

ABSTRACTS

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2. LBP

LBP factors

Spine J. 2015 Jul 10. pii: S1529-9430(15)00686-5. doi: 10.1016/j.spinee.2015.07.007.

Risk factors for a recurrence of low back pain.

Hancock M¹, Maher C², Petocz P³, Lin CC², Steffens D², Luque-Suarez A⁴, Magnussen J⁵.
Author information

Abstract

BACKGROUND CONTEXT:

The clinical importance of lumbar pathology identified on MRI remains unclear. It is plausible that pathology seen on MRI is a risk factor for a recurrence of low back pain (LBP); however, to our knowledge this has not been investigated by previous studies.

PURPOSE:

To investigate if lumbar pathology, identifiable on MRI, increases the risk of a recurrence of (LBP).

DESIGN:

Prospective inception cohort study with 1 year follow up.

PATIENT SAMPLE:

76 people who had recovered from an episode of LBP within the previous 3 months.

OUTCOME MEASURES:

The primary outcome was time to recurrence of LBP which was determined by contacting participants at 2 month intervals for 12 months.

METHODS:

All participants underwent a baseline assessment including MRI scan and completion of a questionnaire which assessed a range of potential risk factors for recurrence. MRI scans were reported for the presence of a range of MRI findings. The primary analysis investigated the predictive value of 2 clinical features (age and number of previous episodes) and 6 MRI findings (disc degeneration, high intensity zone, Modic changes, disc herniation, facet joint arthrosis and spondylolisthesis) in a multivariate Cox regression model. We decided a priori that dichotomous predictors with hazard ratios (HR) of > 1.5 or <0.67 would be considered potentially clinically important and justify further investigation.

RESULTS:

Of the 8 predictors entered into the primary multivariate model, 3 (disc degeneration, high intensity zone and number of previous episodes) met our a priori threshold for potential importance. Participants with disc degeneration score > 3 (Pfarrmann scale) had a hazard ratio (HR) of 1.89 (95% CI 0.42 to 8.53) compared to those without. Patients with high intensity zone had a HR of 1.84 (95% CI 0.94 to 3.59) compared to those without. For every additional previous episode participants had a HR of 1.04 (95% CI 1.02 to 1.07).

CONCLUSIONS:

We identified promising risk factors for a recurrence of LBP, which should be further investigated in larger trials. The findings suggest pathology seen on MRI plays a potentially important role in recurrence of LBP.

PMID: 26169027

Treatment beliefs

Pain. 2015 Aug;156(8):1489-500. doi: 10.1097/j.pain.0000000000000193.

Patients' treatment beliefs in low back pain: development and validation of a questionnaire in primary care.

Dima A¹, Lewith GT, Little P, Moss-Morris R, Foster NE, Hankins M, Surtees G, Bishop FL.
Author information

Abstract

Choosing the most appropriate treatment for individual patients with low back pain (LBP) can be challenging, and clinical guidelines recommend taking into account patients' preferences. However, no tools exist to assess or compare patients' views about LBP treatments. We report the development and validation of the Low Back Pain Treatment Beliefs Questionnaire (LBP-TBQ) for use across different treatments in clinical practice and research. Using qualitative data, we developed a pool of items assessing perceived credibility, effectiveness, concerns about, and individual "fit" of specific treatments. These items were included in a survey completed by 429 primary care patients with LBP, of whom 115 completed it again 1 to 2 weeks later. We performed psychometric analyses using nonparametric item response theory and classical test theory. The 4 subscales of the resulting 16-item LBP-TBQ showed good homogeneity ($H = 0.46-0.76$), internal consistency ($\alpha = 0.73-0.94$), and stability ($r = 0.63-0.83$), confirmed most convergent and discriminant validity hypotheses, and had acceptable structural validity for 4 guideline-recommended treatments: pain medication, exercise, manual therapy, and acupuncture. Participants with stronger positive treatment beliefs were more likely to rank that treatment as their first choice, indicating good criterion validity (t values = 3.11-9.80, all $P < 0.01$, except pain medication effectiveness beliefs, $t(339) = 1.35$; $P = 0.18$).

A short 4-item version also displayed good homogeneity ($H = 0.43-0.66$), internal consistency ($\alpha = 0.70-0.86$), and stability ($r = 0.82-0.85$) and was significantly related to treatment choice (t values = 4.33-9.25, all $P < 0.01$). The LBP-TBQ can be used to assess treatment beliefs in primary care patients with LBP and to investigate the effects of treatment beliefs on treatment uptake and adherence.

PMID:25906346

4. INJECTIONS

Bone marrow injections

Int Orthop. 2015 Jul 10.

Treatment of discogenic back pain with autologous bone marrow concentrate injection with minimum two year follow-up.

Pettine K¹, Suzuki R, Sand T, Murphy M.
Author information

Abstract

PURPOSE:

The purpose of this study is to assess safety and feasibility of intradiscal bone marrow concentrate (BMC) injections to treat discogenic pain as an alternative to surgery.

METHODS:

A total of 26 patients (11 male, 15 female, aged 18-61 years, 13 single level, 13 two level) that met inclusion criteria of chronic (> 6 months) discogenic low back pain, degenerative disc pathology assessed by magnetic resonance imaging (MRI) with modified Pfirrmann grade of IV-VII at one or two levels, candidate for surgical intervention (failed conservative treatment and radiologic findings) and a visual analogue scale (VAS) pain score of 40 mm or more at initial visit. Initial Oswestry Disability Index (ODI) and VAS pain score average was 56.5 % and 80.1 mm (0-100), respectively. Adverse event reporting, ODI score, VAS pain score, MRI radiographic changes, progression to surgery and cellular analysis of BMC were noted. Retrospective cell analysis by flow cytometry and colony forming unit-fibroblast (CFU-F) assays were performed to characterise each patient's BMC and compare with clinical outcomes. The BMC was injected into the nucleus pulposus of the symptomatic disc(s) under fluoroscopic guidance. Patients were evaluated clinically prior to treatment and at three, six, 12 and 24 months and radiographically prior to treatment and at 12 months.

RESULTS:

There were no complications from the percutaneous bone marrow aspiration or disc injection. Of 26 patients, 24 (92 %) avoided surgery through 12 months, while 21 (81 %) avoided surgery through two years. Of the 21 surviving patients, the average ODI and VAS scores were reduced to 19.9 and 27.0 at three months and sustained to 18.3 and 22.9 at 24 months, respectively ($p \leq 0.001$). Twenty patients had follow-up MRI at 12 months, of whom eight had improved by at least one Pfirrmann grade, while none of the discs worsened. Total and rate of pain reduction were linked to mesenchymal stem cell concentration through 12 months. Only five of the 26 patients elected to undergo surgical intervention (fusion or artificial disc replacement) by the two year milestone.

CONCLUSIONS:

This study provides evidence of safety and feasibility in the non-surgical treatment of discogenic pain with autologous BMC, with durable pain relief (71 % VAS reduction) and ODI improvements (> 64 %) through two years.

PMID: 26156727

7. PELVIC ORGANS

Personal hygiene and vulvovaginitis

J Pediatr Adolesc Gynecol. 2015 Jul 14. pii: S1083-3188(15)00262-4. doi: 10.1016/j.jpag.2015.07.002.

Personal hygiene and vulvovaginitis in prepubertal children.

Cemek F¹, Odabaş D², Şenel Ü³, Kocaman AT³.
Author information

Abstract

OBJECTIVES:

To determine and compare clinical and microbiological features of vulvovaginitis in prepubertal girls.

BACKGROUND:

Vulvovaginitis is the most common gynecological problem of childhood.

METHODS:

This study involves forty-five girls from 2-12 (5.38±2.9) years old; and twenty-six girls from 3-12 (5.72±3.1) years old as a control group. Anamnesis and physical examination were followed by vaginal smear, urine culture and stool analyses from both groups, and the personal hygiene status and education level of the mother were determined.

RESULTS:

The most common symptoms among the patients were vaginal discharge (44.4%), vulvar erythema (37.8%), and vaginal itch (24.4%). Microorganisms, isolated from vaginal smears, were detected in 48.9% of the patients. Escherichia coli was shown in the urine culture of three patients with vulvovaginitis (6.70%). In microscopic stool analysis parasites were detected (45.9%). We found some relevant personal hygiene factors, such as wiping back to front (42.9%), cleaning by herself after defecation (89.3%), using toilet paper (60.7%) and wet wipes (21.4%), having bath by standing (14.3%) and by sitting (46.4%), among patients. The questionnaire also showed that the children wear tight clothing (35.7%).

CONCLUSION:

Our findings suggest that vulvovaginitis in prepubertal girls is related not only to microorganisms but also poor personal hygiene, the educational status of mothers and specific irritants.

KEYWORDS: Prepubertal girls; personal hygiene; vaginal discharge; vulvovaginitis
PMID: 26187769

Hysterectomy and increase illness

Hysterectomy may indicate cardiovascular risk in women under age 50

Mayo Clinic, 07/30/2015

Hysterectomy may be a marker of early cardiovascular risk and disease, especially in women under 35, according to Mayo Clinic experts.

In a study recently published in *Menopause: The Journal of the North American Menopause Society*, researchers found that women who underwent hysterectomy were much more likely to have pre-existing cardiovascular risk factors – especially obesity – than women of the same age in the control group who did not undergo hysterectomy. In particular, women under age 35 had the most cardiovascular risk factors and disease, including stroke.

Poor sleep and birth defects

Birth Defects Res A Clin Mol Teratol. 2015 Jul 16. doi: 10.1002/bdra.23411.

Poor sleep during the periconceptual period increases risk for neural tube defects in offspring.

Li Z¹, Zhang L¹, Jin L¹, Ye R¹, Raynes-Greenow C², Ren A¹.

Author information

Abstract

BACKGROUND:

Poor sleep has been studied in relation to various diseases. Few studies have investigated the effect of poor sleep on birth defects.

METHODS:

We examined the association of maternal poor sleep during periconceptual period and the risk of neural tube defects (NTDs) in offspring based on a large case-control study in northern China. The subjects included 629 NTD cases and 858 normal controls investigated between 2002 and 2007. Maternal sleep status was collected by health workers within first week after delivery. Logistic regression was used to estimate the odds ratio (OR) and 95% confidence interval (CI) of NTDs in association with poor sleep.

RESULTS:

The proportion of mothers with frequent poor sleep (≥ 4 days/week on average) was markedly higher in NTDs group (5.9%) than in control group (1.2%). In the multivariate analysis, frequent poor sleep was significantly associated with an increased risk of total NTDs (adjusted OR, 4.1; 95% CI, 1.9-8.8) and spina bifida subtype (adjusted OR, 6.4; 95% CI, 2.8-14.5). Frequent poor sleep showed a significant interaction with body mass index (BMI). Relative to women who reported poor sleep < 4 days/week and with BMI < 24 , frequent poor sleep showed a markedly higher increased risk of NTDs among overweight or obese women (adjusted OR, 11.8; 95% CI, 1.4-97.6) than women with BMI < 24 (adjusted OR, 2.5; 95% CI, 1.1-5.9).

CONCLUSION:

Maternal frequent poor sleep during the periconceptual period may increase the risk for all NTDs and spina bifida. The association appears to be independent of some lifestyle factors that are closely associated with sleep quality. Birth Defects Research (Part A), 2015. © 2015 Wiley Periodicals, Inc.

KEYWORDS: case-control study; neural tube defects; poor sleep; spina bifida
PMID:26184080

Breast-feeding reduces the risk of RA

J Rheumatol. 2015 Jul 15. pii: jrheum.150195.

Breastfeeding and Risk of Rheumatoid Arthritis: A Systematic Review and Metaanalysis.

Chen H¹, Wang J¹, Zhou W¹, Yin H¹, Wang M¹.

[Author information](#)

Abstract**OBJECTIVE:**

Previous studies have examined the association between breastfeeding and rheumatoid arthritis (RA), but their results were inconsistent. The aim of this study was to perform a metaanalysis to clarify the effect of breastfeeding on RA risk.

METHODS:

The PubMed, EMBASE, Chinese National Knowledge Infrastructure, and Wanfang databases were searched for relevant studies published up to September 10, 2014. Data were extracted, and multivariable-adjusted OR with 95% CI were pooled in the random-effects model.

RESULTS:

A total of 6 studies were included in the metaanalysis (RA cases: 1672, sample size: 143,670). Overall, an inverse association between breastfeeding and RA was observed (OR 0.675, 95% CI 0.493-0.924, $p = 0.014$). In the subgroup analysis, decreased RA risk was also found in both breastfeeding 1-12 months (OR 0.783, 95% CI 0.641-0.957, $p = 0.015$) and breastfeeding > 12 months (OR 0.579, 95% CI 0.462-0.726, $p < 0.0005$). Sensitivity analysis and cumulative analysis further strengthened the validity of the results. No publication bias was found in this metaanalysis.

CONCLUSION:

This metaanalysis suggests that breastfeeding is associated with a lower risk of RA, no matter if breastfeeding time is longer or shorter than 12 months.

PMID:26178286

8. VISCERA

Altered cortical thickness with dysmenorrhea

Original Article

Altered regional cortical thickness and subcortical volume in women with primary dysmenorrhea

P. Liu¹, Yang^{2,†}, G. Wang¹, Y. Liu¹, X. Liu¹, L. Jin¹, F. Liang², W. Qin¹ and V.D. Calhoun^{3,4}
European Journal of Pain

There is emerging evidence that primary dysmenorrhoea (PDM) is associated with altered brain function and structure. However, few studies have investigated changes in regional cortical thickness and subcortical volumes in PDM patients. The purpose of this study was to characterize differences in both cortical thickness and subcortical volumes between PDM patients and healthy controls (HCs).

Methods

T1-weighted magnetic resonance images were obtained from 44 PDM patients and 32 HCs matched for age and handedness. Cortical thickness was compared in multiple locations across the continuous cortical surface, and subcortical volumes were compared on a structure-by-structure basis. Correlation analysis was then used to evaluate relationships between the clinical symptoms and abnormal brain structure in PDM.

Results

PDM patients had significantly increased cortical thickness in the orbitofrontal cortex (OFC), insula (IN), primary/secondary sensory area (SI/SII), superior temporal cortex (STC), precuneus (pCUN) and posterior cingulate cortex (PCC). Meanwhile, significantly decreased subcortical volumes of the caudate, thalamus and amygdala were found in PDM patients. Moreover, there were significant positive correlations between the PDM-related duration and the OFC, SFC, STC and IN. The MPQ scores were positively correlated with the pCUN.

Conclusions

These findings provide further evidence for grey matter changes in patients with PDM, and in addition, the results support relationships between the structural abnormalities and their role in symptom production. All these results are likely to be potential valuable to provide us with direct information about the neural basis of PDM.

Adherence to GFD

Aliment Pharmacol Ther. 2015 Jul 23. doi: 10.1111/apt.13319.

Factors governing long-term adherence to a gluten-free diet in adult patients with coeliac disease.

Villafuerte-Galvez J¹, Vanga RR¹, Dennis M¹, Hansen J¹, Leffler DA¹, Kelly CP¹, Mukherjee R¹.
Author information

Abstract

BACKGROUND:

A strict gluten-free diet is the cornerstone of treatment for coeliac disease. Studies of gluten-free diet adherence have rarely used validated instruments. There is a paucity of data on long-term adherence to the gluten-free diet in the adult population.

AIMS:

To determine the long-term adherence to the gluten-free diet and potential associated factors in a large coeliac disease referral centre population.

METHODS:

We performed a mailed survey of adults with clinically, serologically and histologically confirmed coeliac disease diagnosed ≥ 5 years prior to survey. The previously validated Celiac Disease Adherence Test was used to determine adherence. Demographic, socio-economic and potentially associated factors were analysed with adherence as the outcome.

RESULTS:

The response rate was 50.1% of 709 surveyed, the mean time on a gluten-free diet 9.9 ± 6.4 years. Adequate adherence (celiac disease adherence test score < 13) was found in 75.5% of respondents. A higher level of education was associated with adequate adherence ($P = 0.002$) even after controlling for household income ($P = 0.0220$). Perceptions of cost, effectiveness of the gluten-free diet, knowledge of the gluten-free diet and self-effectiveness at following the gluten-free diet correlated with adherence scores ($P < 0.001$).

CONCLUSIONS:

Long-term adherence to a gluten-free diet was adequate in $> 75\%$ of respondents. Perceived cost remains a barrier to adherence. Perceptions of effectiveness of gluten-free diet as well as its knowledge, are potential areas for intervention.

PMID:26206401

Gluten free diet

J Gastroenterol Hepatol. 2015 Jul 24. doi: 10.1111/jgh.13060.

Adherence to the gluten-free diet can achieve the therapeutic goals in almost all patients with coeliac disease: A five-year longitudinal study from diagnosis.

Newnham ED¹, Shepherd SJ¹, Strauss BJ², Hosking P³, Gibson PR⁴.
Author information

Abstract**BACKGROUND:**

Key aims of treatment of coeliac disease are to heal the intestinal mucosa and correct nutritional abnormalities.

AIM:

To determine prospectively the degree of success and time course of achieving those goals with a gluten-free diet.

METHODS:

99 patients were enrolled at diagnosis and taught the diet. The first 52 were reassessed at one year and 46 at 5 years, 25 being assessed at the three time points regarding dietary compliance (dietitian-assessed), coeliac serology, bone mineral density and body composition analysis by DEXA, and intestinal histology.

RESULTS:

Mean age (range) was 40 (18-71) y and 48 (76%) were female. Dietary compliance was very good to excellent in all but one. Tissue transglutaminase IgA was persistently elevated in 44% at one and 30% at five years and were poorly predictive of mucosal disease. Rates of mucosal remission (Marsh 0) and response (Marsh 0/1) were 37% and 54%, and 50% and 85% at 1 and 5 years, respectively. Fat mass increased significantly over the first year in those with normal/reduced BMI. Lean body mass indices more slowly improved irrespective of status at diagnosis with significant improvement at 5 years. Bone mass increased only in those with osteopenia or osteoporosis, mostly in year one.

CONCLUSION:

Dietary compliance is associated with a high chance of healing the intestinal lesion and correction of specific body compositional abnormalities. The time-course differed with body fat improving within one year, and correction of the mucosal lesion and improvement in lean mass and bone mass taking longer. This article is protected by copyright. All rights reserved.

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KEYWORDS: body composition; bone mineral density; coeliac disease; histopathology
PMID: 26212198

IBS and diet

BMC Gastroenterol. 2015 Jul 30;15:93. doi: 10.1186/s12876-015-0322-2.

"And then you start to loose it because you think about Nutella": The significance of food for people with inflammatory bowel disease - a qualitative study.

Palant A¹, Koschack J², Rassmann S³, Lucius-Hoene G⁴, Karaus M⁵, Himmel W⁶.

Author information

Abstract

BACKGROUND:

Many patients with inflammatory bowel disease strongly believe that food or certain food products heavily influence the symptoms or even trigger acute flare-ups. Unfortunately, there is no generalizable information for these patients, and therefore no effective diet has been identified to date.

METHODS:

The narrative interviews we used for this study provide the basis for the German website www.krankheitserfahrungen.de. Maximum-variation sampling was used to include a broad range of experiences and a variety of different factors that might influence people's experiences. The sample included men and women of different age groups and social and ethnic backgrounds from across Germany. The interviews were analyzed using grounded theory.

RESULTS:

Four interrelated categories emerged: managing uncertainty, eating: between craving and aversion, being different and professional help as a further source of uncertainty. The most important issue for our responders was the handling of uncertainty and to find a way between desire for, and aversion against, eating. Many participants described difficulties during formal social occasions such as weddings, birthdays, or when going out to a restaurant.

CONCLUSIONS:

Many of the experiences the participants reported in their daily struggle with food and their illness, such as cravings for and abstaining from certain foods, were rather unusual and often stressful. Because they decided not to go out in public any longer, some of the interviewees experienced even more social isolation than they did before. Health professionals need to become more involved and not only advice about food and eating, but also help their patients find strategies for avoiding social isolation.

PMID: 26219642

Placebo effect

Nat Rev Gastroenterol Hepatol. 2015 Jul 21. doi: 10.1038/nrgastro.2015.117.

Placebo effects and their determinants in gastrointestinal disorders.

Elsenbruch S1, Enck P2.

Author information

Abstract

Placebo effects in clinical trials have sparked an interest in the placebo phenomenon, both in randomized controlled trials (RCTs) and in experimental gastroenterology. RCTs have demonstrated similar short-term and long-term placebo response rates in gastrointestinal compared to other medical diagnoses. Most mediators and moderators of placebo effects in gastrointestinal diseases are also of similar type and size to other medical diagnoses and not specific for gastrointestinal diagnoses. Other characteristics such as an increase in the placebo response over time and the placebo-enhancing effects of unbalanced randomization were not seen, at least in IBS. Experimental placebo and nocebo studies underscore the 'power' of expectancies and conditioning processes in shaping gastrointestinal symptoms not only at the level of self-reports, but also within the brain and along the brain-gut axis. Brain imaging studies have redressed earlier criticism that placebo effects might merely reflect a response bias.

These findings raise hope that sophisticated trials and experiments designed to boost positive expectations and minimize negative expectations could pave the way for a practical and ethically sound use of placebo knowledge in daily practice. Rather than focusing on a 'personalized' choice of drugs based on biomarkers or genes, it might be the doctor-patient communication that needs to be tailored.

PMID: 26194942

Parenting habits of oral care

Int J Paediatr Dent. 2015 Jul 4. doi: 10.1111/ipd.12175.

Observed child and parent toothbrushing behaviors and child oral health.

Collett BR^{1,2}, Huebner CE³, Seminario AL⁴, Wallace E², Gray KE², Speltz ML^{1,2}.
Author information

Abstract

BACKGROUND:

Parent-led toothbrushing effectively reduces early childhood caries. Research on the strategies that parents use to promote this behavior is, however, lacking.

AIM:

To examine associations between parent-child toothbrushing interactions and child oral health using a newly developed measure, the Toothbrushing Observation System (TBOS).

DESIGN:

One hundred children ages 18-60 months and their parents were video-recorded during toothbrushing interactions. Using these recordings, six raters coded parent and child behaviors and the duration of toothbrushing. We examined the reliability of the coding system and associations between observed parent and child behaviors and three indices of oral health: caries, gingival health, and history of dental procedures requiring general anesthesia.

RESULTS:

Reliabilities were moderate to strong for TBOS child and parent scores. Parent TBOS scores and longer duration of parent-led toothbrushing were associated with fewer decayed, missing or filled tooth surfaces and lower incidence of gingivitis and procedures requiring general anesthesia. Associations between child TBOS scores and dental outcomes were modest, suggesting the relative importance of parent versus child behaviors at this early age.

CONCLUSIONS:

Parents' child behavior management skills and the duration of parent-led toothbrushing were associated with better child oral health. These findings suggest that parenting skills are an important target for future behavioral oral health interventions.

PMID: 26148197

Breast feeding aids tooth health

Acta Paediatr. 2015 Jul 24. doi: 10.1111/apa.13118.

Breastfeeding and the risk of dental caries: a systematic review and meta-analysis.

Tham R1, Bowatte G1, Dharmage SC1,2, Tan DJ1,3, Lau M1, Dai X1, Allen KJ1,2, Lodge CJ1,2.

[Author information](#)

Abstract**AIM:**

To synthesise the current evidence for the associations between breastfeeding and dental caries, with respect to specific windows of early childhood caries risk.

METHODS:

Systematic review, meta-analyses and narrative synthesis following searches of PubMed, CINAHL, and EMBASE databases.

RESULTS:

63 papers included. Children exposed to longer versus shorter duration of breastfeeding up to age 12 months (more versus less breastfeeding), had a reduced risk of caries (OR 0.50; 95%CI 0.25,0.99, I2 86.8%). Children breastfed >12 months had an increased risk of caries when compared with children breastfed <12 months (7 studies (OR 1.99; 1.35, 2.95, I2 69.3%). Amongst children breastfed >12 months, those fed nocturnally or more frequently had a further increased caries risk (5 studies, OR 7.14; 3.14,16.23, I2 77.1%). There was a lack of studies on children aged > 12 months simultaneously assessing caries risk in breastfed, bottle-fed, and children not bottle or breastfed, alongside specific breastfeeding practices, consuming sweet drinks and foods, and oral hygiene practices limiting our ability to tease out the risks attributable to each.

CONCLUSION:

Breastfeeding in infancy may protect against dental caries. Further research needed to understand the increased risk of caries in children breastfed after 12 months. This article is protected by copyright. All rights reserved.

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KEYWORDS: Breastfeeding; child; dental caries; meta-analysis; systematic review
PMID:26206663

Open bit and Hyoid position

The relevance analysis of hyoid bone position to skeletal or dental openbite and dentofacial characteristics

Seok-Ki Jung, DDS, MSD Tae-Woo Kim, DDS, MSD, PhD

DOI: <http://dx.doi.org/10.1016/j.oooo.2015.07.001>

Objective

The aim of this study was to investigate relationship between hyoid bone position and skeletal or dental openbite, and to investigate dentofacial characteristics according to the hyoid bone position

Study Design

A total of 182 patients were grouped based on the skeletal and dental openbite. Hyoid bone position of each group was compared and evaluated. In addition, dividing samples according to the hyoid bone position, dentofacial characteristics of each group were compared and analyzed.

Results

There were significant differences of the hyoid bone position according to the skeletal pattern, not dental pattern. Skeletal openbite group showed low hyoid bone position. In addition, low hyoid bone group showed short ramus height, short posterior facial height, retrusive chin, and clockwise-rotated mandible.

Conclusions

Patients with low hyoid bone had a tendency of skeletal openbite even though there was no dental openbite. Moreover, low hyoid bone position had relevance to retrognathic dentofacial characteristics.

Key Words:

Hyoid bone position, Openbite, Long face syndrome

14. HEADACHES**Restless leg syndrome and Migraine**

Cephalalgia. 2015 Jul 20. pii: 0333102415596444.

Bidirectional triggering association between migraine and restless legs syndrome: A diary study.

Chen PK¹, Fuh JL², Wang SJ³.
Author information

Abstract

OBJECTIVE:

Migraine is comorbid with restless legs syndrome (RLS). However, the temporal association between these two episodic disorders remains elusive. The current study investigated the temporal relationship between migraine and RLS attacks.

METHODS:

Migraine patients with RLS were recruited from a headache clinic. Patients with symptomatic RLS, RLS mimics, daily headaches, or daily RLS attacks were excluded. The patients recorded their headaches and RLS attacks for two weeks in a diary. The severity of each headache or RLS attack was rated on a four-point (0-3) Likert scale. Logit-normal, random-effects models were employed to estimate the odds ratios (ORs) for the temporal association between migraine and RLS attacks.

RESULTS:

Thirty migraine patients with RLS (28 F/2 M, mean age 35.5 ± 9.0 years) completed the study. On the basis of 420 daily diary records, migraine attacks were associated with subsequent RLS attacks occurring on the same and next nights (OR = 6.94, 95% confidence interval (CI) = 4.39-11.0 and OR = 3.00, CI = 1.92-4.68; both $p < 0.001$). RLS attacks were associated with subsequent migraine attacks only on Day 1 (OR = 1.97 (CI = 1.3-2.98; $p = 0.01$). Overall, the frequencies of migraine and RLS attacks in two weeks were correlated (Spearman's correlation = 0.56, $p = 0.001$).

CONCLUSIONS:

Our study results showed a bidirectional triggering association between migraine and RLS attacks. The association was stronger and lasted longer for migraine triggering subsequent RLS than that for vice versa.

KEYWORDS: Comorbidity; migraine; restless legs syndrome (RLS); temporal association
PMID:26195587

Myofascial components

Pain. 2015 Aug;156(8):1409-23. doi: 10.1097/j.pain.0000000000000219.

Pressure pain thresholds assessed over temporalis, masseter, and frontalis muscles in healthy individuals, patients with tension-type headache, and those with migraine-a systematic review.

Andersen S¹, Petersen MW, Svendsen AS, Gazerani P.
Author information

Abstract

A systematic review was conducted to identify and summarize the available scientific literature addressing pressure pain threshold (PPT) values over the temporalis, masseter, and frontalis muscles in healthy humans, patients with tension-type headache (TTH), and those with migraine both in males and females. Six relevant medical databases for the literature search were included: PubMed, Web of Science, Cochrane, CINAHL, BioMed Central, and Embase. The search strategy was performed applying 15 keywords (eg, pressure pain threshold, temporalis muscle, tension type headache, pressure algometer) and their combinations. A total of 156 articles were identified, and 40 relevant articles were included. The main outcomes of the systematic review were extracted, and it was demonstrated that the PPT values in general were lower in patients compared with healthy subjects, and this was especially noted for temporalis in both females (migraine: 231.2 ± 38.3 kPa < TTH: 248.4 ± 39.3 kPa < healthy: 282.1 ± 70.8 kPa) and males (migraine: 225.5 ± 61.2 kPa < TTH: 264.2 ± 32.5 kPa < healthy: 314.8 ± 63.3 kPa).

The masseter muscle seemed to be more sensitive than the other 2 muscles, in both females (healthy: masseter 194.1 ± 62.7 kPa < frontalis 277.5 ± 51.1 kPa < temporalis 282.1 ± 70.8 kPa) and males (healthy: masseter 248.2 ± 48.4 kPa < temporalis 314.8 ± 63.3 < frontalis 388 kPa). Females had lower PPT values than those of males in temporalis, masseter, and frontalis muscles. This work is the first to systematically review the scientific literature addressing PPT values over craniofacial muscles of healthy subjects, patients with TTH, and those with migraine to provide the PPT value ranges. Based on these findings, a set of guidelines was established to assist future studies including PPT assessments over craniofacial muscles.

PMID:25955963

17. SHOULDER GIRDLE

dyskinesia after clavicle fx

J Shoulder Elbow Surg. 2015 Jul 10. pii: S1058-2746(15)00292-X. doi: 10.1016/j.jse.2015.05.047.

Scapular dyskinesia following displaced fractures of the middle clavicle.

Shields E¹, Behrend C¹, Beiswenger T¹, Strong B¹, English C¹, Maloney M¹, Voloshin I².
Author information

Abstract

PURPOSE:

To evaluate the rate of scapular dyskinesia and resulting patient outcomes after treatment of displaced midshaft clavicle fractures.

METHODS:

Skeletally mature patients with isolated, displaced midshaft clavicle fractures treated with or without surgery over a 16-month period were recruited. The minimum length of follow-up at study examination was 12 months. Patient outcomes were documented using the SICK (scapular malposition, inferomedial border prominence, coracoid pain and malposition, and dyskinesia of scapular movement) Scapula Rating Scale, the Simple Shoulder Test, 3 visual analog scales (VAS) for pain, and shoulder range-of-motion and strength measurements. Of the 32 eligible patients, 24 (75%) were successfully recruited.

RESULTS:

The mean participant age was 46 ± 17 years, with a mean length of follow-up at study evaluation of 1.7 ± 1 years. Surgical fixation was performed in 12 patients (50%). Scapular dyskinesia was present in 37.5% of patients ($n = 9$). Patients with scapular dyskinesia had worse SICK scapula scores (5.8 ± 2.2 vs 3.1 ± 2.4 , $P = .01$), worse Simple Shoulder Test scores (10.5 ± 1.6 vs 11.7 ± 0.8 , $P = .029$), higher maximum VAS pain scores (4.1 ± 3.1 vs 0.97 ± 1.2 , $P = .002$), and worse average VAS pain scores in the week before the examination (2.7 ± 2.5 vs 0.2 ± 0.4 , $P < .001$) compared with patients without scapular dyskinesia. Range of motion and abduction strength were similar between the groups. Scapular dyskinesia developed in 1 patient treated with surgery (8% [1 of 12]) compared with 8 patients treated nonoperatively (67% [8 of 12]) ($P = .009$).

CONCLUSIONS:

Scapular dyskinesia is common after displaced middle-third clavicle fractures, and these patients have more pain and worse functional outcomes compared with patients without scapular dyskinesia. Surgical treatment may reduce a patient's risk of scapular dyskinesia developing and improve short-term outcomes.

KEYWORDS: Clavicle fracture; SICK scapula syndrome; scapular dyskinesia
PMID: 26169903

19. GLENOHUMERAL/SHOULDER**Plyometric training**

J Sport Rehabil. 2015 Jul 13.

The Effect of Shoulder Plyometric Training on Amortization Time and Upper Extremity Kinematics.

Swanik KA¹, Thomas SJ, Struminger AH, Huxel Bliven KC, Kelly JD 4th, Swanik CB.
Author information

Abstract

CONTEXT: Plyometric training is credited with providing benefits in performance and dynamic restraint. However, limited prospective data exists quantifying kinematic adaptations such as amortization time, glenohumeral rotation, and scapulothoracic position, which may underlie its efficacy for upper extremity rehabilitation or performance enhancement.

OBJECTIVE: To measure upper extremity kinematics and plyometric phase times before and after an 8 week upper extremity strength and plyometric training programs.

DESIGN: Randomized pre-test, post-test design.

SETTING: Research laboratory.

PARTICIPANTS: Forty recreationally active males (plyometric group: age=20.43±1.40 years, height=180.00±8.80cm, weight=73.07±7.2k1g; strength group: age=21.95±3.40 years, height=173.98±11.91cm, weight=74.79±13.55kg).

INTERVENTIONS: Participants were randomly assigned to either a strength training group or a strength and plyometric training group. Each participant performed the assigned training for 8 weeks.

MAIN OUTCOME MEASURES: Dynamic and static glenohumeral and scapular rotation measurements were taken before and after the training programs. Dynamic measurement of scapular rotation and time spent in each plyometric phase (concentric, eccentric, and amortization) during a ball toss exercise were recorded while the subjects were fitted with an electromagnetic tracking system. Static measures included scapular upward rotation at 3 different glenohumeral abduction angles, glenohumeral internal rotation, and glenohumeral external rotation.

RESULTS: Post-testing showed that both groups significantly decreased the time spent in the amortization, concentric, and eccentric phase of a ball toss exercise ($p<.01$). Both groups also exhibited significantly decreased static external rotation and increased dynamic scapular upward rotation after the training period ($p<.01$). The only difference between the training protocols was that the plyometric training group exhibited an increase in internal rotation that was not present in the strength training group ($p<.01$).

CONCLUSION: These findings support the use of both upper extremity plyometrics and strength training for reducing commonly identified upper extremity injury risk factors and improving upper extremity performance.

PMID:26181427

Shoulder plyometrics

J Sport Rehabil. 2015 Jul 13.

Randomized Control Trial Investigating the Effects of Kinesiology Tape on Shoulder Proprioception.

Burfeind SM¹, Chimera N.
Author information

Abstract

CONTEXT: Athletes participating in upper extremity dominate sports, such as softball and volleyball, are at an increased risk for glenohumeral joint pain and injury. For these athletes, an integral part of many injury prevention and rehabilitation programs includes improving joint proprioception. One way to measure joint proprioception is through the reproduction of joint angles, or joint reposition sense. Kinesiology tape is purported to enhance neuromuscular feedback; therefore, it may influence joint reposition sense. However, conflicting findings and the absence of research in the upper extremity warrants further investigation.

OBJECTIVE: To determine the effects of kinesiology tape on shoulder joint proprioception by actively reproducing joint angles, or measurement of joint reposition sense.

DESIGN: Randomized Controlled Trial.

SETTING: Collegiate Laboratory Room.

PARTICIPANTS: Sixteen (9 males, 7 females) participants (24 ± 3 years old).

INTERVENTIONS: SpiderTech Kinesiology Tape Pre-Cut Shoulder Spider was applied to the shoulder of participants' block randomized to the experimental group, following product specific instructions, to measure its influence on joint reposition sense compared to a control group.

MAIN OUTCOME MEASUREMENT: Joint Reposition Sense (JRS) error scores in shoulder flexion, extension, internal rotation, and external rotation.

RESULTS: There was a significant interaction between groups pre- to post-intervention resulting in decreased JRS errors in flexion ($p = 0.04$) and external rotation ($p = 0.03$) in the experimental compared to the control groups. The 95% confidence intervals suggest a clinically relevant difference in the variability of JRS errors between post intervention movements for the experimental group in flexion and external rotation, such that the control group demonstrated much more variability in JRS errors than the experimental group.

CONCLUSIONS: Following the application of kinesiology tape the JRS errors were smaller in flexion and external rotation. This may be of clinical significance in improving proprioception, and thus improving joint stability. Additional research should determine the effectiveness of kinesiology tape on reduction of joint injury.

PMID:26181196

Changes with aging

Int Orthop. 2015 Jul 7.

Age-dependent variation of glenohumeral anatomy: a radiological study.

Bockmann B¹, Soschynski S, Lechler P, Ruchholtz S, Debus F, Schwarting T, Frink M.
Author information

Abstract

PURPOSE:

Profound knowledge of variations in shoulder anatomy is gaining relevance in daily clinical work. In our study, we examine age-dependent variations of glenohumeral parameters in healthy individuals.

METHODS:

In this analysis, 774 severely injured patients who received a whole-body computed tomography (CT) scan were included. Patients with shoulder fractures were excluded. The resulting scans were split into two groups: patients younger than 25 (group 1) and older than 60 years (group 2). These groups were divided into four subgroups according to gender. Shoulder scans with advanced osteoarthritis were then removed. In order to maintain equal group size, redundant patients were randomly removed.

RESULTS:

A total of 210 measurements from 106 patients were included. The humeral head diameter (group 1: 41.6 ± 3.7 mm, group 2: 44.5 ± 3.7 mm, $p < 0.001$) and glenoid surface (group 1: 627.0 ± 110.8 mm², group 2: 763.9 ± 148.5 mm², $p < 0.001$) showed higher values in the group of older patients. Older patients also had a higher glenoid inclination (group 1: $50.9 \pm 6.9^\circ$, group 2: $55.7 \pm 8.8^\circ$, $p < 0.001$) as well as an increased glenoid to head ratio (group 1: 0.61 ± 0.04 , group 2: 0.64 ± 0.05 , $p < 0.001$).

CONCLUSIONS:

Increased sizes of humeral head and glenoid surface are present in older patients without signs of osteoarthritis. Moreover, in patients with increased age more glenoid inclination as well as an increased glenoid to head ratio was revealed. These age-dependent anatomical parameters should be considered during planning of operative procedures of the shoulder joint.

PMID:26150334

22 B. INSTABILITY**Capsule involvement**

Int Orthop. 2015 Jul 8.

The pathology of the anterior capsule in patients over forty years of age with recurrent shoulder dislocation.

Mizuno N¹, Yoneda M, Nakagawa S, Hayashida K.
Author information

Abstract

PURPOSE:

We evaluated the pathologies of anterior capsular mechanism in older patients with recurrent anterior shoulder dislocation in the absence of full-thickness rotator cuff tears.

METHODS:

Three hundred and ninety-five shoulders with recurrent anterior shoulder dislocation were assessed. The patients were divided into three groups by the age at the first dislocation and the surgical treatment: group A (onset and treatment were at an age over 40 years), group B (onset was at an age under 40 years and treatment was at an age over 40 years) and group C (onset and treatment were at an age under 40 years). Groups A, B and C involved nine, 31 and 355 shoulders, respectively.

RESULTS:

The prevalence of an isolated Bankart lesion was 81.7 % in group C, 33.3 % in group A and 64.5 % in group B, and each of A and B was significantly lower than group C. The prevalence of an isolated capsular tear was 3.1 % in group C, while it was 33.3 % in group A, which was significantly higher.

CONCLUSIONS:

The prevalence of an isolated Bankart lesion was low and the prevalence of a capsular tear was high in older patients. We should keep in mind the existence of a capsular tear in older patients and examine the whole anterior capsular mechanism meticulously.

PMID:26152243

24. ELBOW

Lateral epicondylitis testing

Current Orthopaedic Practice:
July/August 2015 - Volume 26 - Issue 4 - p 367–370
doi: 10.1097/BCO.0000000000000243
Resident Research

Accuracy testing of four physical examination maneuvers for detecting lateral epicondylitis

Murphy, Robert F. MD; Azar, Frederick M. MD; Mauck, Benjamin M. MD; Smith, Richard A. PhD; Throckmorton, Thomas W. MD

Abstract

Background: The purpose of this study was to determine the accuracy of four commonly used maneuvers in diagnosing lateral epicondylitis.

Methods: Patients who presented with lateral elbow pain and had positive findings for at least one physical examination test were recruited: (1) tenderness to palpation at the lateral epicondyle, (2) pain with resisted dorsiflexion of the wrist, (3) pain with resisted extension of the long finger, or (4) pain with resisted supination. After examination with all four tests, the lateral epicondylar area was injected with 2 cc of lidocaine and 1 cc of methylprednisolone. After 10 min to allow the lidocaine to anesthetize the area, patients were re-examined with all four tests. Preinjection and postinjection findings were recorded and accuracy data were compiled.

Results: Forty-four patients (46 elbows) were enrolled, 24 women and 20 men, with an average age of 50 yr. After injection, all had relief of elbow pain, and all physical examination maneuvers were negative. The sensitivities and accuracy of the tests in isolation (with 95% confidence intervals) were: lateral epicondyle tenderness test 0.8, wrist extension test 0.74, long finger extension test 0.54, and resisted supination test 0.59. The combination of the lateral epicondyle tenderness and wrist extension test produced a sensitivity and accuracy of 0.9, and the combination of the lateral epicondyle tenderness test and resisted supination test produced a sensitivity and accuracy of 0.95.

Conclusions: Both the lateral epicondyle tenderness test and wrist extension test have reasonable accuracy and sensitivity in evaluating lateral epicondylitis but are not individually diagnostic. The combination of the two achieved 90% accuracy. The combination of the lateral epicondyle tenderness test and resisted supination test was most accurate (95%) in this study. The long finger extension test and resisted supination test are individually less sensitive and accurate.

Level of Evidence: Diagnostic Level II.

27. HIP**Hip capsule contributions**

Clin Anat. 2015 Jul;28(5):665-71. doi: 10.1002/ca.22539. Epub 2015 Apr 14.

Anatomy of the hip capsule and pericapsular structures: A cadaveric study.

Cooper HJ¹, Walters BL¹, Rodriguez JA¹.

Author information

Abstract

The anatomical literature contains relatively little qualitative or quantitative information regarding the anatomy of the hip joint capsule and its relationship to the surrounding pericapsular structures. We aimed to provide a detailed description of the anatomy of these relationships in a cadaveric study. Dissections of 11 nonpaired, fresh-frozen cadaveric hips were performed, documenting capsular dimensions and attachments to pericapsular structures including the rectus femoris, gluteus minimus, iliocapsularis, and piriformis and short external rotator muscles. Tendon footprints of these pericapsular muscles were measured, as well as their distance from reproducible bony landmarks. The thickest portion of the hip capsule is posterosuperiorly and superiorly near its acetabular origin, while the thinnest portion is posteriorly and posteroinferiorly near its femoral insertion. The piriformis has no capsular contribution; however, the reflected head of the rectus femoris, gluteus minimus, iliocapsularis, and external rotator tendons all demonstrate consistent capsular adhesions. There are complex associations among these structures, yet the surrounding layers of the capsule are confluent in predictable relationships. Knowledge of the intricate relationship between the hip capsule and pericapsular structures presented here will be useful for surgeons as they perform the precise and specific capsular releases required by various operative procedures. This study also provides information that can lead to further biomechanical, radiographic, and clinical studies on these structures. Clin. Anat.

KEYWORDS: anatomy; cadaver; capsule; hip; tendons

PMID:25873416

Ligamentum Teres role in hip stability

Current Orthopaedic Practice:

July/August 2015 - Volume 26 - Issue 4 - p 425–428

doi: 10.1097/BCO.0000000000000259

Review Article

Function and clinical relevance of the ligamentum teres: a current concept

Martin, RobRoy L. PhD, PT, CSCSa; Martin, Hal David DOB

Abstract

Despite a growing interest in the ligamentum teres, its role in hip stability has not been investigated until recently. The purpose of this paper was to review current literature and define the function and clinical relevance of the ligamentum teres. Based on recent studies the function of the ligamentum teres can be defined as a rotational stabilizer in all hip positions and the primary rotational stabilizer in the upper range of flexion, greater than 90°. The function of the ligamentum teres may be described using a ball and string model where rotational movements of the femoral head that occur in the transverse and frontal planes cause the ligamentum teres to act as a sling as it wraps around the femoral head. Also as the ligamentum teres tightens, it pulls the femoral head into the acetabulum to increase stability at the end range of hip motion. This stabilizing function becomes important when the capsular ligaments are in a loose pack position of hip flexion, in those with osseous risk factors for instability and also may be more important in those with capsular laxity. The ligamentum teres test can be used to detect pain associated with partial tears of the ligamentum teres while a squat test may be useful to identify those with hip instability associated with complete ligamentum teres tears and osseous risk factors for instability. The results of these studies also support theories that the ligamentum teres could be injured in a highly active population with nontraumatic injuries and/or abnormal acetabular geometry.

30 A. IMPINGEMENT**Groin pain/PT vs surgery**

Br J Sports Med. 2015 Jun 30. pii: bjsports-2014-093715. doi: 10.1136/bjsports-2014-093715. [

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

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

Author information

Abstract

BACKGROUND:

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

METHODS:

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

RESULTS:

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

CONCLUSIONS:

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

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

PMID:26130700

31. KNEE**Surgery for MCL and posterior injury**

Arthroscopy. 2015 Jul 8. pii: S0749-8063(15)00461-2. doi: 10.1016/j.arthro.2015.05.010.

Surgical Repair of Medial Collateral Ligament and Posteromedial Corner Injuries of the Knee: A Systematic Review.

DeLong JM¹, Waterman BR².
Author information

Abstract

PURPOSE:

To systematically evaluate surgical techniques and objective clinical outcomes of primary repair of the medial collateral ligament (MCL) and posteromedial corner of the knee.

METHODS:

A systematic review of the PubMed/Medline Database (1966 to August 2014) was performed to identify all clinical studies describing MCL and other medial-based repairs of the knee. Exclusion criteria were applied to reconstruction techniques, animal models, and non-English publications. Descriptive analysis identified surgical technique, International Knee Documentation Committee (IKDC) objective form valgus stability subscore, functional outcome measures, and laxity on valgus stress.

RESULTS:

After exclusion of 165 references, 16 publications with 355 knees were included in the final analysis. Fixation construct included suture-only repair (49.5%), staples (12.1%), suture anchors (11.2%), and mixed or unknown fixation (27.0%). When isolating knees with available relative valgus stress opening (n = 223), 75.8% had side-to-side difference of <3 mm or <1+ (n = 169; 10 studies; range, 36% to 100%). Similarly, an IKDC valgus stability grade of A or B was identified in 126 of 140 knees (90.0%; 6 studies; range, 60% to 100%). Of 93 knees with quantified values, the mean side-to-side difference in medial joint space opening was 1.25 mm (SD ± 0.85) after primary repair. Thirteen of 212 knees (6.1%) met the criteria for failure, and the average Lysholm score was 91.6 (n = 210; range, 85.5 to 98.5).

CONCLUSIONS:

This systematic review demonstrated that repair of the MCL and posteromedial corner of the knee may be an effective and reliable treatment for medial-sided knee injuries, resulting in improved valgus stability and patient-reported functional scores with low rates of secondary failure. However, repair techniques may vary significantly depending on the chronicity and extent of medial ligamentous knee injuries, and appropriate patient selection is critical in determining ultimate clinical outcomes.

LEVEL OF EVIDENCE: IV.

PMID: 26163306

Angle differences between sexes

Knee Surg Sports Traumatol Arthrosc. 2015 Jul 7.

Sex-related differences in joint-angle-specific functional hamstring-to-quadriceps strength ratios.

El-Ashker S¹, Carson BP, Ayala F, De Ste Croix M.
Author information

Abstract**PURPOSE:**

To examine and compare sex-related differences in the functioning of the hamstrings and quadriceps muscles and the isokinetic hamstrings eccentric-to-quadriceps concentric functional ratio (H/Q_{FUNC}).

METHODS:

Fifty male and 46 female young adults completed this study. Each participant carried out an isokinetic assessment to determine isokinetic concentric and eccentric torques during knee extension and flexion actions at 3 different angular velocities (60, 180 and 300°/s) adopting a lying position. The H/Q_{FUNC} was calculated using peak torque (PT) values and 3 different joint-angle-specific torque values (15°, 30° and 45° of knee extension). A repeated measures analysis of variance was used to compare the results, and post hoc analyses using Friedman correction were employed.

RESULTS:

There were statistically significant effects of angular velocity, joint angle and sex on the H/Q_{FUNC} ($p < 0.01$). Thus, the H/Q_{FUNC} ratio in both males and females decreases closer to full knee extension and with increasing movement velocity. The H/Q_{FUNC} was also significantly lower in females compared to males, irrespective of moment velocity and joint angle.

CONCLUSIONS:

The findings of the current study reinforce the need to examine the H/Q_{FUNC} ratio closer to full knee extension (where knee injury is most likely to occur) rather than using PT values which may not be as informative, as well as to focus preventive and rehabilitation training programmes on reducing quadriceps dominance by enhancing eccentric hamstring strength (especially in females who are at higher risk of injury).

LEVEL OF EVIDENCE: III.

PMID:26149462

PRP injections

Br J Sports Med. 2015 Jul;49(14):957-60. doi: 10.1136/bjsports-2012-091916. Epub 2013 Jun 15.

Exercise and the platelet activator calcium chloride both influence the growth factor content of platelet-rich plasma (PRP): overlooked biochemical factors that could influence PRP treatment.

Hamilton B¹, Tol JL², Knez W³, Chalabi H⁴.

Author information

Abstract

BACKGROUND:

There is strong evidence that exercise affects platelet haemostasis factors, but this potential effect on growth factor concentrations in platelet-rich plasma (PRP) has never been studied. In addition, there is a paucity of studies focusing on the effects of activating agents used in conjunction with PRP. The first aim of this study was to evaluate the effect of exercise on platelet and platelet-derived growth factors (PDGF)-AB, hepatocyte growth factor (HGF), insulin-like growth factor-1 (IGF-1) and vascular endothelial growth factor (VEGF) concentrations in PRP. The second aim was to study the effect of the activating agent calcium chloride (CaCl₂) on growth factor concentration in relation to different exercise states.

METHODS:

Controlled laboratory study. Ten healthy participants performed 1 h of submaximal exercise with blood being withdrawn immediately pre, post and 18 h following. PRP was prepared in each condition in both an activated CaCl₂ and non-activated form. Concentrations of PDGF-AB, HGF, IGF-1 and VEGF were evaluated using standard ELISA systems.

RESULTS:

Exercise had no significant effect on platelet concentration, but significantly suppressed both VEGF and PDGF-AB concentrations. Exercise state had no significant effect on IGF-1 or HGF concentration. Activation with CaCl₂ resulted in a significant increase in PDGF-AB and IGF-1 concentrations, unchanged VEGF and significantly reduced HGF concentrations.

CONCLUSIONS:

Exercise significantly impacts on PDGFs in PRP with significantly reduced concentrations of VEGF and PDFG-AB. Furthermore, the activation of PRP with CaCl₂ results in a differentiated GF release from platelets. These relevant factors can potentially influence outcome in daily clinical practice and are recommended to be accounted for in future study design.

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KEYWORDS: Exercise physiology; Molecular biochemistry; Sporting injuries

PMID:23770705

32 A. KNEE/ACL**Stair climbing**

Longitudinal evaluation of stair walking biomechanics in acl patients

Medicine and Science in Sports and Exercise, 07/31/2015Lepley AS, et al.

Abstract

Purpose: Following anterior cruciate ligament (ACL) injury and reconstruction, abnormal biomechanics during daily tasks may have prominent and detrimental long-term consequences on knee joint health. The purpose of this study was to longitudinally evaluate hip and knee joint biomechanics during stair ascent and descent in acutely ACL injured patients, and at return to activity following ACL reconstruction.

Methods: Twenty unilateral ACL injured individuals (age: 20.9 +/- 4.4yrs; height: 172.4 +/- 7.5cm; mass: 76.2 +/- 12.2kg) that were scheduled to undergo surgical reconstruction were compared to 20 healthy matched controls (age: 21.7 +/- 3.7yrs; height: 173.7 +/- 9.9cm; mass: 76.1 +/- 19.7kg). Lower extremity biomechanics were recorded using 3-D motion analysis during stair ascent and descent at two testing sessions (prior to surgery and at approximately 6-months post surgery, or when they were allowed to return to unrestricted physical activity). Time between sessions for healthy participants was matched based to the ACL group. Peak sagittal and frontal plane knee and hip joint angles and moments, joint angles at initial contact and joint excursions across stance phase were evaluated.

Results: The injured limb of ACL patients experienced smaller knee extension moments than the uninjured limb and healthy controls during stair ascent and descent ($P < 0.05$) before and 6-months following ACL reconstruction. During stair ascent, ACL patients experienced more extended knee joint positions and less sagittal plane knee joint excursions, coupled with greater frontal plane hip joint excursions ($P < 0.05$).

Conclusions: ACL patients experience reductions in knee flexion angle and knee extension moments during stair walking. These alterations were observed both prior to, and following reconstruction, suggesting that early gait retraining interventions may be beneficial in these patients.

Primary repair

Arthroscopy. 2015 Jul 10. pii: S0749-8063(15)00438-7. doi: 10.1016/j.arthro.2015.05.007.

Primary Repair of the Anterior Cruciate Ligament: A Systematic Review.

Taylor SA¹, Khair MM¹, Roberts TR¹, DiFelice GS².
Author information

Abstract

PURPOSE:

To describe the clinical and preclinical research conducted on primary repair of the anterior cruciate ligament (ACL) during the past 10 years.

METHODS:

A systematic search of PubMed, the Cochrane Central Register of Controlled Trials, and Embase was performed for all English-language studies published between 2003 and April 2014 on primary repair of the ACL.

RESULTS:

Twenty-six studies met the inclusion and exclusion criteria. In the clinical research group, 8 studies (166 patients; age range, 10 to 71 years) met the inclusion and exclusion criteria and were largely long-term clinical outcome studies, based on the original cohorts from the 1970s and 1980s, and suggested high failure rates, additional surgery, and revision for instability. A subset of patients, however, achieved good to excellent subjective and objective long-term outcomes. In the preclinical research group, 18 studies met the inclusion and exclusion criteria and were based on an ACL transection model; they suggested that (1) stabilization of the knee with an internal suture strut improved the healing and biomechanical properties of the repaired ACL, (2) "enhancing" the repair with biological collagen-platelet composite augmentation improved healing and mechanical strength, (3) younger age and skeletal immaturity seem to correlate with improved histologic healing and biomechanical properties, (4) enhanced primary repair of the ACL may reduce post-traumatic osteoarthritis, and (5) the native ACL biomechanically outperformed the repaired ACL.

CONCLUSIONS:

Although long-term human studies suggest collectively unacceptable outcomes for open primary repair of the ACL, a subset of patients achieved acceptable long-term results. ACL transection model animal studies showed improved healing and biomechanics with primary suture repair stabilization, early intervention, biological augmentation techniques, and younger age. Primary repair of the ACL may be an effective treatment modality for an appropriately selected subset of patients.

LEVEL OF EVIDENCE: Level IV, systematic review of preclinical and clinical Level IV studies.

PMID:26165465

Patella OA after ACL

Br J Sports Med. 2015 Aug;49(15):975-83. doi: 10.1136/bjsports-2013-093258. Epub 2015 Mar 30.

Which determinants predict tibiofemoral and patellofemoral osteoarthritis after anterior cruciate ligament injury? A systematic review.

van Meer BL¹, Meuffels DE¹, van Eijsden WA¹, Verhaar JA¹, Bierma-Zeinstra SM², Reijman M¹.
Author information

Abstract

BACKGROUND:

Anterior cruciate ligament (ACL) injury is an important risk factor for development of knee osteoarthritis (OA). To identify those ACL injured patients at increased risk for knee OA, it is necessary to understand risk factors for OA.

AIM:

To summarise the evidence for determinants of (1) tibiofemoral OA and (2) patellofemoral OA in ACL injured patients.

METHODS:

MEDLINE, EMBASE, Web of Science and CINAHL databases were searched up to 20 December 2013. Additionally, reference lists of eligible studies were manually and independently screened by two reviewers. 2348 studies were assessed for the following main inclusion criteria: ≥ 20 patients; ACL injured patients treated operatively or non-operatively; reporting OA as outcome; description of relationship between OA outcome and determinants; and a follow-up period ≥ 2 years. Two reviewers extracted the data, assessed the risk of bias and performed a best-evidence synthesis.

RESULTS:

Sixty-four publications were included and assessed for quality. Two studies were classified as low risk of bias. Medial meniscal injury/meniscectomy showed moderate evidence for influencing OA development (tibiofemoral OA and compartment unspecified). Lateral meniscal injury/meniscectomy showed moderate evidence for no relationship (compartment unspecified), as did time between injury and reconstruction (tibiofemoral and patellofemoral OA).

CONCLUSIONS:

Medial meniscal injury/meniscectomy after ACL rupture increased the risk of OA development. In contrast, it seems that lateral meniscal injury/meniscectomy has no relationship with OA development. Our results suggest that time between injury and reconstruction does not influence patellofemoral and tibiofemoral OA development. Many determinants showed conflicting and limited evidence and no determinant showed strong evidence.

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KEYWORDS: ACL; Osteoarthritis

PMID: 25824447

Return to sports not good

r J Sports Med. 2015 Jun 10. pii: bjsports-2014-094089. doi: 10.1136/bjsports-2014-094089.

After revision anterior cruciate ligament reconstruction, who returns to sport? A systematic review and meta-analysis.

Grassi A¹, Zaffagnini S¹, Marcheggiani Muccioli GM¹, Neri MP¹, Della Villa S², Marcacci M¹.
Author information

Abstract

BACKGROUND:

Return to sport and to pre-injury level represents an important outcome after both primary and revision anterior cruciate ligament (ACL) reconstructions.

PURPOSE:

The aim of the present meta-analysis was to determine the return to sport rate after revision ACL reconstruction.

MATERIAL AND METHODS:

A systematic search was performed of the MEDLINE, Embase and the Cochrane Central Register of Controlled Trials Databases. All the studies that reported return to sport, return to pre-injury sport level and return to high level/competitive sport was considered for the meta-analysis. The overall pooled mean of post-operative knee laxity and pooled rate of positive pivot-shift and objective International Knee Documentation Committee (IKDC) categories was calculated as well.

RESULTS:

Overall, 472 abstracts were identified and screened for inclusion and only 16 studies reported the rate of return to any level of sport activity at the final follow-up of 4.7 years (range 1.0-13.2 years), showing a pooled rate of 85.3% (CI 79.7 to 90.2). The return to pre-injury sport level was achieved in 53.4% (CI 37.8 to 68.7) of cases. Normal or quasi-normal objective IKDC, less than 5 mm of side-to-side difference at arthrometric evaluations and grade I-II pivot-shift test were reported in 84%, 88% and 93% patients, respectively.

CONCLUSIONS:

In spite of almost 8 patients out of 10 returning to sport after revision ACL reconstruction and showing good stability, only half of the patients returned to the same pre-injury sport level.

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KEYWORDS: ACL; Knee; Review; Sport

PMID: 26062956

33. MENISCUS

Repair

Arch Orthop Trauma Surg. 2015 Jul 5.

Comparison between conservative treatment and arthroscopic pull-out repair of the medial meniscus root tear and analysis of prognostic factors for the determination of repair indication.

Ahn JH¹, Jeong HJ, Lee YS, Park JH, Lee JW, Park JH, Ko TS.

Author information

Abstract

INTRODUCTION:

This study was undertaken to compare the clinical outcomes between the conservative treatment and pull-out repair of the medial meniscus root tear (MMRT), and to analyze the prognostic factors of the MMRT repair for the determination of repair indication.

MATERIALS AND METHODS:

38 patients, diagnosed with a MMRT between August 2010 and February 2012, were retrospectively evaluated. Among these patients, 25 patients (pull-out repair group) underwent arthroscopic pull-out repair and the remaining 13 patients (conservative treatment group) underwent conservative management. Two groups were compared using the final clinical outcomes (using Tegner and Lysholm activity scale, IKDC subjective score). For the analysis of prognostic factors of the pull-out repair, patients' factors, radiologic, and magnetic resonance imaging factors were evaluated. Degrees of varus alignment ($\geq 5^\circ$) and cartilage status (\geq outerbridge III) were employed as a cut-off value in comparing the final clinical outcomes among the subgroups.

RESULTS:

In the final clinical results, the MMRT pull-out repair group had better IKDC subjective scores ($p < 0.001$), Tegner and Lysholm activity scale ($p = 0.017$). In the MMRT pull-out repair group, mild varus knee patient achieved better clinical outcome than the severe varus knee patient ($p = 0.006$). And the mild cartilage degenerative patient group achieved better outcomes than the severe cartilage degenerative patient group ($p = 0.009$). However, there was no significant difference between the severe varus alignment group and conservative treatment group ($p = 0.487$). Severe cartilage changes also show no significant difference ($p = 0.643$).

CONCLUSIONS:

The MMRT pull-out repair group had better clinical results than that the conservative treatment group. However, severe varus alignment and severe degeneration of cartilage status were a poor prognostic factor, and there was no significant difference between the severe varus alignment or severe cartilage change and the conservative treatment group in the clinical results. The other optional treatment could be recommended for patients who have MMRT with a severe varus knee alignment or severe cartilage.

PMID:26142540

34. PATELLA**Proximal rehabilitation**

Br J Sports Med. 2015 Jul 14. pii: bjsports-2015-094723. doi: 10.1136/bjsports-2015-094723.

Proximal muscle rehabilitation is effective for patellofemoral pain: a systematic review with meta-analysis.

Lack S¹, Barton C², Sohan O¹, Crossley K³, Morrissey D⁴.

Author information

Abstract

BACKGROUND:

Proximal muscle rehabilitation is commonly prescribed to address muscle strength and function deficits in individuals with patellofemoral pain (PFP). This review (1) evaluates the efficacy of proximal musculature rehabilitation for patients with PFP; (2) compares the efficacy of various rehabilitation protocols; and (3) identifies potential biomechanical mechanisms of effect in order to optimise outcomes from proximal rehabilitation in this problematic patient group.

METHODS:

Web of Knowledge, CINAHL, EMBASE and Medline databases were searched in December 2014 for randomised clinical trials and cohort studies evaluating proximal rehabilitation for PFP. Quality assessment was performed by two independent reviewers. Effect size calculations using standard mean differences and 95% CIs were calculated for each comparison.

RESULTS:

14 studies were identified, seven of high quality. Strong evidence indicated proximal combined with quadriceps rehabilitation decreased pain and improved function in the short term, with moderate evidence for medium-term outcomes. Moderate evidence indicated that proximal when compared with quadriceps rehabilitation decreased pain in the short-term and medium-term, and improved function in the medium term. Limited evidence indicated proximal combined with quadriceps rehabilitation decreased pain more than quadriceps rehabilitation in the long term. Very limited short-term mechanistic evidence indicated proximal rehabilitation compared with no intervention decreased pain, improved function, increased isometric hip strength and decreased knee valgum variability while running.

CONCLUSIONS:

A robust body of work shows proximal rehabilitation for PFP should be included in conservative management. Importantly, greater pain reduction and improved function at 1 year highlight the long-term value of proximal combined with quadriceps rehabilitation for PFP.

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KEYWORDS: Exercises; Knee; Rehabilitation

PMID:26175019

Medial Patellofemoral ligament

Knee Surg Sports Traumatol Arthrosc. 2015 Jul 8.

Comparative analysis of medial patellofemoral ligament length change pattern in patients with patellar dislocation using open-MRI.

Arai Y¹, Nakagawa S, Higuchi T, Inoue A, Honjo K, Inoue H, Ikoma K, Ueshima K, Ikeda T, Fujiwara H, Kubo T.

Author information

Abstract

PURPOSE:

Medial patellofemoral ligament (MPFL) reconstruction has become a common form of treatment for recurrent patellar dislocation. This study was performed using open-MRI to compare the length change pattern of MPFL in patients with a history of patellar dislocation to that in healthy subjects.

METHODS:

The subjects comprised 10 knees of 8 males and 13 knees of 12 females with a history of one or more patellar dislocations. The length of the MPFL was measured using open-MRI in both the leg-extended position and knee-flexed positions to analyse the length change pattern.

RESULTS:

The average MPFL lengths were 58.6 ± 6.5 mm and 52.0 ± 4.6 mm for males and females in the extended knee position, respectively. The length change pattern of the MPFL showed slight variation up to a flexion angle of 30° and a clear decrease above 30° . This pattern differed from that of normal MPFL. In terms of morphology, the fibre bundle of the damaged MPFL followed a convex course towards the side of the patellofemoral joint surface at a knee flexion angle of 60° , whereas that of the normal MPFL followed a straight course.

CONCLUSION:

The in vivo damaged MPFL length change pattern was specific and differed distinctly from that of normal MPFL. The results of the present study suggested that MPFL fibres with a history of patellar dislocation lack sufficient tension at knee flexion angles of 0° - 60° . However, further studies are needed to obtain a better understanding of cases with a patellar dislocation or postsurgical cases of MPFL reconstruction.

LEVEL OF EVIDENCE: III.

PMID:26154483

37. OSTEOARTHRITIS/KNEE**Daily activities and occupation not related to OA**

Int J Rheum Dis. 2015 Jul 22. doi: 10.1111/1756-185X.12604.

Are daily physical activities risk factors for knee osteoarthritis?

Gholami J¹, Mansournia MA¹, Davatchi F², Mohammad K¹, Hosseini H¹, Majdzadeh R^{1,3}.
Author information

Abstract

AIM:

In spite of many epidemiologic studies, there is still insufficient evidence on the effects of daily physical activity on osteoarthritis. The purpose of this study was to evaluate the association between squatting, climbing, kneeling, lifting and carrying weights and knee osteoarthritis.

METHODS:

This population-based case control study was the second stage of the World Health Organization - Community Oriented Program for Control of Rheumatic Diseases (WHO-COPCORD), in which 263 cases and 263 controls aged 30-70 years were selected from 780 eligible cases and 4373 eligible controls identified in the first-stage survey in Tehran. Demographic and lifestyle data were obtained from all the participants. The selection probability of each case and control and the stabilized weight was estimated using the restricted cubic spline models. Multivariable regression models by inverse probability weighting were used to minimize the effect of the bias resulting from the unequal selection probability.

RESULTS:

The female sex, age, obesity and history of previous severe knee injury maintained their strong and significant associations with knee osteoarthritis before and after the adjustment. Although walking and squatting were significantly different in the case and control groups in the bivariate analysis, after adjustment and weighting no such association was found between the disease and squatting, kneeling, standing, walking, climbing, carrying and lifting.

CONCLUSION:

This study did not show any significant association between knee osteoarthritis and daily occupational and non-occupational activities; nevertheless it does add another piece of information to the literature on the complex role of physical activities in knee osteoarthritis.

KEYWORDS: case-control study; inverse probability weighting; knee osteoarthritis; physical activity

PMID: 26201051

Pelvic motion changes in advanced stages

Arch Orthop Trauma Surg. 2015 Jul 4.

Pelvic movement strategies and leg extension power in patients with end-stage medial compartment knee osteoarthritis: a cross-sectional study.

Kierkegaard S¹, Jørgensen PB, Dalgas U, Søballe K, Mechlenburg I.
Author information

Abstract

INTRODUCTION:

During movement tasks, patients with medial compartment knee osteoarthritis use compensatory strategies to minimise the joint load of the affected leg. Movement strategies of the knees and trunk have been investigated, but less is known about movement strategies of the pelvis during advancing functional tasks, and how these strategies are associated with leg extension power. The aim of the study was to investigate pelvic movement strategies and leg extension power in patients with end-stage medial compartment knee osteoarthritis compared with controls.

MATERIALS AND METHODS:

57 patients (mean age 65.6 years) scheduled for medial uni-compartmental knee arthroplasty, and 29 age and gender matched controls were included in this cross-sectional study. Leg extension power was tested with the Nottingham Leg Extension Power-Rig. Pelvic range of motion was derived from an inertia-based measurement unit placed over the sacrum bone during walking, stair climbing and stepping.

RESULTS:

Patients had lower leg extension power than controls (20-39 %, $P < 0.01$) and used greater pelvic range of motion during stair and step ascending and descending ($P \leq 0.03$, except for pelvic range of motion in the frontal plane during ascending, $P > 0.06$). Furthermore, an inverse association (coefficient: -0.03 to -0.04; $R^2 = 13-22$ %) between leg extension power and pelvic range of motion during stair and step descending was found in the patients.

CONCLUSIONS:

Compared to controls, patients with medial compartment knee osteoarthritis use greater pelvic movements during advanced functional performance tests, particularly when these involve descending tasks. Further studies should investigate if it is possible to alter these movement strategies by an intervention aimed at increasing strength and power for the patients.

PMID:26141537

Enablers

Phys Ther. 2015 Jul 23.

Personal Perspectives on Enablers and Barriers to Accessing Care for Hip and Knee Osteoarthritis.

Ackerman IN¹, Livingston JA², Osborne RH³.
Author information

Abstract

BACKGROUND:

Despite increasing demand for joint replacement surgery and other health services for hip and knee osteoarthritis (OA), barriers and enablers to individual access to care are not well understood. A comprehensive understanding of drivers at all levels is required to inform efforts for improving access.

OBJECTIVE:

To explore perceived barriers and enablers to receiving conservative (non-surgical) and surgical treatment for hip and knee OA.

DESIGN:

Qualitative study using directed content analysis.

METHODS:

Semi-structured telephone interviews were conducted with 33 participants randomly sampled from an Australian population-based survey of hip and knee OA. Each interview covered factors contributing to receiving treatment for OA and perceived barriers to accessing care. Interview transcripts were coded and organised into themes.

RESULTS:

Key barriers to accessing care for OA included medical opinions about saving surgery for later and the appropriate age for joint replacement. Other common barriers included difficulty obtaining referrals or appointments, long waiting times, work-related issues, and limited availability of primary and specialist care in some areas. Several participants perceived a lack of effective treatment for OA. Private health insurance was the most frequently-cited enabler and was perceived to support the costs of surgical and conservative treatments including physiotherapy, while facilitating faster access to surgery. Close proximity to services and assistance from medical professionals in arranging care were also considered enablers.

CONCLUSIONS:

People with hip or knee OA experience substantial challenges in accessing treatment and these relate predominantly to health professionals, health systems and financial factors, while private health insurance was the strongest perceived enabler to accessing care for OA.

PMID:26206218

38 A. FOOT AND ANKLE**Ankle arthrodesis mechanics**

Foot Ankle Int. 2015 Jul 9. pii: 1071100715593913.

Hind- and Midfoot Motion After Ankle Arthrodesis.

van der Plaats LW¹, van Engelen SJ², Wajner QE³, Hendrickx RP⁴, Doets KH⁵, Houdijk H⁶, van Dijk CN⁷.

Author information

Abstract

BACKGROUND:

After ankle arthrodesis (AA), compensatory increased range of motion in adjacent joints might lead to increased osteoarthritis. Evaluation of patient-reported outcomes after AA with validated questionnaires is rare. Likewise, reliable radiographic analysis of the position of the AA, expected to influence the range of motion of the hind- and midfoot, is lacking. Therefore, the current study was performed.

METHODS:

Seventeen patients with unilateral AA were included. Sagittal hind- and midfoot range of motion was measured radiographically. The position of the AA in the sagittal and coronal planes and osteoarthritis of adjacent joints were also evaluated radiographically. Measurements were compared to the contralateral side. Patient-reported outcomes via validated questionnaires were compared to a control group (n = 18).

RESULTS:

Average follow-up was 3.5 years. Mean combined hind- and midfoot sagittal range of motion after AA equaled that of the contralateral side (20.8 vs 21.0 degrees; P = .93). The tibiotalar angle after AA equaled that of the contralateral side (107 vs 107 degrees; P = .86). The talus was translated posteriorly after AA (T-T ratio 0.45 vs 0.34; P < .001). Low intraclass correlation coefficients (ICC) precluded reliable evaluation of the coronal position of the hindfoot (ICC, 0.07 and -0.34) and osteoarthritis in adjacent joints (ICC range, 0-0.54). SF-36 physical health scores after AA are lower as compared with those of controls (50 vs 56; P = .01). Scores on the Foot and Ankle Outcome Score and Ankle Osteoarthritis Scale were also significantly lower. Patient satisfaction with AA was high (average visual analog scale score, 83).

CONCLUSION:

No increased sagittal range of motion in the hind- and midfoot after AA was found at 3.5 years of follow-up as compared with the contralateral side. Tibiotalar angles were equal. The talus was translated posteriorly. The hindfoot alignment view was not suitable to analyze the position of the hindfoot. Low ICC of the Kellgren and Lawrence scale precluded evaluation of osteoarthritis of adjacent joints. Patients scored lower than controls on self-reported outcome questionnaires but were satisfied with the result of AA.

LEVEL OF EVIDENCE: Level III, comparative series.

KEYWORDS: ankle; arthrodesis; osteoarthritis; range of motion

PMID:26160385

Forefoot kinematics

Individual metatarsal and forefoot kinematics during walking in people with diabetes mellitus and peripheral neuropathy

Gait and Posture, 07/28/2015 DiLiberto FE, et al.

The purpose of this study was to compare in-vivo kinematic angular excursions of individual metatarsal segments and a unified forefoot segment in people with Diabetes Mellitus and peripheral neuropathy (DMPN) without deformity or ulceration to a healthy matched control group. This study illustrates that multiple individual metatarsals have reduced motion in people with DMPN. Differences in the magnitude and coupling between individual metatarsal motion and unified forefoot motion supports the use of a two segment forefoot modeling approach in future kinematic analyses.

Methods

- Thirty subjects were recruited.
- A five-segment foot model (1st, 3rd, and 5th, metatarsals, calcaneus, tibia) was used to examine relative 3D angular excursions during the terminal stance phase of walking.
- Student t-tests were used to assess group differences in kinematics.
- Pearson correlations and cross-correlations were used to assess relationships between the motion of the individual metatarsals and the unified forefoot.

Results

- Significant reductions of DMPN group sagittal plane angular excursions were detected in all individual metatarsals and the unified forefoot ($p < 0.01$).
- Frontal plane 3rd metatarsal excursion was reduced ($p = 0.04$) in the DMPN group.
- The 3rd and 5th metatarsal and the unified forefoot excursions were reduced ($p \leq 0.02$) in the DMPN group in the transverse plane.
- In both groups, coupling of individual metatarsal and unified forefoot motion was strongest in the sagittal plane

39 A. ORTHOTICS**Orthotics affect on biomechanics****The Effect of Orthotics on Intersegmental Foot Kinematics and the EMG Activity of Select Lower Leg Muscles**

Juan C. Garbalosa Bruce Elliott Richard Feinn Ryan Wedge

Highlights

- MASS and FCO orthoses are unable to control rearfoot or forefoot motion.
- The positioning of the first ray by the orthotics did not affect hallux motion.
- Orthotics did not have a significant effect on EMG activity during stance.

Abstract**Background:**

Persons with exertional related leg pain are managed using orthoses. This study aimed to determine the effectiveness of two orthoses in altering foot motion and muscle activity in symptomatic individuals.

Methods:

52 subjects with lower extremity pain complaints of a non-traumatic, mechanical origin received one of two orthoses. Foot kinematics and EMG activity were recorded while treadmill walking in 3 footwear conditions. The peak EMG activity of the sandal and sandal orthotic trials (normalized to peak barefoot values) and foot motion during 4 subphases of stance were obtained. Using a multivariate multilevel model via linear mixed models, the effect of orthoses within these phases on motion and EMG was determined.

Results:

An effect of orthotic type was not present for any of the rearfoot or forefoot motions (p.10). A significant effect of footwear and orthotic type on first ray motion (p < .05) during subphases 2 and 4 was seen. During subphase 4 an interaction effect between footwear condition and orthotic type on tibialis posterior EMG activity (p=.036) was present.

Conclusion:

Orthoses are unable to control rear or midfoot motion but appear to control first ray motion and during late stance, affect tibialis posterior muscle activity.

Keywords:

EMG, Biomechanics, Gait, Orthotics

41 A. ACHILLES TENDON AND CALF**Orthotics not helpful**

Br J Sports Med. 2015 Aug;49(15):989-94. doi: 10.1136/bjsports-2014-093845. Epub 2014 Sep 22.

Effectiveness of customised foot orthoses for Achilles tendinopathy: a randomised controlled trial.

Munteanu SE¹, Scott LA¹, Bonanno DR¹, Landorf KB¹, Pizzari T², Cook JL³, Menz HB¹.
Author information

Abstract

AIM:

To evaluate the effectiveness of customised foot orthoses in chronic mid-portion Achilles tendinopathy.

METHODS:

This was a participant-blinded, parallel-group randomised controlled trial at a single centre (La Trobe University, Melbourne, Australia). One hundred and forty participants aged 18-55 years with mid-portion Achilles tendinopathy were randomised to receive eccentric calf muscle exercises with either customised foot orthoses (intervention group) or sham foot orthoses (control group). Allocation to intervention was concealed. The Victorian Institute of Sports Assessment-Achilles (VISA-A) questionnaire was completed at baseline, then at 1, 3, 6 and 12 months, with 3 months being the primary end point. Differences between groups were analysed using intention to treat with analysis of covariance.

RESULTS:

After randomisation into the customised foot orthoses group (n=67) or sham foot orthoses group (n=73), there was 70.7% follow-up of participants at 3 months. There were no significant differences between groups at any time point. At 3 months, the mean (SD) VISA-A score was 82.1 (16.3) and 79.2 (20.0) points for the customised and sham foot orthosis groups, respectively (adjusted mean difference (95% CI)=2.6 (-2.9 to 8.0), p=0.353). There were no clinically meaningful differences between groups in any of the secondary outcome measures.

CONCLUSIONS:

Customised foot orthoses, prescribed according to the protocol in this study, are no more effective than sham foot orthoses for reducing symptoms and improving function in people with mid-portion Achilles tendinopathy undergoing an eccentric calf muscle exercise programme.

TRIAL REGISTRATION NUMBER:

Australian New Zealand Clinical Trials Registry: number ACTRN12609000829213.

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KEYWORDS: Achilles; Eccentric; Physiotherapy; Podiatry; Soft tissue
PMID: 2524644

43. HALLUX VALGUS

Management of

Foot Ankle Int. 2015 Jul 9. pii: 1071100715593799.

Algorithm for Severe Hallux Valgus Associated With Metatarsus Adductus.

Sharma J¹, Aydogan U².

Author information

Abstract

BACKGROUND:

Radiographic angles, such as the intermetatarsal angle, hallux valgus angle, and distal metatarsal articular angle, are commonly used to help guide operative planning for soft tissue and osseous treatment options for hallux valgus. Hallux valgus treatment in the setting of associated metatarsus adductus is less common and not well described. The presence of metatarsus adductus reduces the gap between the first and second metatarsals. Consequently, it complicates the measurement of the first-second intermetatarsal angle and can limit the area available for transposition of the first metatarsal head. A compensatory pronation is also created, which must be compensated for. We present 4 cases of patients that had hallux valgus with severe metatarsus adductus treated operatively, as well as a treatment algorithm.

METHODS:

For concomitant correction of both the metatarsus adductus and the hallux valgus, a thorough surgical treatment algorithm was implemented to address the hallux, lesser toe deformities, and pes planus deformity. Postoperatively, the patients were kept non-weight bearing for 6 weeks, followed by gradual weight bearing in a protective boot. Physical therapy was instituted at the start of weight bearing to encourage a return to activities of daily living.

RESULTS:

At follow-up, patients reported significant relief of their pain symptoms with a narrower and improved appearance of the foot. No recurrence was noted. One patient used a medial arch support but was otherwise symptom free. Radiographic measurements improved on postoperative radiographs.

CONCLUSIONS:

For the treatment of hallux valgus with metatarsus adductus, the second and third metatarsals may need to be addressed for the first metatarsal to be laterally transposed adequately. Overall, this comprehensive approach addresses the hindfoot, midfoot, and forefoot for patients with hallux valgus associated with metatarsus adductus, with successful results.

LEVEL OF EVIDENCE: Level V, case series.

KEYWORDS: distal metatarsal articular angle; hallux valgus; hallux valgus angle; intermetatarsal angle; metatarsus adductus

PMID: 26160386

Hallux rigidus

Hallux Rigidus Relevant Anatomy and Pathophysiology

Douglas E. Lucas, DO,cKenneth J. Hunt, MD

Department of Orthopedics, Stanford University School of Medicine, 450 Broadway Street,
Redwood City, CA 94063, USA

Abstract

Hallux rigidus is a painful condition of the great toe characterized by restriction of the metatarsophalangeal joint arc of motion and progressive osteophyte formation. Precise cause of hallux rigidus remains under debate. Anatomic variations and historical, clinical, and radiographic findings have been implicated in the development and progression of hallux rigidus. Radiologic findings associated with hallux rigidus include metatarsal head osteochondral defects, altered metatarsal head morphology, and an elevated hallux interphalangeus angle measure.

Associated historical findings include a positive family history and history of trauma to the joint. An understanding of relevant anatomy and pathophysiology is essential during the approach to hallux rigidus treatment.

Keywords: Metatarsal head, Metatarsus primus elevatus, Arthritis, Great toe, Bunion, Hallux valgus, Forefoot pain, Osteochondral defect

44. RHUMATOID ARTHRITIS**Exercise**

Sports Med. 2015 Jul 29.

Perceived Barriers, Facilitators and Benefits for Regular Physical Activity and Exercise in Patients with Rheumatoid Arthritis: A Review of the Literature.

Veldhuijzen van Zanten JJ¹, Rouse PC, Hale ED, Ntoumanis N, Metsios GS, Duda JL, Kitas GD.
Author information

- ¹School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham, Birmingham, B15 2TT, UK, veldhujj@bham.ac.uk.

Abstract

Rheumatoid arthritis (RA) is an autoimmune disease, which not only affects the joints but can also impact on general well-being and risk for cardiovascular disease. Regular physical activity and exercise in patients with RA have numerous health benefits. Nevertheless, the majority of patients with RA are physically inactive. This indicates that people with RA might experience additional or more severe barriers to physical activity or exercise than the general population. This narrative review provides an overview of perceived barriers, benefits and facilitators of physical activity and exercise in RA. Databases were searched for articles published until September 2014 using the terms 'rheumatoid arthritis', 'physical activity', 'exercise', 'barriers', 'facilitators', 'benefits', 'motivation', 'motivators' and 'enablers'. Similarities were found between disease-specific barriers and benefits of physical activity and exercise, e.g. pain and fatigue are frequently mentioned as barriers, but reductions in pain and fatigue are perceived benefits of physical activity and exercise. Even though exercise does not influence the existence of barriers, physically active patients appear to be more capable of overcoming them.

Therefore, exercise programmes should enhance self-efficacy for exercise in order to achieve long-term physical activity and exercise behaviour. Encouragement from health professionals and friends/family are facilitators for physical activity and exercise. There is a need for interventions that support RA patients in overcoming barriers to physical activity and exercise and help sustain this important health behaviour.

PMID:26219268

Breast feeding reduces risk of RA

J Rheumatol. 2015 Jul 15. pii: jrheum.150195.

Breastfeeding and Risk of Rheumatoid Arthritis: A Systematic Review and Metaanalysis.

Chen H¹, Wang J¹, Zhou W¹, Yin H¹, Wang M¹.

Author information

Abstract

OBJECTIVE:

Previous studies have examined the association between breastfeeding and rheumatoid arthritis (RA), but their results were inconsistent. The aim of this study was to perform a metaanalysis to clarify the effect of breastfeeding on RA risk.

METHODS:

The PubMed, EMBASE, Chinese National Knowledge Infrastructure, and Wanfang databases were searched for relevant studies published up to September 10, 2014. Data were extracted, and multivariable-adjusted OR with 95% CI were pooled in the random-effects model.

RESULTS:

A total of 6 studies were included in the metaanalysis (RA cases: 1672, sample size: 143,670). Overall, an inverse association between breastfeeding and RA was observed (OR 0.675, 95% CI 0.493-0.924, $p = 0.014$). In the subgroup analysis, decreased RA risk was also found in both breastfeeding 1-12 months (OR 0.783, 95% CI 0.641-0.957, $p = 0.015$) and breastfeeding > 12 months (OR 0.579, 95% CI 0.462-0.726, $p < 0.0005$). Sensitivity analysis and cumulative analysis further strengthened the validity of the results. No publication bias was found in this metaanalysis.

CONCLUSION:

This metaanalysis suggests that breastfeeding is associated with a lower risk of RA, no matter if breastfeeding time is longer or shorter than 12 months.

PMID:26178286

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

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

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

Urban LM1, MacNeil BJ.

Author information

1Lecturer, Department of Physical Therapy, College of Rehabilitation Sciences, Faculty of Health Sciences, University of Manitoba, Winnipeg, Manitoba, Canada.

Abstract

Study Design Diagnostic accuracy study with non-consecutive enrollment. **Objectives** Assess diagnostic accuracy of the slump test for neuropathic pain (NeP) in those with low to moderate levels of chronic low back pain (LBP). Determine whether accuracy of the slump test improves by adding anatomical or qualitative pain descriptors. **Background** NeP has been linked with poor outcomes likely due to inadequate diagnosis which precludes treatment specific for NeP. Current diagnostic approaches are time consuming or lack accuracy. **Methods** A convenience sample of 21 individuals with LBP with or without radiating leg pain was recruited. A standardized neurosensory examination was used to determine the reference diagnosis for NeP. Afterwards, the slump test was administered to all participants. Reports of pain location and quality produced during the slump test were recorded. **Results** The neurosensory examination designated 11 of the 21 participants with LBP/sciatica as having NeP.

The slump test displayed high sensitivity (0.91), moderate specificity (0.70), a positive likelihood ratio of 3.03, and a negative likelihood ratio of 0.13. Adding the criterion of pain below the knee significantly increased specificity to 1.00 (positive likelihood ratio = 11.9). Pain quality descriptors did not improve diagnostic accuracy.

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

KEYWORDS: neurodynamic testing; sensitivity; specificity
PMID: 26107044

48 C. MUSCLES**Hamstring tears are worse if includes tendon**

Br J Sports Med doi:10.1136/bjsports-2015-094657 Original article

Time to return to full training is delayed and recurrence rate is higher in intratendinous ('c') acute hamstring injury in elite track and field athletes: clinical application of the British Athletics Muscle Injury Classification

Noel Pollock¹,

Anish Patel², Julian Chakraverty³, Anu Suokas⁴, Stephen L J James², Robin Chakraverty⁵

Abstract

Background: The British Athletics Muscle Injury Classification describes acute muscle injuries and their anatomical site within muscle based on MRI parameters of injury extent. It grades injuries from 0 to 4 and classifies location based on a myofascial (a), musculotendinous (b) or intratendinous (c) description. This is a retrospective cohort study that assessed time to return to full training (TRFT) and injury recurrence in the different British Athletics classifications for hamstring injuries sustained by elite track and field (T&F) athletes over a 4-year period.

Methods: The electronic medical records (EMRs) of 230 elite British T&F athletes were reviewed. Athletes who sustained an acute hamstring injury, with MRI investigation within 7 days of injury, were included. MRI were graded by two musculoskeletal radiologists using the British Athletics Muscle Injury Classification. The EMRs were reviewed by 2 sports physicians, blinded to the new classification; TRFT and injury recurrence were recorded.

Results: There were 65 hamstring injuries in 44 athletes (24±4.4 years; 28 male, 16 female). TRFT differed among grades ($p<0.001$). Grade 3 injuries and 'c' injuries took significantly longer and grade 0 injuries took less TRFT. There were 12 re-injuries; the injury recurrence rate was significantly higher in intratendinous (c) injuries ($p<0.001$). There was no difference in re-injury rate between number grades 1–3, hamstring muscle affected, location (proximal vs central vs distal), age or sex.

Conclusions: This study describes the clinical application of the British Athletics Muscle Injury Classification. Different categories of hamstring injuries had different TRFT and recurrence rate. Hamstring injuries that extend into the tendon ('c') are more prone to re-injury and delay TRFT.

PRP does not assist hamstring tears

Br J Sports Med. 2015 Jul;49(14):943-50. doi: 10.1136/bjsports-2015-094603.

Platelet-rich plasma does not enhance return to play in hamstring injuries: a randomised controlled trial.

Hamilton B¹, Tol JL², Almusa E³, Boukarroum S², Eirale C², Farooq A⁴, Whiteley R⁵, Chalabi H⁶.
Author information

Abstract

BACKGROUND:

To evaluate the efficacy of a single platelet-rich plasma (PRP) injection in reducing the return to sport duration in male athletes, following an acute hamstring injury.

METHODS:

A randomised, three-arm (double-blind for the injection arms), parallel-group trial, in which 90 professional athletes with MRI positive hamstring injuries were randomised to injection with PRP-intervention, platelet-poor plasma (PPP-control) or no injection. All received an intensive standardised rehabilitation programme. The primary outcome measure was time to return to play, with secondary measures including reinjury rate after 2 and 6 months.

RESULTS:

The adjusted HR for the PRP group compared with the PPP group was 2.29 (95% CI 1.30 to 4.04) p=0.004; for the PRP group compared with the no injection group 1.48 (95% CI 0.869 to 2.520) p=0.15, and for the PPP group compared with the no injection group 1.57 (95% CI 0.88 to 2.80) p=0.13. The adjusted difference for time to return to sports between the PRP and PPP groups was -5.7 days (95% CI -10.1 to -1.4) p=0.01; between the PRP and no injection groups -2.9 days (95% CI -7.2 to 1.4) p=0.189 and between the PPP and no injection groups 2.8 days (95% CI -1.6 to 7.2) p=0.210. There was no significant difference for the secondary outcome measures. No adverse effects were reported.

CONCLUSIONS:

Our findings indicate that there is no benefit of a single PRP injection over intensive rehabilitation in athletes who have sustained acute, MRI positive hamstring injuries. Intensive physiotherapy led rehabilitation remains the primary means of ensuring an optimal return to sport following muscle injury.

TRIAL REGISTRATION NUMBER:

ClinicalTrials.gov Identifier: NCT01812564.

KEYWORDS: Hamstring; Muscle; Platelet-Rich Plasma
PMID:26136179

52. EXERCISE**Aerobic training in AA**

Medicine & Science in Sports & Exercise:

Post Acceptance: July 29, 2015

doi: 10.1249/MSS.0000000000000742

Original Investigation: PDF Only**Aerobic Exercise Training and Arterial Changes in African-Americans versus Caucasians.**

Ranadive, Sushant M.; Yan, Huimin; Lane, Abbi D.; Kappus, Rebecca M.; Cook, Marc D.; Sun, Peng; Harvey, Idethia; Ploutz-Synder, Robert; Woods, Jeffrey A.; Wilund, Kenneth R.; Fernhall, Bo

Abstract

African-Americans (AA) have increased carotid artery intima-media thickness and decreased vascular function compared to their Caucasian (CA) peers. Aerobic exercise prevents and potentially reverses arterial dysfunction.

Purpose: The purpose of this study was to examine the effect of 8 weeks of moderate-high intensity aerobic training in young healthy sedentary AA and CA men and women.

Methods: Sixty-four healthy volunteers (men = 28, women = 36) with mean age = 24 underwent measures of arterial structure, function and blood pressure variables at baseline, post-4 week control period and 8 weeks post-training.

Results: There was a significant increase in VO₂peak amongst both groups post exercise training. Brachial systolic blood pressure decreased significantly following control period in both groups but not following exercise training. Carotid pulse pressure decreased significantly in both groups post exercise training as compared to baseline. There was no change in any of the other blood pressure variables. AAs had a higher intima-media thickness at baseline and post-control period, but significantly decreased following exercise training compared to CAs. AAs had significantly lower baseline forearm blood flow and RH compared to CAs, but exercise training had no effect on these variables. There was no significant difference in arterial stiffness (cPWV) and wave-reflection (AIx) between the two groups at any time point.

Conclusions: This is the first study to show that, 8 weeks of aerobic exercise training causes significant improvement in the arterial structure in young, healthy AAs, making it comparable to the CAs and with minimal effects on blood pressure variables.

Exercise and cannabis

Sports Med. 2015 Jul 16.

Cannabis and Exercise Science: A Commentary on Existing Studies and Suggestions for Future Directions.

Gillman AS¹, Hutchison KE, Bryan AD.
Author information

Abstract

Policies regarding cannabis use are rapidly changing, yet public officials have limited access to scientific information that might inform the creation of these policies. One important area in which to begin investigations is the link between recreational cannabis use and health, specifically exercise. There are common anecdotal reports that cannabis decreases motivation, including motivation to exercise. On the other hand, there are also anecdotal reports that cannabis is used prior to athletic activity. In fact, the World Anti-Doping Agency includes cannabis as a prohibited substance in sport, partly because it is believed that it may enhance sports performance. At the current time, there is limited scientific evidence to support either one of these opposing lay perspectives. Given recent political, cultural, and legal trends, and the growing acceptance of recreational cannabis use, it is important to develop a more nuanced understanding of the relationship between cannabis and exercise, specifically the potential effects of use on exercise performance, motivation, and recovery.

PMID: 26178329

55. SCOLIOSIS**Psoas and multifidus**

Spine J. 2015 Jul 9. pii: S1529-9430(15)00680-4. doi: 10.1016/j.spinee.2015.07.001.

The paravertebral muscle and psoas for the maintenance of global spinal alignment in patient with degenerative lumbar scoliosis.

Yagi M¹, Hosogane N², Watanabe K³, Asazuma T¹, Matsumoto M⁴; Keio Spine Research Group.
Author information

Abstract

BACKGROUND CONTEXT: Various factors are reported to affect the spinal alignment in lumbar degenerative scoliosis (DLS). Although trunk muscles also appear to affect spinal alignment, the role of the trunk muscles is not yet clear.

PURPOSE: To elucidate the role of the multifidus and psoas in maintaining global spinal alignment in patients with DLS.

STUDY DESIGN: A multi-center retrospective matched-cohort study, **PATIENT SAMPLE:** Surgically treated 60 paired DLS and lumbar spinal stenosis (LSS) female (120 patients), matched for age and BMI (DLS age 68.0±6.8 vs. LSS 67.1±8.9 years; BMI 21.6±3.3 vs. 23.2±3.8 kg/m²), and were followed for at least 2 years.

OUTCOME MEASURES: Spinal alignment, muscle area, and volume were measured from radiographs, MRIs, and whole-body DXA scans. Muscle strength was measured by grip power and peak expiratory flow (PEF).

METHODS: No external funding was used for this study. No appraisal of potential conflict of interest. As a surrogate of muscle area, we obtained the cross-sectional area (CSA) at the L5/S level from preop MRIs.

RESULTS: The multifidus and psoas CSAs were significantly smaller in the DLS group than in the LSS group (multifidus 477.7±192.5 vs. 779.8±248.6 mm², P<0.01; psoas 692.3±201.2 vs. 943.4±272.4 mm², P=0.002), while the right and left sides difference (%diff) was significantly larger in the DLS group (multifidus 18.4±30.6 vs. 2.4±3.3%, P<0.01; psoas 14.4±15.8 vs. 2.1±2.2%, P <0.01). In the extremities, there were no significant differences in the left- or right-side lean composition and grip strength or PEF tests between the groups. Correlation coefficient tests showed moderate correlations between the multifidus avCSA and global spinal alignment and spinopelvic alignment (pelvic incidence-lumbar lordosis) (R=-0.37, -0.38) in the DLS group. The multifidus avCSA was correlated with the postop progression of kyphosis at the unfused thoracic vertebrae in the DLS group (R=0.34).

CONCLUSIONS: The CSAs of the multifidus and psoas were significantly smaller in the DLS group. Whole-body DXA showed no significant difference in the lean composition between the groups. There were significant correlations in the DLS patients between the multifidus CSA and sagittal spinal alignment. These findings suggest the causal relationship between muscles global spine alignment.

KEYWORDS: Cross-sectional area; Degenerative lumbar scoliosis; Para-vertebral muscles; Sagittal alignment; Thoracic kyphosis
PMID:26165478

56. ATHLETICS**Coffee intake**

Clin Physiol Funct Imaging. 2015 Jul 17. doi: 10.1111/cpf.12279.

Combined effect of coffee ingestion and repeated bouts of low-intensity exercise on fat oxidation.

Kurobe K¹, Nakao S², Nishiwaki M³, Matsumoto N².

Author information

Abstract

We investigated the effect of the combination of coffee ingestion and repeated bouts of low-intensity exercise on fat oxidation. Subjects were seven young, healthy male adults. They performed four trials: a single 30-min bout of exercise following ingestion of plain hot water (WS) or coffee (CS); a trial with three 10-min bouts of exercise separated by 10-min periods of rest following ingestion of plain hot water (WR) or coffee (CR). The coffee contained 5 mg kg⁻¹ of caffeine. All trials were performed on a cycle ergometer at 40% maximal oxygen uptake for each subject an hour after beverage ingestion. Oxygen uptake in the CS and CR trials was higher compared with the WS and WR trials at 90 min after exercise ($P < 0.05$). Respiratory exchange ratio (RER) in the CS and CR trials was decreased during the whole recovery period compared with baseline ($P < 0.05$), whereas no significant decreases were observed in either the WS or WR trials. Moreover, RER was significantly lower at 30 min after exercise in the CR trial than in either the WS or WR trials ($P < 0.05$ each). Similarly, it is notable that fat oxidation rate in the CR trial was significantly higher at 30 min after exercise compared to that in the WS and WR trials ($P < 0.05$). These results suggest that the combination of coffee intake and repeated bouts of low-intensity exercise enhances fat oxidation in the period after exercise.

KEYWORDS: caffeine; energy substrate; fat metabolism; multiple bouts of exercise; oxygen uptake

PMID:26189608

Football shoes and injuries

Br J Sports Med. 2015 Jun 2. pii: bjsports-2014-094478. doi: 10.1136/bjsports-2014-094478.

Higher shoe-surface interaction is associated with doubling of lower extremity injury risk in football codes: a systematic review and meta-analysis.

Thomson A¹, Whiteley R¹, Bleakley C².

Author information

¹Aspetar Orthopaedic and Sports Medicine Hospital, Doha, Qatar.

²Ulster Sports Academy, University of Ulster, Newtownabbey, County Antrim, UK.

Abstract

BACKGROUND:

Turning or cutting on a planted foot may be an important inciting event for lower limb injury, particularly when shoe-surface traction is high. We systematically reviewed the relationship between shoe-surface interaction and lower-extremity injury in football sports.

METHODS:

A systematic literature search of four databases was conducted up to November 2014. Prospective studies investigating the relationship between rotational traction and injury rate were included. Two researchers independently extracted outcome data and assessed the quality of included studies using a modified Downs and Black index. Effect sizes (OR+95% CIs) were calculated using RevMan software. Where possible, data were pooled using the fixed effect model.

RESULTS:

Three prospective studies were included (4972 male athletes). The methodological quality was generally good with studies meeting 68-89% of the assessment criteria. All studies categorised athletes into low (lowest mean value 15 nm) or high traction groups (highest mean value 74 nm) based on standardised preseason testing. In all cases, injury reporting was undertaken prospectively over approximately three seasons, with verification from a medical practitioner. Injury data focused on: all lower limb injuries, ankle/knee injuries or ACL injury only. There was a clear relationship between rotational traction and injury and the direction and magnitude of effect sizes were consistent across studies. The pooled data from the three studies (OR=2.73, 95% CI 2.13 to 3.15; $\chi^2=3.19$, df=2, p=0.21; $I^2=36.5\%$) suggest that the odds of injury are approximately 2.5 times higher when higher levels of rotational traction are present at the shoe-surface interface.

SUMMARY AND CONCLUSIONS:

Higher levels of rotational traction influence lower limb injury risk in American Football athletes. We conclude that this warrants considerable attention from clinicians and others interested in injury prevention across all football codes.

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KEYWORDS: ACL; American football; Football; Injuries; Leg
PMID: 26036677

57. GAIT**Gait changes with pain**

Gait Posture. 2015 Jul 14. pii: S0966-6362(15)00729-8. doi: 10.1016/j.gaitpost.2015.06.193.

Chronic joint pain in the lower body is associated with gait differences independent from radiographic osteoarthritis.

de Kruijf M¹, Verlinden VJ², Huygen FJ³, Hofman A⁴, van der Geest JN⁵, Uitterlinden AG⁶, Bierma-Zeinstra SM⁷, Ikram MA⁸, van Meurs JB⁹.

Author information

Abstract

Gait is an important indicator of health.

Chronic lower body pain may impair gait and lead to morbidity and mortality. We investigated the associations between lower body pain and gait in community-dwelling individuals, independent from osteoarthritis (OA). This population based cohort study included 2304 Rotterdam Study participants who underwent electronic walkway gait assessment. Thirty different variables resulting from gait assessment were summarized into seven gait domains using principle components analysis: i.e. Rhythm, Variability, Phases, Pace, Tandem, Turning, and Base of Support. Chronic lower body pain was assessed using pain drawings. OA was defined as a Kellgren & Lawrence score of 2 or higher on radiographs of the hip and/or knee. Linear regression analysis was used to study associations. Participants with chronic pain in the leg and hip, had lower Rhythm, Phases, and Pace, independent from OA. Additionally, we found unilateral pain to associate with larger gait asymmetry. No associations were found between chronic pain and the other gait domains, including gait variability. However, within individuals with hip pain, gait variability was higher in individuals with radiographic OA compared to those without OA.

This is the first population based study showing chronic lower body pain associates with gait differences independent from OA. Participants with pain were found to walk with slower and smaller steps, longer double support and more asymmetry. Proper care and treatment of chronic pain could be a way of reducing gait problems and thereby fall risk and associated mortality. In addition, gait assessment may help identifying individuals with OA from those having pain due to other causes.

KEYWORDS: Chronic musculoskeletal pain; Gait; General population; Mobility; Osteoarthritis
PMID: 26210905

58. RUNNING**Endurance running and conditioning**

Sports Med. 2015 Jul 16.

Meta-Analyses of the Effects of Habitual Running on Indices of Health in Physically Inactive Adults.

Hespanhol Junior LC¹, Pillay JD, van Mechelen W, Verhagen E.
Author information

Abstract

BACKGROUND: In order to implement running to promote physical activity, it is essential to quantify the extent to which running improves health.

OBJECTIVE: The aim was to summarise the literature on the effects of endurance running on biomedical indices of health in physically inactive adults.

DATA SOURCES: Electronic searches were conducted in October 2014 on PubMed, Embase, CINAHL, SPORTDiscus, PEDro, the Cochrane Library and LILACS, with no limits of date and language of publication.

STUDY SELECTION: Randomised controlled trials (with a minimum of 8 weeks of running training) that included physically inactive but healthy adults (18-65 years) were selected. The studies needed to compare intervention (i.e. endurance running) and control (i.e. no intervention) groups.

STUDY APPRAISAL AND SYNTHESIS METHODS: Two authors evaluated study eligibility, extracted data, and assessed risk of bias; a third author resolved any uncertainties. Random-effects meta-analyses were performed to summarise the estimates for length of training and sex. A dose-response analysis was performed with random-effects meta-regression in order to investigate the relationship between running characteristics and effect sizes.

RESULTS: After screening 22,380 records, 49 articles were included, of which 35 were used to combine data on ten biomedical indices of health. On average the running programs were composed of 3.7 ± 0.9 sessions/week, 2.3 ± 1.0 h/week, 14.4 ± 5.4 km/week, at 60-90 % of the maximum heart rate, and lasted 21.5 ± 16.8 weeks. After 1 year of training, running was effective in reducing body mass by 3.3 kg [95 % confidence interval (CI) 4.1-2.5], body fat by 2.7 % (95 % CI 5.1-0.2), resting heart rate by 6.7 min^{-1} (95 % CI 10.3-3.0) and triglycerides by 16.9 mg dl^{-1} (95 % CI 28.1-5.6). Also, running significantly increased maximal oxygen uptake ($\text{VO}_{2\text{max}}$) by $7.1 \text{ ml min}^{-1} \text{ kg}^{-1}$ (95 % CI 5.0-9.1) and high-density lipoprotein (HDL) cholesterol by 3.3 mg dl^{-1} (95 % CI 1.2-5.4). No significant effect was found for lean body mass, body mass index, total cholesterol and low-density lipoprotein cholesterol after 1 year of training. In the dose-response analysis, larger effect sizes were found for longer length of training.

LIMITATIONS: It was only possible to combine the data of ten out of the 161 outcome measures identified. Lack of information on training characteristics precluded a multivariate model in the dose-response analysis.

CONCLUSIONS: Endurance running was effective in providing substantial beneficial effects on body mass, body fat, resting heart rate, $\text{VO}_{2\text{max}}$, triglycerides and HDL cholesterol in physically inactive adults. The longer the length of training, the larger the achieved health benefits. Clinicians and health authorities can use this information to advise individuals to run, and to support policies towards investing in running programs.

PMID:26178328

Gait changes for runners

Br J Sports Med. 2015 Jun 23. pii: bjsports-2014-094393. doi: 10.1136/bjsports-2014-094393.

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

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

Abstract

BACKGROUND:

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

AIM:

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

STUDY DESIGN:

Systematic literature review.

METHODS:

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

RESULTS:

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

CONCLUSIONS:

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

KEYWORDS: Running; Sports & exercise medicine
PMID:26105016

Shod vs. unshod

Br J Sports Med. 2015 Jun 30. pii: bjsports-2014-094482. doi: 10.1136/bjsports-2014-094482.

Prospective comparison of running injuries between shod and barefoot runners.

Altman AR¹, Davis IS².
Author information

Abstract

BACKGROUND:

Advocates of barefoot running suggest that it is more natural and may be a way to minimise injury risk. In contrast, opponents believe shoes are needed to adequately cushion and support the foot. However, to date, there have been no prospective studies of injury patterns in barefoot and shod runners. The purpose of this study was to compare the incidence and rate of injuries between shod and barefoot runners.

METHODS:

A prospective survey was conducted over the course of a year among 201 (107 barefoot and 94 shod) adult runners. Information regarding injuries and mileage was logged monthly using a custom, web-based database program. The number of injured runners, number of injuries per runner and injury rates were compared between habitual barefoot and habitual shod runners. Both musculoskeletal and plantar surface injuries were assessed.

RESULTS:

Statistically fewer overall, diagnosed, musculoskeletal injuries/runner were noted in the barefoot group. However, injury rates were not statistically different between groups due to significantly less mileage run in the barefoot group. As expected, barefoot runners sustained a statistically greater number of injuries to the plantar surface of the foot. The descriptive analysis suggests a greater number of calf injuries, but lower number of knee and hip injuries in the barefoot group. Additionally barefoot runners reported less plantar fasciitis than the shod group.

CONCLUSIONS:

Barefoot running is associated with fewer overall musculoskeletal injuries/runner, but similar injury rates. A larger scale cohort is needed to more accurately assess differences in individual injuries between these two groups.

KEYWORDS: Injuries; Running
PMID:26130697

59. PAIN**Prevalence of chronic pain****Prevalence of chronic pain in a large integrated healthcare delivery system in the U.S.A**

Pain Practice, 07/31/2015

Lamerato LE, et al. – There is a paucity of published data on the prevalence of chronic pain conditions within large, integrated healthcare organizations in the U.S.A. Such data are essential to inform the development of appropriate treatment programs. In this comprehensive analysis of 2 years of data from a large, vertically integrated metropolitan health system, chronic pain was identified in 12% of adult patients. Approximately 75% of chronic pain conditions were musculoskeletal. The triad of age ≥ 60 years, BMI ≥ 30 , and female sex were the most salient demographic characteristics of patients with chronic pain conditions. These diagnostic and demographic data may be used to inform treatment program development.

Methods

- Twenty-five selected pain conditions were used to identify patients receiving care within the Henry Ford Health System (HFHS) who were enrolled in the Health Alliance Plan (HAP), a subsidiary of HFHS.
- Patients aged ≥ 18 years, enrolled in HAP in 2010, and having ≥ 2 encounters, ≥ 30 days apart, with an ICD-9-CM diagnosis code for a pain condition of interest during 2010 were counted.
- Variables included in the study were as follows: age, gender, body mass index (BMI), and Charlson comorbidity conditions and index score.

Results

- Altogether, 14,784 persons (11.6% of the total adult population) met the criteria for having a chronic pain condition.
- Overall, the study population was 64.4% female and had mean age (SD) of 61.2 (15.6) years and mean BMI of 31.4 (7.2) kg/m².
- Musculoskeletal pain conditions were the most common diagnoses, comprising 75.4% of all pain diagnoses.
- Diabetes and chronic pulmonary disease were the most common medical comorbidities.

Psychological correlates

Pain. 2015 Aug;156(8):1458-64. doi: 10.1097/j.pain.0000000000000182.

Chronic widespread pain: clinical comorbidities and psychological correlates.

Burri A¹, Ogata S, Vehof J, Williams F.

Author information

¹aDepartment of Psychology, University of Zurich, Zurich, Switzerland bDepartment of Twin Research, King's College London, London, UK cDepartment of Health Promotion Science, Osaka University Graduate School of Medicine, Suita, Osaka, Japan dDepartments of Ophthalmology and Epidemiology, University Medical Center Groningen, University of Groningen, Groningen, the Netherlands.

Abstract

Recent studies have provided consistent evidence for a genetic influence on chronic widespread pain (CWP). The aim of this study was to investigate (1) the etiological structure underlying CWP by examining the covariation between CWP and psychological comorbidities and psychoaffective correlates and (2) the decomposition of the covariation into genetic and environmental components. A total of 3266 female twins (mean age 56.6 years) were subject to multivariate analyses. Using validated questionnaires to classify twins as having CWP, the prevalence of CWP was 20.8%. In the multivariate analysis, the most suitable model was the common pathway model. This model revealed 2 underlying latent variables, one common to anxiety, emotional intelligence, and emotional instability (f1) and the other common to depression and CWP (f2), the latter being highly heritable (86%). Both latent variables (f1 and f2) shared an additive genetic and a nonshared environmental factor. In addition, a second additive genetic factor loading only on f2 was found.

This study reveals the structure of genetic and environmental influences of CWP and its psychoaffective correlates. The results show that the clustering of CWP and depression is due to a common, highly heritable, underlying latent trait. In addition, we found evidence that CWP, anxiety, emotional instability, and emotional intelligence are influenced by different underlying latent traits sharing the same genetic and nonshared environmental factors. This is the first study to reveal the structure and relative importance of genetic and environmental influences on complex etiological mechanisms of CWP and its correlates.

PMID: 25851458

Pain modulation

Pain. 2015 Aug;156(8):1477-88. doi: 10.1097/j.pain.000000000000192.

Experimental reduction of pain catastrophizing modulates pain report but not spinal nociception as verified by mediation analyses.

Terry EL¹, Thompson KA, Rhudy JL.
Author information

Abstract

Pain catastrophizing is associated with enhanced pain; however, the mechanisms by which it modulates pain are poorly understood. Evidence suggests that catastrophizing modulates supraspinal processing of pain but does not modulate spinal nociception (as assessed by nociceptive flexion reflex [NFR]). Unfortunately, most NFR studies have been correlational. To address this, this study experimentally reduced catastrophizing to determine whether it modulates spinal nociception (NFR). Healthy pain-free participants (N = 113) were randomly assigned to a brief 30-minute catastrophizing reduction manipulation or a control group that received pain education. Before and after manipulations, 2 types of painful stimuli were delivered to elicit (1) NFR (single trains of stimuli) and (2) temporal summation of NFR (3 stimulations at 2 Hz). After each set of stimuli, participants were asked to report their pain intensity and unpleasantness, as well as their situation-specific catastrophizing. Manipulation checks verified that catastrophizing was effectively reduced. Furthermore, pain intensity and unpleasantness to both stimulation types were reduced by the catastrophizing manipulation, effects that were mediated by catastrophizing. Although NFRs were not affected by the catastrophizing manipulation, temporal summation of NFR was reduced. However, this effect was not mediated by catastrophizing.

These results indicate that reductions in catastrophizing lead to reductions in pain perception but do not modulate spinal nociception and provides further evidence that catastrophizing modulates pain at the supraspinal, not the spinal, level.

PMID: 25887463

HOPE

Cult Med Psychiatry. 2015 Jul 21.

Ways of Hoping: Navigating the Paradox of Hope and Despair in Chronic Pain.

Eaves ER¹, Nichter M, Ritenbaugh C.

Author information

Abstract

In this paper, we explore hope in the context of living with chronic pain. Individuals with chronic pain from temporomandibular disorder(s) were interviewed four to five times over the course of their 18-month participation in a clinical trial investigating the effectiveness of Traditional Chinese Medicine. We sought to understand shifts in participants' descriptions of expectations and hopefulness, particularly with regard to the work involved in counterbalancing positive thinking with buffers against disappointment. We found hope to be a dynamic and multifaceted mindset as distinct from being a single entity to be measured. Drawing upon Polanyi's concept of tacit knowing, we explore how different ways of hoping emerge and index one another in participant narratives.

We offer a working typology of hope and raise as an issue the manner in which the paradox of hope-hoping enough to carry on while keeping hopes in check to avoid the ever-present possibility of despair-complicates simplistic notions of the relationship between positive thinking and the placebo response.

PMID: 26194780

Chronic pain and sleep

Pain. 2015 Aug;156(8):1433-9. doi: 10.1097/j.pain.000000000000131.

Sleep and pain sensitivity in adults.

Sivertsen B¹, Lallukka T, Petrie KJ, Steingrimsdóttir ÓA, Stubhaug A, Nielsen CS.
Author information

Abstract

Sleep problems and pain are major public health concerns, but the nature of the association between the 2 conditions is inadequately studied. The aim of this study was to determine whether a range of sleep measures is associated with experimental increased pain sensitivity. A cross-sectional large population-based study from 2007 to 2008, the Tromsø 6 study, provided data from 10,412 participants (age: mean [SD], 58 [13] years; 54% women). Self-reported sleep measures provided information on sleep duration, sleep onset latency (SOL), and sleep efficiency, as well as frequency and severity of insomnia.

The main outcome measure was pain sensitivity tests, including assessment of cold-pressor pain tolerance. We found that all sleep parameters, except sleep duration, were significantly associated with reduced pain tolerance. Both the frequency and severity of insomnia, in addition to SOL and sleep efficiency, were associated with pain sensitivity in a dose-response manner. Adjusting for demographics and psychological distress reduced the strengths of the hazard ratios, but most associations remained significant in the fully adjusted models. There was also a synergistic interaction effect on pain tolerance when combining insomnia and chronic pain.

We conclude that sleep problems significantly increase the risk for reduced pain tolerance. Because comorbid sleep problems and pain have been linked to elevated disability, the need to improve sleep among patients with chronic pain, and vice versa, should be an important agenda for future research.

PMID: 25915149

62 A. NUTRITION/VITAMINS**Coffee decreases gall stone production**

Aliment Pharmacol Ther. 2015 Jul 22. doi: 10.1111/apt.13328.

Systematic review with meta-analysis: coffee consumption and the risk of gallstone disease.

Zhang YP¹, Li WQ¹, Sun YL¹, Zhu RT¹, Wang WJ¹.

Author information

Abstract

BACKGROUND:

Epidemiologic evidence on coffee consumption reducing the risk of gallstone disease has been contradictory.

AIM:

To perform a meta-analysis of observational studies, to investigate an association and dose-response of coffee consumption with gallstone disease.

METHODS:

We used PubMed and EMBASE databases to identify all published studies before June 2015. A random-effects model was used to compute a pooled relative risk (RR) and corresponding 95% confidence intervals (CIs).

RESULTS:

One case-control study and five prospective cohort studies (with seven cohorts) involving 227 749 participants and 11 477 gallstone disease cases were included. Coffee consumption was significantly associated with a reduced risk of gallstone disease (RR, 0.83; 95% CI, 0.76 to 0.89; $I^2 = 35.9%$), based on prospective studies; specifically, we observed an inverse relation in females, but not in males. The case-control study did not reveal any association between coffee and gallstone disease (OR, 0.99; 95% CI, 0.64 to 1.53). In a dose-response analysis, the RR of gallstone disease was 0.95 (95% CI, 0.91 to 1.00; $P = 0.049$) per 1 cup/day of coffee consumption. A significant nonlinear dose-response association was also identified (P for nonlinearity = 0.0106). For people who drank 2, 4 and 6 cups of coffee per day, the estimated RRs of gallstone disease were 0.89 (95% CI, 0.79 to 0.99), 0.81 (95% CI, 0.72 to 0.92) and 0.75 (95% CI, 0.64 to 0.88), respectively, compared with the lowest level drinkers.

CONCLUSION:

This study suggests that coffee consumption is related to a significantly decreased risk of gallstone disease.

PMID: 26198295

62 B. CRYOTHERAPY**Post surgical knees**

Arch Orthop Trauma Surg. 2015 Jul 4.

Temperature-controlled continuous cold flow device versus traditional icing regimen following anterior cruciate ligament reconstruction: a prospective randomized comparative trial.

Ruffilli A¹, Buda R, Castagnini F, Di Nicolantonio D, Evangelisti G, Giannini S, Faldini C.
Author information

Abstract

INTRODUCTION:

Anterior cruciate ligament (ACL) reconstruction requires an intensive rehabilitation program to be completely successful. Cryotherapy has been described to be helpful in reducing post-operative pain and edema. Aim of this prospective randomized study is to compare two homogeneous groups of patients, one receiving traditional icing regimen and the other a temperature-controlled continuous cold flow device, in post-operative setting after ACL reconstruction.

MATERIALS AND METHODS:

Forty-seven patients treated for ACL reconstruction using "over the top" technique were enrolled for this study. All patients received the same elastocompressive bandage. Regarding the coolant device, 23 patients were randomized to temperature-controlled continuous cold flow device (HiloTherm[®] group) and 24 patients were randomized to receive ice bag (control group). The two groups were homogenous for pre-operative (age, sex, and time "lesion to surgery") and intra-operative parameters (duration of the procedure, meniscectomy, and chondral damage). NRS (numeric rating scale), blood loss, knee volume increase at three established sites, ROM, and pain killers consumption were assessed. The subjective evaluation of the device including practicality and usefulness of the device was investigated.

RESULTS:

HiloTherm group resulted in lower pain perception (NRS), blood loss, knee volume increase at the patellar apex and 10 cm proximal to the superior patellar pole, and higher range of motion ($p < 0.05$) in the first post-operative day. No difference in pain killers consumption was noted. HiloTherm device was considered "comfortable" and "useful" by the majority of patients.

CONCLUSIONS:

HiloTherm group showed significant better results in first post-operative day. Further studies with higher number of patients and longer follow-up are required to assess the beneficial effects on rehabilitation and the cost-effectiveness of the routinely use of this device.

LEVEL OF EVIDENCE:II.

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