

ABSTRACTS

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1. LUMBAR SPINE

Spondylolisthesis

J Spinal Disord Tech. 2015 Aug;28(7):236-41. doi: 10.1097/BSD.0000000000000298.

Degenerative Spondylolisthesis.

Koreckij TD¹, Fischgrund JS.

Author information

Abstract

Degenerative spondylolisthesis (DS) is one of the more commonly encountered spine conditions. The diagnosis of DS has changed little in the last 30 years. However, there has been an evolution in the treatment of this disease entity. There have been several landmark papers that helped govern our treatment. These helped serve as the basis for the treatment arms of the Spine Patient Outcomes Research Trial (SPORT), which offers the highest quality evidence to date. Although few would argue that the fusion of the diseased segment appears to offer the best and most durable results, treatment of this disease is best tailored to the individual. Fusion may offer the best results in the young active patient, but the same results may never become evident in the medically infirm patient. Laminectomy or unilateral laminoforaminotomy still plays a role in disease treatment. This review will focus on the diagnosis and the treatment of DS as well as discuss the author's preferred treatment of this disease.

PMID: 26172828

2. LBP

GP's role in LBP

Patient Educ Couns. 2015 Jul 29. pii: S0738-3991(15)30034-3. doi: 10.1016/j.pec.2015.07.027.

Changes in general practitioners' sensitivity to patients' distress in low back pain consultations.

Butalid L¹, Verhaak PF², Bensing JM³.

Author information

Abstract

OBJECTIVE:

We aim to study GPs' sensitivity to patients' distress and communication on psychosocial factors prior to and after the introduction of the clinical guideline for low back pain.

METHODS:

Consultations from previous studies on doctor-patient communication in the Netherlands were available for secondary analyses. We selected consultations in which patients presented low back pain complaints (N=168; 25 from 1989, 6 from 1995, 116 from 2001, 21 from 2008) and analyzed these consultations using the Roter Interaction Analysis System (RIAS) and the Verona Coding Definitions of Emotional Sequences (VR-CoDES).

RESULTS:

GPs more often acknowledged psychosocial factors during consultations after implementation of the guideline for non-specific low back pain. Moreover, patients more often voiced their worries, while GPs put more emphasis on providing biomedical information and counseling during these consultations.

CONCLUSIONS:

GPs tend to emphasize biomedical factors rather than supporting their patients emotionally. Patients are likely to voice their worries implicitly, indicating they have a need for emotional support from their GPs.

PRACTICE IMPLICATIONS:

GPs now face the challenge of not only recognizing psychosocial aspects during consultations with low back pain, but also actively eliciting concerns regarding these psychosocial aspects.

KEYWORDS: Cues and concerns; Doctor-patient communication; General practice; Low back pain; Psychosocial factors

PMID: 26254314

CP – changes in the brain

Brain. 2013 Sep;136(Pt 9):2751-68. doi: 10.1093/brain/awt211.

Shape shifting pain: chronification of back pain shifts brain representation from nociceptive to emotional circuits.

Hashmi JA¹, Baliki MN, Huang L, Baria AT, Torbey S, Hermann KM, Schnitzer TJ, Apkarian AV.

Author information

Abstract

Chronic pain conditions are associated with abnormalities in brain structure and function. Moreover, some studies indicate that brain activity related to the subjective perception of chronic pain may be distinct from activity for acute pain. However, the latter are based on observations from cross-sectional studies. How brain activity reorganizes with transition from acute to chronic pain has remained unexplored. Here we study this transition by examining brain activity for rating fluctuations of back pain magnitude. First we compared back pain-related brain activity between subjects who have had the condition for ~2 months with no prior history of back pain for 1 year (early, acute/subacute back pain group, n = 94), to subjects who have lived with back pain for >10 years (chronic back pain group, n = 59). In a subset of subacute back pain patients, we followed brain activity for back pain longitudinally over a 1-year period, and compared brain activity between those who recover (recovered acute/sub-acute back pain group, n = 19) and those in which the back pain persists (persistent acute/sub-acute back pain group, n = 20; based on a 20% decrease in intensity of back pain in 1 year). We report results in relation to meta-analytic probabilistic maps related to the terms pain, emotion, and reward (each map is based on >200 brain imaging studies, derived from neurosynth.org). We observed that brain activity for back pain in the early, acute/subacute back pain group is limited to regions involved in acute pain, whereas in the chronic back pain group, activity is confined to emotion-related circuitry. Reward circuitry was equally represented in both groups. In the recovered acute/subacute back pain group, brain activity diminished in time, whereas in the persistent acute/subacute back pain group, activity diminished in acute pain regions, increased in emotion-related circuitry, and remained unchanged in reward circuitry.

The results demonstrate that brain representation for a constant percept, back pain, can undergo large-scale shifts in brain activity with the transition to chronic pain. These observations challenge long-standing theoretical concepts regarding brain and mind relationships, as well as provide important novel insights regarding definitions and mechanisms of chronic pain.

KEYWORDS: chronic back pain; emotion; fMRI; longitudinal; reward
PMID: 23983029

Narcotics and LBP

Oxycodone/naloxone vs oxycodone vs morphine in chronic low back pain

Journal of Pain Research, 08/14/2015 Ueberall MA, et al.

The authors aimed to compare the effects of prolonged-release (PR) oxycodone plus PR naloxone (OXN) vs PR oxycodone (OXY) vs PR morphine (MOR) on bowel function under real-life conditions in chronic low-back pain patients refractory to World Health Organization (WHO) step I and/or II analgesics. In this post hoc analysis of data from a real-life 12-week study, OXN treatment was associated with a significantly lower risk of opioid-induced constipation, superior tolerability, and significantly better analgesic efficacy compared with OXY and MOR.

Methods

- This was a post hoc analysis of the complete data set from a prospective, randomized, open-label, blinded endpoint (PROBE) streamlined study (German pain study registry: 2012-0012-05;
- European Union Drug Regulating Authorities Clinical Trials [EudraCT]: 2012-001317-16), carried out in 88 centers in Germany, where a total of 901 patients requiring WHO step III opioids to treat low-back pain were enrolled and prospectively observed for 3 months.
- Opioid allocation was based on either optional randomization (n=453) or physician decision (n=448). In both groups, treatment doses could be adjusted as per the German prescribing information, and physicians were free to address all side effects and tolerability issues as usual.
- The primary endpoint was the proportion of patients maintaining normal bowel function throughout the complete treatment period, assessed with the Bowel Function Index (BFI).
- Secondary analyses addressed absolute and relative BFI changes, complete spontaneous bowel movements, use of laxatives, treatment emergent adverse events, analgesic effects, and differences between randomized vs nonrandomized patient groups.

Results

- BFI changed significantly with all three WHO step III treatments, however significantly less with OXN vs OXY and MOR despite a significantly higher use of laxatives with the latter ones (P<0.001).
- The percentage of patients who maintained normal BFI scores despite opioid treatment was 54.5% (164/301) with OXN and was significantly superior to those seen with OXY (32.8% [98/300]) (odds ratio [OR]: 2.47, 95% confidence interval [CI]: 1.77-3.44; P<0.001) or MOR (29.7% [89/300]) (OR: 2.84, 95% CI: 2.03-3.97; P<0.001).
- Absolute BFI changes of ≥ 12 mm 100 mm horizontal visual analog scale (VAS100) vs. baseline were seen for OXN in 41.4%, for OXY in 68.7%, and for MOR in 72.3%. Complete spontaneous bowel movements decreased at least by one per week in 10.3% with OXN vs 42.3% for OXY (OR: 6.39, 95% CI 4.13-9.89; P<0.001) and 42.0% for MOR (OR: 6.31, 95% CI: 4.08-9.76; P<0.001).
- Overall, 359 treatment emergent adverse events (78 [OXN], 134 [OXY], and 147 [MOR]) in 204 patients (41 [OXN], 80 [OXY], and 83 [MOR]) occurred, most affecting the gastrointestinal (49.3%) and the nervous system (39.3%).
- Treatment contrasts between randomized vs nonrandomized patients were insignificant.

Prognostics in workman's comp LBP**Prognosis and course of work-participation in patients with chronic non-specific low back pain: A 12-month follow-up cohort study**

Journal of Rehabilitation Medicine, 08/14/2015 Verkerk K, et al.

The aim of this study is to investigate the clinical course of, and prognostic factors for, work-participation in patients with chronic non-specific low back pain. At 12 months 52% of patients reported $\geq 90\%$ work-participation. The strongest prognostic factor was more work-participation at baseline for the recovery of chronic non-specific low back pain.

Methods

- A total of 1,608 patients with chronic non-specific low back pain received a multidisciplinary therapy and were evaluated at baseline and 2-, 5- and 12-month follow-ups.
- Recovery was defined as absolute recovery if the patient worked 90% of his contract hours at follow-up.
- Potential factors were identified using multivariable logistic regression analysis.

Results

- Patients reported a mean increase in work-participation from 38% at baseline to 82% after 12 months.
- Prognostic factors for $\geq 90\%$ work-participation at 5 months were being married (odds ratio (OR) 1.72 (95% confidence interval (95% CI) 1.12–2.65)), male (OR 1.99 (95% CI 1.24–3.20)), a higher score on disability (OR 1.00 (95% CI 0.997–1.02)) and physical component scale (Short-Form 36 (SF-36)) (OR 1.05 (95% CI 1.02–1.07)), previous rehabilitation (OR 1.85 (95% CI 1.14–2.98)), not receiving sickness benefits (OR 0.52 (95% CI 0.24–1.10)) and more work-participation (OR 4.86 (95% CI 2.35–10.04)).
- More work-participation (OR 5.22 (95% CI 3.47–7.85)) and male sex (OR 1.79 (95% CI 1.25–2.55)) were also prognostic factors at 12-month follow-up.

Graded ex in LBP

Pain Med. 2015 Aug 3. doi: 10.1111/pme.12882.

A Systematic Review and Meta-Analysis on the Effectiveness of Graded Activity and Graded Exposure for Chronic Nonspecific Low Back Pain.

López-de-Uralde-Villanueva I^{1,2,3,4}, Muñoz-García D^{1,2}, Gil-Martínez A^{1,2,3,4}, Pardo-Montero J^{1,2,3,4}, Muñoz-Plata R^{1,2}, Angulo-Díaz-Parreño S^{2,3,5}, Gómez-Martínez M^{2,6}, La Touche R^{1,2,3,4}.
Author information

Abstract

OBJECTIVE:

Our aim was to systematically review and meta-analyze the effectiveness of graded activity (GA) or graded exposure (GEXP) for chronic nonspecific low back pain (CNSLBP).

METHODS:

A literature search of multiple databases (MEDLINE, EMBASE, PEDro, CINAHL, and PsychINFO) was conducted to identify randomized control trials (RCTs). Standardized mean difference (SMD) and 95% confidence intervals (CI) were calculated for relevant outcome measures (pain intensity, disability, quality of life, and catastrophizing).

RESULTS:

Thirteen RCTs met the inclusion criteria. Only nine studies were included in the meta-analysis. GA was significantly more effective than the control group (CG) for improvements in disability in the short term (three studies: $n = 254$, $SMD = -0.3$, 95% CI -0.55 to -0.05, $P = 0.02$) and long term (two studies: $n = 238$, $SMD = -0.53$, 95% CI -0.79 to -0.27, $P < 0.0001$). GA was significantly less effective than GEXP for the improvement of disability in the short term (two studies: $n = 105$, $SMD = 0.39$, 95% CI 0.003-0.78, $P = 0.048$). GA was also significantly less effective than GEXP at improving catastrophizing in the short term (two studies: $n = 105$, $SMD = 0.48$, 95% CI 0.09-0.87, $P = 0.02$).

CONCLUSION:

Limited evidence has been found to show that GA significantly reduces disability in the short and long term when compared with the CG in CNSLBP. There is moderate evidence that GEXP more effectively decreases catastrophizing than GA in the short term. No difference was found between GA and other exercise for any variable.

KEYWORDS: Behavioural Graded Activity; Cognitive Behavior Therapy; Pain Catastrophizing; Physiotherapy; Recurrent Low Back Pain

PMID: 26235368

5. SURGERY

Increase in lumbar surgery

Spine J. 2015 Feb 1;15(2):265-71. doi: 10.1016/j.spinee.2014.09.026. Epub 2014 Oct 2.

National trends in the surgical treatment for lumbar degenerative disc disease: United States, 2000 to 2009.

Yoshihara H¹, Yoneoka D².

Author information

Abstract

BACKGROUND CONTEXT: Surgical treatment for lumbar degenerative disc disease (DDD) remains controversial. Options include anterior lumbar interbody fusion, posterior approach fusion procedures such as posterior lumbar interbody fusion (PLIF) and posterolateral lumbar fusion (PLF), anterior and posterior lumbar fusion (APLF), and total disc replacement (TDR). However, the trends during the last decade are uncertain.

PURPOSE: To examine the trends in the surgical treatment for lumbar DDD on a national level.

STUDY DESIGN: A retrospective analysis of population-based national hospital discharge data collected for the Nationwide Inpatient Sample (NIS).

PATIENT SAMPLE: In the NIS from 2000 to 2009, patients aged 18 years or older with primary diagnosis of lumbar/lumbosacral DDD who underwent surgical treatment were included.

OUTCOME MEASURES: Trends in the surgical treatment for lumbar DDD.

METHODS: Clinical data were derived from the NIS between 2000 and 2009. Patients aged 18 years or older with a primary diagnosis of lumbar/lumbosacral DDD who underwent spinal fusion or TDR were identified. Data regarding patient- and health care system-related characteristics were retrieved and analyzed.

RESULTS: A total of 380,305 patients underwent surgical treatment for lumbar DDD between 2000 and 2009. Population adjusted incidence increased 2.4-fold from 2000 to 2009. Among the procedures, APLF increased 3.0-fold and PLIF/PLF increased 2.8-fold. Total disc replacement did not increase significantly. Anterior lumbar interbody fusion was performed in 16.8% of patients, PLIF/PLF in 67.9%, APLF in 13.6%, and TDR in 1.8%. Surgical treatment for lumbar DDD was 1.8 times more common in the Midwest region and 1.7 times more common in the South region than in the Northeast region. Total disc replacement was more common in younger patients and in the Northeast region. Posterior lumbar interbody fusion/PLF was more common in older patients and in the South region.

CONCLUSIONS: During the last decade, surgical treatment for lumbar DDD has increased 2.4-fold in the United States. Although all fusion procedures significantly increased, TDR did not increase. Surgical treatment for lumbar DDD was more common in the Midwest and South regions. Trends in the procedures were different depending on the age group and hospital region.

KEYWORDS: Lumbar degenerative disc disease; Nationwide Inpatient Sample; Spinal fusion; Surgical treatment; Total disc replacement; Trend

PMID: 25281920

6. PELVIC GIRDLE

SI Pain test

Can hip abduction and external rotation discriminate sacroiliac joint pain?

Divya Bharatkumar Adhia Steve Tumilty Ramakrishnan Mani Stephan Milosavljevic¹ Melanie D. Bussey

Highlights

- Hip abduction-external rotation reproduces familiar pain in SIJ +ve LBP individuals
- Moderate levels of sensitivity and specificity for discriminating LBP of SIJ origin

Abstract

Aim

The primary aim of the study is to determine if Hip Abduction and External Rotation (HABER) test is capable of reproducing familiar pain in individuals with low back pain (LBP) of sacroiliac joint (SIJ) origin (SIJ-positive) when compared with LBP of Non-SIJ origin (SIJ-negative). If so, the secondary aim is to determine the diagnostic accuracy of HABER test against the reference standard of pain provocation tests, and to determine which increments of the HABER test has highest sensitivity and specificity for identifying SIJ-positive individuals.

Design

Single-blinded diagnostic accuracy study. Method: Participants [n(122)] between ages of 18 to 50 years, suffering from chronic non-specific LBP (≥ 3 months) volunteered in the study. An experienced musculoskeletal physiotherapist evaluated and classified participants into either SIJ-positive [n(45)] or SIJ-negative [n(77)], based on reference standard of pain provocation tests [≥ 3 positive tests=SIJ-positive]. Another musculoskeletal physiotherapist, blinded to clinical groups, evaluated participants for reproduction of familiar pain during each increment (10o, 20o, 30o, 40o, and 50o) of HABER test.

Results

The HABER test reproduced familiar pain in SIJ-positive individuals when compared with SIJ-negative individuals [$p(0.001)$, $R^2(0.38)$, $\text{Exp}(\beta)(5.95 \text{ to } 10.32)$], and demonstrated moderate level of sensitivity (67% to 78%) and specificity (71% to 72%) for identifying SIJ-positive individuals. Receiver operator curve analysis demonstrated that the HABER increments of $\geq 30o$ have the highest sensitivity (83% to 100%) and specificity (52% to 64%).

Conclusions

The HABER test is capable of reproducing familiar pain in SIJ-positive LBP individuals and has moderate levels of sensitivity and specificity for identifying SIJ-positive LBP individuals.

Keywords:

Sacroiliac joint, Clinical tests, Sensitivity, Specificity

7. PELVIC ORGANS

Osteoporosis and heavy exercise helps

Osteoporos Int. 2015 Aug 5.

Heavy resistance training is safe and improves bone, function, and stature in postmenopausal women with low to very low bone mass: novel early findings from the LIFTMOR trial.

Watson SL¹, Weeks BK, Weis LJ, Horan SA, Beck BR.

Author information

Abstract

The aim of the LIFTMOR (Lifting Intervention For Training Muscle and Osteoporosis Rehabilitation) trial is to determine the safety and efficacy of brief, bone-targeted, high-intensity progressive resistance training (HiPRT) with impact loading for postmenopausal women with low bone mass. Preliminary findings indicate the LIFTMOR program is safe and effective.

INTRODUCTION:

Despite a lack of notable efficacy, exercise guidelines for osteoporosis typically recommend moderate-intensity exercises, owing to a perceived risk of fracture from high-intensity loading. Indeed, safety concerns alone have prevented the well-recognised preferential response of bone tissue to high-intensity loads from being applied to those who stand to benefit the most. To progress from this therapeutic stalemate, a challenge to conventional wisdom was required. Our goal was to examine the safety and efficacy of HiPRT and impact loading for risk factors of osteoporotic fracture in postmenopausal women with low to very low bone mass.

METHODS:

Participants have been randomised to either 8 months of twice-weekly 30-min supervised HiPRT and impact loading or a low-intensity home-based exercise program of the same duration and dose. Testing at baseline and follow-up has included anthropometry; bone, muscle, and fat mass; and functional performance.

RESULTS:

Twenty-eight women (66.1 ± 4.8 years, mean lumbar spine T-score -2.15 ± 0.72) have completed the study. HiPRT and impact loading ($n = 12$) improved height (0.4 ± 0.2 cm vs -0.3 ± 0.1 cm, $p = 0.003$), femoral neck bone mineral density (0.3 ± 0.5 % vs -2.5 ± 0.8 %, $p = 0.016$), lumbar spine bone mineral density (1.6 ± 0.9 % vs -1.7 ± 0.6 %, $p = 0.005$), and functional performance ($p < 0.05$), compared to controls ($n = 16$). Compliance has been >87 %. There have been no injuries.

CONCLUSIONS:

Brief supervised HiPRT with impact loading is a safe and effective exercise therapy for postmenopausal women with low to very low bone mass.

PMID: 26243363

Impact of prostrate removal

Andrology. 2015 Jul;3(4):661-5. doi: 10.1111/andr.12060.

Have rates of erectile dysfunction improved within the past 17 years after radical prostatectomy? A systematic analysis of the control arms of prospective randomized trials on penile rehabilitation.

Schauer I¹, Keller E², Müller A², Madersbacher S¹.

Author information

Abstract

Based on case series, potency rates after radical prostatectomy (RPE) differ substantially and - furthermore - it remains unclear whether they have improved in more recent surgical series. The purpose of this study was to investigate whether potency rates after RPE have improved over the years. A systematic analysis of the control arms of all randomized controlled trials (RCT; n = 11) on penile rehabilitation after RPE was carried out. In total, 2009 patients were included in these RCTs, 685 thereof in the respective control arms, who were either observed or received placebo. Assessment of erectile function in these studies was carried out by the Sexual Encounter Profile (SEP) or the International Index of Erectile Function (IIEF). Eight trials used SEP3 as study endpoint. The rate of positive response to SEP3 (=erectile function sufficient for successful intercourse) in the control arms was 20% in 1997 (year of publication), 10% in 2003, 19% in 2004, 25% in 2008, 21% in 2010, 67% in 2011, 10% in 2013, and 22% in 2014. Eight RCTs assessed the IIEF-EF, yet results were not reported uniformly. In the control arms the IIEF-EF was 9.2 (year of publication 2003), 13.3 (2004), 8.8 (2008), 25% \geq 22.0 (2008), 17.4 (2010), 58% \geq 26.0 (2011), 9.3 (2013), and 11.6 (2014). Limitations of this analysis are a positive selection bias regarding patient recruitment, surgical approach, and the non-uniform inclusion and outcome criteria. This systematic analysis of the control arms of all RCTs on penile rehabilitation after nerve-sparing RPE shows (i) that the rate of undisturbed erectile function is in the range 20-25% in most studies and (ii) that these rates have not substantially improved or changed over the past 17 years.

KEYWORDS: International Index of Erectile Function; SEP3; erectile dysfunction; penile rehabilitation; radical prostatectomy

PMID: 26198796

Vaginitis

J Sex Med. 2015 Aug 6. doi: 10.1111/jsm.12935.

Therapist-Aided Exposure for Women with Lifelong Vaginismus: Mediators of Treatment Outcome: A Randomized Waiting List Control Trial.

Ter Kuile MM¹, Melles RJ², Tuijnman-Raasveld CC¹, de Groot HE¹, van Lankveld JJ³.
Author information

Abstract

INTRODUCTION:

Therapist-aided exposure seems an effective treatment for lifelong vaginismus, but mechanisms of action have not yet been established.

AIM:

The purpose of the present study was to investigate whether treatment outcome of a therapist-aided exposure treatment was mediated by changes in positive and negative penetration beliefs or feelings of sexual disgust.

METHODS:

Participants with lifelong vaginismus were allocated at random to a 3-month exposure (n = 35) or a waiting list control condition (n = 35).

MAIN OUTCOME MEASURE:

Full intercourse was assessed daily during 12 weeks. Secondary outcome measures (complaints about vaginismus and coital pain) were assessed at baseline and after 12 weeks. Possible mediators: penetration beliefs (catastrophic pain beliefs, genital incompatibility beliefs, perceived control beliefs) and feelings of sexual disgust were assessed at baseline and 6 weeks.

RESULTS:

Treatment outcome (coital frequency, symptoms of vaginismus, and coital pain) at 12 weeks was mediated by changes in negative and positive penetration beliefs at 6 weeks, in particular by more pronounced reduction of catastrophic pain penetration beliefs. No evidence was found that changes in feelings of sexual disgust mediated treatment outcome.

CONCLUSION:

The results strongly suggest that therapist-aided exposure affects negative penetration beliefs and that these changes in negative penetration beliefs mediate treatment outcome in women with lifelong vaginismus. Implications for treatment are discussed. N = 4850 words. Ter Kuile MM, Melles RJ, Tuijnman-Raasveld CC, de Groot HE, and van Lankveld JJDM. Therapist-aided exposure for women with lifelong vaginismus: Mediators of treatment outcome: A randomized waiting list control trial. J Sex Med **;**:**_**.

KEYWORDS: CBT; Exposure; Lifelong Vaginismus; Mediation; Sexual Dysfunction; Sexual Pain Disorder; Treatment; Women
PMID: 26247327

8. VISCERA

Fiber and bowel function

Effects of cereal fiber on bowel function: A systematic review of intervention trials

World Journal of Gastroenterology, 08/13/2015 de Vries J, et al.

The authors aim to comprehensively review and quantitatively summarize results from intervention studies that examined the effects of intact cereal dietary fiber on parameters of bowel function. Wheat dietary fiber, and predominately wheat bran dietary fiber, improves measures of bowel function.

Methods

- A systematic literature search was conducted using PubMed and EMBASE.
- Supplementary literature searches included screening reference lists from relevant studies and reviews.
- Eligible outcomes were stool wet and dry weight, percentage water in stools, stool frequency and consistency, and total transit time.
- Weighted regression analyses generated mean change (\pm SD) in these measures per g/d of dietary fiber.

Results

- Sixty-five intervention studies among generally healthy populations were identified.
- A quantitative examination of the effects of non-wheat sources of intact cereal dietary fibers was not possible due to an insufficient number of studies.
- Weighted regression analyses demonstrated that each extra g/d of wheat fiber increased total stool weight by 3.7 ± 0.09 g/d ($P < 0.0001$; 95%CI: 3.50-3.84), dry stool weight by 0.75 ± 0.03 g/d ($P < 0.0001$; 95%CI: 0.69-0.82), and stool frequency by 0.004 ± 0.002 times/d ($P = 0.0346$; 95%CI: 0.0003-0.0078).
- Transit time decreased by 0.78 ± 0.13 h per additional g/d ($P < 0.0001$; 95%CI: 0.53-1.04) of wheat fiber among those with an initial transit time greater than 48 h.

Location impact on bowel disease

Eur J Gastroenterol Hepatol. 2015 Sep;27(9):1030-7. doi: 10.1097/MEG.0000000000000395.

Influence of urban/rural and coastal/inland environment on the prevalence, phenotype, and clinical course of inflammatory bowel disease patients from northwest of Spain: a cross-sectional study.

Carpio D¹, Barreiro-de Acosta M, Echarri A, Pereira S, Castro J, Ferreiro R, Lorenzo A; EIGA Group (Grupo Gallego de Enfermedad Inflamatoria Intestinal).

Author information

Abstract

BACKGROUND:

Data on the influence of rural/urban and coastal/inland environment on inflammatory bowel disease (IBD) are either conflicting or lacking. Our aim was to analyze whether the environment has any influence on the prevalence, phenotype, and course of IBD.

MATERIALS AND METHODS:

We carried out a multicenter retrospective study in 1194 IBD patients from Galicia, Spain. Urban areas were defined as those with over 25 000 inhabitants. Sex, age, family history, smoking, Montreal classification, extraintestinal manifestations, steroid dependence/refractoriness, and treatment were assessed. We used the Student's t-test/Mann-Whitney U tests to compare continuous variables and χ to compare categorical variables. Logistic regression was also used.

RESULTS:

Living in urban municipalities was a risk factor for Crohn's disease [relative risk (RR) 1.47; 95% confidence interval (CI) 1.25-1.73; $P < 0.001$]; living in coastal municipalities was a protective factor for ulcerative colitis (RR 0.71; 95% CI 0.60-0.85; $P < 0.001$). Crohn's disease patients living on the coast had more frequent ileocolonic disease and needed immunosuppressives more frequently than inland patients (RR for inland 0.65; 95% CI 0.47-0.90; $P = 0.008$). Urban Crohn's disease patients needed immunosuppressives more frequently than rural patients (RR 1.41; 95% CI 1.04-1.92; $P = 0.027$). Urban ulcerative colitis patients had left-sided colitis less frequently. Coastal ulcerative colitis patients more frequently had extensive colitis.

CONCLUSION:

Crohn's disease was found more frequently in urban and coastal areas and ulcerative colitis in inland municipalities. Place of residence may also influence phenotype and clinical course as patients living on the coast have more frequent ileocolonic Crohn's disease phenotype, extensive ulcerative colitis, and greater need for immunosuppressive therapy.

PMID: 26049704

IBS and fiber

Eur J Gastroenterol Hepatol. 2015 Sep;27(9):1002-10. doi: 10.1097/MEG.0000000000000425.

The role of fiber supplementation in the treatment of irritable bowel syndrome: a systematic review and meta-analysis.

Nagarajan N¹, Morden A, Bischof D, King EA, Kosztowski M, Wick EC, Stein EM.
Author information

Abstract

Irritable bowel syndrome (IBS) is a functional bowel disorder associated with a wide variety of clinical symptoms. The use of fiber in treatment of IBS is well established, but recent reviews have shown conflicting evidence. The aim of our review was to study the effects of fiber (soluble and insoluble) on the symptoms of IBS. Medline, EMBASE, Cochrane Central, CINAHL, LILACS, and ClinicalTrials.gov were searched for appropriate studies. Two reviewers screened the title/abstract and full text against the inclusion criterion - that is, randomized control trials/crossover studies that compare fiber with placebo for its effect on IBS in an outpatient setting. Independent double data extraction was performed across multiple fields. An assessment of the risk of bias and tests for heterogeneity were carried out, along with a meta-analysis of the outcomes of interest. The search yielded 4199 unique records: 121 were selected after title/abstract screening and 22 after full screening.

There was moderate clinical, methodological, and statistical heterogeneity across studies, with a moderate risk of bias. Overall, there was a significant improvement in global assessment of symptoms among those randomized to fiber [risk ratio: 1.27; 95% confidence interval (CI): 1.05-1.54]. Soluble fiber improved assessment of symptoms (risk ratio 1.49; 95% CI: 1.09-2.03), as well as the abdominal pain score (mean difference: -1.84; 95% CI: -2.72 to -0.97), with insoluble fiber not showing improvement in any outcome. Soluble fiber appears to improve symptoms of IBS, whereas there is no evidence for recommending insoluble fiber for IBS.

PMID: 26148247

9. THORACIC SPINE**Effects of scapular stabilization exercise on pain related parameters in patients with scapulocostal syndrome: A randomized controlled trial**

Vitsarut Buttagat, B.Sc., M.Sc., Ph.D. Naruecha Taepa, B.PT. Nitchakarn Suwannived, B.PT. Nattanan Rattanachan, B.PT.

The aim of this study was to evaluate the effects of scapular stabilization exercise (SSE) on pain intensity, pressure pain threshold (PPT), muscle tension and anxiety in patients with scapulocostal syndrome (SCS). Thirty-six patients were randomly assigned to receive a 30-minute session of either SSE or control (relaxed by lying supine quietly) for 12 sessions over a period of 4 weeks. Pain intensity, PPT, muscle tension and anxiety were assessed before and after a 4-week intervention period and 2 weeks after the intervention period. The adverse effects were evaluated after completion of the intervention period. Results indicated that the SSE group showed a significant improvement in all parameters after the intervention period and at 2 weeks after the intervention period ($p < 0.05$).

For all outcomes, similar changes were not found in the control group. The adjusted post-test mean values of each assessment time point for pain intensity, muscle tension and anxiety were significantly lower in the SSE group than those of the control group ($p < 0.05$). Moreover, the values for PPT were significantly higher in the SSE group ($p > 0.05$). There were no reports of adverse effects in either group. We therefore conclude that SSE can improve pain related parameters and could be an effective intervention for SCS.

Keywords: Scapulocostal syndrome, Scapular stabilizatoin exercise, Randomized controlled trial

Pectus Cavus – rib overgrowth**Rib overgrowth may be a contributing factor for pectus excavatum: evaluation of prepubertal patients younger than 10 years old**

Chul Hwan Park Tae Hoon Kim Seok Jin Haam Sungsoo Lee

Abstract

Background/Purpose

We compared the costal cartilage and rib length between prepubertal patients with symmetric pectus excavatum and age- and sex-matched controls without anterior chest wall depression to evaluate if rib overgrowth is a contributing factor for pectus excavatum

Methods

The sample included 18 prepubertal patients <10 years old with symmetric pectus excavatum and 18 age- and sex-matched controls without chest wall deformity. The full lengths of the fourth to sixth ribs and costal cartilage were measured using three-dimensional volume-rendered computed tomography and curved multiplanar reformatting techniques. The rib and costal cartilage lengths, total combined rib and costal cartilage length, and costal index ($[\text{length of cartilage}/\text{length of rib}] \times 100 [\%]$) at the fourth to sixth levels were compared between the groups.

Results

The rib lengths in the patient group were significantly longer than in the control group for the 6th right rib and 4th, 5th, and 6th left ribs. The costal cartilage lengths and costal indices were not different between two groups.

Conclusions

In patients with symmetric pectus excavatum aged <10 years old, several of the ribs were longer than those of controls, suggesting that abnormal rib overgrowth may be a contributing factor responsible for pectus excavatum rather than cartilage overgrowth.

Key words:

Pectus excavatum, Costal cartilage, Rib, Three-dimensional computed tomography

10 A. CERVICAL SPINE**Cervical spondylotic myelopathy**

Spinal Cord. 2015 Jul 28. doi: 10.1038/sc.2015.123.

A new method for characterizing hand dysfunction in cervical spondylotic myelopathy: a preliminary study.

Akutagawa T¹, Tani T², Kida K², Tadokoro N³, Enoki H⁴, Nagano Y¹, Ikeuchi M³.
Author information

Abstract

STUDY DESIGN:

A case-control investigation.

OBJECTIVES:

The objective of this study was to quantitatively study impaired ability to appropriately adjust pinch strength while holding a small object in patients with cervical spondylotic myelopathy (CSM).

SETTING:

Kochi Medical School Hospital, Japan.

METHODS:

The subjects consisted of 19 CSM patients who had frequent episodes of failing to grasp and hold small objects in their daily life (Group A), 13 CSM patients who did not experience such episodes (Group B) and 16 healthy subjects (Control Group). We continuously measured the dynamic internal pressure of a pneumatic rubber object called a blower pinched by the subject, following two different sets of instructions: (1) pinching with eyes open and with the minimal strength required to prevent dropping; and (2) maintaining a constant pinch strength at given levels with eyes closed.

RESULTS:

Compared with the other two groups, Group A subjects used a significantly ($P<0.01$) greater pinch strength to avoid dropping the blower held with eyes open and showed a significantly ($P<0.01$) greater deviation in pinch strength from the baseline values with eyes closed. These tendencies in Group A showed a significant correlation with the tactile perception threshold of the digits ($P<0.01$) but not with impairment of rapid repetitive movements of the digits that reflects spasticity.

CONCLUSION:

Our technique applied to CSM patients helps assess functional integrity primarily, if not exclusively, of the fasciculus cuneatus mediating the feedback signals from proprioceptive and cutaneous receptors in the digits, which are otherwise difficult to evaluate quantitatively. Spinal Cord advance online publication, 28 July 2015; doi:10.1038/sc.2015.123.

PMID: 26215908

Head movements on the homunculus**Neural Substrates for Head Movements in Humans: A Functional Magnetic Resonance Imaging Study****Cecilia N. Prudente¹, Randall Stilla¹, Cathrin M. Buetefisch⁵, Shivangi Singh¹, Ellen J. Hess², Xiaoping Hu⁶, Krish Sathian^{3,7}, and H.A. Jinnah⁴**

The Journal of Neuroscience, 17 June 2015, 35(24): 9163-9172; doi: 10.1523/JNEUROSCI.0851-15.2015

The neural systems controlling head movements are not well delineated in humans. It is not clear whether the ipsilateral or contralateral primary motor cortex is involved in turning the head right or left. Furthermore, the exact location of the neck motor area in the somatotopic organization of the motor homunculus is still debated and evidence for contributions from other brain regions in humans is scarce. Because currently available neuroimaging methods are not generally suitable for mapping brain activation patterns during head movements, we conducted fMRI scans during isometric tasks of the head. During isometric tasks, muscle contractions occur without an actual movement and they have been used to delineate patterns of brain activity related to movements of other body parts such as the hands. Healthy individuals were scanned during isometric head rotation or wrist extension. Isometric wrist extension was examined as a positive control and to establish the relative locations of head and hand regions in the motor cortex. Electromyographic recordings of neck and hand muscles during scanning ensured compliance with the tasks. Increased brain activity during isometric head rotation was observed bilaterally in the precentral gyrus, both medial and lateral to the hand area, as well as the supplementary motor area, insula, putamen, and cerebellum. These findings clarify the location of the neck region in the motor homunculus and help to reconcile some of the conflicting results obtained in earlier studies.

Impact of sustained neck flexion

Effect of static neck flexion in cervical flexion-relaxation phenomenon in healthy males and females

Roghayeh Mousavi-Khatir (PhD candidate of Physical Therapy) Saeed Talebian (Professor of Physical Therapy) Nader Maroufi (Associate professor of physical therapy) Gholam Reza Olyaei (Professor of Physical Therapy)

Introduction

Neck pain is a common musculoskeletal disorder, especially among skilled workers who must keep their necks in a flexed position frequently during the day. The present study investigated changes in cervical flexion-relaxation phenomenon parameters after sustained neck flexion.

Methods

The participants were 40 healthy subjects grouped by gender (20 females, 20 males). They were exposed to static neck flexion at the full angle of cervical flexion for 10 min. Each subject underwent three trials of cervical flexion and re-extension before and after this period.

Differences in onset and cessation angle of flexion-relaxation phenomenon, maximum neck flexion angle, amplitude of neck muscle activation and flexion-relaxation ratio were evaluated.

Results

The maximum neck flexion angle significantly increased after sustained flexion. The onset of flexion-relaxation was significantly delayed during flexion, but cessation angle remained unchanged. Myoelectric activity of the cervical erector spinae muscles increased significantly after maintaining flexion, especially in female subjects. The flexion-relaxation ratio also decreased significantly.

Conclusion

It was concluded that 10 min of static flexion results in a delay in flexion-relaxation phenomenon and a shorted silence period. Also the cervical erector spinae muscles are required to be active longer and generate more activity. These neuromuscular changes may be a risk factor for neck pain.

Keywords: flexion-relaxation phenomenon, neck pain, cervical spine, electromyography

14. HEADACHES

Migraine and RLS

The Journal of Headache and Pain August 2015, 16:75,

Migraine and restless legs syndrome are associated in adults under age fifty but not in adults over fifty: a population-based study

Abstract

Background

Recent studies have shown an association between migraine and restless legs syndrome (RLS). However, migraine prevalence peaks from the 20s to 40s whereas RLS prevalence peaks after the 50s. Despite this, reports on how migraine and RLS may be associated by age is limited. Therefore, the purpose of this study is to investigate the comorbidity between migraine and RLS according to age.

Methods

We selected a stratified random population sample of Koreans aged 19 to 69 years and evaluated them with a 60-item semi-structured interview designed to identify RLS, headache type, and clinical characteristics of migraine. To assess the association between migraine and RLS according to age, we divided participants into 5 age groups (19–29, 30–39, 40–49, 50–59, and 60–69 years) and analysed each group.

Results

Subjects with migraine showed an increased RLS prevalence in the 19–29 (Odds ratio [OR] = 6.6, 95 % confidence interval [CI] = 1.2–36.8) and 40–49 (OR = 6.7, 95 % CI = 1.5–33.5) age groups compared to non-headache controls but failed to show a significant association in the 50–59 (OR = 1.1, 95 % CI = 0.2–5.6) and 60–69 (OR = 0.4, 95 % CI = 0.1–4.0) age groups. Migraineurs with 1–10 (12.5 %, OR = 2.0, 95 % CI = 1.3–3.2, $p = 0.003$) and >10 (12.5 %, OR = 2.5, 95 % CI = 1.0–5.6, $p = 0.038$) attacks per month showed an increased RLS prevalence compared to migraineurs with <1 attack per month (2.1 %). Subjects with non-migraine headaches showed an increased odds for RLS (OR = 1.8, 95 % CI = 1.3–2.7) compared to non-headache controls. There was no significant difference (9.1 % vs. 6.9 %, $p = 0.339$) in the RLS prevalence between migraineurs and non-migraine headache subjects.

Conclusions Our results suggest that migraine and RLS are differently associated according to age.

Cochlear involvement in HA's

The Journal of Headache and Pain
August 2015, 16:76,

A study of cochlear and auditory pathways in patients with tension-type headache

Hang Shen, Wenyang Hao, Libo Li, Daofeng Ni, Liying Cui, Yingying Shang

Abstract**Background**

The purpose of this study was to systematically evaluate the function of cochlear and auditory pathways in patients suffering from tension-type headache (TTH) using various audiological methods.

Methods

Twenty-three TTH patients (46 ears) and 26 healthy controls (52 ears) were included, and routine diagnostic audiometry, extended high-frequency audiometry, acoustic reflex (ASR), transient evoked otoacoustic emissions (TEOAEs), distortion product otoacoustic emissions (DPOAEs) and suppression TEOAEs were tested.

Results

The TTH group showed higher thresholds ($P < 0.05$) for both pure tone and extended high-frequency audiometry at all frequencies except for 9, 14 and 16 kHz. All ASR thresholds were significantly higher ($P < 0.05$) in the TTH group compared with the controls, except for the ipsilateral reflex at 1 kHz, but the threshold differences between the ASR and the corresponding pure tone audiometry did not differ ($P > 0.05$). For the DPOAEs, the detected rates were lower ($P < 0.05$) in the TTH group compared with the controls at 4 and 6 kHz, and the amplitudes and signal to noise ratio (S/N) were not significantly different between groups. No differences in the TEOAEs ($P > 0.05$) were observed for the detected rates, amplitudes, S/Ns or contralateral suppression, except for the S/Ns of the 0.5-1 kHz TEOAE responses, which were significantly higher ($P < 0.05$) in the TTH group.

Conclusions

The results of our study indicate that subclinical changes in cochlear function are associated with TTH.

HA research

Headache. 2015 Aug 6. doi: 10.1111/head.12633.

Mediator Variables in Headache Research: Methodological Critique and Exemplar Using Self-Efficacy as a Mediator of the Relationship Between Headache Severity and Disability.

Peck KR¹, Smitherman TA¹.

Author information

Abstract

BACKGROUND:

Despite advances in headache medicine, there remains little research on process-related variables that mediate relations between headache and outcomes, as well as limited dissemination of optimal statistical methodology for conducting mediation analyses. The present paper thus aims to promote and demonstrate a contemporary approach to mediation analysis as applied to headache.

METHODS:

An overview of a contemporary path-analytic approach to mediation analysis is presented, with an empirical exemplar for illustrative purposes. In the exemplar, headache management self-efficacy (HMSE) was proposed as a mediator between headache severity and disability. The sample included 907 young adults (M age = 19.03 [SD = 2.26]; 70.8% female) with primary headache. Direct and indirect effects of headache severity on headache disability through HMSE were assessed using the espoused methods.

RESULTS:

Pain severity was positively associated with headache disability ($\beta = 2.91$, 95% confidence interval [CI; 2.62, 3.19]) and negatively associated with HMSE ($\beta = -3.50$, 95% CI [-4.24, -2.76]); HMSE was negatively associated with headache disability ($\beta = 0.07$, 95% CI [-0.09, -0.04]). A positive indirect effect of pain severity on disability through HMSE was identified (point estimate = 0.24, 95% CI [0.14, 0.34]); thus, self-efficacy mediated the association between pain severity and disability. The proposed mediation model accounted for 38% of total variance in disability ($P < .001$).

CONCLUSIONS:

There is a need for theory-driven and statistically rigorous mediation analyses within the headache literature. In one exemplar application, self-efficacy partially accounted for the disability resulting from headache. We advocate for increased attention to intervening variables in headache via dissemination of contemporary mediation analyses.

KEYWORDS: headache disability; headache self-efficacy; mediation analysis; migraine; statistical analysis; tension-type headache

PMID: 26247313

16. CONCUSSIONS

Concussions and increase in LE injuries

Med Sci Sports Exerc. 2015 Jun 8.

Acute Lower Extremity Injury Rates Increase following Concussion in College Athletes.

Lynall RC1, Mauntel TC, Padua DA, Mihalik JP.

Author information

Abstract

Dynamic postural control deficits and disrupted cortical pathways have been reported to persist beyond an athlete's return-to-activity following concussion, potentially increasing risk of acute lower extremity musculoskeletal injury.

PURPOSE:

To investigate acute lower extremity musculoskeletal injury rates pre- and post-concussion in concussed and matched control athletes.

METHODS:

Concussed college athletes (n=44; age=20.0±1.2 years) were physician diagnosed. Non-concussed college athletes (n=58; age=20.5±1.3 years) were matched to concussed individuals. Acute lower extremity musculoskeletal injury data were collected for a 2-year period (±1 year of the diagnosed concussion) using electronic medical records. Control participants' 2-year windows for exposure and musculoskeletal injury data were anchored to their match's concussion injury date. Pre- and post-concussion musculoskeletal injury rates were calculated for 90-, 180-, and 365-day time periods for both study cohorts. Risk ratios were calculated to determine differences within- and between-groups for all time periods.

RESULTS:

Within 1-year post-concussion, the concussed group was 1.97 (95% CI: 1.19-3.28; P=0.01) times more likely to have suffered an acute lower extremity musculoskeletal injury post-concussion than prior to concussion, and 1.64 times (95% CI: 1.07-2.51; P=0.02) more likely to have suffered an acute lower extremity musculoskeletal injury post-concussion than their matched non-concussed cohort over the same time period. Up to 180-days post-concussion, the concussed group was 2.02 (95% CI 1.08-3.78; P=0.02) times more likely to have suffered an acute lower extremity musculoskeletal injury post-concussion than prior to concussion.

CONCLUSIONS:

Previous literature has identified dynamic postural control deficits along with increased motor evoked potential latency and decreased amplitude following concussion, suggesting the brain may be unable to effectively coordinate movement. Our findings underscore the need to explore functional movement and dynamic postural control assessments in post-concussion injury assessment protocols.

17. SHOULDER GIRDLE**Scapular stab ex****Effects of scapular stabilization exercise on pain related parameters in patients with scapulocostal syndrome: A randomized controlled trial**

Vitsarut Buttagat, B.Sc., M.Sc., Ph.D. Naruecha Taepa, B.PT. Nitchakarn Suwannived, B.PT. Nattanan Rattanachan, B.PT.

The aim of this study was to evaluate the effects of scapular stabilization exercise (SSE) on pain intensity, pressure pain threshold (PPT), muscle tension and anxiety in patients with scapulocostal syndrome (SCS). Thirty-six patients were randomly assigned to receive a 30-minute session of either SSE or control (relaxed by lying supine quietly) for 12 sessions over a period of 4 weeks. Pain intensity, PPT, muscle tension and anxiety were assessed before and after a 4-week intervention period and 2 weeks after the intervention period. The adverse effects were evaluated after completion of the intervention period. Results indicated that the SSE group showed a significant improvement in all parameters after the intervention period and at 2 weeks after the intervention period ($p < 0.05$). For all outcomes, similar changes were not found in the control group. The adjusted post-test mean values of each assessment time point for pain intensity, muscle tension and anxiety were significantly lower in the SSE group than those of the control group ($p < 0.05$). Moreover, the values for PPT were significantly higher in the SSE group ($p > 0.05$). There were no reports of adverse effects in either group. We therefore conclude that SSE can improve pain related parameters and could be an effective intervention for SCS.

Keywords: Scapulocostal syndrome, Scapular stabilizat on exercise, Randomized controlled trial

Rehab of scapula dyskinesis

Knee Surg Sports Traumatol Arthrosc. 2015 Aug 1.

The role of the scapula in preventing and treating shoulder instability.

Kibler WB¹, Sciascia A.

Author information

Abstract

The shoulder is a closed-chain mechanism that balances the mobility required by the ranges of motion in normal activities with the stability required to act as a stable ball and socket base for those activities. The scapula plays key roles in the closed-chain mechanism by being mobile enough to place the glenoid in optimal relation to the humerus to facilitate concavity/compression and by being a stable base for coordinated muscle activation to compress the humerus into the glenoid. Scapular dyskinesis alters these roles and is frequently present in many types of glenohumeral instability. It may create or exacerbate the abnormal glenohumeral kinematics in instability. Clinical evaluation methods can demonstrate scapular dyskinesis, and if dyskinesis is present, rehabilitation for the dyskinesis should be included in the non-operative, preoperative, or post-operative treatment. Rehabilitation for scapular dyskinesis can be performed by specific protocols and is more successful in muscle-predominant instabilities such as multidirectional instability and repetitive microtrauma instability. Level of evidence V.

PMID: 26231154

Scapula dyskinesia

Knee Surg Sports Traumatol Arthrosc. 2015 Aug 1.

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Abstract

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Level of evidence V.

PMID: 26231154

19. GLENOHUMERAL/SHOULDER**Lateral pectoral nerve**

Knee Surg Sports Traumatol Arthrosc. 2015 Jul 21.

Anatomical study of the articular branch of the lateral pectoral nerve to the shoulder joint.

Nam YS¹, Panchal K, Kim IB, Ji JH, Park MG, Park SR.
Author information

Abstract

PURPOSE:

The purpose of this study was to document the distribution of the articular branch of the lateral pectoral nerve (LPN) to the shoulder and to identify a suitable point for its blockade.

METHODS:

This study involved the dissection of 43 shoulders of 22 unembalmed cadavers (6 male and 16 female) to identify the LPN and its articular branch to the shoulder. To identify the suitable anatomical point for blocking the articular branch of the LPN, several anatomical landmarks around the shoulder were measured.

RESULTS:

The articular branch of the LPN to the shoulder was present in 29 of 43 cases (67.4 %). The appropriate point to block the articular branch of the LPN was identified at a mean distance of 1.5 cm below the clavicle, on the line connecting the closest points between the clavicle and the coracoid process, and at a mean depth of 1.0 cm from the skin.

CONCLUSION:

The articular branch of the LPN to the shoulder, as well as the muscular and cutaneous branches of the LPN, covers a portion of the shoulder joint with suprascapular and axillary nerves. Surgeons might consider a peripheral block of the suprascapular, axillary, and LPNs to provide maximum block coverage after shoulder joint surgery.

PMID: 26194117

20 A. ROTATOR CUFF**Rehab from**

Knee Surg Sports Traumatol Arthrosc. 2015 Jul 22.

Prognostic factors influencing the outcome of rotator cuff repair: a systematic review.

Saccomanno MF¹, Sircana G, Cazzato G, Donati F, Randelli P, Milano G.

Author information

Abstract

PURPOSE:

To identify prognostic factors significantly associated with rotator cuff repair outcome and define the strength of these associations.

METHODS:

Search was performed using electronic databases. Studies reporting prognostic factors affecting rotator cuff repair outcome were included. Primary outcomes were: structural integrity, Disabilities of the Arm, Shoulder and Hand score, American Shoulder and Elbow Surgeons score, and Constant score. Each other outcome was considered as secondary outcome. Descriptive statistics was used. When possible, meta-analyses were performed. Methodological quality was assessed using the Quality In Prognosis Studies Tool. A best evidence synthesis was performed using the Grading of Recommendations Assessment, Development and Evaluation framework adapted to prognostic studies.

RESULTS:

Sixty-four studies were included. Methodological quality was high only for twelve studies. The overall quality of evidence was low to very low. Meta-analyses were possible only for seven studies. Older age and larger tears size were found to affect retear risk. Results were controversial for fatty infiltration, acromioclavicular joint or biceps procedures, acromiohumeral distance, delamination of tendon edges, musculotendinous junction position, number of tendons involved, and tendon length, quality and retraction. Baseline scores and workers compensation claim predicted functional outcomes. Subjective outcome was also affected by patient's expectations.

CONCLUSIONS:

Despite the large number of outcomes and prognostic factors evaluated by a relative small number of studies, almost not prognostic in design, it was not possible to reach any definitive conclusion regarding the most relevant predictors of outcome of rotator cuff repair. Moreover, the low methodological quality of the included studies and, subsequently, the low quality of evidence, seriously affected the strength of recommendation of the present review. Based on data available, retear risk is mainly affected by older age and larger tears size. Baseline scores and work compensation claim are the most significant predictors for functional outcomes.

LEVEL OF EVIDENCE: Systematic review of level I-IV prognostic studies, Level IV.

PMID:26197937

Timing of surgery

Am J Sports Med. 2015 Aug;43(8):2057-63. doi: 10.1177/0363546514552802. Epub 2014 Oct 8.

Early Versus Delayed Passive Range of Motion After Rotator Cuff Repair: A Systematic Review and Meta-analysis.

Kluczynski MA¹, Nayyar S¹, Marzo JM¹, Bisson LJ².

Author information

Abstract

BACKGROUND:

Postoperative rehabilitation has been shown to affect healing of the rotator cuff after surgical repair. However, it is unknown whether an early or delayed rehabilitation protocol is most beneficial for healing.

PURPOSE:

To determine whether early versus delayed passive range of motion (PROM) affects rotator cuff (RC) retear rates after surgery.

STUDY DESIGN:

Systematic review and meta-analysis.

METHODS:

A systematic review of the literature published between January 2003 and February 2014 was conducted. Retear rates were compared for early (within 1 week after surgery) versus delayed (3-6 weeks after surgery) PROM using χ^2 or Fisher exact tests as well as relative risks (RR) and 95% CIs. In the first analysis, data from evidence level 1 studies that directly compared early versus delayed PROM were pooled; and in the second analysis, data from level 1 to 4 studies that did not directly compare early versus delayed PROM were pooled. The second analysis was stratified by tear size and repair method.

RESULTS:

Twenty-eight studies (1729 repairs) were included. The first analysis of level 1 studies did not reveal a significant difference in retear rates for early (13.7%) versus delayed (10.5%) PROM ($P = .36$; $RR = 1.30$ [95% CI, 0.74-2.30]). The second analysis revealed that for ≤ 3 cm tears, the risk of retear was lower for early versus delayed PROM for transosseous (TO) plus single-row anchor (SA) repairs (18.7% vs 28.2%, $P = .02$; $RR = 0.66$ [95% CI, 0.47-0.95]). For > 3 cm tears, the risk of retear was greater for early versus delayed PROM for double-row anchor (DA) repairs (56.4% vs 20%, $P = .002$; $RR = 2.82$ [95% CI, 1.31-6.07]) and for all repair methods combined (52.2% vs 22.6%, $P = .01$; $RR = 2.31$ [95% CI, 1.16-4.61]). There were no statistically significant associations for tears measuring < 1 cm, 1 to 3 cm, 3 to 5 cm, and > 3 cm.

CONCLUSION:

Evidence is lacking with regard to the optimal timing of PROM after RC repair; however, this study suggests that tear size may be influential.

KEYWORDS: healing; passive range of motion; rehabilitation; rotator cuff

PMID: 25296646

Prolotherapy and rotator cuff disease. Positive

Arch Phys Med Rehabil. 2015 Aug 5. pii: S0003-9993(15)00594-8. doi: 10.1016/j.apmr.2015.07.011.

Prolotherapy for refractory rotator cuff disease: retrospective case-control study of one year follow-up.

Lee DH¹, Kwack KS², Rah UW³, Yoon SH⁴.
Author information

Abstract

OBJECTIVE:

To determine the efficacy of prolotherapy for refractory rotator cuff disease.

DESIGN:

Retrospective case-control study SETTING: University-affiliated tertiary-care hospital.

PARTICIPANTS:

One hundred fifty-one patients with non-traumatic refractory rotator cuff disease that was unresponsive to 3 month-long aggressive conservative treatments. Sixty-three patients received prolotherapies with 16.5% dextrose 10 ml solution (treatment group), and 63 continued conservative treatment (control group).\ INTERVENTIONS: Not applicable.

MAIN OUTCOME MEASURE:

Visual analog scale of the average shoulder pain level for the past one week (VAS-week), Shoulder Pain and Disability Index (SPADI), isometric strength of shoulder abductor, active range of motion of shoulder (AROM), maximal tear size on ultrasonography and numbers of analgesic ingestion per day.

RESULTS:

Over the one year follow-up, 57 patients in treatment group and 53 in control group were analyzed. There was no significant difference between two groups in age, sex, shoulder dominance, duration of symptoms, and ultrasonographic findings at pretreatment. Average numbers of injection in treatment group are 4.8 ± 1.3 . Compared with the control group, VAS-week, SPADI, isometric strength of shoulder abductor, and AROM of flexion, abduction, and external rotation showed significant improvement in the treatment group. There were no adverse events.

CONCLUSIONS:

To our knowledge, this is the first study to assess the efficacy of prolotherapy in rotator cuff disease. Prolotherapy showed improvement in pain, disability, isometric strength, and AROM in patients with refractory chronic rotator cuff disease. The result suggests positive outcomes, but one should still take cautions in directly interpreting it as a green light, considering the limitations of this non-randomized retrospective study. In order to show the efficacy of prolotherapy, further studies on prospective randomized controlled trials will be required.

KEYWORDS: prolotherapy; rotator cuff; shoulder impingement syndrome; shoulder pain; tendinopathy
PMID: 26254952

21. ADHESIVE CAPSULITIS

Mobilization with frozen shoulders – effective

Clin Rehabil. 2015 Jul 30. pii: 0269215515597294.

Does adding mobilization to stretching improve outcomes for people with frozen shoulder? A randomized controlled clinical trial.

Çelik D¹, Kaya Mutlu E².

Author information

Abstract

OBJECTIVE:

To assess the effectiveness of joint mobilization combined with stretching exercises in patients with frozen shoulder.

DESIGN:

A randomized controlled clinical pilot trial.

SETTING:

Department of Orthopedics and Traumatology.

SUBJECTS:

Thirty patients with frozen shoulder.

INTERVENTION:

All participants were randomly assigned to one of two treatment groups: joint mobilization and stretching versus stretching exercises alone. Both groups performed a home exercise program and were treated for six weeks (18 sessions).

MAIN MEASURES:

The primary outcome measures for functional assessment were the Disabilities of the Arm, Shoulder and Hand score and the Constant score. The secondary outcome measures were pain level, as evaluated with a visual analog scale, and range of motion, as measured using a conventional goniometer. Patients were assessed before treatment, at the end of the treatment, and after one year as follow-up.

RESULTS:

Two-by-two repeated-measures ANOVA with Bonferroni corrections revealed significant increases in abduction (91.9° [CI: 86.1-96.7] to 172.8° [CI: 169.7-175.5]), external rotation (28.1° [CI: 22.2-34.2] to 77.7° [CI: 70.3-83.0]) and Constant score (39.1 [CI: 35.3-42.6] to 80.5 [75.3-86.6]) at the one-year follow-up in the joint mobilization combined with stretching exercise group, whereas the group performing stretching exercise alone did not show such changes.

CONCLUSION:

In the treatment of patients with frozen shoulder, joint mobilization combined with stretching exercises is better than stretching exercise alone in terms of external rotation, abduction range of motion and function score.

KEYWORDS: Adhesive capsulitis; exercise; manual therapy; shoulder function; shoulder pain
PMID: 26229109

25. WRIST AND HAND

Extensor pollicis longus

Surg Radiol Anat. 2015 Aug 8.

Variant course of extensor pollicis longus tendon in the second wrist extensor compartment.

Kim YJ¹, Lee JH, Baek JH.

Author information

Abstract

Among the muscles involved in thumb movement, the extensor pollicis longus (EPL) tendon of the hand is considered the most consistent structure with the least variation among individuals. There have been a few reports regarding different types of supernumerary tendons; however, an abnormal course of the EPL tendon is extremely rare. We describe a case of a variant course of a single EPL tendon appearing in the second extensor compartment of the wrist. This case was observed incidentally during wrist surgery, and demonstrates a unique variation of tendon course, which has not been reported previously. The knowledge of this anatomic variation is helpful in surgical planning and for making accurate diagnoses.

PMID: 26253859

27. HIP**Fx impact of type of falls**

Osteoporos Int. 2015 Aug 8.

Risk factors for hip impact during real-life falls captured on video in long-term care.

Yang Y¹, Mackey DC, Liu-Ambrose T, Feldman F, Robinovitch SN.

Author information

Abstract

Hip fracture risk is increased by landing on the hip. We examined factors that contribute to hip impact during real-life falls in long-term care facilities. Our results indicate that hip impact is equally likely in falls initially directed forward as sideways and more common among individuals with dependent Activities of Daily Living (ADL) performance.

INTRODUCTION:

The risk for hip fracture in older adults increases 30-fold by impacting the hip during a fall. This study examined biomechanical and health status factors that contribute to hip impact through the analysis of real-life falls captured on video in long-term care (LTC) facilities.

METHODS:

Over a 7-year period, we captured 520 falls experienced by 160 residents who provided consent for releasing their health records. Each video was analyzed by a three-member team using a validated questionnaire to determine whether impact occurred to the hip or hand, the initial fall direction and landing configuration, attempts of stepping responses, and use of mobility aids. We also collected information related to resident physical and cognitive function, disease diagnoses, and use of medications from the Minimum Data Set.

RESULTS:

Hip impact occurred in 40 % of falls. Falling forward or sideways was significantly associated with higher odds of hip impact, compared to falling backward (OR 4.2, 95 % CI 2.4-7.1) and straight down (7.9, 4.1-15.6). In 32 % of sideways falls, individuals rotated to land backward. This substantially reduced the odds for hip impact (0.1, 0.03-0.4). Tendency for body rotation was decreased for individuals with dependent ADL performance (0.43, 0.2-1.0).

CONCLUSIONS:

Hip impact was equally likely in falls initially directed forward as sideways, due to the tendency for axial body rotation during descent. A rotation from sideways to backward decreased the odds of hip impact 10-fold. Our results may contribute to improvements in risk assessment and strategies to reduce risk for hip fracture in older adults.

PMID: 26252977

28. REPLACEMENTS**5 year results in replacement**

Arthritis Care Res (Hoboken). 2015 Aug 3. doi: 10.1002/acr.22679.

Physical functioning and prediction of physical activity after total hip arthroplasty. 5-year follow-up of a randomized controlled trial.

Heiberg KE¹, Figved W².
Author information

Abstract

OBJECTIVE:

To examine whether the 1-year effects from a previous walking skill training program on walking and stair climbing still persist five years following total hip arthroplasty (THA), to examine recovery of physical functioning from before to five years after surgery, and to identify predictors of physical activity five years after THA from preoperative measures.

METHODS:

A 5-year follow-up of a randomized controlled trial and a longitudinal study. Sixty participants, with mean age 70 (95% CI 68-72) years, range 50-87 years, were assessed. Outcome measures were the 6-minute walk test (6MWT), the stair climbing test (SCT), active hip range of motion (ROM), self-efficacy, Hip Dysfunction and Osteoarthritis Outcome Score (HOOS), and University of California, Los Angeles (UCLA) activity scale. Data were analyzed by Student t-tests, general linear model, and multivariate regression analyses.

RESULTS:

The training and control groups were approximately equal on outcome measures of physical functioning, pain, and self-efficacy at five years ($P>0.05$). In the total group, the recovery course was unchanged from one to five years ($P>0.05$), except 9% improvement in ROM ($P<0.001$) and 18% decline in SCT ($P=0.004$). Preoperative HOOS pain ($P=0.022$) and HOOS sport ($P=0.019$) predicted UCLA activity scale five years after THA.

CONCLUSION:

At five years after THA, the control group had caught up with the training group on physical functioning, and the participants lead an active lifestyle. Those with worse preoperative scores on pain and physical functioning in sport were at risk of being less physically active in the long term following THA. This article is protected by copyright. All rights reserved.

PMID: 26239078

29. OA

Impact of exercise – positive

Osteoarthritis Cartilage. 2015 Aug 4. pii: S1063-4584(15)01266-2. doi: 10.1016/j.joca.2015.07.023.

Effectiveness of exercise therapy added to general practitioner care in patients with hip osteoarthritis: a pragmatic randomized controlled trial.

Teirlinck CH¹, Luijsterburg PA², Dekker J³, Bohnen AM², Verhaar JA⁴, Koopmanschap MA⁵, van Es PP², Koes BW², Bierma-Zeinstra SM².

Author information

Abstract

OBJECTIVE:

To assess the effectiveness of exercise therapy added to general practitioner (GP) care compared with GP care alone, in patients with hip osteoarthritis during 12 months follow-up.

METHODS:

We performed a multi-center parallel pragmatic randomized controlled trial in 120 general practices in the Netherlands. 203 patients, aged ≥ 45 years, with a new episode of hip complaints, complying with the ACR criteria for hip osteoarthritis were randomized to the intervention group (n=101; GP care with additional exercise therapy) or the control group (n=102; GP care only). GP care was given by patient's own GP. The intervention group received, in addition, a maximum of 12 exercise therapy sessions in the first 3 months and hereafter 3 booster sessions. Blinding was not possible. Primary outcomes were hip pain and hip-related function measured with the HOOS questionnaire (score 0-100).

RESULTS:

The overall estimates on hip pain and function during the 12-month follow-up showed no between-group difference (intention-to-treat). At 3-months follow-up there was a statistically significant between-group difference for HOOS pain -3.7 (95% CI: -7.3;-0.2), effect size -0.23 and HOOS function -5.3 (95% CI: -8.9;-1.6), effect size -0.31. No adverse events were reported.

CONCLUSIONS:

No differences were found during 12-months follow-up on pain and function. At 3-months follow-up, pain and function scores differed in favor of patients allocated to the additional exercise therapy compared with GP care alone.

TRIAL REGISTRATION: The Netherlands Trial Registry NTR1462.

KEYWORDS: HOOS; Hip osteoarthritis; disability; exercise therapy; pain; physiotherapy
PMID: 26254237

30 A. IMPINGEMENT**Impingements and hernias/adductor strain**

Am J Sports Med. 2015 Jul 17. pii: 0363546515591259.

Sonographic Prevalence of Groin Hernias and Adductor Tendinopathy in Patients With Femoroacetabular Impingement.

Naal FD1, Dalla Riva F2, Wuerz TH3, Dubs B4, Leunig M2.

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

Femoroacetabular impingement (FAI) is a common debilitating condition that is associated with groin pain and limitation in young and active patients. Besides FAI, various disorders such as hernias, adductor tendinopathy, athletic pubalgia, lumbar spine affections, and others can cause similar symptoms.

PURPOSE:

To determine the prevalence of inguinal and/or femoral herniation and adductor insertion tendinopathy using dynamic ultrasound in a cohort of patients with radiographic evidence of FAI.

STUDY DESIGN:

Case series; Level of evidence, 4.

METHODS:

This retrospective study consisted of 74 patients (36 female and 38 male; mean age, 29 years; 83 symptomatic hips) with groin pain and radiographic evidence of FAI. In addition to the usual diagnostic algorithm, all patients underwent a dynamic ultrasound examination for signs of groin herniation and tendinopathy of the proximal insertion of the adductors.

RESULTS:

Evidence of groin herniation was found in 34 hips (41%). There were 27 inguinal (6 female, 21 male) and 10 femoral (9 female, 1 male) hernias. In 3 cases, inguinal and femoral herniation was coexistent. Overall, 5 patients underwent subsequent hernia repair. Patients with groin herniation were significantly older than those without (33 vs 27 years, respectively; $P = .01$). There were no significant differences for any of the radiographic or clinical parameters. Tendinopathy of the proximal adductor insertion was detected in 19 cases (23%; 11 female, 8 male). Tendinopathy was coexistent with groin herniation in 8 of the 19 cases. There were no significant differences for any of the radiographic or clinical parameters between patients with or without tendinopathy. Patients with a negative diagnostic hip injection result were more likely to have a concomitant groin hernia than those with a positive injection result (80% vs 27%, respectively). Overall, 38 hips underwent FAI surgery with satisfactory outcomes in terms of score values and subjective improvement.

CONCLUSION:

The results demonstrate that groin herniation and adductor insertion tendinopathy coexist frequently in patients with FAI. Although the clinical effect is yet unclear, 5 patients underwent hernia repair. Dynamic ultrasound is a useful tool to detect such pathological abnormalities. Diagnostic hip injections can be helpful to differentiate between the sources of pain.

KEYWORDS:

FAI; adductor tendinopathy; diagnostic hip injection; femoroacetabular impingement; groin pain; hernia

32 A. KNEE/ACL**Pivot shift testing**

Knee Surg Sports Traumatol Arthrosc. 2015 Aug 2.

Evaluation of pivot shift phenomenon while awake and under anaesthesia by different manoeuvres using triaxial accelerometer.

Nakamura K¹, Koga H, Sekiya I, Watanabe T, Mochizuki T, Horie M, Nakamura T, Otabe K, Muneta T.

Author information

Abstract

PURPOSE:

Evaluating pivot shift phenomenon is difficult due to its subjectivity, wide variation of testing manoeuvres, and difficulty in evaluating patients while awake. The purpose of this study was to evaluate the pivot shift phenomenon using a triaxial accelerometer by two different manoeuvres, the pivot shift test as representative of flexion manoeuvre and N test as a representative of extension manoeuvre, and in two different conditions, awake and under anaesthesia.

METHODS:

Twenty-nine patients with unilateral anterior cruciate ligament (ACL)-injured knee were included. Pivot shift test and N test were performed for both injured and uninjured legs while awake and under anaesthesia, with the acceleration measurements using a triaxial accelerometer (KiRA). The tests were also subjectively graded on a scale of 0-6 based on the modification of IKDC criteria.

RESULTS:

Under anaesthesia, acceleration of ACL-injured knees was greater than that of uninjured knees in both pivot shift test ($P < 0.001$) and N test ($P < 0.001$), whereas the acceleration value was greater in the N test. Furthermore, there were significant positive correlations between the acceleration and subjective grading in both tests, whereas the N test was more significant than the pivot shift test. On the other hand, there was no statistical significance in acceleration between ACL-injured and uninjured knees in either test while the patient was awake.

CONCLUSION:

The triaxial accelerometer was useful to objectively detect and quantitatively evaluate the pivot shift phenomenon by both the pivot shift test and N test under anaesthesia. The acceleration of ACL-injured knees was greater than that of uninjured knees, and the acceleration was correlated with the subjective manual grading, especially in the N test. On the other hand, its use while the patient was awake was likely limited.

LEVELS OF EVIDENCE: Diagnostic study of non-consecutive patients without a universally applied gold standard, Level III.

PMID: 26233597

Risk assessment

Arch Orthop Trauma Surg. 2015 Jul 22.

Risk assessment for anterior cruciate ligament injury.

Estes K¹, Cheruvu B, Lawless M, Laughlin R, Goswami T.
Author information

Abstract

INTRODUCTION:

Anterior cruciate ligament tears are one of the most frequent soft tissue injuries of the knee. A torn anterior cruciate ligament leaves the knee joint unstable and at risk for further damage to other soft tissues manifested as pain, dislocation, and osteoarthritis. A better understanding of the anatomical details of knee joints suffering anterior cruciate ligament tears is needed to understand and develop prediction models for anterior cruciate ligament injury and/or tear.

MATERIALS AND METHODS:

Magnetic resonance images of 32 patients with anterior cruciate ligament tears and 40 patients with non-tears were evaluated from a physician group practice. Digital measurements of femoral condyle length, femoral notch width, anterior cruciate ligament width in the frontal and sagittal plane, and the anterior cruciate ligament length in the sagittal plane were taken in both groups to identify trends. Monte Carlo simulations were performed (n = 2000) to evaluate the relationship between notch width index and sagittal width and to establish functional relationships among the anatomical parameters for potential injury risk. Sensitivity analysis performed shows the risk of anterior cruciate ligament injury a function of force and notch width index.

RESULTS:

Females have a significantly shorter anterior cruciate ligament when compared to that of males. The notch width index was also significantly different between torn and non-torn individuals. The NWI was not significantly different between genders (p value = 0.40).

CONCLUSIONS:

Anterior cruciate ligament injury has been shown to be caused by the forces which act on the ligament. These forces can result from hyperextension of the tibia or the internal rotation of tibia. The anatomical parameters of the knee joint (i.e., notch width index, anterior cruciate ligament width and length) have no role in the cause of an injury.

PMID:26198056

LE biomechanics

Med Sci Sports Exerc. 2015 Aug 7.

Biomechanical Deficit Profiles Associated with ACL Injury Risk in Female Athletes.

Pappas E¹, Shiyko MP, Ford KR, Myer GD, Hewett TE.

Author information

Abstract

PURPOSE:

To quantify the prevalence of biomechanical deficit patterns associated with ACL injury risk and their inter-connections in a large cohort of female athletes during an unanticipated cutting task.

METHODS:

High school female athletes (N=721) performed an unanticipated cutting task in the biomechanics laboratory. Trunk and lower extremity 3D kinetics and kinematics were measured and entered into a latent profile analysis model.

RESULTS:

Approximately 40% of female athletes demonstrated no biomechanical deficits and were categorized into the low risk group. The second most prevalent profile (24%) demonstrated a combination of high quadriceps and leg dominance deficits and was labeled as quadriceps-leg. The third most prevalent profile (22%) demonstrated a combination of trunk and leg dominance deficits and to lesser extent ligament dominance deficits, and was labeled as trunk-leg-ligament. Finally, the fourth profile (14%) demonstrated very high ligament dominance deficits only and it was labeled as ligament dominance profile.

CONCLUSIONS:

This is the first study to identify the most common biomechanical profiles associated with ACL injury during a cutting task in a large cohort of female athletes. Approximately 60% of female athletes belong to one of the high-risk profiles. With the exception of the ligament dominance profile, the current analysis indicates that risk profiles consist of a combination of biomechanical deficits. The findings provide important insight into the prevalence of biomechanical deficits and future directions for the development of injury prevention programs. The findings can be used to guide the development of quick and easy tests that accurately categorize athletes into one of the profiles and subsequently prescribe tailored injury prevention programs that will be more effective and efficient than the current generic ones.

PMID: 26258858

32 B. KNEE/PCL**Surgery posterolateral instability**

Arch Orthop Trauma Surg. 2015 Jul 19.

Outcome of the treatment of chronic isolated and combined posterolateral corner knee injuries with 2- to 6-year follow-up.

Görmeli G¹, Görmeli CA, Elmalı N, Karakaplan M, Ertem K, Ersoy Y.
Author information

Abstract

INTRODUCTION:

Injuries of the posterolateral corner (PLC) of the knee are rare. They are difficult to diagnose and can cause severe disability. This study presents the 20- to 70-month clinical and radiological outcomes of the anatomical reconstruction technique of LaPrade et al.

MATERIALS AND METHODS:

Twenty-one patients with chronic PLC injuries underwent anatomical PLC reconstruction. The anatomical locations of the popliteus tendon, fibular collateral ligament, and popliteofibular ligament were reconstructed using a 2-graft technique. The patients were evaluated subjectively with the Tegner, Lysholm, and International Knee Documentation Committee (IKDC) subjective knee scores and objectively with the IKDC objective scores; additionally, varus stress radiographs were taken to evaluate knee stability.

RESULTS:

Significant ($p < 0.05$) improvements were observed in the postoperative Lysholm, IKDC-s, and Tegner scores compared with preoperatively. The IKDC objective subscores (lateral joint opening at 20° of knee extension, external rotation at 30° and 90°, and the reverse pivot-shift test) had improved significantly at the time of the final 40.9 ± 13.7-month follow-up. Lateral compartment opening on the varus stress radiographs had decreased significantly in the postoperative period. However, there was still a significant difference compared with the uninjured knee. There was no significant improvement in the IKDC-s, Lysholm, or Tegner scores between the nine patients with isolated PLC injuries and twelve with multi-ligament injuries.

CONCLUSIONS:

Significant improvement in the objective knee stability scores and clinical outcomes with anatomical reconstruction showed that this technique can be used to treat patients with chronic PLC injured knees. However, longer-term multicentre studies and studies with larger groups comparing multiple techniques are required to determine the best treatment method for PLC injuries.

PMID: 26188525

33. MENISCUS

Measuring GAG's

Osteoarthritis Cartilage. 2015 Jul 26. pii: S1063-4584(15)01254-6. doi: 10.1016/j.joca.2015.07.011.

A detailed quantitative outcome measure of glycosaminoglycans in human articular cartilage for cell therapy and tissue engineering strategies.

Kuiper NJ¹, Sharma A².
Author information

Abstract

OBJECTIVE:

Ideally, cartilage regenerative cell therapy should produce a tissue which closely matches the microstructure of native cartilage. Benchmark reference information is necessary to assess the quality of engineered cartilage. Our goal was to examine the variation in glycosaminoglycans (GAGs) in cartilage zones within human knee joints of different ages.

DESIGN:

Osteochondral biopsies were removed from the medial femoral condyles of deceased persons aged 20-50 years. Fluorophore-Assisted Carbohydrate Electrophoresis (FACE) was used to profile GAGs through the superficial, middle and deep zones of the articular cartilage. Differences were identified by statistical analysis.

RESULTS:

Cartilage from the younger biopsies had 4-fold more hyaluronan in the middle zone than cartilage from the older biopsies. The proportion of hyaluronan decreased with increasing age. Cartilage from the middle and deep zones of younger biopsies had significantly more chondroitin sulphate and keratan sulphate than the cartilage from older biopsies. This would suggest that chondrocytes synthesise more sulphated GAGs when deeper in the tissue and therefore in conditions of hypoxia. With increasing age, there was significantly more chondroitin-6 sulphate than chondroitin-4 sulphate. For the first time, unsulphated chondroitin was detected in the superficial zone.

CONCLUSIONS:

As an outcome measure, FACE offers the potential of a complete, detailed assessment of all GAGs and offers more information than the widely used 1,9-dimethylmethylene blue (DMMB) dye assay. FACE could be very useful in the evolving cartilage regeneration field.

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KEYWORDS:

Articular cartilage; Cartilage regeneration; Fluorophore-assisted carbohydrate electrophoresis; Glycosaminoglycans; Human; Knee

PMID:26211607

Posterior root/meniscofemoral ligaments

Knee Surg Sports Traumatol Arthrosc. 2015 Aug 7.

Influence of lateral meniscal posterior root avulsions and the meniscofemoral ligaments on tibiofemoral contact mechanics.

Geeslin AG¹, Civitaresse D, Turnbull TL, Dornan GJ, Fuso FA, LaPrade RF.
Author information

Abstract

PURPOSE:

The purpose of this study was to investigate the effect of lateral meniscal posterior root avulsions combined with intact meniscofemoral ligaments (MFLs), deficient MFLs, anterior cruciate ligament (ACL) tears and reconstructions, and root repairs using an established tibiofemoral contact mechanics testing protocol.

METHODS:

Ten fresh-frozen cadaveric knees were tested with six knee conditions (1: intact; 2: lateral meniscal posterior root avulsion; 3: root avulsion and deficient MFLs; 4: condition 3 with ACL tear; 5: condition 4 with ACL reconstruction; 6: ACL reconstruction with root repair) at five flexion angles (0°, 30°, 45°, 60°, and 90°), under a 1000-N axial load. Contact area and pressure were measured with Tekscan sensors.

RESULTS:

Compared to the intact state, condition 2 did not significantly change lateral compartment contact area or pressure. Changes in contact mechanics were greater at increased flexion angles; for condition 3 at 0° and 90°, contact area decreased 37 and 52 % [95 % CI (21-53) and (39-66), respectively] and mean contact pressure increased 55 and 87 % [95 % CI (33-76) and (59-114), respectively]. Root repair with ACL reconstruction was not significantly different from the intact state.

CONCLUSIONS:

The MFLs protect the lateral compartment from changes in contact mechanics in the setting of a lateral meniscal posterior root avulsion, whereas a combination of lateral meniscal root avulsion and deficient MFLs leads to significant changes. Concurrent ACL reconstruction and lateral meniscal root repair restore mean contact pressure and area to the intact state and are recommended in this combined injury to prevent or slow the development of lateral compartment arthritis.

PMID:26249111

Ligamentous tissues in meniscus

Surg Radiol Anat. 2015 Aug 6.

The meniscal insertion of the knee anterolateral ligament.

Helito CP¹, Bonadio MB, Soares TQ, da Mota E Albuquerque RF, Natalino RJ, Pécora JR, Camanho GL, Demange MK.

Author information

Abstract

PURPOSE:

The aim of this study is to characterize in detail the meniscal insertion of the anterolateral ligament (ALL) of the knee, establishing parameters regarding the circumference of the lateral meniscus and the popliteal muscle tendon (PMT) groove in addition to its histological analysis.

METHODS:

A total of 33 knees of cadavers were dissected. The ALL and the lateral meniscus were removed en bloc. After removal of the anatomical specimen, the meniscus circumference, the ALL insertion points on the external surface of the lateral meniscus, and the PMT groove were measured. Eight menisci were subjected to histological analysis.

RESULTS:

The ALL was found in all dissections performed. The ALL insertion occurred macroscopically in the transition between the anterior horn and the lateral meniscus body, specifically beginning at 36.0 % and ending at 41.9 % of the meniscal circumference, occupying a mean area of 5.6 mm. The distance between the end of the ALL meniscal insertion and the beginning of the PMT groove averaged 12.9 mm. In the histological evaluation, in longitudinal sections, we observed dense collagen fibers of the ligament inserting on the external surface of the meniscus. It is possible to observe a spreading of collagen fibers at the moment of meniscal insertion.

CONCLUSIONS:

The ALL meniscal insertion was found in all dissected specimens, beginning with approximately 36 % of the meniscal outer diameter, 12.9 mm anterior to the beginning of the PMT groove. The histological analysis confirmed the presence of true ligamentous tissue in the dissected specimens.

PMID: 26246342

34. PATELLA**Proximal rehab effective**

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

35. KNEE/TOTAL**Psychological support helps**

J Orthop Traumatol. 2015 Jul 29.

Effectiveness of psychological support in patients undergoing primary total hip or knee arthroplasty: a controlled cohort study.

Tristaino V¹, Lantieri F, Tornago S, Gramazio M, Carriere E, Camera A.
Author information

Abstract

BACKGROUND:

We hypothesised that psychological support would have a significant improvement on the mental and physical recovery of patients undergoing primary total hip or knee arthroplasty.

MATERIALS AND METHODS:

200 patients were consecutively alternately assigned (1:1) to receive routine care (control group) or, in addition, psychological support from a professional psychologist (experimental group). The psychological support was provided at the pre-operative visit, during the hospitalisation period and at the rehabilitation centre.

RESULTS:

Upon discharge, based on the 'Hospital Anxiety and Depression Scale, a state of anxiety was observed in 12.8 % and 78.9 % of the patients in the experimental and in the control group, respectively ($p < 0.0001$). A state of depression was observed in 12.8 % and 73.7 % of the patients in the experimental and in the control group, respectively ($p < 0.0001$). With regard to the 'Physical Component Scale' of the SF-36 questionnaire, a similar temporal trend of values was observed in the two study groups, significantly increasing over time in both groups, taking into consideration both the joint population and the two hip and knee populations separately ($p < 0.0001$). With regard to the 'Mental Component Scale' of the SF-36 questionnaire, in both the joint population and the two hip and knee populations separately, an exact opposite temporal trend was observed in the experimental group compared to the control group ($p < 0.0001$), with generally higher scores in the experimental group ($p < 0.0001$). In patients with hip arthroplasty, the average time to reach the physiotherapy objective (i.e., the patient ability to walk 50 metres independently and to climb 10 steps) was 6.7 ± 1.8 days (range 4-12) in the experimental group and 7.9 ± 2.2 days (range 0-13) in the control group ($p = 0.0015$).

CONCLUSIONS:

In summary, there was a lower incidence of anxiety and depression and better mental well-being in the group of patients who received the psychological support. Within the hip arthroplasty group, the patients who received the psychological support reached the physiotherapy objective 1.2 days earlier than the patients in the control group ($p = 0.0015$).

LEVEL OF EVIDENCE:

Level 3, Non-randomized prospective controlled cohort.

PMID: 26220315

Bilateral vs unilateral bilateral is effective

Simultaneous bilateral versus unilateral total knee arthroplasty: A comparison of 30-day readmission rates and major complications

Journal of Arthroplasty, 08/11/2015 Hart A, et al.

Researchers queried the National Surgical Quality Improvement Program to compare the rate of 30-day readmissions and major complications between simultaneous bilateral and unilateral total knee arthroplasty (TKA). Simultaneous bilateral TKA, they concluded, has a low incidence of major complications and was not associated with more readmissions compared to unilateral TKA, but the odds of major complications was slightly higher following simultaneous bilateral TKA (OR: 1.58).

Methods

- Researchers queried the National Surgical Quality Improvement Program and identified 1,771 patients who underwent simultaneous (same-day) bilateral TKA and matched them to a control group of 6,790 patients who underwent unilateral TKA.

Results

- Simultaneous bilateral TKA patients had longer surgery, were more commonly performed under general anesthesia, had a higher rate of post-operative transfusion, and a greater proportion of patients discharged to rehabilitation facilities.
- Simultaneous bilateral TKA had a low incidence of major complications and was not associated with more readmissions as compared to unilateral TKA (3.6% versus 3.5% respectively).
- The odds of major complications was slightly higher following simultaneous bilateral TKA (OR=1.58).

37. OSTEOARTHRITIS/KNEE**Temporal summation and pain**

Pain. 2015 Jan;156(1):55-61. doi: 10.1016/j.pain.0000000000000022.

Presurgical assessment of temporal summation of pain predicts the development of chronic postoperative pain 12 months after total knee replacement.

Petersen KK¹, Arendt-Nielsen L, Simonsen O, Wilder-Smith O, Laursen MB.
Author information

Abstract

Patients with knee osteoarthritis demonstrate decreased pressure pain thresholds (PPTs), facilitated temporal summation (TS) of pain, and decreased conditioned pain modulation (CPM) compared with healthy controls. This study aimed to correlate preoperative PPTs, TS, and CPM with the development of chronic postoperative pain after total knee replacement (TKR) surgery. Knee pain intensity (visual analog scale [VAS]: 0-10), PPTs, TS, and CPM were collected before, 2 months, and 12 months after TKR. Patients were divided into a low-pain (VAS < 3) and a high-pain (VAS ≥ 3) group based on their VAS 12 months after TKR. The high-pain group (N = 17) had higher pain intensities compared with the low-pain group (N = 61) before surgery (P = 0.009) and 12 months after surgery (P < 0.001). The PPTs of the low-pain groups were normalized for all measurement sites comparing presurgery with 12 months postsurgery (P < 0.05, contralateral arm: P = 0.059), which was not the case for the high-pain group. The low-pain group showed a functional inhibitory CPM preoperatively and 12 months postoperatively (P < 0.05), which was not found in the high-pain group. The high-pain group had higher facilitated TS preoperatively and 12 months postoperatively compared with the low-pain group (P < 0.05).

Preoperative TS level correlated to 12-month postoperative VAS (R = 0.240, P = 0.037). Patients who developed moderate-to-severe pain had pronociceptive changes compared with patients who developed mild pain postsurgery. Preoperative TS level correlated with the postoperative pain intensity and may be a preoperative mechanistic predictor for the development of chronic postoperative pain in patients with osteoarthritis after TKR.

PMID: 25599301

PRP and OA

Knee Surg Sports Traumatol Arthrosc. 2015 Aug;23(8):2170-7. doi: 10.1007/s00167-014-2987-4. Epub 2014 Apr 20.

The effects of repeated intra-articular PRP injections on clinical outcomes of early osteoarthritis of the knee.

Gobbi A¹, Lad D, Karnatzikos G.
Author information

Abstract

PURPOSE:

To assess the outcome of intra-articular platelet-rich plasma (PRP) injections into the knee in patients with early stages of osteoarthritis (OA) and to determine whether cyclical dosing would affect the end result.

METHODS:

This is a prospective, randomized study in which 93 patients (119 knees) were followed up for a minimum of 2 years. Fifty knees were randomly selected prior to the first injection, to receive a second cycle at the completion of 1 year. A cycle consisted of three injections, each given at a monthly interval. The outcome was assessed using Knee Injury and Osteoarthritis Outcome Score (KOOS), Visual Analogue Scale (VAS), Tegner and Marx scoring systems, recorded prior to the first injection and then at 12, 18 and 24 months.

RESULTS:

There was a significant improvement in all scores over time compared to the pre-treatment value ($p < 0.001$). At 12 months, both groups showed similar and significant improvement. At 18 months, except for KOOS (Symptoms) and Tegner score, all other parameters showed a significant difference between the two groups in favour of the patients who had received the second cycle ($p < 0.001$). At 2 years, the scores declined in both groups but remained above the pre-treatment value with no significant difference between the groups despite the patients with two cycles showing higher mean values for all the scores.

CONCLUSION:

Intra-articular PRP injections into the knee for symptomatic early stages of OA are a valid treatment option. There is a significant reduction in pain and improvement in function after 12 months, which can be further improved at 18 months by annual repetition of the treatment. Although the beneficial effects are ill sustained at 2 years, the results are encouraging when compared to the pre-treatment function.

PMID: 24748286

PRP and Hyaluronic acid in OA

Knee Surg Sports Traumatol Arthrosc. 2015 Aug 2.

Multiple PRP injections are more effective than single injections and hyaluronic acid in knees with early osteoarthritis: a randomized, double-blind, placebo-controlled trial.

Görmeli G¹, Görmeli CA, Ataoglu B, Çolak C, Aslantürk O, Ertem K.
Author information

Abstract

PURPOSE:

To compare the effectiveness of intraarticular (IA) multiple and single platelet-rich plasma (PRP) injections as well as hyaluronic acid (HA) injections in different stages of osteoarthritis (OA) of the knee.

METHODS:

A total of 162 patients with different stages of knee OA were randomly divided into four groups receiving 3 IA doses of PRP, one dose of PRP, one dose of HA or a saline injection (control). Then, each group was subdivided into two groups: early OA (Kellgren-Lawrence grade 0 with cartilage degeneration or grade I-III) and advanced OA (Kellgren-Lawrence grade IV). The patients were evaluated before the injection and at the 6-month follow-ups using the EuroQol visual analogue scale (EQ-VAS) and International Knee Documentation Committee (IKDC) subjective scores. Adverse events and patient satisfaction were recorded.

RESULTS:

There was a statistically significant improvement in the IKDC and EQ-VAS scores in all the treatment groups compared with the control group. The knee scores of patients treated with three PRP injections were significantly better than those patients of the other groups. There was no significant difference in the scores of patients injected with one dose of PRP or HA. In the early OA subgroups, significantly better clinical results were achieved in the patients treated with three PRP injections, but there was no significant difference in the clinical results of patients with advanced OA among the treatment groups.

CONCLUSION:

The clinical results of this study suggest IA PRP and HA treatment for all stages of knee OA. For patients with early OA, multiple (3) PRP injections are useful in achieving better clinical results. For patients with advanced OA, multiple injections do not significantly improve the results of patients in any group.

PMID:26233594

38 A. FOOT AND ANKLE**Posterior ankle impingement**

J Foot Ankle Surg. 2015 Jul 25. pii: S1067-2516(15)00229-X. doi: 10.1053/j.jfas.2015.06.005.

Posterior Ankle Impingement in Two Athletic Twin Brothers, Could Genetics Play a Role?

Bech NH¹, de Leeuw PA², Haverkamp D³.
Author information

Abstract

Pain posteriorly in the ankle can be caused by bony impingement of the posterolateral process of the talus. This process impinges between the tibia and calcaneus during deep forced plantar flexion. If this occurs it is called posterior ankle impingement syndrome. We report the case of 2 athletic monozygotic twin brothers with bony impingement posteriorly in the left ankle. Treatment consisted of ankle arthroscopy in both patients during which the symptomatic process was easily removed. At 3 months after surgery, both patients were completely free of pain, and 1 of the brothers had already returned to sports. The posterior ankle impingement syndrome is not a rare syndrome, but it has not been described in siblings thus far. That these 2 patients are monozygotic twin brothers suggests that genetics could play a role in the development of skeletal deformities that can result in posterior ankle impingement syndrome.

KEYWORDS: Stieda's process; ankle arthroscopy; genetics; os trigonum; posterior ankle impingement syndrome; skeletal deformity
PMID: 26215550

Subtalar motions

Gait Posture. 2015 Jul 22. pii: S0966-6362(15)00737-7. doi: 10.1016/j.gaitpost.2015.07.009.

Plantar-flexion of the ankle joint complex in terminal stance is initiated by subtalar plantar-flexion: A bi-planar fluoroscopy study.

Koo S¹, Lee KM², Cha YJ³.

Author information

Abstract

Gross motion of the ankle joint complex (AJC) is a summation of the ankle and subtalar joints. Although AJC kinematics have been widely used to evaluate the function of the AJC, the coordinated movements of the ankle and subtalar joints are not well understood. The purpose of this study was to accurately quantify the individual kinematics of the ankle and subtalar joints in the intact foot during ground walking by using a bi-planar fluoroscopic system. Bi-planar fluoroscopic images of the foot and ankle during walking and standing were acquired from 10 healthy subjects. The three-dimensional movements of the tibia, talus, and calcaneus were calculated with a three-dimensional/two-dimensional registration method. The skeletal kinematics were quantified from 9% to 86% of the full stance phase because of the limited camera speed of the X-ray system. At the beginning of terminal stance, plantar-flexion of the AJC was initiated in the subtalar joint on average at 75% ranging from 62% to 76% of the stance phase, and plantar-flexion of the ankle joint did not start until 86% of the stance phase. The earlier change to plantar-flexion in the AJC than the ankle joint due to the early plantar-flexion in the subtalar joint was observed in 8 of the 10 subjects. This phenomenon could be explained by the absence of direct muscle insertion on the talus. Preceding subtalar plantar-flexion could contribute to efficient and stable ankle plantar-flexion by locking the midtarsal joint, but this explanation needs further investigation.

KEYWORDS: Bi-planar fluoroscopic analysis; Foot and ankle; Gait; Joint kinematics; Subtalar joint

PMID:26238571

44. RHUMATOID ARTHRITIS**OA pain**

Best Pract Res Clin Rheumatol. 2015 Feb;29(1):90-97. doi: 10.1016/j.berh.2015.04.017. Epub 2015 May 16.

Osteoarthritis pain.

Perrot S¹.

Author information

Abstract

Osteoarthritis (OA) represents one of the most frequently occurring painful conditions. Pain is the major OA symptom, involving both peripheral and central neurological mechanisms. OA pain is initiated from free axonal endings located in the synovium, periosteum bone, and tendons, but not in the cartilage. The nociceptive message involves not only neuromediators and regulating factors such as neuronal growth factor (NGF) but also central modifications of pain pathways. OA pain is a mixed phenomenon where nociceptive and neuropathic mechanisms are involved in both the local and central levels. OA pain perception is influenced by multiple environmental, psychological, or constitutional factors, and OA pain intensity is not correlated with joint degradation. OA pain may present with different clinical features: constant and intermittent pain, with or without a neuropathic component, and with or without central sensitization. Finally, OA pain should be considered as a complex and not unique pain condition, where precise clinical assessment may drive specific therapeutic approaches.

KEYWORDS: Assessment; Joint; Osteoarthritis; Pain; Pathophysiology
PMID:26267003

Walking and RA

Musculoskeletal Care. 2015 Jul 31. doi: 10.1002/msc.1112.

Walking is a Feasible Physical Activity for People with Rheumatoid Arthritis: A Feasibility Randomized Controlled Trial.

Baxter SV^{1,2}, Hale LA¹, Stebbings S³, Gray AR³, Smith CM¹, Treharne GJ².
Author information

Abstract

BACKGROUND:

Exercise has been recognized as important in the management of rheumatoid arthritis (RA). Walking is a low-cost and low-impact activity, requiring little supervision. It requires no specialist training, is suited to a variety of environments and is inherently a clinically meaningful measure of independence. The aim of the present study was to determine whether a designed walking programme for people with RA successfully facilitated regular physical activity in participants, without detriment to pain levels.

METHODS:

Thirty-three people with RA were recruited from Dunedin Hospital rheumatology outpatient clinics and enrolled in a walking randomized controlled trial (RCT) feasibility study. Participants were randomly allocated to the walking intervention (n = 11) or control (n = 22) groups. Control participants received a nutrition education session, and the walking intervention group received instructions on a walking route with three loops, to be completed 3-4 times per week. The walking route shape was designed so that the length of the walk could be tailored by participants. Both groups were assessed at baseline and six weeks later. The primary outcome measures were feasibility, acceptability and safety. The principal secondary outcome was change in walking speed after the intervention. Additional outcome measures were a step-up test, activity limitations (on the Health Assessment Questionnaire), global well-being (on the European Quality of Life Questionnaire), self-efficacy for managing arthritis symptoms, self-efficacy for physical activity, daily pedometer readings and a daily visual analogue scale for pain.

RESULTS:

Participants successfully completed the walk for the suggested frequency, indicating feasibility and acceptability. There were no reported adverse effects of participation and the walking intervention group did not have higher daily pain levels than the control group, indicating safety. The walking intervention group showed a pattern of improvements in self-efficacy and global well-being; no changes in these outcomes were noted in the control group. No outcome measure showed statistically significant between-group differences.

CONCLUSIONS:

Walking appears to be a feasible, acceptable and safe intervention for people with RA. These findings inform the design and power requirements of larger trials of structured walking interventions. Copyright © 2015 John Wiley & Sons, Ltd.

KEYWORDS: Rheumatoid arthritis; adherence; exercise; physical activity; rehabilitation; walking

PMID: 26228264

45 A. MANUAL THERAPY LUMBAR & GENERAL

Spinal manip and sensorimotor function in LBP

Effects of spinal manipulation on sensorimotor function in low back pain patients – a randomized controlled trial★

Christine M. Goertz, DC, PhD Ting Xia, PhD Cynthia R. Long, PhD Robert D. Vining, DC , Katherine A. Pohlman, DC, MS James W. DeVocht, DC, PhD M.Ram Gudavalli, PhD Edward F. Owens Jr., MS, DC William C. Meeker, DC, MPH David G. Wilder, PhD

Highlights

- Two distinct types of spinal manipulation were applied to treat low back pain.
- Sensorimotor function was studied using postural sway and response to sudden load.
- Two weeks of spinal manipulation did not affect these two sensorimotor functions.
- The neurophysiological effects of spinal manipulation remain unclear.

Abstract

Background

Low back pain (LBP) is a major health problem in industrialized societies. Spinal manipulation (SM) is often used for treating LBP, though the therapeutic mechanisms remain elusive. Research suggests that sensorimotor changes may be involved in LBP. It is hypothesized that SM may generate its beneficial effects by affecting sensorimotor functions.

Objectives

To compare changes in sensorimotor function, as measured by postural sway and response to sudden load, in LBP patients following the delivery of high-velocity low amplitude (HVLA)-SM or low-velocity variable amplitude (LVVA)-SM versus a sham control intervention.

Design

A three-arm (1:1:1 ratio) randomized controlled trial.

Methods

A total of 221 participants who were between 21-65 years, having LBP intensity (numerical rating scale) ≥ 4 at either phone screen or the first baseline visit and ≥ 2 at phone screen and both baseline visits, and Quebec Task Force diagnostic classifications of 1, 2, 3 or 7 were enrolled to receive four SM treatments over two weeks. Study outcomes were measured at the first and fifth visits with the examiners blinded from participant group assignment.

Results

The LVVA-SM group demonstrated a significant increase in medial-to-lateral postural excursion on the soft surface at the first visit when compared to the control group. No other significant between-group differences were found for the two sensorimotor tests, whether during the first visit or over two weeks.

Conclusions

It appears that short-term SM does not affect the sensorimotor functions as measured by postural sway and response to sudden load in this study.

Keywords:

low back pain, clinical trial, spinal manipulation, sensorimotor function

46 A. UPPER LIMB NEUROMOBILIZATION**Mobilization with frozen shoulders – effective**

Clin Rehabil. 2015 Jul 30. pii: 0269215515597294.

Does adding mobilization to stretching improve outcomes for people with frozen shoulder? A randomized controlled clinical trial.

Çelik D¹, Kaya Mutlu E².
Author information

Abstract

OBJECTIVE:

To assess the effectiveness of joint mobilization combined with stretching exercises in patients with frozen shoulder.

DESIGN:

A randomized controlled clinical pilot trial.

SETTING:

Department of Orthopedics and Traumatology.

SUBJECTS:

Thirty patients with frozen shoulder.

INTERVENTION:

All participants were randomly assigned to one of two treatment groups: joint mobilization and stretching versus stretching exercises alone. Both groups performed a home exercise program and were treated for six weeks (18 sessions).

MAIN MEASURES:

The primary outcome measures for functional assessment were the Disabilities of the Arm, Shoulder and Hand score and the Constant score. The secondary outcome measures were pain level, as evaluated with a visual analog scale, and range of motion, as measured using a conventional goniometer. Patients were assessed before treatment, at the end of the treatment, and after one year as follow-up.

RESULTS:

Two-by-two repeated-measures ANOVA with Bonferroni corrections revealed significant increases in abduction (91.9° [CI: 86.1-96.7] to 172.8° [CI: 169.7-175.5]), external rotation (28.1° [CI: 22.2-34.2] to 77.7° [CI: 70.3-83.0]) and Constant score (39.1 [CI: 35.3-42.6] to 80.5 [75.3-86.6]) at the one-year follow-up in the joint mobilization combined with stretching exercise group, whereas the group performing stretching exercise alone did not show such changes.

CONCLUSION:

In the treatment of patients with frozen shoulder, joint mobilization combined with stretching exercises is better than stretching exercise alone in terms of external rotation, abduction range of motion and function score.

KEYWORDS: Adhesive capsulitis; exercise; manual therapy; shoulder function; shoulder pain
PMID: 26229109

48 B. TRIGGER POINTS NEEDLING

Acupuncture and pain

Efficacy and safety of acupuncture for acute low back pain in emergency department: a pilot cohort study

Evidence-based Complementary and Alternative Medicine , 08/10/2015Liu YT, et al.

Low back pain (LBP) is one of the most common complaints in the emergency department (ED). There are several research articles providing evidence for acupuncture for treating chronic LBP but few about treating acute LBP. This study assessed the efficacy and safety of acupuncture for the treatment of acute LBP in the ED. Acupuncture might provide immediate effect in reducing the pain of acute LBP safely.

49. STRETCHING

Yoga and autonomic factors

J Psychiatr Res. 2015 Sep;68:270-82. doi: 10.1016/j.jpsychires.2015.07.013. Epub 2015 Jul 13.

A systematic review of randomised control trials on the effects of yoga on stress measures and mood.

Pascoe MC¹, Bauer IE².

Author information

Abstract

Stress related disorders such as depression and anxiety are leading sources of disability worldwide, and current treatment methods such as conventional antidepressant medications are not beneficial for all individuals. There is evidence that yoga has mood-enhancing properties possibly related to its inhibitory effects on physiological stress and inflammation, which are frequently associated with affective disorders. However the biological mechanisms via which yoga exerts its therapeutic mood-modulating effects are largely unknown. This systematic review investigates the effects of yoga on sympathetic nervous system and hypothalamic pituitary adrenal axis regulation measures. It focuses on studies collecting physiological parameters such as blood pressure, heart rate, cortisol, peripheral cytokine expression and/or structural and functional brain measures in regions involved in stress and mood regulation.

Overall the 25 randomised control studies discussed provide preliminary evidence to suggest that yoga practice leads to better regulation of the sympathetic nervous system and hypothalamic-pituitary-adrenal system, as well as a decrease in depressive and anxious symptoms in a range of populations. Further research is warranted to confirm these preliminary findings and facilitate implementation in clinical settings.

KEYWORDS: Anxiety; Brain imaging; Depression; Exercise; Inflammation; Mood; Stress; Yoga

PMID: 26228429

52. EXERCISE**Strength training and corticospinal respons.**

Med Sci Sports Exerc. 2015 Aug 7.

Acute Strength Training Increases Responses to Stimulation of Corticospinal Axons.

Nuzzo JL¹, Barry BK, Gandevia SC, Taylor JL.

Author information

Abstract

PURPOSE:

Acute strength training of forearm muscles increases resting twitch forces from motor cortex stimulation. It is unclear if such effects are spinal in origin and if they also occur with training of larger muscles. Using subcortical stimulation of corticospinal axons, the current study examined if one session of strength training of the elbow flexor muscles leads to spinal cord changes and if the type of training is important.

METHODS:

In Experiment 1, 10 subjects completed ballistic isometric training, ballistic concentric training, and no training (control) on separate days. In Experiment 2, 13 subjects completed ballistic isometric training and slow-ramp isometric training. Before and after training, transcranial magnetic stimulation over the contralateral motor cortex elicited motor evoked potentials (MEPs) in the resting biceps brachii, and electrical stimulation of corticospinal tract axons at the cervicomedullary junction elicited cervicomedullary motor evoked potentials (CMEPs). MEP and CMEP twitch forces were also measured.

RESULTS:

In Experiment 1, CMEPs and CMEP twitch forces were significantly facilitated after ballistic isometric training compared to control. In Experiment 2, MEPs, MEP twitch forces, CMEPs, and CMEP twitch forces increased for 15 to 25 minutes after ballistic and slow-ramp isometric training.

CONCLUSION:

Via processes within the spinal cord, one session of strength training of the elbow flexors increases net output from motoneurons projecting to the trained muscles. Likely mechanisms include increased efficacy of corticospinal-motoneuronal synapses or increased motoneuron excitability. However, the rate of force generation during training is not important for inducing these changes. A concomitant increase in motor cortical excitability is likely. These short-term changes may represent initial neural adaptations to strength training.

PMID: 26258855

54. POSTURE**x ray measurements**

J Orthop Surg Res. 2015 Jul 22;10(1):115. doi: 10.1186/s13018-015-0262-0.

A new sagittal parameter to estimate pelvic tilt using the iliac cortical density line and iliac tilt: a retrospective X-ray measurement study.

Doi T¹, Tono O², Tarukado K³, Harimaya K⁴, Matsumoto Y⁵, Hayashida M⁶, Okada S⁷, Iwamoto Y⁸.

Author information

Abstract

BACKGROUND:

When spinal kyphosis increases, the compensatory mechanism activates and the pelvic position changes. Increasing the pelvic tilt, which is the orientation of the pelvis with respect to the femoral head, is known to associate with the clinical symptoms in kyphosis in the aging population. It is often difficult to detect the femoral head on radiographs, limiting the ability to determine the pelvic tilt. Therefore, there is a need to establish another parameter independent of the femoral head which closely correlates with the pelvic tilt.

METHODS:

Eighty-two adult patients with full-length lateral standing spine radiographs were recruited (mean age: 73.0 years). A new parameter, the iliac cortical density line (a component of the arcuate line of the ilium) and the iliac tilt (defined as the angle between the iliac cortical density line and the vertical), was analyzed to determine the correlation with the pelvic tilt.

RESULTS:

Both the pelvic tilt (PT) and iliac tilt (IT) could be identified in 67 patients, and a significant correlation was observed between the PT and IT ($r = 0.86$, $P < 0.0001$). The PT could be estimated using the following formula: $PT = IT - 12.9$ (in females), $PT = IT - 16.7$ (in males).

CONCLUSIONS:

The iliac tilt, which can be easily and directly measured using the iliac cortical density line, is a new parameter that can reliably estimate the pelvic tilt even when the femoral head is not detectable on the radiograph.

PMID:26195133

56. ATHLETICS

Training

Sports Med. 2015 Aug 5.

Effectiveness of High-Intensity Interval Training (HIT) and Continuous Endurance Training for VO₂max Improvements: A Systematic Review and Meta-Analysis of Controlled Trials.

Milanović Z¹, Sporiš G, Weston M.
Author information

Abstract

BACKGROUND: Enhancing cardiovascular fitness can lead to substantial health benefits. High-intensity interval training (HIT) is an efficient way to develop cardiovascular fitness, yet comparisons between this type of training and traditional endurance training are equivocal.

OBJECTIVE: Our objective was to meta-analyse the effects of endurance training and HIT on the maximal oxygen consumption (VO_{2max}) of healthy, young to middle-aged adults.

METHODS: Six electronic databases were searched (MEDLINE, PubMed, SPORTDiscus, Web of Science, CINAHL and Google Scholar) for original research articles. A search was conducted and search terms included 'high intensity', 'HIT', 'sprint interval training', 'endurance training', 'peak oxygen uptake', and ' VO_{2max} '. Inclusion criteria were controlled trials, healthy adults aged 18-45 years, training duration ≥ 2 weeks, VO_{2max} assessed pre- and post-training. Twenty-eight studies met the inclusion criteria and were included in the meta-analysis. This resulted in 723 participants with a mean \pm standard deviation (SD) age and initial fitness of 25.1 ± 5 years and 40.8 ± 7.9 $mL \cdot kg^{-1} \cdot min^{-1}$, respectively. We made probabilistic magnitude-based inferences for meta-analysed effects based on standardised thresholds for small, moderate and large changes (0.2, 0.6 and 1.2, respectively) derived from between-subject SDs for baseline VO_{2max} .

RESULTS: The meta-analysed effect of endurance training on VO_{2max} was a possibly large beneficial effect (4.9 $mL \cdot kg^{-1} \cdot min^{-1}$; 95 % confidence limits ± 1.4 $mL \cdot kg^{-1} \cdot min^{-1}$), when compared with no-exercise controls. A possibly moderate additional increase was observed for typically younger subjects (2.4 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 2.1 $mL \cdot kg^{-1} \cdot min^{-1}$) and interventions of longer duration (2.2 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 3.0 $mL \cdot kg^{-1} \cdot min^{-1}$), and a small additional improvement for subjects with lower baseline fitness (1.4 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 2.0 $mL \cdot kg^{-1} \cdot min^{-1}$). When compared with no-exercise controls, there was likely a large beneficial effect of HIT (5.5 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 1.2 $mL \cdot kg^{-1} \cdot min^{-1}$), with a likely moderate greater additional increase for subjects with lower baseline fitness (3.2 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 1.9 $mL \cdot kg^{-1} \cdot min^{-1}$) and interventions of longer duration (3.0 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 1.9 $mL \cdot kg^{-1} \cdot min^{-1}$), and a small lesser effect for typically longer HIT repetitions (-1.8 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 2.7 $mL \cdot kg^{-1} \cdot min^{-1}$). The modifying effects of age (0.8 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 2.1 $mL \cdot kg^{-1} \cdot min^{-1}$) and work/rest ratio (0.5 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 1.6 $mL \cdot kg^{-1} \cdot min^{-1}$) were unclear. When compared with endurance training, there was a possibly small beneficial effect for HIT (1.2 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 0.9 $mL \cdot kg^{-1} \cdot min^{-1}$) with small additional improvements for typically longer HIT repetitions (2.2 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 2.1 $mL \cdot kg^{-1} \cdot min^{-1}$), older subjects (1.8 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 1.7 $mL \cdot kg^{-1} \cdot min^{-1}$), interventions of longer duration (1.7 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 1.7 $mL \cdot kg^{-1} \cdot min^{-1}$), greater work/rest ratio (1.6 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 1.5 $mL \cdot kg^{-1} \cdot min^{-1}$) and lower baseline fitness (0.8 $mL \cdot kg^{-1} \cdot min^{-1}$; ± 1.3 $mL \cdot kg^{-1} \cdot min^{-1}$).

CONCLUSION: Endurance training and HIT both elicit large improvements in the VO_{2max} of healthy, young to middle-aged adults, with the gains in VO_{2max} being greater following HIT when compared with endurance training.

PMID:26243014

58. RUNNING

Hamstring function during running

Gait Posture. 2015 Jul 16. pii: S0966-6362(15)00730-4. doi: 10.1016/j.gaitpost.2015.07.002.

Differences in activation properties of the hamstring muscles during overground sprinting.

Higashihara A1, Nagano Y2, Ono T3, Fukubayashi T4.

Author information

Abstract

The purpose of this study was to quantify activation of the biceps femoris (BF) and medial hamstring (MH) during overground sprinting. Lower-extremity kinematics and electromyography

(EMG) of the BF and MH were recorded in 13 male sprinters performing overground sprinting at maximum effort. Mean EMG activity was calculated in the early stance, late stance, mid-swing, and late-swing phases. Activation of the BF was significantly greater during the early stance phase than the late stance phase ($p < 0.01$). Activation of the BF muscle was significantly lower during the first half of the mid-swing phase than the other phases ($p < 0.05$). The MH had significantly greater EMG activation relative to its recorded maximum values compared to that for the BF during the late stance ($p < 0.05$) and mid-swing ($p < 0.01$) phases.

These results indicate that the BF shows high activation before and after foot contact, while the MH shows high activation during the late stance and mid-swing phases. We concluded that the activation properties of the BF and MH muscles differ within the sprinting gait cycle.

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KEYWORDS:

Electromyography; Hamstring muscles; Hip joint; Knee joint; Overground sprint

Plyometrics and running

Med Sci Sports Exerc. 2015 Aug 7.

Effect of Plyometrics on the Energy Cost of Running and MHC and Titin Isoforms.

Pellegrino J¹, Ruby BC, Dumke CL.

Author information

Abstract

Several training strategies such as plyometrics have been shown to improve running economy; however its physiological basis remains elusive.

PURPOSE:

To examine the effect of plyometric training on the energy cost of running (ECR, J[BULLET OPERATOR]kg[BULLET OPERATOR]min), titin and myosin heavy chain (MHC) isoforms.

METHODS:

Subjects were randomly assigned to a 6 week plyometric treatment (P, N=11) or control group (C, N=11). Pre- and post-intervention outcomes included body composition, vertical jump (VJ), sit-and-reach (SR), VO₂max, speed at OBLA, 3km time trial (TT) performance, ECR and a vastus lateralis (VL) muscle biopsy for protein analysis.

RESULTS:

Plyometric intervention resulted in improved TT (P = 2.6% faster, p=0.04; C=1.6%, p=0.17). VO₂max improved in the P group (5.2%, p=0.03), whereas the C group increased 3.1% (p=0.20). ECR decreased in the P group as the result of 6 weeks of plyometric training (p=0.02 for stage 3), whereas it increased in the C group (p=0.02 for stage 3). ECR correlated strongly with performance at stages 2, 3 and 4 (r>0.8, p<0.001) independent of group. There was no significant main effect of group, time or interaction on any of the protein isoforms analyzed. A negative correlation was found between ECR at stage 7 and MHC IIa (r=-0.96, p<0.001), and ECR at stage 6 with T1:T2 isoform ratio (r=-0.69, p=0.007) independent of group.

CONCLUSION:

Six weeks of plyometric training improved running performance and the ECR despite no measurable changes in MHC and titin isoforms. However, higher MHC IIa and lower T1:T2 isoform ratios correlated to lower ECR.

PMID:26258856

Impact of menstrual cycle on LE biomechanics

Arch Orthop Trauma Surg. 2015 Jul 12.

Tibial acceleration profiles during the menstrual cycle in female athletes.

Hohmann E¹, Bryant AL, Livingstone E, Reaburn P, Tetsworth K, Imhoff A.
Author information

Abstract

PURPOSE:

Fluctuating levels of endogenous estrogen are thought to have an adverse effect on lower limb biomechanics, given the observed higher rate of ACL injury at certain phases of the menstrual

cycle. The purpose of this study was to investigate the effects of fluctuating endogenous estrogen levels during the menstrual cycle on acceleration transients at the proximal tibia in young physically active females.

METHODS:

Eleven females aged 16-18 years participated in this study and were compared to a male control group. Female subjects were tested at each of the four phases of the menstrual cycle: menses, follicular, ovulation and luteal. On each test occasion, acceleration transients at the proximal tibia were measured while subjects performed an abrupt deceleration task (simulated netball landing).

RESULTS:

No significant differences were found between the different phases of the menstrual cycle for peak tibial acceleration (PTA; $P = 0.57$), and time to zero tibial acceleration (TZTA; $P = 0.59$). However, there was a significant difference for time to peak tibial acceleration (TPTA) between menstruation and follicular ($P = 0.04$), menstruation and ovulation ($P = 0.001$), menstruation and luteal phase ($P = 0.002$), and follicular phase and ovulation ($P = 0.007$). In the male control group, no significant between-test session differences were observed for PTA ($P = 0.48$), TZTA ($P = 0.08$) and TPTA ($P = 0.29$). While there were no significant between-group differences for PTA ($P = 0.21$) and TZTA ($P = 0.48$), significant between-group differences were observed for TPTA ($P = 0.001$).

CONCLUSION:

The results of this project strongly suggest that serum estrogen fluctuations have an effect on tibial acceleration profiles in young female athletes during different phases of the menstrual cycle.

PMID: 26164005

Running and alignment

Scand J Med Sci Sports. 2015 Jul 6. doi: 10.1111/sms.12514.

Reduced oxygen cost of running is related to alignment of the resultant GRF and leg axis vector: A pilot study.

Moore IS1, Jones AM2, Dixon SJ2.

Author information

Abstract

This pilot study investigated whether a 10-week running program (10wkRP), which reduced the oxygen cost of running, affected resultant ground reaction force (GRF), leg axis alignment, joint

moment characteristics, and gear ratios. Ten novice, female runners completed a 10wkRP. Running kinematics and kinetics, in addition to oxygen consumption ($\dot{V}O_2$) during steady-state running, were recorded pre- and post-10wkRP. $\dot{V}O_2$ decreased (8%) from pre-10wkRP to post-10wkRP. There was a better alignment of the resultant GRF and leg axis at peak propulsion post-10wkRP compared with pre-10wkRP (10.8 ± 4.9 vs $1.6 \pm 1.2^\circ$), as the resultant GRF vector was applied $7 \pm 0.6^\circ$ ($P = 0.008$) more horizontally. There were shorter external ankle moment arms (24%) and smaller knee extensor moments (23%) at peak braking post-10wkRP. The change in $\dot{V}O_2$ was associated with the change in alignment of the resultant GRF and leg axis ($r_s = 0.88$, $P = 0.003$). As runners became more economical, they exhibited a more aligned resultant GRF vector and leg axis at peak propulsion. This appears to be a self-optimization strategy that may improve performance. Additionally, changes to external ankle moment arms indicated beneficial low gear ratios were achieved at the time of peak braking force.

KEYWORDS:

Running economy; gear ratio; joint moments; running gait

Fatigue and coordination

J Appl Biomech. 2015 Apr;31(2):102-10. doi: 10.1123/jab.2013-0300. Epub 2014 Nov 20.

Isolated hamstrings fatigue alters hip and knee joint coordination during a cutting maneuver.

Samaan MA1, Hoch MC, Ringleb SI, Bawab S, Weinhandl JT.

Author information

Abstract

The aim of this study was to determine the effects of hamstrings fatigue on lower extremity joint coordination variability during a sidestep cutting maneuver. Twenty female recreational athletes performed five successful trials of a sidestep cutting task pre- and postfatigue. Each participant completed an isolated hamstrings fatigue protocol consisting of isokinetic maximum effort knee flexion and passive extension contractions. Vector coding was used to examine hip and knee joint couplings (consisting of various planar motions) during the impact and weight acceptance phases of the sidestep cut stance phase. Paired t tests were used to analyze differences of each phase as an effect of fatigue, where alpha was set a priori at .05. The hip rotation/knee rotation coupling exhibited a significant decrease in coordination variability as a function of fatigue in both the impact ($P = .015$) and weight acceptance phases ($P = .043$). Similarly, the hip adduction-abduction/knee rotation coupling exhibited a significant decrease in coordination variability in the weight acceptance phase ($P = .038$). Hamstrings fatigue significantly decreased coordination variability within specific lower extremity joint couplings that included knee rotation. Future studies should be conducted to determine if this decrease in coordination variability is related to lower extremity injury mechanisms.

Running performance enhanced with plyometrics

Med Sci Sports Exerc. 2015 Aug 7.

Effect of Plyometrics on the Energy Cost of Running and MHC and Titin Isoforms.

Pellegrino J¹, Ruby BC, Dumke CL.
Author information

Abstract

Several training strategies such as plyometrics have been shown to improve running economy; however its physiological basis remains elusive.

PURPOSE:

To examine the effect of plyometric training on the energy cost of running (ECR, J[BULLET OPERATOR]kg[BULLET OPERATOR]min), titin and myosin heavy chain (MHC) isoforms.

METHODS:

Subjects were randomly assigned to a 6 week plyometric treatment (P, N=11) or control group (C, N=11). Pre- and post-intervention outcomes included body composition, vertical jump (VJ), sit-and-reach (SR), VO₂max, speed at OBLA, 3km time trial (TT) performance, ECR and a vastus lateralis (VL) muscle biopsy for protein analysis.

RESULTS:

Plyometric intervention resulted in improved TT (P = 2.6% faster, p=0.04; C=1.6%, p=0.17). VO₂max improved in the P group (5.2%, p=0.03), whereas the C group increased 3.1% (p=0.20). ECR decreased in the P group as the result of 6 weeks of plyometric training (p=0.02 for stage 3), whereas it increased in the C group (p=0.02 for stage 3). ECR correlated strongly with performance at stages 2, 3 and 4 (r>0.8, p<0.001) independent of group. There was no significant main effect of group, time or interaction on any of the protein isoforms analyzed. A negative correlation was found between ECR at stage 7 and MHC IIa (r=-0.96, p<0.001), and ECR at stage 6 with T1:T2 isoform ratio (r=-0.69, p=0.007) independent of group.

CONCLUSION:

Six weeks of plyometric training improved running performance and the ECR despite no measurable changes in MHC and titin isoforms. However, higher MHC IIa and lower T1:T2 isoform ratios correlated to lower ECR.

PMID:26258856

Running and CV risk

Med Sci Sports Exerc. 2015 Aug 7.

Adverse Cardiovascular Response to Aerobic Exercise Training: Is This a Concern?

Leifer ES¹, Mikus CR, Karavirta L, Resnick BD, Kraus WE, Häkkinen K, Earnest CP, Fleg JL.
Author information

Abstract

PURPOSE:

Aerobic exercise training in sedentary individuals improves physical fitness and various cardiovascular (CV) biomarkers. Nevertheless, there has been controversy as to whether exercise training may adversely affect some biomarkers in a small segment of the population. The purpose of this study was to investigate whether clinically significant worsening of CV biomarkers was more prevalent among individuals randomized to a supervised endurance training program as compared to those randomized to a control condition.

METHODS:

Baseline and end of study measurements of fasting insulin (FI), triglycerides (TG), resting systolic blood pressure (SBP), and HDL-cholesterol (HDL-C) were obtained on 1188 healthy sedentary subjects from four clinical studies. Each study randomized subjects to 4- to 6-month supervised aerobic exercise programs or to a control group of no supervised exercise training. For each of the 4 CV biomarkers, we calculated the respective proportions of control and exercise group subjects whose baseline-to-followup changes were greater than or equal to previously reported adverse change (AC) thresholds. Those thresholds were increases of ≥ 24 pmol[BULLET OPERATOR]L for FI, ≥ 0.42 mmol[BULLET OPERATOR]L for TG, ≥ 10 mm Hg for SBP, and a decrease of ≥ 0.12 mmol[BULLET OPERATOR]L for HDL-C.

RESULTS:

The respective proportions of subjects meeting the AC threshold in the control and exercise groups were 15.2% vs. 9.6% ($p=0.02$) for FI, 14.9% vs. 13.1% ($p=0.37$) for TG, 16.9% vs. 15.8% ($p=0.52$) for SBP, and 28.6% vs. 22.5% ($p=0.03$) for HDL-C. All were nonsignificant at the 0.0125 Bonferroni threshold adjusting for multiple comparisons.

CONCLUSION:

These findings do not support the concept that aerobic exercise training increases the risk of adverse changes in the CV biomarkers we studied.

PMID: 26258860

Aging and running

Med Sci Sports Exerc. 2015 Aug 7.

The Relationships between Age and Running Biomechanics.

DeVita P¹, Fellin RE, Seay JF, Ip E, Stavro N, Messier SP.
Author information

Abstract

Running has high injury rates, especially among older runners. Most aging literature compares young vs old runners without accounting for the progression of biomechanics throughout the lifespan. We used age as a continuous variable to investigate the continuum of age-related gait adaptations in running along with determining the chronology and rate of these adaptations.

PURPOSE:

Identify the relationships among age and selected running biomechanics throughout the range of 18 to 60 years.

METHODS:

Experienced (n = 110), healthy runners (54% male) provided informed consent and ran at their training pace while motion and force data were captured. Kinematics, ground reaction forces (GRFs) and lower limb joint torques and powers were correlated with age using Pearson product-moment correlations and linear regression.

RESULTS:

Running velocity was inversely related to age ($r = -0.27$, $p = 0.005$) due to decreased stride length ($r = -0.25$, $p = 0.008$) but not rate. Peak vertical GRF ($r = -0.23$, $p = 0.016$) and peak horizontal propulsive GRF decreased with age ($r = -0.38$, $p < 0.0001$). Peak ankle torque ($r = -0.32$, $p = 0.0007$), and peak negative ($r = 0.34$, $p = 0.0003$) and positive ($r = -0.37$, $p < 0.0001$) ankle power decreased with age. Age-based regression equations and per year reductions in all variables significantly related to age are reported.

CONCLUSIONS:

Data support prior work showing lower GRFs, stride length and velocity in old runners. Results are novel in showing the rate of decline in running biomechanics on a per-year basis and that mechanical reductions at the ankle but not hip or knee were correlated with age confirming previous observation of biomechanical plasticity with age showing reduced ankle but not hip function in gait.

PMID:26258853

59. PAIN**Pain catastrophizing and fear****Pain Catastrophizing and Fear of Pain predict the Experience of Pain in Body Parts not targeted by a Delayed-Onset Muscle Soreness procedure**

Nils Georg Niederstrasser Ann Meulders Michel Meulders P. Maxwell Slepian Johan W.S. Vlaeyen Michael J.L. Sullivan

Highlights points

- We measured pain responses to a non-noxious stimulus before and after unilateral experimental injury-induction.
- Reported pain intensity increased over repeated exposure in injury-free body sites.
- The reported increase was predicted by pain catastrophizing and pain-related fear.

Abstract

The present study examined whether pain catastrophizing and pain-related fear predict the experience of pain in body regions that are not targeted by an experimental muscle injury protocol. A delayed-onset muscle soreness (DOMS)-protocol was used to induce pain unilaterally in the pectoralis, serratus, trapezius, latissimus dorsi, and deltoid muscles. The day following the DOMS-protocol, participants were asked to rate their pain as they lifted weighted canisters with their targeted arm (i.e. injured) and their not-targeted arm. The lifting task is a non-noxious stimulus unless participants are already experiencing musculoskeletal pain. Therefore, reports of pain on the not-targeted arm were operationalized as pain in response to a non-noxious stimulus. Eighty-two (54 females, 28 males) healthy university students completed pain catastrophizing and fear of pain questionnaires and went through the DOMS-protocol. The analyses revealed that catastrophizing and pain-related fear prospectively predicted pain experience in response to a non-noxious stimulus. The possible mechanisms underlying this effect and clinical implications are discussed.

Perspective

Pain catastrophizing, and fear of pain prospectively predict the pain experience in response to a non-noxious stimulus. The pattern of findings is consistent with the predictions of current models of generalization of pain-related fear.

Key words: generalization, multisite pain, delayed-onset muscle soreness, pain catastrophizing, fear of pain

Feigned pain identification

J Pain. 2015 Aug 7. pii: S1526-5900(15)00788-9. doi: 10.1016/j.jpain.2015.07.004.

Distinguishing feigned from sincere performance in psychophysical pain testing.

Kucyi A¹, Sheinman A², Defrin R³.

Author information

Abstract

Self-report, the most widely used, gold standard measurement of pain, is crucial for pain research, diagnosis and management. However, there are currently no accurate, reliable methods for detecting dishonesty in self-reports when there is incentive for pain deception. We introduce a novel approach to detecting pain deception by analyzing performance patterns of honest and dishonest psychophysical pain testing. Warmth sensation (WST) and heat pain (HPT) thresholds were measured in healthy subjects (n=37) under two conditions: standard instruction (i.e., provide sincere reports) and instructions to simulate intense pain (i.e., provide feigned reports) with the intention of deceiving. In the feigned compared to sincere condition, subjects had significantly increased WST and decreased HPT. Repeatability and variability indices were indistinguishable between conditions. In a second, separate cohort (n=24), measurements were repeated with the addition of a sensory interference to influence task performance. When sensory interference during HPT measurement was introduced, feigned pain reports had significantly higher variability and poorer repeatability compared to sincere reports and were distinguishable from sincere reports with high sensitivity (83%) and specificity (84%). The statistical properties of psychophysical performance under sensory interference provide a method for identifying feigned performance and could be applied to evaluations of pain malingering.

PERSPECTIVE:

This article introduces a method to detect whether individuals are being dishonest in psychophysical pain testing. The method could potentially help clinicians to detect chronic pain malingering in contexts where there is incentive to deceive.

KEYWORDS: lie detection; malingering; pain psychophysics; sensory interference

PMID: 26259781

Brain changes in chronic pain

Brain. 2013 Sep;136(Pt 9):2751-68. doi: 10.1093/brain/awt211.

Shape shifting pain: chronification of back pain shifts brain representation from nociceptive to emotional circuits.

Hashmi JA¹, Baliki MN, Huang L, Baria AT, Torbey S, Hermann KM, Schnitzer TJ, Apkarian AV.

Author information

Abstract

Chronic pain conditions are associated with abnormalities in brain structure and function. Moreover, some studies indicate that brain activity related to the subjective perception of chronic pain may be distinct from activity for acute pain. However, the latter are based on observations from cross-sectional studies. How brain activity reorganizes with transition from acute to chronic pain has remained unexplored. Here we study this transition by examining brain activity for rating fluctuations of back pain magnitude. First we compared back pain-related brain activity between subjects who have had the condition for ~2 months with no prior history of back pain for 1 year (early, acute/subacute back pain group, n = 94), to subjects who have lived with back pain for >10 years (chronic back pain group, n = 59). In a subset of subacute back pain patients, we followed brain activity for back pain longitudinally over a 1-year period, and compared brain activity between those who recover (recovered acute/sub-acute back pain group, n = 19) and those in which the back pain persists (persistent acute/sub-acute back pain group, n = 20; based on a 20% decrease in intensity of back pain in 1 year).

We report results in relation to meta-analytic probabilistic maps related to the terms pain, emotion, and reward (each map is based on >200 brain imaging studies, derived from neurosynth.org). We observed that brain activity for back pain in the early, acute/subacute back pain group is limited to regions involved in acute pain, whereas in the chronic back pain group, activity is confined to emotion-related circuitry. Reward circuitry was equally represented in both groups. In the recovered acute/subacute back pain group, brain activity diminished in time, whereas in the persistent acute/subacute back pain group, activity diminished in acute pain regions, increased in emotion-related circuitry, and remained unchanged in reward circuitry.

The results demonstrate that brain representation for a constant percept, back pain, can undergo large-scale shifts in brain activity with the transition to chronic pain. These observations challenge long-standing theoretical concepts regarding brain and mind relationships, as well as provide important novel insights regarding definitions and mechanisms of chronic pain.

KEYWORDS: chronic back pain; emotion; fMRI; longitudinal; reward

PMID: 23983029

DNA damage in CT scans

DNA damage seen in patients undergoing CT scanning

Stanford School of Medicine News, 08/04/2015

Along with the burgeoning use of advanced medical imaging tests over the past decade have come rising public health concerns about possible links between low-dose radiation and cancer. Using new laboratory technology, scientists have shown that cellular damage is detectable in patients after CT scanning, according to a new study led by researchers at the Stanford University School of Medicine. “We now know that even exposure to small amounts of radiation from computed tomography scanning is associated with cellular damage,” said Patricia Nguyen, MD, one of the lead authors of the study and an assistant professor of cardiovascular medicine at Stanford. “Whether or not this causes cancer or any negative effect to the patient is still not clear, but these results should encourage physicians toward adhering to dose reduction strategies.” The study was published online July 22 in the Journal of the American College of Cardiology: Cardiovascular Imaging

Inflammation and tendons

Br J Sports Med. 2015 Aug 5. pii: bjsports-2015-094754. doi: 10.1136/bjsports-2015-094754.

Are inflammatory cells increased in painful human tendinopathy? A systematic review.

Dean BJ¹, Gettings P², Dakin SG¹, Carr AJ¹.

Author information

Abstract

BACKGROUND:

The role of inflammation in tendinopathy has historically been a subject of significant controversy. Our primary aim was to determine whether inflammatory cell numbers were increased in painful human tendinopathy versus healthy control tendons. Our secondary aim was to assess whether the inflammatory cells had been linked with symptoms or disease stage.

METHODS:

We conducted a systematic review of the scientific literature using the PRISMA and Cochrane guidelines of the Medline database using specific search criteria. Only studies measuring inflammatory cells using specific markers in tissue from human patients with the clinical diagnosis of tendinopathy were included. Inclusion was agreed on by 2 independent researchers on review of abstracts or full-text using specific predetermined criteria. The search yielded 5 articles in total.

RESULTS:

There were increased numbers of macrophages (4 studies) and mast cells (3 studies) in tendinopathic versus healthy control tissues. One study demonstrated increased numbers of T cells in tendinopathic tissue versus healthy control tendons. There were reduced numbers of T cells (1 study), macrophages (2 studies) and mast cells (2 studies) in torn tendon versus intact tendinopathic tissue.

CONCLUSIONS:

The existing evidence supports the hypothesis that increased numbers of inflammatory cells are present in pathological tendons. The lack of high-quality quantitative studies in this area demonstrates a clear need for future research to better understand the role of inflammation in tendinopathy.

KEYWORDS: Immunology; Orthopaedics; Tendinopathy; Tendinosis; Tendon

PMID: 26246419

Impact of placebo's

Curr Sports Med Rep. 2015 Jul-Aug;14(4):284-7. doi: 10.1249/JSR.0000000000000172.

Capitalizing on the Placebo Component of Treatments.

Beedie C¹, Foad A, Hurst P.
Author information

Abstract

A placebo treatment is traditionally administered in a double-blind randomized controlled trial to control for the "real" effects of the treatment under investigation. In the present article, a broader view of the placebo is proposed, one in which the idea of a potentially "useable" placebo component of a sports or exercise medicine treatment is presented. It is argued that many interventions in sport and exercise psychology might contain a placebo component that could be capitalized upon by practitioners through processes often as simple as communicating positive expectations from a treatment to clients. Research findings relating to factors that might influence an individual's response to a placebo, such as personality, situation, and genetics, are briefly addressed. Ethical considerations for practice and future research are discussed.

PMID: 26166052

Pscho education does not assist return to work

BMC Public Health. 2015 Aug 8;15:763. doi: 10.1186/s12889-015-2087-5.

Effectiveness of psychoeducation in reducing sickness absence and improving mental health in individuals at risk of having a mental disorder: a randomised controlled trial.

Pedersen P^{1,2,3}, Søggaard HJ^{4,5}, Labriola M^{6,7}, Nohr EA⁸, Jensen C^{9,10}.

Author information

Abstract

BACKGROUND:

The aim of this study was to evaluate the effect of psychoeducation on return to work as an adjunct to standard case management in individuals on sick leave at risk of having a mental disorder. The participants could have different diagnoses but were all at risk of having a mental disorder.

METHODS:

Between 2012 and 2014, 430 participants on sick leave were randomly allocated to either an intervention or control group. The psychoeducation consisted of 2-h sessions once a week for 6 weeks. The sessions focused on stress and work life and was based on problem-solving techniques and coping strategies. The main outcome, the relative risk (RR) of a full return to work based on register data from the job centres, was determined during the first 3 and 6 months after participation in the psychoeducation programme. At baseline and at 3 and 6 months after the intervention, the participants received a questionnaire on psychological symptoms, mental health-related quality of life, and locus of control.

RESULTS:

During the first 6 months after inclusion, the two groups had almost the same RR of a full return to work (RR:0.97, 95 % CI: 0.78;1.21), but during the first 3 months, the individuals in the intervention group had a significantly higher risk of not having fully returned to work (RR:0.68, 95 % CI:0.47;0.98). The individuals in the intervention group who had participated in at least four of the six psychoeducational sessions returned to work considerably slower at both time points than did the control group. The intervention did not decrease the level of psychological symptoms or improve mental health-related quality of life; however, individuals in the intervention group improved their scores on internal locus of control at both 3 and 6 months.

CONCLUSION:

Offering psychoeducation to individuals on sick leave at risk of having a mental disorder had no influence on the chance of a full return to work during the first 6 months; however, it did result in a higher relative risk of not returning to work after 3 months. Therefore, we do not recommend offering psychoeducation in this form to facilitate return to work.

TRIAL REGISTRATION:

Clinical Trial.gov NCT01637363 . Registered 6 July 2012.

PMID: 26253219

62 A. NUTRITION/VITAMINS**Spicy food and mortality**

BMJ. 2015 Aug 4;351:h3942. doi: 10.1136/bmj.h3942.

Consumption of spicy foods and total and cause specific mortality: population based cohort study.

Lv J¹, Qi L², Yu C¹, Yang L³, Guo Y⁴, Chen Y³, Bian Z⁴, Sun D¹, Du J⁵, Ge P⁶, Tang Z⁷, Hou W⁸, Li Y⁹, Chen J¹⁰, Chen Z³, Li L¹¹; China Kadoorie Biobank collaborative group.

Author information

Abstract

OBJECTIVE:

To examine the associations between the regular consumption of spicy foods and total and cause specific mortality.

DESIGN: Population based prospective cohort study.

SETTING:

China Kadoorie Biobank in which participants from 10 geographically diverse areas across China were enrolled between 2004 and 2008.

PARTICIPANTS:

199 293 men and 288 082 women aged 30 to 79 years at baseline after excluding participants with cancer, heart disease, and stroke at baseline.

MAIN EXPOSURE MEASURES:

Consumption frequency of spicy foods, self reported once at baseline.

MAIN OUTCOME MEASURES:

Total and cause specific mortality.

RESULTS:

During 3 500 004 person years of follow-up between 2004 and 2013 (median 7.2 years), a total of 11 820 men and 8404 women died. Absolute mortality rates according to spicy food consumption categories were 6.1, 4.4, 4.3, and 5.8 deaths per 1000 person years for participants who ate spicy foods less than once a week, 1 or 2, 3 to 5, and 6 or 7 days a week, respectively. Spicy food consumption showed highly consistent inverse associations with total mortality among both men and women after adjustment for other known or potential risk factors. In the whole cohort, compared with those who ate spicy foods less than once a week, the adjusted hazard ratios for death were 0.90 (95% confidence interval 0.84 to 0.96), 0.86 (0.80 to 0.92), and 0.86 (0.82 to 0.90) for those who ate spicy food 1 or 2, 3 to 5, and 6 or 7 days a week, respectively. Compared with those who ate spicy foods less than once a week, those who consumed spicy foods 6 or 7 days a week showed a 14% relative risk reduction in total mortality. The inverse association between spicy food consumption and total mortality was stronger in those who did not consume alcohol than those who did (P=0.033 for interaction). Inverse associations were also observed for deaths due to cancer, ischemic heart diseases, and respiratory diseases.

CONCLUSION:

In this large prospective study, the habitual consumption of spicy foods was inversely associated with total and certain cause specific mortality, independent of other risk factors of death. PMID: 26242395

Dairy and eczema

Clin Exp Dermatol. 2015 Jul 30. doi: 10.1111/ced.12714.

Dairy and nondairy beverage consumption for childhood atopic eczema: what health advice to give?

Hon KL¹, Tsang YC¹, Poon TC², Pong NH¹, Luk NM³, Leung TN⁴, Chow CM¹, Leung TF¹.
Author information

Abstract

BACKGROUND:

Many parents of children with atopic eczema (AE) practise empirical dietary avoidance and supplementation, and seek healthcare advice on whether consumption of dairy and nondairy beverages may be beneficial or detrimental for this condition.

AIM:

We investigated if frequency of consumption of beverages was associated with disease severity and quality of life (QoL).

METHODS:

Parent-reported frequency of drinks and beverages were recorded in consecutive children with AE, and disease severity (Nottingham Eczema Severity Score; NESS), QoL (Children's Dermatology Life Quality Index; CDLQI), skin hydration (SH), transepidermal water loss (TEWL), blood pressure (BP), resting heart rate (RHR) and body mass index (BMI) were evaluated.

RESULTS:

AE was associated with worse QoL than miscellaneous non-AE skin diseases ($P < 0.001$). Compared with children without AE, there was a trend for children with AE to drink less milk ($P = 0.06$) and more miscellaneous beverages (such as Chinese herbal tea and soymilk; $P = 0.03$). In children with AE, NESS correlated with CDLQI ($\rho = 0.66$, $P < 0.001$) and reduced SH ($\rho = -0.32$, $P < 0.001$), whereas CDLQI correlated with a higher RHR ($\rho = 0.25$, $P < 0.01$). Multiple logistic regression showed that male sex (OR = 0.44, 95% CI 0.20-0.97; $P = 0.04$) and drinking fresh milk (OR = 0.42, 95% CI 0.20-0.93; $P = 0.03$) were independent factors associated with less severe disease. Moderate to severe impairment of CDLQI was associated with NESS (OR = 1.48, 95% CI 1.28-1.71; $P < 0.001$) and RHR (OR = 1.05, 95% CI 1.02-1.08; $P < 0.01$) but not with reported habits of beverage consumption. Concerning cardiovascular health in AE, frequency of formula milk consumption was associated with RHR ($\rho = 0.17$, $P = 0.04$), and soft drink consumption was associated with higher systolic blood pressure (SBP) ($\rho = 0.18$, $P = 0.04$).

CONCLUSION:

This study provides evidence for parental/patient guidance. Children with AE who reported more fresh milk consumption had less severe disease. There was no correlation between consumption of nondairy beverages with disease severity or QoL, but frequency of soft drink consumption correlated with SBP. With these results being supported by a literature review, it is reasonable to advise parents that fresh milk can be consumed by unsensitized children with AE. Soft drinks and other beverages should not be consumed in excess for optimal cardiovascular health and for other health reasons.

PMID:26224067

63. PHARMACOLOGY**Pain meds and HA**

Pain Med. 2015 Jul 27. doi: 10.1111/pme.12854.

Willingness to Use Pain Medication to Treat Pain.

Hong S¹, Cagle JG¹, Van Dussen DJ², Carrion IV³, Culler KL⁴.

Author information

Abstract

OBJECTIVE:

Despite the growth of the economic impact of pain and pain management, there remains a lack of knowledge about disparities, especially, evidence regarding individual attitudes and beliefs about accepting pain treatments. This study provides preliminary information on the prevalence of public concerns about pain management and a better understanding of factors that may ultimately lead to improved pain management and treatment adherence.

METHODS:

Using a cross-sectional survey of community-dwelling adults 18+ in the US, 123 randomly selected respondents were telephone-interviewed in 2012. Principal components factor analysis (PCA) was used to detect statistical groupings of attitudes and beliefs about pain and pain management. The modified Protection Motivation Theory was applied to examine the willingness to use pain medicine.

RESULTS:

The five most important components pertained to threat appraisal, coping appraisal, attitudes, subjective norms, and perceived control. Threat appraisal was the most common factor, and subjective norms was the least common factor. Lower income, more awareness of hospice, and less misconceptions about threat appraisal and attitudes toward pain and pain management were associated with more willingness to use pain medicine in hierarchical regression.

CONCLUSIONS:

These components are useful for future research on the willingness to use pain medicine and may have implications for assessing cognitive barriers toward pain and pain management among the general public.

KEYWORDS: Hospice; Pain; Pain Management; Protection Motivation Theory; Willingness to Use Pain Medicine

PMID: 26218168

Depression and opioid misuse

Pain Med. 2015 Aug 3. doi: 10.1111/pme.12886.

Evaluation of How Depression and Anxiety Mediate the Relationship between Pain Catastrophizing and Prescription Opioid Misuse in a Chronic Pain Population.

Arteta J¹, Cobos B¹, Hu Y¹, Jordan K², Howard K¹.

Author information

Abstract

OBJECTIVE:

We investigated the extent to which anxiety and depression mediate the relationship between pain catastrophizing and the risk of prescription opioid misuse in chronic pain patients.

METHODS:

215 patients with chronic occupational musculoskeletal disorders completed self-report measures upon admission to a functional restorative program. A bootstrap multivariate regression analysis was conducted to assess how depression and anxiety mediated the relationship between pain catastrophizing and prescription opioid misuse.

RESULTS:

Catastrophizing, anxiety, and depression predicted higher risk for prescription opioid misuse. Furthermore, anxiety and depression acted as mediators while controlling for the effects of gender and age. Finally, it was found that the effects of catastrophizing on risk for prescription opioid misuse were completely eliminated by those of depression.

CONCLUSION:

Due to the partially independent relationship of anxiety and catastrophizing, it is recommended that treatments for chronic pain patients employ techniques addressing both behaviors. The relationship between depression and catastrophizing requires more research since it was observed that their effects were confounded.

Wiley Periodicals, Inc.

KEYWORDS:

Anxiety; Catastrophizing; Chronic Pain; Depression; Opioids

PMID:26235471