self-confidence, 2. positive psychological impact/improved self-worth, and 3. positive social impact.

CONCLUSIONS:

Female adolescent patients tended to experience worse psycho-social impacts related to their malocclusions compared with males with similar index-determined OT need. Index-determined OT need scores did not correlate with the OHRQoL scales. Adolescent patients expected OT to improve their dental appearance and QoL aspects.

PMID:26709143

Link between periodontal disease and heart attack

Published in Cardiology Journal Scan / Research · January 21, 2016

Periodontitis Increases Risk of First Myocardial Infarction**TAKE-HOME MESSAGE**

- The authors evaluated the association between periodontitis and risk for cardiovascular disease. Dental examinations were performed in 805 patients who had a first myocardial infarction (MI) and 805 matched controls. In the MI group, 43% had periodontitis compared with 33% of controls ($P < .001$). After adjustment for confounding factors, participants with periodontitis had a significantly increased risk for MI.
- Patients with periodontitis had a significantly increased risk for a first MI, strengthening the argument that there is an independent relationship between periodontitis and MI.

BACKGROUND

The relationship between periodontitis (PD) and cardiovascular disease (CVD) is debated. PD is common in patients with CVD. It has been postulated that PD could be causally related to the risk for CVD, a hypothesis tested in PAROKRANK.

METHODS AND RESULTS

805 patients (age <75 years) with a first MI and 805 age (mean 62 ± 8), gender (male 81%) and area matched controls without MI underwent standardized dental examination including panoramic x-ray. The periodontal status was defined as healthy ($\geq 80\%$ remaining bone) or as mild-moderate (79-66%) or severe PD ($<66\%$). Great efforts were made to collect information on possibly related confounders (≈ 100 variables). Statistical comparisons included Student's pairwise t-test and Mc Nemar's test in 2x2 contingency tables. Contingency tables exceeding 2x2 with ranked alternatives were tested by Wilcoxon signed rank test. Odds Ratios (95% CI) were calculated by conditional logistic regression. PD was more common (43%) in patients than in controls (33%; $p < 0.001$). There was an increased risk for MI among those with PD (OR = 1.49; 95% CI 1.21-1.83), which remained significant (OR = 1.28; 95% CI 1.03-1.60) after adjusting for variables that differed between patients and controls (smoking habits, diabetes, years of education and marital status).

CONCLUSIONS

In this large case-control study of PD, verified by radiographic bone loss and with a careful consideration of potential confounders, the risk of a first MI was significantly increased in patients with PD even after adjustment for confounding factors. These findings strengthen the possibility of an independent relationship between PD and MI.

14. HEADACHES

PT management

Arch Phys Med Rehabil. 2015 Dec 21. pii: S0003-9993(15)01558-0. doi: 10.1016/j.apmr.2015.12.006.

Additional effects of a physical therapy protocol on headache frequency, pressure pain threshold, and improvement perception in patients with migraine and associated neck pain: a randomized clinical trial.

Bevilaqua-Grossi D¹, Gonçalves MC², Carvalho GF³, Florencio LL³, Dach F⁴, Speciali JG⁴, Bigal ME⁵, Chaves TC⁴.

Author information

Abstract

OBJECTIVE: To evaluate the additional effect provided by physical therapy in migraine treatment.

DESIGN: Randomized clinical trial.

SETTING: Tertiary university-based hospital.

PARTICIPANTS: Among 300 patients approached, 50 women, aged 18-55 years old, diagnosed with migraine were randomized into two groups: a control group (CG) and a physiotherapy plus medication group (PG).

INTERVENTIONS: Both groups received medication for migraine treatment. Additionally, PG patients received 8 sessions of physical therapy over four weeks; comprised mainly of manual therapy and stretching maneuvers lasting 50 min.

MAIN OUTCOME MEASURES: A blinded examiner assessed the clinical outcomes of headache frequency, intensity, and self-perception of global change, as well as physical outcomes of pressure pain threshold and cervical range of motion. Data were recorded at baseline, post-treatment, and follow-up after one-month.

RESULTS: Twenty-three patients experienced side effects from the medication. Both groups reported a significantly reduced frequency of headaches, although no differences were observed between groups (PG patients showed an additional 18% improvement at post-treatment and 12% improvement at follow-up compared to CG patients, $p>0.05$). The reduction observed in PG patients was clinically relevant at post-treatment, whereas clinical relevance for CG patients was demonstrated only at the follow-up. For pain intensity, PG patients showed statistical evidence and clinical relevance with reduction post-treatment ($p<0.05$). In addition, they showed better self-perception of global change than CG patients ($p<0.05$). Cervical muscle pressure pain threshold increased significantly in PG patients and decreased in CG patients, but statistical differences between groups were observed only in the temporal area ($p<0.05$). No differences were observed between groups regarding the cervical range of motion.

CONCLUSION: We cannot assume that physical therapy promotes additional improvement in migraine treatment; however, it can increase cervical pressure pain threshold, anticipate clinically relevant changes, and enhance patient satisfaction.

CLINICAL TRIALS REGISTER: REBEC n° RBR-6kvx74.

KEYWORDS: headache; manual therapy; migraine; physical therapy

PMID: 26718237

Nerve fiber thickness

BMC Ophthalmol. 2016 Jan 4;16(1):1. doi: 10.1186/s12886-015-0180-2.

Ocular pulse amplitude and retina nerve fiber layer thickness in migraine patients without aura.

Acer S¹, Oğuzhanoğlu A², Çetin EN³, Ongun N⁴, Pekel G⁵, Kaşıkçı A⁶, Yağcı R⁷.

Author information

Abstract

BACKGROUND:

To evaluate the ocular pulse amplitude (OPA), the posterior pole asymmetry analysis (PPAA), the peripapillary retinal nerve fiber layer (RNFL) thickness, the ganglion cell layer (GCL) thickness, macular thickness and visual field testing in migraine patients without aura.

METHODS:

In this prospective, cross-sectional and comparative study 38 migraine patients and 44 age and sex matched controls were included. OPA was measured by dynamic contour tonometry (DCT), PPAA, RNFL, GCL and macular thickness were measured by Heidelberg Spectral Domain Optical Coherence Tomography (SD-OCT) and standard perimetry was performed using the Humphrey automated field analyzer.

RESULTS:

The difference in OPA was not statistically significant between the two groups ($p \geq 0.05$). In the PPAA there was no significant difference between two hemispheres in each eye ($p \geq 0.05$). The RNFL thickness was significantly reduced in the temporal and nasal superior sectors in the migraine group ($p \leq 0.05$). The GCL and macular thickness measurements were thinner in migraine patients but the difference between groups was not statistically significant ($p \geq 0.05$). There was no correlation between RNFL, GCL, macular thickness measurements and OPA values. There was no significant difference in the mean deviation (MD) and pattern standard deviation (PSD) between the two groups ($p \geq 0.05$).

CONCLUSIONS:

Migraine patients without aura have normal OPA values, no significant asymmetry of the posterior pole and decreased peripapillary RNFL thickness in the temporal and nasal superior sectors compared with controls. These findings suggest that there is sectorial RNFL thinning in migraine patients without aura and pulsative choroidal blood flow may not be affected during the chronic course of disease.

PMID: 26728474

16. CONCUSSIONS

HA and depression

Headache. 2016 Jan 27. doi: 10.1111/head.12762.

Comorbidity of Headache and Depression After Mild Traumatic Brain Injury.

Lucas S¹, Smith BM², Temkin N¹, Bell KR³, Dikmen S¹, Hoffman JM¹.

Author information

Abstract

OBJECTIVE:

To examine headache and depression over time in individuals who sustained mild traumatic brain injury (mTBI). Prevalence of headache and depression early after mTBI and at 1 year postinjury as well as the relationship between the two are evaluated.

BACKGROUND:

Headache is the most common physical symptom and depression is among the most common psychiatric diagnosis after traumatic brain injury regardless of severity. Headache and depression have been found to be two independent factors related to poor outcome after mTBI, yet there appears to be a paucity of research exploring the comorbidity of these two conditions after injury.

METHOD/DESIGN:

Longitudinal survey design over 1 year of 212 participants with mTBI who were admitted to a Level 1 trauma center for observation or other system injuries. Depression was based on a score ≥ 10 on the Patient Health Questionnaire-9. Headache was based on participant report of new or worse-than-preinjury headache since hospitalization (baseline) or within the previous 3 months at 1 year postinjury.

RESULTS:

The prevalence of headache and depression at baseline was 64% (135/212) and 15% (31/212), respectively. The prevalence of headache and depression at 1 year was 68% (127/187) and 27% (50/187), respectively. The co-occurrence of headache and depression increased from 11% (23/212) at baseline to 25% (46/187) at 1 year. At 1 year, the risk ratio of individuals who had headache to be depressed was 5.43 (95% CI 2.05-14.40) compared to those without headache ($P < .001$). The corresponding risk ratio at baseline was 1.64 (95% CI .77-3.49; $P = .23$).

CONCLUSIONS:

While prevalence of headache is consistently high over the first year after injury, rate of depression increased over the first year for those who were followed. Given the high rate of comorbidity, those with headache may develop depression over time. Evaluation for possible depression in those with headache after mTBI should be conducted to address both conditions over the year following injury.

KEYWORDS: depression; headache; mild traumatic brain injury; posttraumatic headache; traumatic brain injury

PMID: 26814846

Adolescent concussion recovery

J Pediatr. 2016 Jan 9. pii: S0022-3476(15)01516-4. doi: 10.1016/j.jpeds.2015.12.006.

Physical Maturity and Concussion Symptom Duration among Adolescent Ice Hockey Players.

Kriz PK¹, Stein C², Kent J³, Ruggieri D⁴, Dolan E⁴, O'Brien M⁵, Meehan WP 3rd⁵.

Author information

Abstract

OBJECTIVE:

To investigate the association between physical maturity and risk of prolonged concussion symptoms in adolescent ice hockey players.

STUDY DESIGN:

Prospective cohort study of 145 patients ages 13-18 years with concussion referred to 3 hospital-affiliated sports medicine clinics between September 1, 2012 and March 31, 2015. Concussion evaluations included Post Concussive Symptom Score, neurologic examination, and postinjury computerized neurocognitive testing. Pubertal development at initial visit was assessed by the Pubertal Developmental Scale. Duration of concussion symptoms (days) was the main outcome. Statistical comparisons were conducted using Student t test, Wilcoxon rank sum, and logistic regression.

RESULTS:

Mean symptom duration was 44.5 ± 48.7 days. Nearly one-half (48.3%) of all players enrolled had prolonged concussion symptoms (≥28 days); most (86.9%) had symptom resolution by 90 days. Among males, less physically mature adolescents took longer to recover than more physically mature players (54.5 days vs 33.4 days; P = .004). "Early" Pubertal Category Score was the strongest predictor of prolonged symptoms (OR = 4.29, 95% CI 1.24-14.85; P = .021) among males. Among females, heavier weight increased the odds of experiencing prolonged symptoms (OR 1.07, 95% CI 1.00-1.14; P = .039).

CONCLUSIONS:

Among adolescent ice hockey players, early-pubertal stage is independently associated with longer recovery from concussion in males, and heavier weight is associated with longer concussion recovery in females. Until further studies determine valid physical maturity indicators, peripubertal collision sport athletes should compete in leagues grouped by relative age and be discouraged from "playing up" on varsity teams.

PMID: 26781190

Recovery

Am J Sports Med. 2016 Jan;44(1):226-33. doi: 10.1177/0363546515610537. Epub 2015 Nov 6.

Epidemiology of Sports-Related Concussions in National Collegiate Athletic Association Athletes From 2009-2010 to 2013-2014: Symptom Prevalence, Symptom Resolution Time, and Return-to-Play Time.

Wasserman EB¹, Kerr ZY², Zuckerman SL³, Covassin T⁴.

Author information

Abstract

BACKGROUND:

Limited data exist among collegiate student-athletes on the epidemiology of sports-related concussion (SRC) outcomes, such as symptoms, symptom resolution time, and return-to-play time.

PURPOSE:

This study used the National Collegiate Athletic Association (NCAA) Injury Surveillance Program (ISP) to describe the epidemiology of SRC outcomes in 25 collegiate sports.

STUDY DESIGN:

Descriptive epidemiology study.

METHODS:

SRC data from the NCAA ISP during the 2009-2010 to 2013-2014 academic years were analyzed regarding symptoms, time to resolution of symptoms, and time to return to play. Findings were also stratified by sex in sex-comparable sports (ie, ice hockey, soccer, basketball, lacrosse, baseball/softball) and whether SRCs were reported as recurrent.

RESULTS:

Of the 1670 concussions reported during the 2009-2010 to 2013-2014 academic years, an average (\pm SD) of 5.29 ± 2.94 concussion symptoms were reported, with the most common being headache (92.2%) and dizziness (68.9%). Most concussions had symptoms resolve within 1 week (60.1%); however, 6.2% had a symptom resolution time of over 4 weeks. Additionally, 8.9% of concussions required over 4 weeks before return to play. The proportion of SRCs that required at least 1 week before return to play increased from 42.7% in 2009-2010 to 70.2% in 2013-2014 (linear trend, $P < .001$). Within sex-comparable sports analyses, the average number of symptoms and symptom resolution time did not differ by sex. However, a larger proportion of concussions in male athletes included amnesia and disorientation; a larger proportion of concussions in female athletes included headache, excess drowsiness, and nausea/vomiting. A total of 151 SRCs (9.0%) were reported as recurrent. The average number of symptoms reported with recurrent SRCs (5.99 ± 3.43) was greater than that of nonrecurrent SRCs (5.22 ± 2.88 ; $P = .01$). A greater proportion of recurrent SRCs also resulted in a long symptom resolution time (14.6% vs 5.4%, respectively; $P < .001$) and long return-to-play time (21.2% vs 7.7%, respectively; $P < .001$) compared with nonrecurrent SRCs.

CONCLUSION:

Trends in return-to-play time may indicate changing concussion management practices in which team medical staff members withhold players from participation longer to ensure symptom resolution. Concussion symptoms may differ by sex and recurrence. Future research should continue to examine the trends and discrepancies in symptom resolution time and return-to-play time.

20 A. ROTATOR CUFF**Subscapularis repair difficult**

Arch Orthop Trauma Surg. 2016 Jan;136(1):75-81. doi: 10.1007/s00402-015-2334-3. Epub 2015 Sep 20.

Recovery of subscapularis and shoulder function following arthroscopic treatment of isolated anterior and combined anterosuperior rotator cuff lesions.

Gerhardt C¹, Bartl C², Voigt C³, Lill H³, Scheibel M⁴, Frosch KH⁵, Katthagen JC³.

Author information

Abstract

BACKGROUND:

The purpose of the study was to evaluate the recovery of the subscapularis and shoulder function dependent on the type of lesion and type of surgical treatment, when compared to the non-affected contralateral shoulder. We hypothesized that regardless of type of lesion and performed surgical intervention, a significant muscle insufficiency as compared to the healthy contralateral side will remain.

PATIENTS AND METHODS:

Sixty-eight patients (14 females and 54 males) with an anterior or anterosuperior cuff lesion at an average age of 55.7 ± 11.7 years (range 20-80 years) were prospectively evaluated up to 24 months. Intraoperatively, the lesions were classified according to current systems and treated by debridement or reconstruction. Pre- and postoperatively, the Constant Score (CS) as well as the belly-press angle (BPA) and back-to-hand distance (BHD) on the affected and on the contralateral shoulder was noted.

RESULTS:

29.4 % had an isolated subscapularis lesion whereas 69.1 % had concomitant supraspinatus pathology. In 17 patients an arthroscopic debridement and in 51 patients an arthroscopic repair were performed. Postoperatively, all patients revealed a significant improvement of the CS, BPA and BHD ($p < 0.05$) independent of the type of lesion or the surgical intervention. However, reconstruction of the subscapularis tendon resulted in significant differences of CS, BPA and BHD ($p < 0.05$) compared to the contralateral shoulder.

CONCLUSION:

Reconstruction of subscapularis lesions cannot provide full subscapularis function since a residual subscapularis insufficiency remains, other than in patients with small partial tears treated with debridement alone.

KEYWORDS: Anterior cuff lesion; Anterosuperior cuff tear; Shoulder; Subscapularis; Subscapularis function

PMID: 26388036

Use of sonoelastography if useful

J Shoulder Elbow Surg. 2016 Jan 12. pii: S1058-2746(15)00590-X. doi: 10.1016/j.jse.2015.10.019.

Real-time sonoelastography in the diagnosis of rotator cuff tendinopathy.

Lee SU¹, Joo SY¹, Kim SK², Lee SH¹, Park SR¹, Jeong C³.
Author information

Abstract

BACKGROUND:

Real-time sonoelastography can be used to assess tissue elasticity. The present study evaluated the relationship between tendon stiffness on sonoelastography and the magnetic resonance imaging (MRI) tendinosis grade in patients with rotator cuff tendinopathy.

METHODS:

The study included 39 patients with chronic pain and no history of trauma or rotator cuff tear. The supraspinatus tendons were graded according to MRI findings (grade 0, normal; grade 1, mild tendinosis; grade 2, moderate tendinosis; grade 3, marked tendinosis), and the subcutaneous fat-to-tendon (Fat/T) and gel pad-to-tendon (Pad/T) strain ratios were assessed. We used the trend test to analyze the relationship of the MRI grade with the Fat/T strain ratio and the Pad/T strain ratio.

RESULTS:

Of the 39 patients, 9 had grade 0, 17 had grade 1, 12 had grade 2, and 1 had grade 3 tendinosis. The mean real-time elastography Fat/T and Pad/T strain ratios were 2.92 ± 2.13 and 20.77 ± 21.78 in patients with grade 0 tendinosis, 4.08 ± 4.09 and 21.78 ± 17.16 in patients with grade 1 tendinosis, 13.48 ± 10.19 and 83.00 ± 48.26 in patients with grade 2 tendinosis, and 12.3 ± 0.00 and 16.58 ± 0.00 in patients with grade 3 tendinosis, respectively. The Fat/T and Pad/T strain ratios were positively associated with the MRI grade ($P < .001$).

CONCLUSION:

The MRI tendinosis grade is associated with stiffness assessed using sonoelastography in patients with rotator cuff tendinopathy. Therefore, sonoelastography might be a useful diagnostic tool for supraspinatus tendinopathy.

LEVEL OF EVIDENCE:

Level III; Diagnostic Study.

KEYWORDS: diagnosis; grade; magnetic resonance imaging; rotator cuff; sonoelastography; supraspinatus tendon; tendinopathy

PMID:26794853

Comparison of tears

Am J Sports Med. 2016 Jan;44(1):198-201. doi: 10.1177/0363546515611653. Epub 2015 Nov 12.

The Coracohumeral Distance in Shoulders With Traumatic and Degenerative Subscapularis Tendon Tears.

Balke M¹, Banerjee M², Greshake O³, Hoehner J³, Bouillon B², Liem D⁴.
Author information

Abstract

BACKGROUND:

A reduced coracohumeral distance (CHD) is thought to be responsible for subcoracoid impingement. This only accounts for degenerative tendon tears. In traumatic tears, the subcoracoid space should be normal.

HYPOTHESIS:

The CHD in patients with traumatic subscapularis tendon tears is larger than that in patients with degenerative tears and does not differ from patients with an intact subscapularis tendon.

STUDY DESIGN:

Cohort study; Level of evidence, 3.

METHODS:

A total of 83 patients with arthroscopically certified subscapularis tendon tears were included in the study. Forty-four patients had degenerative causes (group 1), and 39 had traumatic causes (group 2). The control group consisted of 20 patients with traumatic supraspinatus tendon tears and arthroscopically proven, intact subscapularis tendons (group 3). On preoperative axial magnetic resonance imaging, the distance between the CHD was measured, and the values of the 3 groups were compared using the t test.

RESULTS:

The mean (\pm SD) CHD in patients with degenerative subscapularis tendon tears was 8.6 ± 2.0 mm (range, 4.0-13.2 mm) and was significantly ($P = .0003$) smaller than that in patients with traumatic tears (10.2 ± 2.0 mm; range, 6.6-16.2 mm) or controls (10.4 ± 1.8 mm; range, 6.8-14.0 mm). The CHD of controls and patients with traumatic tears did not differ significantly ($P = .7875$). A CHD of less than 6 mm only occurred in patients with degenerative subscapularis tendon tears.

CONCLUSION:

The hypothesis that the CHD in patients with degenerative subscapularis tendon tears is significantly smaller than that in patients with traumatic tears or intact subscapularis tendons was confirmed. The CHD in patients with traumatic tears does not differ from that in controls. A CHD of less than 6 mm only occurs in patients with degenerative subscapularis tendon tears.

KEYWORDS: MRI; coracohumeral distance; rotator cuff tear; shoulder trauma; subscapularis
PMID: 26564790

21. ADHESIVE CAPSULITIS

Glycation

J Shoulder Elbow Surg. 2016 Jan 5. pii: S1058-2746(15)00586-8. doi: 10.1016/j.jse.2015.10.015.

Advanced glycation end products in idiopathic frozen shoulders.

Hwang KR¹, Murrell GA², Millar NL³, Bonar F⁴, Lam P¹, Walton JR¹.

Author information

Abstract

BACKGROUND:

The pathophysiologic mechanisms behind proliferation of fibroblasts and deposition of dense collagen matrix in idiopathic frozen shoulder remain unclear. Accumulation of advanced glycation end products (AGEs) with cross-linking and stabilization of collagen has been hypothesized to contribute to this pathophysiologic process. This study investigated whether the immunoreactivity of AGEs is higher in patients with idiopathic frozen shoulder than in the control groups.

METHODS:

Shoulder capsule samples were collected from 8 patients with idiopathic frozen shoulder, 6 with unstable shoulders (control 1), and 8 with rotator cuff tears (control 2). The samples were hematoxylin and eosin stained and analyzed by immunohistochemistry using antibodies against AGEs. Immunoreactivities were rated in a blinded fashion from none (0) to strong (3). Immunohistochemical distribution within the capsule was noted.

RESULTS:

Frozen shoulder patients had greater frequency and severity of self-reported pain ($P = .02$) than rotator cuff tear patients and more restricted range of motion in all planes ($P < .05$) than patients of the instability and rotator cuff tear groups. Hematoxylin and eosin-stained capsular tissue from frozen shoulder showed fibroblastic proliferation, increased numbers of adipocytes, and increased subsynovial vascularity. Immunoreactivity of AGEs was stronger in frozen shoulder capsules (2.8) than in instability (0.3; $P = .0001$) and rotator cuff tear (1.1; $P = .016$) capsules.

CONCLUSION:

This study highlights a potential role for AGEs in the pathogenesis of frozen shoulder. The overexpression of AGEs may explain the fibroblastic proliferation and deposition of collagen matrix in idiopathic frozen shoulder.

LEVEL OF EVIDENCE:

Basic Science Study; Histology.

KEYWORDS: Frozen shoulder; adhesive capsulitis; advanced glycation end products; fibroblastic proliferation; immunoreactivity; stiff shoulder

PMID: 26776943

22 B. INSTABILITY**Evidence based exercise**

Knee Surg Sports Traumatol Arthrosc. 2015 Dec 24. [Epub ahead of print]

Evidence-based rehabilitation of athletes with glenohumeral instability.

Cools AM¹, Borms D², Castelein B², Vanderstukken F², Johansson FR^{2,3}.

Author information

Abstract

PURPOSE:

To give an overview of current knowledge and guidelines with respect to evidence-based rehabilitation of athletes with glenohumeral instability.

METHODS:

This narrative review combines scientific evidence with clinical guidelines based on the current literature to highlight the different components of the rehabilitation of glenohumeral instability.

RESULTS:

Depending on the specific characteristics of the instability pattern, the severity, recurrence, and direction, the therapeutic approach may be adapted to the needs and demands of the athlete. In general, attention should go to (1) restoration of rotator cuff strength and inter-muscular balance, focusing on the eccentric capacity of the external rotators, (2) normalization of rotational range of motion with special attention to the internal rotation ROM, (3) optimization of the flexibility and muscle performance of the scapular muscles, and (4) gradually increasing the functional sport-specific load on the shoulder girdle. The functional kinetic chain should be implemented throughout all stages of the rehabilitation program. Return to play should be based on subjective assessment as well as objective measurements of ROM, strength, and function.

CONCLUSIONS:

This paper summarizes evidence-based guidelines for treatment of glenohumeral instability. These guidelines may assist the clinician in the prevention and rehabilitation of the overhead athlete.

LEVEL OF EVIDENCE: Expert opinion, Level V.

KEYWORDS: Exercise; Rehabilitation; Shoulder instability

PMID: 26704789

25. WRIST AND HAND**Measuring hypermobility**

J Hand Surg Eur Vol. 2016 Jan 7. pii: 1753193415618110. [Epub ahead of print]

In-vivo three-dimensional measurement of distal radioulnar joint translation in normal and clinically unstable populations.

Pickering GT¹, Nagata H², Giddins GE².

Author information

Abstract

Assessment of distal radioulnar joint instability is clinically difficult and subjective. The distal radioulnar joint is postulated to 'tighten' in ulnar/radial deviation and pronation/supination. Using a rig, we measured mean distal radioulnar joint translation in neutral forearm rotation and neutral wrist radial and ulnar deviation, as well as extremes of wrist radial and ulnar deviation and forearm rotation. We tested the rig on ten cadaver forearms to validate the measurements we made. We tested 50 normal adults and 50 patients with clinical distal radioulnar joint instability. Distal radioulnar joint stability in men and women and on contralateral sides were comparable. Distal radioulnar joint translation decreased significantly with wrist radial and ulnar deviation and forearm pronation and supination, matching clinical practice and further validating the rig. The data in normal patients is comparable with previous computed tomography-based studies. Translation in all positions was statistically increased within the clinical instability group and did not cross-over with the normal ranges.

Distal radioulnar joint translation is a physically measurable phenomenon. Our device appears to be a valid test of distal radioulnar joint translation, establishing normal data in vivo.

LEVEL OF EVIDENCE: III.

KEYWORDS: DRUJ; Distal radioulnar joint; in-vivo; instability; three-dimensional; translation
PMID:26744510

26. CARPAL TUNNEL SYNDROME

Surgical results

Orthop Clin North Am. 2016 Apr;47(2):425-33. doi: 10.1016/j.ocl.2015.09.015.

Complications of Carpal Tunnel Release.

Karl JW¹, Gancarczyk SM¹, Strauch RJ².

Author information

Abstract

Carpal tunnel release for compression of the median nerve at the wrist is one of the most common and successful procedures in hand surgery. Complications, though rare, are potentially devastating and may include intraoperative technical errors, postoperative infection and pain, and persistent or recurrent symptoms. Patients with continued complaints after carpal tunnel release should be carefully evaluated with detailed history and physical examination in addition to electrodiagnostic testing. For those with persistent or recurrent symptoms, a course of nonoperative management including splinting, injections, occupational therapy, and desensitization should be considered prior to revision surgery.

KEYWORDS: Carpal tunnel syndrome; Complications; Median nerve; Release; Revision
PMID: 26772951

31. KNEE**Knee mechanics**

Knee. 2016 Jan 9. pii: S0968-0160(15)00173-8. doi: 10.1016/j.knee.2015.08.004.

In vivo kinematics of healthy male knees during squat and golf swing using image-matching techniques.

Murakami K¹, Hamai S², Okazaki K¹, Ikebe S³, Shimoto T⁴, Hara D¹, Mizu-Uchi H¹, Higaki H³, Iwamoto Y¹.

Author information

Abstract

PURPOSE:

Participation in specific activities requires complex ranges of knee movements and activity-dependent kinematics. The purpose of this study was to investigate dynamic knee kinematics during squat and golf swing using image-matching techniques.

METHODS:

Five healthy males performed squats and golf swings under periodic X-ray images at 10 frames per second. We analyzed the in vivo three-dimensional kinematic parameters of subjects' knees, namely the tibiofemoral flexion angle, anteroposterior (AP) translation, and internal-external rotation, using serial X-ray images and computed tomography-derived, digitally reconstructed radiographs.

RESULTS:

During squat from 0° to 140° of flexion, the femur moved about 25mm posteriorly and rotated 19° externally relative to the tibia. Screw-home movement near extension, bicondylar rollback between 20° and 120° of flexion, and medial pivot motion at further flexion were observed. During golf swing, the leading and trailing knees (the left and right knees respectively in the right-handed golfer) showed approximately five millimeters and four millimeters of AP translation with 18° and 26° of axial rotation, respectively. A central pivot motion from set-up to top of the backswing, lateral pivot motion from top to ball impact, and medial pivot motion from impact to the end of follow-through were observed.

CONCLUSIONS:

The medial pivot motion was not always recognized during both activities, but a large range of axial rotation with bilateral condylar AP translations occurs during golf swing. This finding has important implications regarding the amount of acceptable AP translation and axial rotation at low flexion in replaced knees.

LEVEL OF EVIDENCE: IV.

KEYWORDS: Golf swing; Image-matching techniques; Kinematics; Knee joint; Squat
PMID: 26783190

Knee alignment

Knee. 2016 Jan 7. pii: S0968-0160(15)00279-3. doi: 10.1016/j.knee.2015.12.004.

Coronal lower limb alignment in normal knees-A radiographic analysis of 797 normal knee subjects.

Nakano N¹, Matsumoto T², Hashimura M³, Takayama K¹, Ishida K⁴, Araki D¹, Matsushita T¹, Kuroda R¹, Kurosaka M¹.

Author information

Abstract

BACKGROUND:

This study aimed to resolve uncertainty regarding sex differences in alignment changes with age.

METHODS:

We measured various parameters of weight-bearing long leg radiographs of 797 legs without osteoarthritic changes, which were classified according to sex and age (young [15-39years], middle-aged [40-54years], aged [55-69years], and elderly [\geq 70years]), and performed morphological analysis of the lower extremities. The mean measurements in each group were calculated and compared among the groups.

RESULTS:

In the young and middle-aged populations, the femorotibial angle was significantly more varus in male than in female participants ($p<0.001$). In addition, medial femoral bowing was seen both in male and female participants, but it was more significant in male participants ($p<0.005$). This was due to greater femoral condylar orientation ($p<0.01$) and tibial plateau inclination ($p<0.01$) in male participants compared to female participants with nearly identical joint space narrowing. In aged and elderly populations, on the contrary, lateral femoral bowing was seen in both male and female participants, and there were no differences in any measured values, including the femorotibial angle, between male and female participants.

CONCLUSIONS:

In relatively young Japanese individuals, male participants' femorotibial angles were more varus and had more medial femoral bowing than female participants, while there was no difference in any measured values between male and female participants in older adults by a radiographic analysis on the alignment of the lower extremities.

LEVEL OF EVIDENCE:

Level 2.

PMID: 26775257

32 A. KNEE/ACL**Quadriceps force**

Knee Surg Sports Traumatol Arthrosc. 2016 Jan 8.

Impaired voluntary quadriceps force control following anterior cruciate ligament reconstruction: relationship with knee function.

Perraton L^{1,2}, Clark R³, Crossley K⁴, Pua YH⁵, Whitehead T⁶, Morris H⁷, Telianidis S⁸, Bryant A⁸.
Author information

Abstract

PURPOSE:

Impairments in quadriceps force control and altered quadriceps and hamstring muscle activation strategies have been observed following anterior cruciate ligament reconstruction; however, the functional implications of these impairments are unclear. This study examined the cross-sectional associations between quadriceps force control, quadriceps activation, hamstring coactivation and clinically assessed knee function following anterior cruciate ligament reconstruction with a hamstring graft.

METHODS:

Sixty-six patients (18 ± 3 months following surgery) and 41 uninjured individuals participated. Quadriceps force control was assessed using an isometric knee extension task. Participants cyclically increased and decreased quadriceps force at slow speeds between 5 and 30 % maximum voluntary isometric contraction matching a moving target displayed on a screen. Quadriceps activation and hamstring coactivation were assessed concurrently using surface electromyography. Knee function was assessed with the Cincinnati Knee Rating Scale and three single-leg hop tests.

RESULTS:

The reconstructed group completed the task with 48 % greater root-mean-square error (RMSE), indicating significantly worse quadriceps force control ($p < 0.001$). In a multivariable model adjusted for sex, greater RMSE and greater lateral hamstring coactivation were significantly associated with worse knee function that is greater odds of scoring <85 % on one or more knee functional assessment.

CONCLUSIONS:

Less-accurate quadriceps force output and greater hamstring coactivation are associated with worse knee joint function following anterior cruciate ligament reconstruction and may contribute to irregular knee joint loading and the onset or progression of knee osteoarthritis. Impairments in quadriceps force control and altered muscle activation strategies may be modifiable through neuromuscular training, and this is an area for future research.

LEVEL OF EVIDENCE:

Case-control study, Level III.

KEYWORDS: ACL reconstruction; Knee function; Muscle activation; Quadriceps force control
PMID: 26745965

Cartilage damage

BMC Musculoskelet Disord. 2016 Jan 13;17(1):21. doi: 10.1186/s12891-016-0871-8.

Molecular changes indicative of cartilage degeneration and osteoarthritis development in patients with anterior cruciate ligament injury.

Papathanasiou I1, Michalitsis S2, Hantes ME3, Vlychou M4, Anastasopoulou L5, Malizos KN6, Tsezou A7,8.

Author information

Abstract

BACKGROUND:

Anterior cruciate ligament (ACL) tear is considered a risk factor for osteoarthritis development. The purpose of our study was to investigate the expression levels of the apoptotic enzyme caspase 3, pro-inflammatory cytokines interleukin-1 β (IL-1 β) and interleukin-6 (IL-6) and degrading enzyme matrix metalloproteinase 13 (MMP-13), all indicative of cartilage degeneration and osteoarthritis development in patients' chondrocytes after ACL rupture.

METHODS:

We investigated the correlation between grade of cartilage degradation and time from injury or patients' age. IL-1 β , IL-6 and MMP-13 mRNA expression levels were investigated in normal (n = 4) and chondrocytes from patients with ACL rupture (n = 33) using real-time polymerase chain reaction (PCR). Moreover, MMP-13 and caspase-3 protein expression levels were evaluated by western blot analysis. Trend analysis and correlation coefficient were performed to derive the relations between gene expression (MMP13, IL-6, IL-1 β) and grading of cartilage defects and between gene expression (MMP13, IL-6, IL-1 β) and patients' age, respectively.

RESULTS:

Correlations were established between grade of cartilage degradation and time from injury. MMP-13, IL-6, IL-1 β and caspase 3 expression levels were significantly upregulated in chondrocytes from ACL-deficient knee compared to normal. Among the patients with ACL-deficient knees, a significant upregulation of MMP-13 was observed in patients with ACL-rupture > 18 months from the time of injury to arthroscopy compared to patients with ACL-injury up to 18 months, whereas IL-6 and IL-1 β expression was higher in chondrocytes from patients with more than 10 months ACL injury compared to those that underwent surgery within the first 10 months after injury. No association was observed between IL-1 β , IL-6 and MMP-13 expression levels and cartilage defects or patients' age.

CONCLUSION:

Our results showed that increased levels of apoptotic, inflammatory and catabolic factors in chondrocytes are associated with time from injury and could contribute to cartilage degradation and osteoarthritis development after ACL rupture.

PMID: 26762166

Sex comparisons

Am J Sports Med. 2016 Jan;44(1):242-54. doi: 10.1177/0363546515573008. Epub 2015 Mar 23.

The Importance of Patient Sex in the Outcomes of Anterior Cruciate Ligament Reconstructions: A Systematic Review and Meta-analysis.

Tan SH¹, Lau BP², Khin LW³, Lingaraj K².

Author information

Abstract**BACKGROUND:**

One of the well-studied epidemiological phenomena of anterior cruciate ligament (ACL) injuries is the 2- to 9-fold increase in the relative risk of ACL rupture in female athletes compared with male athletes. However, the influence of patient sex on the outcome after ACL reconstruction remains unclear, with some authors reporting inferior outcomes in females and others noting no significant difference.

PURPOSE:

To provide a comprehensive systematic review and meta-analysis to examine the possible association between patient sex and the subjective and objective outcomes after ACL reconstruction.

METHODS:

This study was conducted according to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. All studies that reported clinical outcomes after ACL reconstruction in males and females independently were included in the review. A quantitative random-effects meta-analysis was performed to compare outcomes between sexes. For outcomes with considerable heterogeneity, meta-regression was used to identify potential moderators. Articles were evaluated qualitatively when quantitative data were not reported.

RESULTS:

A total of 135 publications were included in the review. Females had inferior outcomes in instrumented laxity (standardized mean difference [SMD], 0.24; 95% CI, 0.11-0.37), revision rate (relative risk [RR], 1.15; 95% CI, 1.02-1.28), Lysholm score (SMD, -0.33; 95% CI, -0.55 to -0.11), Tegner activity scale (SMD, -0.37; 95% CI, -0.49 to -0.24), and incidence of not returning to sports (RR, 1.12; 95% CI, 1.04-1.21), all of which were statistically significant. Other outcomes were comparable between sexes, including anterior drawer test, Lachman test, pivot-shift test, timed single-legged hop test, single-legged hop test, quadriceps testing, hamstring testing, extension loss, flexion loss, development of cyclops lesion, and International Knee Documentation Committee (IKDC) knee examination score. Females and males were equally likely to develop anterior knee pain and osteoarthritis after ACL reconstruction. The graft rupture and graft failure rates did not differ significantly between sexes.

CONCLUSION:

There were comparable or inferior results for females compared with males in all outcomes analyzed. No statistically significant sex difference was identified in most of the objective parameters. However, subjective and functional outcomes, including Lysholm score, Tegner activity scale, and ability to return to sports, have been shown to be poorer in females.

KEYWORDS: anterior cruciate ligament; anterior cruciate ligament reconstruction; meta-analysis; sex

PMID: 25802119

Knee mechanics post ACL

Med Sci Sports Exerc. 2015 Dec 21.

Clinical Predictors of Knee Mechanics at Return to Sport Following ACL Reconstruction.

Kline PW¹, Johnson DL, Ireland ML, Noehren B.
Author information

Abstract

PURPOSE:

Despite significant rehabilitation, many athletes experience protracted weakness and faulty mechanics following anterior cruciate ligament reconstruction (ACLR). Clinical tests performed early in rehabilitation that predict knee mechanics at return-to-sport are virtually unknown and critically needed to guide clinical decision making. The purpose of this study is to determine if quadriceps strength, Y-Balance anterior reach distance (YB-A), and single-limb step-down test performance (SLSD) conducted 3 months post-ACLR are predictive of knee flexion excursion (KFLEX) and knee extensor moment (KEM) during running 6 months post-ACLR.

METHODS:

Thirty (16 F) subjects were collected 3 and 6 months post-ACLR. Age 21.3 ± 7.6 years, mass 69.85 ± 11.4 kg, height 1.73 ± 0.09 m. At 3 months post-ACLR, subjects performed isometric quadriceps strength testing, YB-A, and SLSD assessments. At 6 months post-ACLR, subjects underwent 3-D motion analysis while running on an instrumented treadmill. Pearson's correlation coefficients and stepwise multiple regression were used to assess the relationships of 3 month and 6 month variables.

RESULTS:

Quadriceps strength ($r=.493$, $p<0.01$), YB-A ($r=.394$, $p=0.03$), and SLSD ($r=.648$, $p<0.01$) were significantly correlated to KFLEX. Quadriceps strength ($.505$, $p<0.01$) and SLSD ($.541$, $p<0.01$) were significantly correlated with KEM, while YB-A ($.276$, $p=0.06$) was not. SLSD and quadriceps strength were predictive of KEM (Adj R $.36$, $p=.001$) while only SLSD was predictive of KFLEX (Adj R $.40$, $p<.001$).

CONCLUSIONS:

After ACLR, better performance in SLSD and quadriceps strength 3 months post-surgery is predictive of improved sagittal plane knee mechanics during running 6 months post-surgery.

PMID: 26694845

ACL adaptations

Am J Sports Med. 2016 Jan;44(1):143-51. doi: 10.1177/0363546515608475. Epub 2015 Oct 22.

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

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

Abstract

BACKGROUND:

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

HYPOTHESIS:

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

STUDY DESIGN:

Case-control study; Level of evidence, 3.

METHODS:

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

RESULTS:

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

CONCLUSION:

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

KEYWORDS: anterior cruciate ligament; contact force; knee moment; loading; osteoarthritis
PMID: 26493337

Adherence to rehab

Orthop J Sports Med. 2015 Dec 10;3(12):2325967115620770. doi: 10.1177/2325967115620770. eCollection 2015.

Increased Compliance With Supervised Rehabilitation Improves Functional Outcome and Return to Sport After Anterior Cruciate Ligament Reconstruction in Recreational Athletes.

Han F¹, Banerjee A², Shen L³, Krishna L¹.

Author information

Abstract

BACKGROUND: Successful return to sport is an important outcome measure after anterior cruciate ligament (ACL) reconstruction and a reason for patients' decisions to elect surgery. Rehabilitation programs supervised by physical therapists are routinely prescribed after ACL reconstruction surgery. However, the added advantage of supervised physical therapy after ACL reconstruction is still debatable.

HYPOTHESIS: Attending more supervised physical therapy sessions after arthroscopic ACL reconstruction in recreational athletes increases their chance of successful return to sport.

STUDY DESIGN: Cohort study; Level of evidence, 3.

METHODS: The authors analyzed 93 recreational athletes who underwent arthroscopic ACL reconstruction. After arthroscopic single-bundle ACL reconstruction, patients were advised to attend 20 supervised physical therapy sessions. Patients' demographics, surgical details, and outcome measures (Knee injury and Osteoarthritis Outcome Score [KOOS], Lysholm scale, and Short Form-36 Health Survey [SF-36]) were recorded presurgery and at 1-year follow-up. Ability to return to sports was documented through patients' self-report. The attendance at physical therapy by each patient was obtained by examining database records and assessed as fully compliant (>15 sessions), moderately compliant (6-15 sessions), or noncompliant (<6 sessions).

RESULTS: Patients in the fully compliant group had significantly greater odds (odds ratio [OR], 18.5; 95% CI, 1.9-184.5; P = .013) of a successful return to sport as compared with the noncompliant group. Patients in the moderately compliant group also had greater odds of returning to sport as compared with the noncompliant group (OR, 4.2; 95% CI, 1.0-16.6; P = .043). Patients in the fully compliant group had significantly greater scores on the Lysholm (P < .001), KOOS Sports and Recreation subscale (P = .021), KOOS Symptoms subscale (P = .040), and SF-36 physical component summary (PCS) (P = .012) as compared with the noncompliant group. Moderately compliant patients had significantly greater scores on the Lysholm (P = .004), KOOS Sports and Recreation (P = .026), KOOS Symptoms (P = .041), KOOS Quality of Life (P = .022), and SF-36 PCS (P = .004) as compared with noncompliant patients.

CONCLUSION: In recreational athletes, moderate to full compliance with a supervised physical therapy program predicts improved knee function and a greater chance of returning to sport 1 year after ACL reconstruction.

KEYWORDS: anterior cruciate ligament reconstruction; compliance with physical therapy; physical therapy; return to sports

PMID: 26740958

37. OSTEOARTHRITIS/KNEE**Alternatives impact on Knee OA****Knee osteoarthritis pain in the elderly can be reduced by massage therapy, yoga and tai chi:
A review**

Complementary Therapies in Clinical Practice , 01/28/2016Field T This is a review of recently published research, both empirical studies and meta-analyses, on the effects of complementary therapies including massage therapy, yoga and tai chi on pain associated with knee osteoarthritis in the elderly. Larger, randomized control trials are needed on each of these therapies using more standardized protocols and more objective variables in addition to the self-reported WOMAC pain scale, for example, range-of-motion and observed range-of-motion pain. In addition, treatment comparison studies should be conducted so, for example, if the lower-cost yoga and tai chi were as effective as massage therapy, they might be used in combination with or as supplemental to massage therapy. Nonetheless, these therapies are at least reducing pain in knee osteoarthritis and they do not seem to have side effects. Fernandez-de-las-Penas C, et al. –

- The massage therapy protocols have been effective in not only reducing pain but also in increasing range of motion, specifically when moderate pressure massage was used and when both the quadriceps and hamstrings were massaged.
- The yoga studies typically measured pain by the WOMAC.
- Most of those studies showed a clinically significant reduction in pain, especially the research that focused on poses (e.g. the Iyengar studies) as opposed to those that had integrated protocols (poses, breathing and meditation exercises).
- The tai chi studies also assessed pain by self-report on the WOMAC and showed significant reductions in pain.
- The tai chi studies were difficult to compare because of their highly variable protocols in terms of the frequency and duration of treatment

Hyaluronan

Arthritis Res Ther. 2016 Jan 21;18(1):18. doi: 10.1186/s13075-016-0922-4.

Hyaluronan concentration and size distribution in human knee synovial fluid: variations with age and cartilage degeneration.

Temple-Wong MM¹, Ren S², Quach P³, Hansen BC⁴, Chen AC⁵, Hasegawa A⁶, D'Lima DD^{7,8}, Koziol J⁹, Masuda K¹⁰, Lotz MK¹¹, Sah RL^{12,13,14}.

Author information

Abstract

BACKGROUND:

One potential mechanism for early superficial cartilage wear in normal joints is alteration of the lubricant content and quality of synovial fluid. The purpose of this study was to determine if the concentration and quality of the lubricant, hyaluronan, in synovial fluid: (1) was similar in left and right knees; (2) exhibited similar age-associated trends, whether collected postmortem or antemortem; and (3) varied with age and grade of joint degeneration.

METHODS:

Human synovial fluid of donors (23-91 years) without osteoarthritis was analyzed for the concentrations of protein, hyaluronan, and hyaluronan in the molecular weight ranges of 2.5-7 MDa, 1-2.5 MDa, 0.5-1 MDa, and 0.03-0.5 MDa. Similarity of data between left and right knees was assessed by reduced major axis regression, paired t-test, and Bland-Altman analysis. The effect of antemortem versus postmortem collection on biochemical properties was assessed for age-matched samples by unpaired t-test. The relationships between age, joint grade, and each biochemical component were assessed by regression analysis.

RESULTS:

Joint grade and the concentrations of protein, hyaluronan, and hyaluronan in the molecular weight ranges of 2.5-7 MDa, 1-2.5 MDa, and 0.5-1 MDa in human synovial fluid showed good agreement between left and right knees and were similar between age-matched patient and cadaver knee joints. There was an age-associated decrease in overall joint grade (-15 %/decade) and concentrations of hyaluronan (-10.5 %/decade), and hyaluronan in the molecular weight ranges of 2.5-7 MDa (-9.4 %/decade), 1-2.5 MDa (-11.3 %/decade), 0.5-1 MDa (-12.5 %/decade), and 0.03-0.5 MDa (-13.0 %/decade). Hyaluronan concentration and quality was more strongly associated with age than with joint grade.

CONCLUSIONS:

The age-related increase in cartilage wear in non-osteoarthritic joints may be related to the altered hyaluronan content and quality of synovial fluid.

PMID: 26792492

38 A. FOOT AND ANKLE**Lisfranc recovery**

Am J Sports Med. 2016 Jan;44(1):166-70. doi: 10.1177/0363546515616814. Epub 2015 Dec 4.

Return to Training and Playing After Acute Lisfranc Injuries in Elite Professional Soccer and Rugby Players.

Deol RS¹, Roche A², Calder JD³.

Author information

Abstract

BACKGROUND:

Lisfranc joint injuries are increasingly recognized in elite soccer and rugby players. Currently, no evidence-based guidelines exist on time frames for return to training and competition after surgical treatment.

PURPOSE:

To assess the time to return to training and playing after Lisfranc joint injuries.

STUDY DESIGN:

Case series; Level of evidence, 4.

METHODS:

A consecutive series of 17 professional soccer and rugby players in the English Premier/Championship leagues was assessed using prospectively collected data. All were isolated injuries sustained during training or competitive matches. Each player had clinical and radiological evidence of an unstable Lisfranc injury and required surgical treatment. A standardized postoperative regimen was used. The minimum follow-up time was 2 years.

RESULTS:

Clinical and radiological follow-up was obtained in all 17 players. Seven players had primarily ligamentous injuries, and 10 had bony injuries. The time from injury to fixation ranged from 8 to 31 days, and hardware was removed at 16 weeks postoperatively. One athlete retired after a ligamentous injury; the remaining 16 players returned to training and full competition. Excluding the retired player, the mean time to return to training was 20.1 weeks (range, 18-24 weeks) and to full competition was 25.3 weeks (range, 21-31 weeks). There was a significant difference between the mean time to return to competition for rugby (27.8 weeks) and soccer players (24.1 weeks; $P = .02$) and for ligamentous (22.5 weeks) compared with bony injuries (26.9 weeks; $P = .003$). Three patients suffered deep peroneal nerve sensation loss, from which 1 patient did not fully recover.

CONCLUSION:

Return to competitive elite-level soccer and rugby is possible after surgically treated Lisfranc injuries. Return to training can take up to 24 weeks and return to playing up to 31 weeks, with bony injuries taking longer.

KEYWORDS: Lisfranc; professional athlete; return to playing; return to training; rugby; soccer
PMID: 26637283

40. ANKLE SPRAINS AND INSTABILITY**Factors that lend themselves to ankle sprain**

Sports Health. 2015 Dec 28. pii: 1941738115623775.

Intrinsic Risk Factors of Lateral Ankle Sprain: A Systematic Review and Meta-analysis.

Kobayashi T¹, Tanaka M², Shida M².

Author information

Abstract

CONTEXT:

Lateral ankle ligamentous sprain (LAS) is one of the most common injuries in recreational activities and competitive sports. Many studies have attempted to determine whether there are certain intrinsic factors that can predict LAS. However, no consensus has been reached on the predictive intrinsic factors.

OBJECTIVE:

To identify the intrinsic risk factors of LAS by meta-analysis from data in randomized control trials and prospective cohort studies.

DATA SOURCES:

A systematic computerized literature search of MEDLINE, CINAHL, ScienceDirect, SPORTDiscus, and Cochrane Register of Clinical Trials was performed.

STUDY SELECTION:

A computerized literature search from inception to January 2015 resulted in 1133 studies of the LAS intrinsic risk factors written in English.

STUDY DESIGN:

Systematic review.

LEVEL OF EVIDENCE:

Level 4.

DATA EXTRACTION:

The modified quality index was used to assess the quality of the design of the papers and the standardized mean difference was used as an index to pool included study outcomes.

RESULTS:

Eight articles were included in this systematic review. Meta-analysis results showed that body mass index, slow eccentric inversion strength, fast concentric plantar flexion strength, passive inversion joint position sense, and peroneus brevis reaction time correlated with LAS.

CONCLUSION:

Body mass index, slow eccentric inversion strength, fast concentric plantar flexion strength, passive inversion joint position sense, and the reaction time of the peroneus brevis were associated with significantly increased risk of LAS.

KEYWORDS: lateral ankle sprain; meta-analysis; risk factor

PMID: 26711693

41 A. ACHILLES TENDON AND CALF**Return to sports**

Knee Surg Sports Traumatol Arthrosc. 2016 Jan 5.

Achilles tendon Total Rupture Score at 3 months can predict patients' ability to return to sport 1 year after injury.

Hansen MS1, Christensen M2, Budolfsen T3, Østergaard TF4, Kalleose T5, Troelsen A6, Barfod KW6.

Author information

Abstract

PURPOSE:

To investigate how the Achilles tendon Total Rupture Score (ATRS) at 3 months and 1 year after injury is associated with a patient's ability to return to work and sports as well as to investigate whether sex and age influence ATRS after 3 months and 1 year.

METHOD:

This is a retrospective study analysing the data from the Danish Achilles tendon Database. A total of 366 patients were included. Logistic regression was conducted to describe the effect of ATRS on return to work and sports. The effect of age and sex on ATRS was analysed by linear regression.

RESULTS:

Three months after injury patients had a significantly increased chance of return to sport after 1 year with an increased ATRS (OR 1.06, $p = 0.001$) but a non-significant effect on return to work. After 1 year, patients had a significantly increased probability of having returned to sport (OR 1.11, $p < 0.001$) and also having returned to work (OR 1.05, $p = 0.007$) with an increased ATRS. Men had an average 7 ($p = 0.006$) points higher ATRS at 3 months and an average 22 ($p = 0.006$) points higher at 1 year.

CONCLUSION:

ATRS is associated with patients' ability to return to sports and work. ATRS at 3 months can be used as a predictor of the patient's ability to return to sports after 1 year. Hereby, ATRS might help to individualise rehabilitation by identifying patients who do not respond adequately to the chosen treatment.

LEVEL OF EVIDENCE: II.

KEYWORDS: Achilles tendon Total Rupture Score; Achilles tendon rupture; Predictive value; Return to sport; Sex

PMID: 26733273

Frequency of eccentric ex.

Lasers Med Sci. 2016 Jan;31(1):127-35. doi: 10.1007/s10103-015-1840-4. Epub 2015 Nov 26.

Photobiomodulation and eccentric exercise for Achilles tendinopathy: a randomized controlled trial.

Tumilty S¹, Mani R², Baxter GD².
Author information

Abstract

BACKGROUND:

The common regime of eccentric exercise in use for Achilles tendinopathy is somewhat arduous and compliance issues can arise. This is the first study to investigate the effectiveness of a regime of fewer exercise sessions combined with photobiomodulation for the treatment of Achilles tendinopathy.

METHODS:

A double blind randomized controlled trial and intention-to-treat analysis were performed. Eighty participants, 18-65 years with Achilles tendinopathy and symptoms for longer than 3 months, were included in the trial. Participants randomized into one of four groups; 1 (Placebo + Ex Regime 1) or 2 (Laser + Ex Regime 1) or 3 (Placebo + Ex Regime 2) or 4 (Laser + Ex Regime 2). The primary outcome measure was the Victorian Institute of Sports Assessment-Achilles (VISA-A) questionnaire. Outcomes were collected at baseline, week 4 and week 12.

RESULTS:

Sixteen participants were lost to follow-up at 12 weeks, 4 of which due to adverse reactions. As per intention to treat, missing data were imputed, 80 participants were included in the final analysis. For VISA-A at 12 weeks, group 4 achieved significant gains over the other 3 groups: group 1 (18.5 [9.1, 27.9]), group 2 (10.4 [1.5, 19.2]), group 3 (11.3 [3.0, 19.6]). There was a moderate effect size in favour of exercise twice per week (7.2 [-1.8, 16.2], ES .7).

CONCLUSIONS:

Twice-daily exercise sessions are not necessary as equivalent results can be obtained with two exercise sessions per week. The addition of photobiomodulation as adjunct to exercise can bring added benefit.

KEYWORDS: Dose response; Exercise therapy; Laser therapy; Rehabilitation
PMID:26610637

Eccentric exercise impact

J Strength Cond Res. 2015 Dec 15.

Ultrasound changes in Achilles tendon and Gastrocnemius Medialis muscle on squat eccentric overload and running performance.

Sanz-López F¹, Berzosa Sánchez C, Hita-Contreras F, Cruz-Díaz D, Martínez-Amat A.
Author information

Abstract

Previous studies have proven the adaptation to load in the Achilles tendon and gastrocnemius muscle after different types of exercise, such as running, heel drop training, and a variety of sports. These findings have been applied to improve performance and in the treatment and prevention of overuse injuries. However, the effects that squat performance may have on the Achilles tendon and gastrocnemius muscle are still unknown. Squats are a widely-used training exercise that involves calf-muscle activation. Similarly, no reports have been published regarding the adaptation to load of trained and untrained subjects during several consecutive days of running. The purpose of this study was to analyze changes in the Achilles tendon and in the pennation angles of the gastrocnemius medialis after eccentric overload training and within three days of running. Twenty healthy males who volunteered for this study were divided into two groups. Subjects in the eccentric overload training group (ECC) performed six weeks of eccentric overload training (twice weekly, four sets of seven repetitions in a Yoyo squat device) prior to the running intervention. All participants, ECC and control (CONT), ran on three consecutive days. After the eccentric training, an increase in the cross sectional area of the Achilles tendon and in the pennation angle were observed. As for the running intervention, the behavior of tissues in both groups was similar. These results suggest that eccentric overload training with squats promotes changes in the Achilles tendon and in the pennation angle of the gastrocnemius medialis muscle. Nevertheless, significant changes in the tissue do not appear between the running performance of trained and untrained subjects.

PMID:26677829

41 B. COMPARTMENT SYNDROME**Identification of**

J Bone Joint Surg Am. 2016 Jan 6;98(1):56-61. doi: 10.2106/JBJS.N.01280.

Changes in Muscle Oxygen Saturation Have Low Sensitivity in Diagnosing Chronic Anterior Compartment Syndrome of the Leg.

Rennerfelt K¹, Zhang Q², Karlsson J², Styf J².
Author information

Abstract

BACKGROUND:

Near-infrared spectroscopy measures muscle oxygen saturation (StO₂) in the skeletal muscle and has been proposed as a noninvasive tool for diagnosing chronic anterior compartment syndrome (CACS). The purpose of this study was to investigate the diagnostic value of changes in StO₂ during and after exercise in patients with CACS.

METHODS:

The study comprised 159 consecutive patients with exercise-induced leg pain. Near-infrared spectroscopy was used to measure StO₂ continuously before, during, and after an exercise test. One minute post-exercise, intramuscular pressure was recorded in the same muscle. The cohort was divided into patients with CACS (n = 87) and patients without CACS (n = 72) according to the CACS diagnostic criteria. Reoxygenation at rest after exercise was calculated as the time period required for the level of muscular StO₂ to reach 50% (T50), 90% (T90), and 100% (T100) of the baseline value.

RESULTS:

The lowest level of StO₂ during exercise was 1% (range, 1% to 36%) in the patients with CACS and 3% (range, 1% to 54%) in the patients without CACS. The sensitivity was 34% and the specificity was 43% when an StO₂ level of ≤8% at peak exercise was used to indicate CACS. The sensitivity and the specificity were only 1% when an StO₂ level of ≤50% at peak exercise was used to indicate CACS. The time period for reoxygenation was seven seconds (range, one to forty-three seconds) at T50, twenty-eight seconds (range, seven to seventy-seven seconds) at T90, and forty-two seconds (range, seven to 200 seconds) at T100 in the patients with CACS and ten seconds (range, one to forty-nine seconds) at T50, thirty-two seconds (range, four to 138 seconds) at T90, and forty-eight seconds (range, four to 180 seconds) at T100 in the patients without CACS. When thirty seconds or more at T90 was set as the cutoff value for a prolonged time for reoxygenation, indicating a diagnosis of CACS, the sensitivity was 38% and the specificity was 50%.

CONCLUSIONS:

Changes in muscle oxygen saturation during and after an exercise test that elicits leg pain cannot be used to distinguish between patients with CACS and patients with other causes of exercise-induced leg pain.

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

PMID: 26738904

45 A. MANUAL THERAPY LUMBAR & GENERAL**McKenzie and LBP**

Phys Ther. 2015 Oct 22.

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

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

Abstract

BACKGROUND:

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

OBJECTIVE:

The purpose of the study was to investigate whether baseline characteristics of patients with chronic LBP, already classified as derangement syndrome, can identify those who respond better to MDT compared with Back School.

METHODS:

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

RESULTS:

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

LIMITATIONS:

The sample (n=140) was powered to detect the main effects of treatment but not to detect the interactions of the potential treatment effect modifiers.

CONCLUSIONS:

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

PMID: 26494768

Impact of mobilization

Spine (Phila Pa 1976). 2016 Jan;41(2):159-72. doi: 10.1097/BRS.0000000000001151.

Mechanism of Action of Spinal Mobilizations: A Systematic Review.

Aguirrebeña IL¹, Newham D, Critchley DJ.
Author information

Abstract

STUDY DESIGN:

Systematic review.

OBJECTIVE:

To review the evidence regarding the mechanism of action of mobilizations.

SUMMARY OF BACKGROUND DATA:

Spinal mobilizations-low velocity passive oscillatory movements-reduce spinal pain in some patient subgroups. Identifying patients likely to respond remains a challenge since mobilizations' mechanism(s) of action are unclear.

METHODS:

Medline, Web of Science, Cinahl, Embase, and Scopus databases were searched for relevant studies. Reference lists of included studies were hand searched. Studies were included if the intervention was passive spinal mobilizations, participants were symptomatic, and outcomes evaluated possible mechanisms of action. Methodological quality was independently assessed by two assessors using a modified Cochrane Back Review Group tool.

RESULTS:

Twenty-four studies were included in the review. Four were classified high risk, 14 moderate risk, and four low risk of bias. Commonest methodological limitations were lack of participant blinding, adequate randomization and allocation concealment, and sample size calculation. Evidence suggests that spinal mobilizations cause neurophysiological effects resulting in hypoalgesia (local and/or distal to mobilization site), sympathoexcitation, and improved muscle function. Mobilizations have no effect on temperature pain threshold. Three of four studies reported reduction in spinal stiffness, heterogeneous in location and timing. There is limited evidence (one study in each case) to suggest that mobilizations produce increased nociceptive flexion reflex threshold, improved posture, decreased concentration of substance P in saliva, and improved sway index measured in cervical extension. Evidence does not support an effect on segmental vertebral movement. Two studies investigated correlations between hypoalgesia and mechanism: one found a correlation with sympathoexcitatory changes, whereas the other found no correlation with change in stiffness.

CONCLUSION:

These findings suggest involvement of an endogenous pain inhibition system mediated by the central nervous system, although this is yet to be investigated directly. There is limited evidence regarding other possible mechanisms.

LEVEL OF EVIDENCE: 3.

PMID: 26751060

45 B. MANUAL THERAPY CERVICAL**C spine manip improved scapular muscle strength**

Musculoskeletal Care. 2016 Jan 12. doi: 10.1002/msc.1132.

Scapulothoracic Muscle Strength Changes Following a Single Session of Manual Therapy and an Exercise Programme in Subjects with Neck Pain.

Petersen S¹, Domino N¹, Postma C¹, Wells C¹, Cook C².

Author information

Abstract

INTRODUCTION:

Scapulothoracic muscle weakness has been associated with neck pain (NP). Little evidence exists regarding lower trapezius (LT), middle trapezius (MT) and serratus anterior (SA) strength in this population. LT strength changes have been observed following thoracic manipulation in healthy subjects. The purpose of the present study was to examine scapulothoracic strength changes following cervical manipulation in subjects with NP.

METHODS:

Twenty-two subjects with NP and 17 asymptomatic control (AC) subjects underwent strength testing of the LT, MT and SA using a hand-held dynamometer. Subjects with NP were treated with passive intervertebral neck manipulation and neck range of motion exercises. The AC group received no intervention. Strength testing was repeated after manipulation, then 48 and 96 hours later. Change scores were calculated for strength over time. Paired t-tests were done for strength change between painful and non-painful sides in the NP group. Independent t-tests were done for strength change between the NP group and AC group.

RESULTS:

There was no significant difference between groups for age, gender, hand dominance or body mass index. Mean (standard deviation) symptom duration for subjects in the NP group was 43.27 (62.71) months. There was no significant difference in strength change over time between painful and non-painful sides in the NP group for any muscle; however, there was a significant difference in strength change over time between those in the NP group and AC group for the LT ($p < 0.01$), SA ($p < 0.01$) and MT ($p < 0.01$).

DISCUSSION:

Scapulothoracic muscle strength improvements were observed in both extremities following passive intervertebral neck manipulation and neck range of motion exercises. Improvements lasted up to 96 hours following manipulation, even though no strengthening exercises were prescribed.

CONCLUSIONS:

Manipulation and range of motion should be considered as a component of intervention programmes for patients with NP and scapulothoracic muscle weakness. Future studies should compare manipulation alone to exercise alone to determine impact on strength. Copyright © 2016 John Wiley & Sons, Ltd.

KEYWORDS: Axioscapular; manipulation; mobilization; scapula; serratus anterior; trapezius
PMID: 26756540

46 A. UPPER LIMB NEUROMOBILIZATION**Thoracic outlet**

Vasc Endovascular Surg. 2016 Jan 6. pii: 1538574415623650.

Preoperative Duplex Scanning is a Helpful Diagnostic Tool in Neurogenic Thoracic Outlet Syndrome.

Orlando MS¹, Likes KC², Mirza S², Cao Y², Cohen A², Lum YW², Freischlag JA².

Author information

Abstract

OBJECTIVE:

To evaluate the diagnostic role of venous and arterial duplex scanning in neurogenic thoracic outlet syndrome (NTOS).

METHODS:

Retrospective review of patients who underwent duplex ultrasonography prior to first rib resection and scalenectomy (FRRS) for NTOS from 2005 to 2013. Abnormal scans included ipsilateral compression (IC) with abduction of the symptomatic extremity (>50% change in subclavian vessel flow), contralateral (asymptomatic side) compression (CC) or bilateral compression (BC).

RESULTS:

A total of 143 patients (76% female, average age 34, range 13-59) underwent bilateral preoperative duplex scanning. Ipsilateral compression was seen in 44 (31%), CC in 12 (8%), and BC in 14 (10%). Seventy-three (51%) patients demonstrated no compression. Patients with IC more often experienced intraoperative pneumothoraces (49% vs. 25%, $P < .05$) and had positive Adson tests (86% vs. 61%, $P < .02$).

CONCLUSION:

Compression of the subclavian vein or artery on duplex ultrasonography can assist in NTOS diagnosis. Ipsilateral compression on abduction often correlates with Adson testing.

KEYWORDS: duplex ultrasonography; first rib resection and scalenectomy; neurogenic thoracic outlet syndrome

PMID:26744377

Neural management for pain

Clin J Pain. 2015 Dec 24.

Does Evidence Support the Use of Neural Tissue Management to Reduce Pain and Disability in Nerve-related Chronic Musculoskeletal Pain? A Systematic Review with Meta-analysis.

Su Y¹, Lim EC.

Author information

Abstract

OBJECTIVES:

In nerve-related chronic musculoskeletal (MS) disorders, neural tissue management is used to relieve pain by balancing the relative movement of neural tissues and their surrounding tissues. To date, there has not been any review evaluating the magnitude of this treatment effect in nerve-related chronic MS pain. The aim of this review was to compare pain and disability in individuals with nerve-related chronic MS pain who were treated with neural tissue management with those who received minimal or other treatment approaches.

METHODS:

Searches of eight major electronic databases were conducted. Data for pain and disability scores were then extracted. Meta-analyses (where possible) with either a fixed- or random- effect(s) model, standardized mean differences (SMDs), and tests of heterogeneity were performed.

RESULTS:

Twenty clinical controlled trials were identified and included in the meta-analyses. When compared to minimal intervention, neural mobilization provided superior pain relief (pooled SMD -0.77, 95% confidence interval [CI] -1.11 to -0.42, $P < 0.0001$), and reduction in disability (pooled SMD -1.06, 95% CI -1.97 to -0.14, $P = 0.02$), after post-hoc sensitivity analyses. No significant differences were found when comparing neural mobilization to other treatment approaches for pain (pooled SMD -0.67, 95% CI -2.03 to 0.69, $P = 0.33$), after post-hoc sensitivity analysis, and disability (pooled SMD -0.03, 95% CI -0.54 to 0.59, $P = 0.93$).

DISCUSSION:

Neural tissue management is superior to minimal intervention for pain relief and reduction of disability in nerve-related chronic MS pain. Existing evidence does not establish superiority of neural mobilization over other forms of intervention in reducing pain and disability for individuals with nerve-related chronic MS pain.

PMID: 26710222

47. STRETCHING/MUSCLES**Hamstring tears**

Am J Sports Med. 2015 Dec 15. pii: 0363546515617472.

Determinants of Return to Play After the Nonoperative Management of Hamstring Injuries in Athletes: A Systematic Review.

Fournier-Farley C¹, Lamontagne M², Gendron P³, Gagnon DH⁴.
Author information

Abstract

BACKGROUND: It is important for clinicians to rely on suitable prognosis factors after hamstring injuries because of the high incidence of these injuries and time away from athletic activities.

PURPOSE: To summarize the current literature on factors that influence return to play after a hamstring injury in athletes.

STUDY DESIGN: Systematic review.

METHODS: A computer-assisted literature search of CINAHL, MEDLINE, Embase, and EBM Reviews databases (and a manual search of the reference lists of all selected articles) was conducted using keywords related to hamstring injuries and return to play. The literature review criteria included (1) patients with an acute hamstring or posterior thigh injury; (2) a randomized controlled trial, cohort study, case-control study, case series, or prospective or retrospective design; (3) information on rehabilitation, physical therapy, clinical assessment, imaging techniques, and return to play; and (4) studies written in English or French.

RESULTS: The search strategy identified 914 potential articles, of which 24 met the inclusion criteria. In terms of the clinical assessment, the following factors were associated with a longer recovery time: stretching-type injuries, recreational-level sports, structural versus functional injuries, greater range of motion deficit with the hip flexed at 90°, time to first consultation >1 week, increased pain on the visual analog scale, and >1 day to be able to walk pain free after the injury. As for magnetic resonance imaging studies, the following factors correlated with a longer recovery time: positive findings; higher grade of injury; muscle involvement >75%; complete transection; retraction; central tendon disruption of the biceps femoris; proximal tendon involvement; shorter distance to the ischial tuberosity; length of the hamstring injury; and depth, volume, and large cross-sectional area. With respect to ultrasound studies, the following factors were associated with a poor prognosis: large cross-sectional area, injury outside the musculotendinous junction, hematoma, structural injury, and injury involving the biceps femoris. Lastly, rehabilitation approaches that included hamstring loading during extensive lengthening or 4 daily sessions of static hamstring stretching led to shorter rehabilitation times.

CONCLUSION: Numerous determinants have an effect on return to play after a hamstring injury in athletes. It is important for sports professionals to be aware of those determinants to guide athletes through the rehabilitation process and refine return-to-play strategies.

KEYWORDS: hamstring injury; imaging; rehabilitation; return to play

PMID: 26672025

49. STRETCHING

As a part of warm up

Acute effects of muscle stretching on physical performance, range of motion, and injury incidence in healthy active individuals: a systematic review.

Behm DG, et al. Appl Physiol Nutr Metab. 2016.

Show full citation

Abstract

Recently, there has been a shift from static stretching (SS) or proprioceptive neuromuscular facilitation (PNF) stretching within a warm-up to a greater emphasis on dynamic stretching (DS). The objective of this review was to compare the effects of SS, DS, and PNF on performance, range of motion (ROM), and injury prevention. The data indicated that SS- (-3.7%), DS- (+1.3%), and PNF- (-4.4%) induced performance changes were small to moderate with testing performed immediately after stretching, possibly because of reduced muscle activation after SS and PNF. A dose-response relationship illustrated greater performance deficits with ≥ 60 s (-4.6%) than with < 60 s (-1.1%) SS per muscle group. Conversely, SS demonstrated a moderate (2.2%) performance benefit at longer muscle lengths. Testing was performed on average 3-5 min after stretching, and most studies did not include poststretching dynamic activities; when these activities were included, no clear performance effect was observed. DS produced small-to-moderate performance improvements when completed within minutes of physical activity. SS and PNF stretching had no clear effect on all-cause or overuse injuries; no data are available for DS. All forms of training induced ROM improvements, typically lasting < 30 min. Changes may result from acute reductions in muscle and tendon stiffness or from neural adaptations causing an improved stretch tolerance. Considering the small-to-moderate changes immediately after stretching and the study limitations, stretching within a warm-up that includes additional poststretching dynamic activity is recommended for reducing muscle injuries and increasing joint ROM with inconsequential effects on subsequent athletic performance.

PMID- 26642915

50 A. MOTOR CONTROL**Mirror therapy**

Med Sci Sports Exerc. 2016 Jan 13.

Mirror Training Augments the Cross-education of Strength and Affects Inhibitory Paths.

Zult T¹, Goodall S, Thomas K, Solnik S, Hortobágyi T, Howatson G.

Author information

Abstract

PURPOSE:

Unilateral strength training not only strengthens muscles on the trained side, but also the homologous muscles on the untrained side; however, the magnitude of this interlimb cross-education is modest. We tested the hypothesis that heightened sensory feedback by mirror-viewing the exercising hand would augment cross-education by modulating neuronal excitability.

METHODS:

Healthy adults were randomized into a mirror training group (MG, N = 11) and no-mirror training group (NMG, N = 12) and performed 640 shortening muscle contractions of the right wrist flexors at 80% maximal voluntary contraction (MVC) during 15 sessions over three weeks. Maximal strength and specific transcranial magnetic stimulation metrics of neuronal excitability, measured in the mirror and no-mirror setup at rest and during unilateral contractions at 60% MVC, were assessed prior to and following the strength intervention.

RESULTS:

Trained wrist flexor MVC increased 72% across groups while cross-education was higher for the MG (61%) than NMG (34%; $P = 0.047$). The MG showed a reduction (15-16%) in contralateral silent period duration measured from the contracting left-untrained flexor carpi radialis, while the NMG showed an increase (12%; $P \leq 0.030$). Interhemispheric inhibition, measured from the trained to untrained primary motor cortex, increased for the MG (11%) but decreased for the NMG (15%) when measured in the mirror setup at rest ($P = 0.048$). Other TMS measures did not change.

CONCLUSION:

Viewing the exercising hand in a mirror can augment the cross-education effect. The use of a mirror in future studies can potentially accelerate functional recovery from unilateral impairment due to stroke or upper limb fracture.

PMID: 26765630

52. EXERCISE**Inflammation of exercise**

Med Sci Sports Exerc. 2016 Jan 13.

Arm and Intensity-Matched Leg Exercise Induce Similar Inflammatory Responses.

Leicht CA¹, Paulson TA, Goosey-Tolfrey VL, Bishop NC.

Author information

Abstract

INTRODUCTION:

The amount of active muscle mass can influence the acute inflammatory response to exercise, associated with reduced risk for chronic disease. This may affect those restricted to upper body exercise, for example due to injury or disability. The purpose of this study was to compare the inflammatory responses for arm exercise and intensity-matched leg exercise.

METHODS:

Twelve male individuals performed three 45-min constant load exercise trials following determination of peak oxygen uptake for arm exercise ($V[\text{Combining Dot Above}]\text{O}_2\text{peak A}$) and cycling ($V[\text{Combining Dot Above}]\text{O}_2\text{peak C}$): (1) arm cranking exercise at $60\%V[\text{Combining Dot Above}]\text{O}_2\text{peak A}$; (2) moderate cycling at $60\%V[\text{Combining Dot Above}]\text{O}_2\text{peak C}$; and (3) easy cycling at $60\%V[\text{Combining Dot Above}]\text{O}_2\text{peak A}$. Cytokine, adrenaline and flow cytometric analysis of monocyte subsets were performed before and up to 4h post exercise.

RESULTS:

Plasma IL-6 increased from resting concentrations in all trials, however, post exercise concentrations were higher for arm exercise ($1.73\pm 1.04\text{pg}[\text{BULLET OPERATOR}]\text{mL}$) and moderate cycling ($1.73\pm 0.95\text{pg}[\text{BULLET OPERATOR}]\text{mL}$) compared with easy cycling ($0.87\pm 0.41\text{pg}[\text{BULLET OPERATOR}]\text{mL}$, $P<0.04$). Similarly, the plasma IL-1ra concentration in the recovery period was higher for arm exercise ($325\pm 139\text{pg}[\text{BULLET OPERATOR}]\text{mL}$) and moderate cycling ($316\pm 128\text{pg}[\text{BULLET OPERATOR}]\text{mL}$) when compared with easy cycling ($245\pm 77\text{pg}[\text{BULLET OPERATOR}]\text{mL}$, $P<0.04$). Arm exercise and moderate cycling induced larger increases in monocyte numbers and larger increases of the classical monocyte subset in the recovery period than easy cycling ($P<0.05$). The post-exercise adrenaline concentration was lowest for easy cycling ($P=0.04$).

CONCLUSIONS:

Arm exercise and cycling at the same relative exercise intensity induces a comparable acute inflammatory response; however, cycling at the same absolute oxygen uptake as arm exercise results in a blunted cytokine, monocyte and adrenaline response. Relative exercise intensity appears to be more important to the acute inflammatory response than modality, which is of major relevance for populations restricted to upper body exercise.

PMID: 26765632

53. CORE**Abdominal muscle thickness****Ultrasound measurement of deep and superficial abdominal muscles thickness during standing postural tasks in participants with and without chronic low back pain**

Fatemeh Ehsani, PT, MS, PT Amir Massoud Arab, PT, PhD Shapour Jaberzadeh, PT, , Mahyar Salavati, PT, PhD

Highlights

- •Increasing motor control impairment in patient with LBP during standing tasks.
- •More activity of superficial than deep abdominal muscles during standing tasks in the patients.
- •Using standing test conditions for discrimination of individuals with LBP.
- •No recommendation for standing tasks in early stage of the patients training.
- •Using unstable surface during progressive training protocol in the patients.

Abstract

Background Activity of deep abdominal muscles increases the lumbar stability. Majority of previous studies indicated abdominal muscle activity dysfunction during static activity in patients with low back pain (LBP). However, the number of studies that evaluated deep abdominal muscle activity in dynamic standing activities in patients is limited, while this assessment provides better understanding of pain behavior during these activities.

Objective Investigation of superficial and deep abdominal muscles activity in participants with chronic LBP as compared to healthy individuals during standing tasks.

Design Case control study.

Methods Ultrasound imaging was used to measure the thickness of transverses abdominis (TrA), internal oblique (IO) and external oblique (EO) muscles in female participants with (N= 45) and without CLBP (N= 45) during tests. The Biodex Balance System was used to provide standing tasks. The thickness of each muscle in a standing task was normalized to actual thickness at rest in the supine lying position to estimate its activity.

Results The results indicate increases in thickness of all muscles in both groups during dynamic as compared to static standing tasks ($P < 0.05$, $ES > 0.5$). Lower percentages of thickness change for TrA muscle and higher for EO muscle were found in the patients as compared to healthy individuals during all tests ($P < 0.05$, $ES > 1.28$).

Conclusions Higher activity of superficial than deep abdominal muscles in patients as compared to healthy individuals during standing tasks indicates motor control dysfunction in patients with CLBP. Standing tasks can discriminate the individuals with and without LBP and can be progressively used in training.

Keywords: *Abdominal muscle thickness, Low back pain, Standing postural task, Ultrasound*

54. POSTURE**Thoracic kyphosis**

Osteoporos Int. 2016 Jan 18.

Thoracic kyphosis and rate of incident vertebral fractures: the Fracture Intervention Trial.

Katzman WB¹, Vittinghoff E², Kado DM^{3,4}, Lane NE⁴, Ensrud KE⁵, Shipp K⁶.

Author information

Abstract

Biomechanical analyses support the theory that thoracic spine hyperkyphosis may increase risk of new vertebral fractures. While greater kyphosis was associated with an increased rate of incident vertebral fractures, our analysis does not show an independent association of kyphosis on incident fracture, after adjustment for prevalent vertebral fracture. Excessive kyphosis may still be a clinical marker for prevalent vertebral fracture.

INTRODUCTION:

Biomechanical analyses suggest hyperkyphosis may increase risk of incident vertebral fracture by increasing the load on vertebral bodies during daily activities. We propose to assess the association of kyphosis with incident radiographic vertebral fracture.

METHODS:

We used data from the Fracture Intervention Trial among 3038 women 55-81 years of age with low bone mineral density (BMD). Baseline kyphosis angle was measured using a Debrunner kyphometer. Vertebral fractures were assessed at baseline and follow-up from lateral radiographs of the thoracic and lumbar spine. We used Poisson models to estimate the independent association of kyphosis with incident fracture, controlling for age and femoral neck BMD.

RESULTS:

Mean baseline kyphosis was 48° (SD = 12) (range 7-83). At baseline, 962 (32 %) participants had a prevalent fracture. There were 221 incident fractures over a median of 4 years. At baseline, prevalent fracture was associated with 3.7° greater average kyphosis (95 % CI 2.8-4.6, $p < 0.0005$), adjusting for age and femoral neck BMD. Before adjusting for prevalent fracture, each 10° greater kyphosis was associated with 22 % increase (95 % CI 8-38 %, $p = 0.001$) in annualized rate of new radiographic vertebral fracture, adjusting for age and femoral neck BMD. After additional adjustment for prevalent fracture, estimated increased annualized rate was attenuated and no longer significant, 8 % per 10° kyphosis (95 % CI -4 to 22 %, $p = 0.18$).

CONCLUSIONS:

While greater kyphosis increased the rate of incident vertebral fractures, our analysis does not show an independent association of kyphosis on incident fracture, after adjustment for prevalent vertebral fracture. Excessive kyphosis may still be a clinical marker for prevalent vertebral fracture.

KEYWORDS:

Incidence; Kyphosis; Vertebral fracture

PMID: 26782685

Postural algorithm

Med Sci Sports Exerc. 2016 Jan 7.

Accuracy of Posture Allocation Algorithms for Thigh- and Waist-Worn Accelerometers.

Edwardson CL¹, Rowlands AV, Bunnewell S, Sanders J, Esliger DW, Gorely T, O'Connell S, Davies M, Khunti K, Yates T.

Author information

Abstract

PURPOSE:

To compare the accuracy of the activPAL and ActiGraph GT3X+ (waist and thigh) proprietary postural allocation algorithms and an open source postural allocation algorithm applied to GENEActiv (thigh) and ActiGraph GT3X+ (thigh) data.

METHODS:

34 adults (≥ 18 years) wore the activPAL3, GENEActiv and ActiGraph GT3X+ on the right thigh and an ActiGraph on the right hip while performing four lying, seven sitting and five upright activities in the laboratory. Lying and sitting tasks incorporated a range of leg angles (e.g., lying with legs bent, sitting with legs crossed). Each activity was performed for five minutes while being directly observed. Percent time correctly classified was calculated.

RESULTS:

Participants consisted of 14 males and 20 females (mean age 27.2 ± 5.9 years; mean body mass index of 23.8 ± 3.7 kg/m). All postural allocation algorithms applied to monitors worn on the thigh correctly classified $\geq 93\%$ of the time lying, $\geq 91\%$ of the time sitting and $\geq 93\%$ of the time upright. The ActiGraph waist proprietary algorithm correctly classified 72% of the time lying, 58% of the time sitting and 74% of the time upright. Both the activPAL and ActiGraph thigh proprietary algorithms misclassified sitting on a chair with legs stretched out (58% and 5% classified incorrectly respectively). The ActiGraph thigh proprietary and open source algorithm applied to the thigh worn ActiGraph misclassified participants lying on their back with their legs bent 27% and 9% of the time, respectively.

CONCLUSION:

All postural allocation algorithms when applied to devices worn on the thigh were highly accurate in identifying lying, sitting and upright posture. Given the poor accuracy of the waist algorithm for detecting sitting, caution should be taken if inferring sitting time from a waist-worn device.

PMID:26741122

55. SCOLIOSIS

Tethered cord

Year : 2016 | Volume : 50 | Issue : 1 | Page : 80-86 Indian journal of orthopedics

Scoliosis may be the first symptom of the tethered spinal cord

Mustafa Barutcuoglu¹, Mehmet Selcuki¹, Ahmet Sukru Umur¹, Mesut Mete¹, Seren Gulsen Gurgun², Deniz Selcuki³

Background: Tethered cord syndrome (TCS) is a progressive clinical entity that arises from abnormal spinal cord tension. Scoliosis may be a unique symptom in TCS. The aim of this study is to investigate prognosis after releasing the filum terminale in scoliosis due to TCS with/without findings in magnetic resonance imaging (MRI) and to draw attention to the importance of somatosensorial evoked potentials (SSEP) on the differential diagnosis of idiopathic scoliosis versus scoliosis due to TCS with normal appearance of filum terminale and conus medullaris.

Materials and Methods: Eleven female and seven male patients with progressive scoliosis were included in the study. They were evaluated radiologically, SSEP and urodynamical studies. Preoperative and postoperative anteroposterior full spine X-rays were obtained for measuring the Cobb's angle. MRI was performed in all cases for probable additional spinal abnormalities. All patients underwent filum terminale sectioning through a L5 hemilaminectomy. The resected filum terminale were subjected to histopathological examination.

Results: The mean Cobb angle was 31.6° (range 18°–45°). Eight patients (44.45%) had a normal appearance of filum terminale and normal level conus medullaris in MRI, but conduction delay and/or block was seen on SSEP. In the histopathological examination of filum terminale dense collagen fibers, hyaline degeneration and loss of elastic fibers were observed. Postoperatively none of the patients showed worsening of the Cobb angle. Three patients showed improvement of scoliosis.

Conclusion: In TCS presented with scoliosis, untethering must be performed prior to the corrective spinal surgery. Absence of MRI findings does not definitely exclude TCS. SSEP is an important additional guidance in the diagnosis of TCS. After untethering, a followup period of 6 months is essential to show it untethering helps in stopping the progress of the scoliotic curve. In spite of non progression (curve stopped lesser than 45°) or even improvement of scoliosis, there may be no need for major orthopedic surgical intervention.

Keywords: Cobb angle, scoliosis, somatosensorial evoked potentials, tethered cord syndrome

Brace use decreases progression

J Bone Joint Surg Am. 2016 Jan 6;98(1):9-14. doi: 10.2106/JBJS.O.00359.

Effect of Compliance Counseling on Brace Use and Success in Patients with Adolescent Idiopathic Scoliosis.

Karol LA¹, Virostek D², Felton K², Wheeler L².

Author information

Abstract

BACKGROUND:

Outcomes of orthotic management of idiopathic scoliosis depend on patient compliance with brace wear. The purpose of this study was to determine if counseling based on objective compliance data increases brace wear and therefore reduces the likelihood of surgery.

METHODS:

Two hundred and twenty-two patients with adolescent idiopathic scoliosis were prospectively enrolled in a study to determine if physician counseling based on data obtained from compliance monitors (sensors embedded in the brace) improves brace use and decreases curve progression. Patients were placed into two groups. In the counseled group, patients were aware of the compliance monitor in the brace and were counseled at each visit regarding downloaded brace-usage data. The patients in the noncounseled group were not told the purpose of the monitor in their brace, and the compliance data were not made available to the physician, orthotist, or patient.

RESULTS:

Ninety-three patients who were counseled with use of the compliance data and seventy-eight patients who were not so counseled completed bracing or underwent surgery; twenty-five patients were lost to follow-up before completing brace treatment, and twelve were still undergoing brace treatment at the time of the study review. The average curve magnitude at the initiation of bracing was 33.2° in the counseled group and 33.9° in the noncounseled group ($p = 0.21$ [not significant]). Patients in the counseled group wore their orthosis an average of 13.8 hours per day throughout their management, while noncounseled patients wore their brace an average of 10.8 hours per day ($p = 0.002$). Of the counseled patients who finished brace treatment, 59% did not have curve progression of $\geq 6^\circ$, whereas 25% had progression to $\geq 50^\circ$ or to surgery. In the noncounseled group, 46% did not have curve progression of $\geq 6^\circ$, whereas 36% had progression to $\geq 50^\circ$ or to surgery. Noncounseled patients who had curve progression to a magnitude requiring surgery wore their brace an average of 9.6 hours per day compared with 12.6 hours per day for the counseled patients who required surgery. The amount of daily brace wear by children who did not have curve progression to a magnitude requiring surgery was significantly greater than that by children who did require surgery ($p = 0.029$).

CONCLUSIONS:

Providing patients undergoing bracing for adolescent idiopathic scoliosis with feedback about their compliance with brace wear improves that compliance. Patients who wore their brace more hours per day had less curve progression. Patients in both groups who had curve progression to a magnitude requiring surgery wore their brace less than their counterparts for whom bracing was successful. Compliance monitoring and counseling based on that monitoring should become part of the clinical orthotic management of patients with adolescent idiopathic scoliosis.

56. ATHLETICS**Cross country conditioning**

Med Sci Sports Exerc. 2016 Jan 7.

The Physiological Capacity of the World's Highest Ranked Female Cross-country Skiers.

Sandbakk Ø¹, Hegge AM, Losnegard T, Skattebo Ø, Tønnessen E, Holmberg HC.

Author information

Abstract

PURPOSE:

To compare the physiological capacity and training characteristics of the world's six highest ranked female cross-country skiers (WC) with those of six competitors of national class (NC).

METHODS:

Immediately before the start of the competition season, all skiers performed three 5-min submaximal stages of roller skiing on a treadmill for measurement of oxygen cost, as well as a 3-min self-paced performance test employing both the double poling (DP) and diagonal stride (DIA) techniques. During the 3-min performance tests, the total distance covered, peak oxygen uptake (VO₂peak) and accumulated oxygen deficit were determined. Each skier documented the intensity and mode of their training during the preceding 6 months in a diary.

RESULTS:

There were no differences between the groups with respect to oxygen cost or gross efficiency at the submaximal speeds. The WC skiers covered 6-7% longer distances during the 3-min tests and exhibited average VO₂peak values of ~70 and ~65 mL·min⁻¹·kg with DIA and DP, respectively, which were 10 and 7% higher than the NC skiers (all P<0.05). However, the accumulated oxygen deficit did not differ between groups. From May to October, the WC skiers trained a total of 532±73 hours (270±26 sessions) versus 411±62 hours (240±27 sessions) for the NC skiers. In addition, the WC skiers performed 26% more low-intensity and almost twice as much moderate-intensity endurance and speed training (all P<0.05).

CONCLUSIONS:

This study highlights the importance of a high oxygen uptake and the ability to utilize this while performing the different skiing techniques on varying terrain for female cross-country skiers to win international races. In addition, the training data documented here provide benchmark values for female endurance athletes aiming for medals.

PMID:26741124

59. PAIN**Hippocampal involvement in chronic pain**

Pain. 2016 Feb;157(2):418-28. doi: 10.1097/j.pain.0000000000000332.

Role of adult hippocampal neurogenesis in persistent pain.

Apkarian AV¹, Mutso AA, Centeno MV, Kan L, Wu M, Levinstein M, Banisadr G, Gobeske KT, Miller RJ, Radulovic J, Hen R, Kessler JA.

Author information

Abstract

The full role of adult hippocampal neurogenesis (AHN) remains to be determined, yet it is implicated in learning and emotional functions, and is disrupted in negative mood disorders. Recent evidence indicates that AHN is decreased in persistent pain consistent with the idea that chronic pain is a major stressor, associated with negative moods and abnormal memories. Yet, the role of AHN in development of persistent pain has remained unexplored. In this study, we test the influence of AHN in postinjury inflammatory and neuropathic persistent pain-like behaviors by manipulating neurogenesis: pharmacologically through intracerebroventricular infusion of the antimetabolic AraC; ablation of AHN by x-irradiation; and using transgenic mice with increased or decreased AHN. Downregulating neurogenesis reversibly diminished or blocked persistent pain; oppositely, upregulating neurogenesis led to prolonged persistent pain. Moreover, we could dissociate negative mood from persistent pain. These results suggest that AHN-mediated hippocampal learning mechanisms are involved in the emergence of persistent pain.

PMID:26313405

Parenting and child's chronic pain

Child Care Health Dev. 2016 Jan 14. doi: 10.1111/cch.12312.

The relationship between parental attitudes and behaviours in the context of paediatric chronic pain.

Jaaniste T^{1,2}, Jia N^{1,2}, Lang T^{1,2}, Goodison-Farnsworth EM^{1,2}, McCormick M^{1,2}, Anderson D¹.
Author information

Abstract

BACKGROUND:

Within the context of paediatric chronic pain, parental attitudes are of particular importance given that they have the potential to impact on how parents respond to their child. The current study was designed to assess whether parental attitudes, such as parental confidence and beliefs in their child's ability to function in spite of pain, and parental catastrophising about their child's pain, are associated with parental pain-related behaviours known to be associated with poor child outcomes, such as protectiveness and high levels of monitoring.

METHODS:

Participants were 138 child-parent dyads recruited from a tertiary chronic pain clinic. Patients were aged 8- to 17-years. Prior to the initial clinic appointment, parents completed validated measures of parental pain catastrophising and parental responses to their child's pain. Patients completed measures of functional disability and pain intensity.

RESULTS:

Parents who reported lower confidence in their child's ability to cope with the pain engaged in significantly more protective, monitoring and distracting behaviours, even when controlling for the child's recent level of functioning. They also took more days off work due to their child's pain. Parents who catastrophised more about their child's pain engaged in significantly more protective and monitoring behaviours, even when controlling for the child's recent level of functioning.

CONCLUSIONS:

Parental behaviours in response to their child's pain are significantly related to parental confidence in their child's coping and parental pain-related catastrophising. Clinical interventions may benefit from addressing parental attitudes, especially their confidence in their child's ability to function.

KEYWORDS: attitude; behaviour; children; chronic pain; parents

PMID: 26767347

Personalities and choice

J Behav Med. 2016 Jan 7.

Identifying when choice helps: clarifying the relationships between choice making, self-construal, and pain.

Fox J¹, Close SR¹, Rose JP¹, Geers AL².
Author information

Abstract

Prior research indicates that making choices before a painful task can sometimes reduce pain. We examined the possibility that independent and interdependent self-construals moderate the effect of choice on pain. Further, we tested between two types of choice: instrumental and non-instrumental. Healthy normotensive undergraduates were randomly assigned to one of three conditions prior to the cold pressor task. Participants in an instrumental choice condition selected which hand to immerse in the water and were told this choice might help reduce their pain. Non-instrumental choice participants selected which hand to immerse but were given no information about potential pain reduction. Control participants were given no choice or additional instructions. Low interdependence individuals reported less pain than high interdependence individuals-but only when given an instrumental choice. These data indicate that not all forms of choice reduce pain and not all individuals benefit from choice. Instead, individuals low in interdependence exhibit pain relief from instrumental choices.

KEYWORDS: Choice; Cold pressor; Independence; Interdependence; Pain; Self-construal
PMID: 26743202

61. FIBROMYALGIA

FM Perceptive rehabilitation

A new rehabilitation tool in fibromyalgia: the effects of perceptive rehabilitation on pain and function in a clinical randomized controlled trial

Evidence-based Complementary and Alternative Medicine , 01/28/2016 Paolucci T, et al.

The aim of this study was to perform a randomized controlled trial to determine the efficacy of perceptual surfaces (PS) and physical exercises with regard to chronic pain and physical function in fibromyalgia compared with a control group. According to the results, the PS are as promising as the physical exercises, since results were similar. Fernandez-de-las-Penas C, et al. –

Methods

- Data from 54 females (18–60 years old) with a diagnosis of fibromyalgia and scoring >5 on the visual analog scale were divided into 3 groups and analyzed: group treated with perceptual surfaces (PS–group), physical exercises group (PE–group), and control group (CG).
- The Fibromyalgia Impact Questionnaire (FIQ), Health Assessment Questionnaire (HAQ), and Fibromyalgia Assessment Scale (FAS) were administered at baseline (T0), at the end of the treatment (T1) (after 10 rehabilitation sessions over a 5–week period), and at the 12–week follow–up (T2).

Results

- The PS–group experienced a statistically significant improvement versus the CG in FAS and HAQ scores.
- Good efficacy with respect to pain and function in the PE–group compared with the CG in terms of FAS, HAQ, and FIQ scores was observed.
- The adherence ratio was 86% for the PE–group and CG and 90% for the PS–group.

62 A. NUTRITION/VITAMINS**Omega 3's**

Eur J Nutr. 2016 Jan 27.

Intake of fish and long-chain omega-3 polyunsaturated fatty acids and incidence of metabolic syndrome among American young adults: a 25-year follow-up study.

Kim YS^{1,2}, Xun P¹, Iribarren C³, Van Horn L⁴, Steffen L⁵, Daviglus ML⁶, Siscovick D⁷, Liu K⁴, He K⁸.

[Author information](#)

Abstract**PURPOSE:**

Studies suggest that long-chain ω -3 polyunsaturated fatty acid (LC ω 3PUFA) intake and its primary food source-fish-may have beneficial effects on the individual components of metabolic syndrome (MetS). We examined the longitudinal association between fish or LC ω 3PUFA intake and MetS incidence.

METHODS:

We prospectively followed 4356 American young adults, free from MetS and diabetes at baseline, for incident MetS and its components in relation to fish and LC ω 3PUFA intake. MetS was defined by the National Cholesterol Education Program/Adult Treatment Panel III criteria. Cox proportional hazards model was used for analyses, controlling for socio-demographic, behavioral, and dietary factors.

RESULTS:

During the 25-year follow-up, a total of 1069 incident cases of MetS were identified. LC ω 3PUFA intake was inversely associated with the incidence of MetS in a dose-response manner. The multivariable adjusted hazards ratio (HR) [95 % confidence interval (CI)] of incident MetS was 0.54 (95 % CI 0.44, 0.67; P for linear trend < 0.01) as compared the highest to the lowest quintile of LC ω 3PUFA intake. A threshold inverse association was found between non-fried fish consumption and the incidence of MetS. The multivariable adjusted HRs (95 % CIs) from the lowest to the highest quintile were 1.00, 0.70 (0.51, 0.95), 0.68 (0.52, 0.91), 0.67 (0.53, 0.86), and 0.71 (0.56, 0.89) (P for linear trend = 0.49). The observed inverse associations were independent of the status of baseline individual components of MetS.

CONCLUSIONS:

Our findings suggest that intakes of LC ω 3PUFAs and non-fried fish in young adulthood are inversely associated with the incidence of MetS later in life.

KEYWORDS: Fish consumption; Longitudinal studies; Metabolic syndrome; Omega-3 fatty acids

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Infant nutrition

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Nutrient Intakes and Vegetable and White Potato Consumption by Children Aged 1 to 3 Years.

Storey ML¹, Anderson PA².
Author information

Abstract

In 2020, for the first time, the Dietary Guidelines for Americans will include recommendations for children from birth to age 24 mo. We examined average nutrient intakes as well as total vegetable and white potato (WP) consumption among children aged 1-3 y using day 1 dietary data from the NHANES 2009-2012 and the Food Patterns Equivalents Database 2009-2012. Appropriate survey weights were used to calculate average daily consumption of total vegetables and WPs, which included French-fried potatoes and chips, for boys and girls aged 1-3 y. We calculated mean intakes of selected nutrients of concern, including vitamin D, potassium, dietary fiber (DF), and calcium. We also examined intakes of selected nutrients by major food group. Average intakes of most nutrients, including calcium, by children aged 1-3 y exceeded Dietary Reference Intakes (DRIs). However, average intakes of potassium, DF, and vitamin D were 67%, 55%, and 49% of DRIs, respectively. Mean total vegetable intake was less than the recommendation of 1 cup/d. Boys and girls aged 1-3 y consumed an average of 0.58 cup equivalents of total vegetables on the day of the survey, which included 0.16 cups of WPs. Average vegetable consumption and mean intakes of potassium, DF, and vitamin D were far below recommendations. The consumption of all vegetables, particularly those that are excellent sources of potassium and DF, such as potatoes, should be encouraged.

KEYWORDS: dietary fiber; nutrient intake; potassium; potatoes; toddlers; vegetables
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