

ABSTRACTS

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2. LBP

Patient awareness of LBP causes

Pain. 2015 Oct;156(10):1913-9. doi: 10.1097/j.pain.0000000000000252.

Can patients identify what triggers their back pain? Secondary analysis of a case-crossover study.

do Carmo Silva Parreira P¹, Maher CG, Latimer J, Steffens D, Blyth F, Li Q, Ferreira ML.
Author information

Abstract

The aim of this case-crossover study was to investigate the extent to which patients can accurately nominate what triggered their new episode of sudden-onset acute low back pain (LBP). We interviewed 999 primary care patients to record exposure to 12 standard triggers and also asked the patients to nominate what they believed triggered their LBP. Exposure to the patient-nominated trigger during the case window was compared with exposure in the control window. Conditional logistic regression models were constructed to quantify the risk of LBP onset associated with the patient-nominated trigger. Sensitivity analyses were conducted varying the duration and timing of case/control windows. We compared the extent to which patient-nominated triggers matched standard triggers. The odds ratios for exposure to patient-nominated triggers ranged from 8.60 to 30.00, suggesting that exposure increases the risk of LBP. Patients' understanding of triggers however seems incomplete, as we found evidence that while some of the standard triggers were well recognised (such as lifting heavy loads), others (such as being distracted during manual tasks) were under-recognised as possible triggers of an episode of LBP. This study provides some evidence that patients can accurately nominate the activity that triggered their new episode of sudden-onset acute LBP.

PMID:26039901

Cessation of smoking decreases sciatica

Am J Med. 2015 Sep 21. pii: S0002-9343(15)00905-5. doi: 10.1016/j.amjmed.2015.07.041.

The effect of smoking on the risk of sciatica: A meta-analysis.

Shiri R¹, Falah-Hassani K².

Author information

Abstract**BACKGROUND:**

The role of smoking in sciatica is unknown. This study aimed to estimate the effect of smoking on lumbar radicular pain and clinically verified sciatica.

METHODS:

Comprehensive literature searches were conducted in PubMed, Embase, Web of Science, Scopus, Google Scholar and ResearchGate databases from 1964 through March 2015. We used a random-effects meta-analysis, assessed heterogeneity and publication bias, and performed sensitivity analyses with regard to study design, methodological quality of included studies and publication bias.

RESULTS:

Twenty-eight (7 cross sectional [N=20,111 participants], 8 case control [N=10,815] and 13 cohort [N=443,199]) studies qualified for a meta-analysis. Current smokers had an increased risk of lumbar radicular pain or clinically verified sciatica (pooled adjusted odds ratio [OR] =1.46, 95% confidence interval [CI] 1.30-1.64, N=459,023). Former smokers had only slightly elevated risk than never smokers (pooled adjusted OR=1.15, CI 1.02-1.30, N=387,196). For current smoking the pooled adjusted OR was 1.64 (CI 1.24-2.16, N=10,853) for lumbar radicular pain, 1.35 (CI 1.09-1.68, N=110,374) for clinically verified sciatica, and 1.45 (CI 1.16-1.80, N=337,796) for hospitalization or surgery due to a herniated lumbar disc. The corresponding estimates for past smoking were 1.57 (CI 0.98-2.52), 1.09 (CI 1.00-1.19), and 1.10 (CI 0.96-1.26). The associations did not differ between men and women, and they were independent of study design. Moreover, there was no evidence of publication bias, and the observed associations were not due to selection or detection bias, or confounding factors.

CONCLUSIONS:

Smoking is a modest risk factor for lumbar radicular pain and clinically verified sciatica. Smoking cessation appears to reduce, but not entirely eliminate, the excess risk.

KEYWORDS: Back pain; hospitalization; intervertebral disc displacement; sciatica; smoking; tobacco

PMID:26403480

Training and LBP

Phys Ther. 2015 Sep 17.

Implementation of a Quality Improvement Process Aimed to Deliver Higher Value Physical Therapy for Patients With Low Back Pain: Case Report.

Karlen E¹, McCathie B².
Author information

Abstract

BACKGROUND AND PURPOSE:

The current health care state demands higher value care. Due to many barriers, clinicians routinely do not implement evidence-based care even though it is known to improve quality and reduce cost of care. The purpose of this case report is to describe a theory-based, multi-tactic implementation of a quality improvement process aimed to deliver higher value physical therapy for patients with low back pain.

CASE DESCRIPTION:

Patients were treated from January 2010 through December 2014 in one of 32 outpatient physical therapy clinics within an academic healthcare system. Data were examined from 47,755 patients (mean age= 50.3 year old) entering outpatient physical therapy for management of nonspecific low back pain with or without radicular pain. Development and implementation tactics were constructed from adult learning and change management theory to enhance adherence to best practice care among 130 physical therapists. A quality improvement team implemented four tactics: establish care delivery expectations, facilitate peer-led clinical and operational teams, foster a learning environment focused on meeting a population's needs, and continuously collect and analyze outcomes data. Physical therapy utilization and change in functional disability were measured to assess relative cost and quality of care. Secondarily, charge data assessed change in physical therapists' application of evidence-based care.

OUTCOMES:

Implementation of a quality improvement process was measured by year-over-year improved clinical outcomes, decreased utilization, and increased adherence to evidence-based physical therapy, which was associated with higher value care.

DISCUSSION:

When adult learning and change management theory are combined in quality improvement efforts, common barriers to implementing evidence-based care can be overcome, creating an environment supportive of delivering higher value physical therapy for patients with low back pain.

PMID:26381807

Somatosensory characteristics

Pain. 2015 Oct;156(10):1874-84. doi: 10.1097/j.pain.0000000000000244.

Somatosensory nociceptive characteristics differentiate subgroups in people with chronic low back pain: a cluster analysis.

Rabey M¹, Slater H, O'Sullivan P, Beales D, Smith A.
Author information

Abstract

The objectives of this study were to explore the existence of subgroups in a cohort with chronic low back pain (n = 294) based on the results of multimodal sensory testing and profile subgroups on demographic, psychological, lifestyle, and general health factors. Bedside (2-point discrimination, brush, vibration and pinprick perception, temporal summation on repeated monofilament stimulation) and laboratory (mechanical detection threshold, pressure, heat and cold pain thresholds, conditioned pain modulation) sensory testing were examined at wrist and lumbar sites. Data were entered into principal component analysis, and 5 component scores were entered into latent class analysis. Three clusters, with different sensory characteristics, were derived. Cluster 1 (31.9%) was characterised by average to high temperature and pressure pain sensitivity. Cluster 2 (52.0%) was characterised by average to high pressure pain sensitivity. Cluster 3 (16.0%) was characterised by low temperature and pressure pain sensitivity. Temporal summation occurred significantly more frequently in cluster 1. Subgroups were profiled on pain intensity, disability, depression, anxiety, stress, life events, fear avoidance, catastrophizing, perception of the low back region, comorbidities, body mass index, multiple pain sites, sleep, and activity levels. Clusters 1 and 2 had a significantly greater proportion of female participants and higher depression and sleep disturbance scores than cluster 3. The proportion of participants undertaking <300 minutes per week of moderate activity was significantly greater in cluster 1 than in clusters 2 and 3. Low back pain, therefore, does not appear to be homogeneous. Pain mechanisms relating to presentations of each subgroup were postulated. Future research may investigate prognoses and interventions tailored towards these subgroups.

PMID: 26020225

LBP management

Phys Ther. 2015 Sep 17.

Implementation of a Quality Improvement Process Aimed to Deliver Higher Value Physical Therapy for Patients With Low Back Pain: Case Report.

Karlen E¹, McCathie B².
Author information

Abstract

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The current health care state demands higher value care. Due to many barriers, clinicians routinely do not implement evidence-based care even though it is known to improve quality and reduce cost of care. The purpose of this case report is to describe a theory-based, multi-tactic implementation of a quality improvement process aimed to deliver higher value physical therapy for patients with low back pain.

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PMID: 26381807

Can we determine what strategy of treatment is the best

Chiropr Man Therap. 2015 Sep 11;23:26. doi: 10.1186/s12998-015-0071-x. eCollection 2015.

Do MRI findings identify patients with chronic low back pain and Modic changes who respond best to rest or exercise: a subgroup analysis of a randomised controlled trial.

Jensen RK¹, Kent P², Hancock M³.

Author information

Abstract

BACKGROUND:

No previous clinical trials have investigated MRI findings as effect modifiers for conservative treatment of low back pain. This hypothesis-setting study investigated if MRI findings modified response to rest compared with exercise in patients with chronic low back pain and Modic changes.

METHODS:

This study is a secondary analysis of a randomised controlled trial comparing rest with exercise. Patients were recruited from a specialised outpatient spine clinic and included in a clinical trial if they had chronic low back pain and an MRI showing Modic changes. All patients received conservative treatment while participating in the trial. Five baseline MRI findings were investigated as effect modifiers: Modic changes Type 1 (any size), large Modic changes (any type), large Modic changes Type 1, severe disc degeneration and large disc herniation. The outcome measure was change in low back pain intensity measured on a 0-10 point numerical rating scale at 14-month follow-up (n = 96). An interaction ≥ 1.0 point (0-10 scale) between treatment group and MRI findings in linear regression was considered clinically important.

RESULTS:

The interactions for Modic Type 1, with large Modic changes or with large Modic changes Type 1 were all potentially important in size (-0.99 (95 % CI -3.28 to 1.29), -1.49 (-3.73 to 0.75), -1.49 (-3.57 to 0.58), respectively) but the direction of the effect was the opposite to what we had hypothesized-that people with these findings would benefit more from rest than from exercise. The interactions for severe disc degeneration (0.74 (-1.40 to 2.88)) and large disc herniation (-0.92 (3.15 to 1.31)) were less than the 1.0-point threshold for clinical importance. As expected, because of the lack of statistical power, no interaction term for any of the MRI findings was statistically significant.

CONCLUSIONS:

Three of the five MRI predictors showed potentially important effect modification, although the direction of the effect was surprising and confidence intervals were wide so very cautious interpretation is required. Further studies with adequate power are warranted to study these and additional MRI findings as potential effect modifiers for common interventions.

PMID:26366285

Sciatica/exercise vs advise

Spine (Phila Pa 1976). 2015 Jul 10.

Advice to stay active or structured exercise in the management of sciatica: a systematic review and meta-analysis.

Fernandez M¹, Hartvigsen J, Ferreira ML, Refshauge KM, Machado AF, Lemes ÍR, Maher CG, Ferreira PH.
Author information

Abstract

STUDY DESIGN:

A systematic review and meta-analysis.

OBJECTIVE:

To evaluate the evidence on comparative effectiveness of advice to stay active versus supervised structured exercise in the management of sciatica.

SUMMARY OF BACKGROUND DATA:

Conservative management of sciatica usually includes interventions to promote physical activity in the form of advice to stay active or exercise, but there has been no systematic review directly comparing the effectiveness of these two approaches.

METHODS:

Data Sources included MEDLINE, CINAHL, Embase and PEDro databases. Studies were randomized controlled trials comparing advice with exercise. Two independent reviewers extracted data and assessed methodological quality using the PEDro scale. Pain and disability data were extracted for all time points and converted to a common 0 to 100 scale. Data were pooled with a random effects model for short; intermediate and long-term follow ups. The GRADE approach was used to summarize the strength of evidence.

RESULTS:

Five trials were included in the meta-analysis, which showed a significant, although small effect favoring exercise over advice for reducing leg pain intensity in the short term (weighted mean difference 11.43 [95%CI, 0.71, 22.16]), but no difference for disability (weighted mean difference 1.45 [95%CI, -2.86, 5.76]). Furthermore, there was no difference at intermediate and long term follow ups between advice and exercise for patient relevant outcomes.

CONCLUSION:

There is low quality evidence (GRADE) that exercise provides small, superior effects compared with advice to stay active on leg pain in the short term for patients suffering with sciatica. However there is moderate quality evidence showing no difference between advice to stay active and exercise on leg pain and disability status in people with sciatica in the long term.

PMID: 26165218

Red flags and LBP/low

Phys Ther. 2015 Jul 16.

Prevalence and "Red Flags" Regarding Specified Causes of Back Pain in Older Adults Presenting in General Practice.

Enthoven WT¹, Geuze J², Scheele J³, Bierma-Zeinstra SM⁴, Bueving HJ⁵, Bohnen AM⁶, Peul WC⁷, van Tulder MW⁸, Berger MY⁹, Koes BW¹⁰, Luijsterburg PA¹¹.

Author information

Abstract

BACKGROUND:

In a small proportion of patients experiencing unspecified back pain, a specified underlying pathology is present.

OBJECTIVE:

The purposes of this study were: (1) to identify the prevalence of physician-specified causes of back pain and (2) to assess associations between "red flags" and vertebral fractures, as diagnosed by the patients' general practitioner (GP), in older adults with back pain.

METHODS:

The Back Complaints in the Elders (BACE) study is a prospective cohort study. Patients (aged >55 years) with back pain were included when consulting their GP. A questionnaire was administered and a physical examination and heel bone densitometry were performed, and the results determined back pain and patient characteristics, including red flags. Participants received a radiograph, and reports were sent to their GP. The final diagnoses established at 1 year were collected from the GP's patient registry.

RESULTS:

Of the 669 participants included, 6% were diagnosed with a serious underlying pathology during the 1-year follow-up. Most of these participants (n=33, 5%) were diagnosed with a vertebral fracture. Multivariable regression analysis showed that age of ≥ 75 years, trauma, osteoporosis, a back pain intensity score of ≥ 7 , and thoracic pain were associated with a higher chance of getting the diagnosis of a vertebral fracture. Of these variables, trauma showed the highest positive predictive value for vertebral fracture of 0.25 (95% confidence interval=0.09, 0.41) and a positive likelihood ratio of 6.2 (95% confidence interval=2.8, 13.5). A diagnostic prediction model including the 5 red flags did not increase these values.

LIMITATIONS:

Low prevalence of vertebral fractures could have led to findings by chance.

CONCLUSIONS:

In these older adults with back pain presenting in general practice, 6% were diagnosed with serious pathology, mainly a vertebral fracture (5%). Four red flags were associated with the presence of vertebral fracture.

PMID:26183589

5. SURGERY

Neuro damage frequency

Clin Neurol Neurosurg. 2015 Sep 1;139:76-80. doi: 10.1016/j.clineuro.2015.08.022.

Iatrogenic neurologic deficit after lumbar spine surgery: A review.

Ghobrial GM¹, Williams KA Jr¹, Arnold P², Fehlings M³, Harrop JS⁴.

Author information

Abstract

Iatrogenic neurologic deficits after lumbar spine surgery are rare complications, but important to recognize and manage. Complications such as radiculopathy, spinal cord compression, motor deficits (i.e. foot drop with L5 radiculopathy), and new onset radiculitis, while uncommon do occur. Attempts at mitigating these complications with the use of neuromonitoring have been successful. Guidance in the literature as to the true rate of iatrogenic neurologic deficit is limited to several case studies and retrospective designed studies describing the management, prevention and treatment of these deficits. The authors review the lumbar spinal surgery literature to examine the incidence of iatrogenic neurologic deficit in the lumbar spinal surgery literature. An advanced MEDLINE search conducted on May 14th, 2015 from January 1, 2004 through May 14, 2015, using the following MeSH search terms "postoperative complications," then subterms "lumbar vertebrae," "treatment outcome," "spinal fusion," and "radiculopathy" were included together with "postoperative complications" in a single search. Postoperative complications including radiculopathy, weakness, and spinal cord compression were included. The definition of iatrogenic neurologic complication was limited to post-operative radiculopathy, motor weakness or new onset pain/radiculitis. An advanced MEDLINE search conducted on May 14th, 2015 using all of the above terms together yielded 21 results. After careful evaluation, 11 manuscripts were excluded and 10 were carefully reviewed. The most common indications for surgery were degenerative spondylolisthesis, spondylosis, scoliosis, and lumbar stenosis. In 2783 patients in 12 total studies, there were 56 patients who had reported a postoperative neurologic deficit for a rate of 5.7. The rates of deficits ranged from 0.46% to 17% in the studies used. The average rate of reported neurologic complications within these papers was 9% (range 0.46-24%). Thirty patients of a total of 731 (4.1%) had a new onset neurologic injury after anterior lumbar interbody fusion or lateral lumbar interbody fusion. Thirty-seven out of 2052 (1.9%) patients had a neurologic injury after posterior decompression and fusion. Screw malposition was responsible for 11 deficits.

Spinal surgery for lumbar degenerative disease carries a low but definite rate of neurologic deficits. Despite the introduction of neuromonitoring, these complications still occur. Interpretation of neurologic injury rates for lumbar surgery is limited by the few prospective and cohort-matched controlled studies. Likewise, most injuries were associated with the placement of instrumentation despite the type of approach.

KEYWORDS: Complications; Lumbar spine; Postoperative; Radiculopathy
PMID:26386902

7. PELVIC ORGANS/WOMAN'S HEALTH

Mother stress and child's dental health

Mothers' stress takes toll on kids' dental health

UW Medicine, 09/21/2015

Mothers who are constantly stressed tend to have children with a higher incidence of dental cavities, according to a study in which Erin Masterson, from the UW Schools of Public Health and Dentistry, was one of the lead researchers. "Policy that aims to improve dental health, particularly the prevalence of cavities among children, should include interventions to improve the quality of life of mothers," said the study's co-author, Dr. Wael Sabbah, from the Dental Institute at King's College London. "Chronic maternal stress as a potential risk factor is something we need to consider, in addition to the wider implications of maternal well-being, social and psychological environment on dental health," Sabbah added in a college news release. However, the researchers cautioned that the study doesn't prove a cause-and-effect relationship between maternal stress and a child's inadequate dental care. The findings showed that dental cavities were more common among kids whose mothers had two or more biological markers of chronic stress, or "wear and tear." These markers included levels of blood fats, such as triglycerides and HDL ("good") cholesterol; blood sugar; blood pressure; and waist circumference. After considering caregiving behaviors – including breast-feeding, eating breakfast every day and visits to the dentist – the researchers found that cavities were more common among the children who weren't breast-fed as babies. The mothers with at least one of these biomarkers were much less likely to breast-feed, the researchers reported in the Sept. 17 issue of the American Journal of Public Health. Income level also played a role, the findings suggested.

Fertility treatments increases risk of CA

J Cancer Res Clin Oncol. 2015 Sep 4.

The risk of female malignancies after fertility treatments: a cohort study with 25-year follow-up.

Kessous R¹, Davidson E, Meirovitz M, Sergienko R, Sheiner E.
Author information

Abstract

OBJECTIVE:

To investigate whether an association exists between a history of fertility treatments and future risk of female malignancies.

STUDY DESIGN:

A population-based study compared the incidence of long-term female malignancies in a cohort of women with and without a history of fertility treatments including in vitro fertilization (IVF) and ovulation induction (OI). Deliveries occurred between the years 1988-2013, with a mean follow-up duration of 12 years. Excluded from the study were women with known genetic predisposition for malignancies or known malignancies prior to the index pregnancy. Female malignancies were divided into specific types including ovarian, uterine, breast and cervix. Kaplan-Meier survival curve was used to estimate cumulative incidence of malignancies. Cox proportional hazard models were used to estimate the adjusted hazard ratios (HRs) for female malignancy.

RESULTS:

During the study period, 106,031 women met the inclusion criteria; 4.1 % (n = 4363) occurred in patients following fertility treatments. During the follow-up period, patients with a history of IVF treatments had a significantly increased risk of being diagnosed with ovarian and uterine cancer as compared to patients after OI and patients with no history of fertility treatments. Cox proportional hazard models were constructed for ovarian and uterine cancer separately, controlling for confounders such as maternal age and obesity. A history of IVF treatment remained independently associated with ovarian and uterine cancer (adjusted HR 3.9; 95 % CI 1.2-12.6; P = 0.022 and adjusted HR 4.6; 95 % CI 1.4-14.9; P = 0.011; respectively).

CONCLUSION: IVF treatments pose a significant risk of subsequent long-term ovarian and uterine cancer.

PMID:26337160

8. VISCERA

IBS

Gastroenterology. 2015 Sep 15. pii: S0016-5085(15)01313-X. doi: 10.1053/j.gastro.2015.09.005.

Early Course of Inflammatory Bowel Disease in a Population-based Inception Cohort Study from 8 Countries in Asia and Australia.

Ng SC¹, Zeng Z², Niewiadomski O³, Tang W⁴, Bell S³, Kamm MA³, Hu P², de Silva HJ⁵, Niriella MA⁵, Udara WY⁵, Ong D⁶, Ling KL⁷, Ooi CJ⁷, Hilmi I⁸, Goh KL⁸, Ouyang Q⁹, Wang YF⁹, Wu K¹⁰, Wang X¹⁰, Pisespongsa P¹¹, Manatsathit S¹², Aniwan S¹³, Limsrivilai J¹², Gunawan J¹⁴, Simadibrata M¹⁴, Abdullah M¹⁴, Tsang SW¹⁵, Lo FH¹⁶, Hui A¹⁷, Chow CM¹⁸, Yu HH¹⁹, Li MF¹⁹, Ng KK²⁰, Ching JY⁴, Chan V⁴, Wu JC⁴, Chan FK⁴, Chen M², Sung JJ⁴; Asia-Pacific Crohn's and Colitis Epidemiology Study (ACCESS) Group.
Author information

Abstract

BACKGROUND & AIMS:

The incidence of inflammatory bowel disease (IBD) is increasing in Asia, but little is known about disease progression in this region. The Asia-Pacific Crohn's and Colitis Epidemiology Study was initiated in 2011, enrolling subjects from 8 countries in Asia (China, Hong Kong, Indonesia, Sri Lanka, Macau, Malaysia, Singapore, and Thailand) and Australia. We present data from this ongoing study.

METHODS:

We collected data on 413 patients diagnosed with IBD (222 with ulcerative colitis [UC]), 181 with Crohn's disease [CD], 10 IBD unclassified [IBDU]; median age, 37 years) from 2011 through 2013. We analyzed disease course and severity and mortality. Risks for medical and surgical therapies were assessed using Kaplan-Meier analysis.

RESULTS:

The cumulative probability that CD would change from inflammatory to stricturing or penetrating disease was 19.6%. The cumulative probabilities for use of immunosuppressants or anti-tumor necrosis factor (TNF) agents were 58.9% and 12.0% for patients with CD, and 12.7% and 0.9% for patients with UC, respectively. Perianal CD was associated with an increased risk of anti-TNF therapy within 1 year of its diagnosis (HR, 2.97; 95% CI, 1.09-8.09). The cumulative probabilities for surgery 1 year after diagnosis were 9.1% for patients with CD and 0.9% for patients with UC. Patients with CD and penetrating disease had a 7-fold increase for risk of surgery, compared to patients with inflammatory disease (HR, 7.67; 95% CI, 3.93-14.96). Overall mortality for patients with IBD was 0.7%.

CONCLUSION:

In a prospective population-based study, we found that the early course of disease in patients with IBD in Asia was comparable to that of the West. Patients with CD frequently progress to complicated disease and have accelerated use of immunosuppressants. Few patients with early-stage UC undergo surgery in Asia. Increasing our understanding of IBD progression in different populations can help optimize therapy and improve outcomes.

KEYWORDS: ACCESS; natural history; risk factor; treatment
PMID: 26385074

10 A. CERVICAL SPINE

Cervical spine ROM

Spine J. 2015 Aug 31. pii: S1529-9430(15)01348-0. doi: 10.1016/j.spinee.2015.08.042.

Cervical motion segment contributions to head motion during flexion\extension, lateral bending and axial rotation.

Anderst WJ¹, Donaldson WF 3rd², Lee JY², Kang JD².
Author information

Abstract

BACKGROUND CONTEXT: Cervical spine segmental contributions to motion may reveal movement abnormalities associated with whiplash, disc herniation, disc arthroplasty, or fusion.

PURPOSE: The objective of this study was to determine the cervical spine segmental contributions to head flexion\extension, lateral bending, and axial rotation during dynamic motion in young healthy individuals.

STUDY DESIGN: Descriptive control study **PATIENT SAMPLE:** Twenty-nine young (20-35 years of age) healthy individuals.

OUTCOME MEASURES: Physiologic measures of contributions from each cervical motion segment to the primary head rotation.

METHODS: 29 healthy participants performed full range of motion (ROM) flexion\extension, lateral bending, and axial rotation while biplane radiographs were collected at 30 images per second. Surface-based markers were used to determine head kinematics for each movement, and a validated volumetric model-based tracking technique was used to determine intervertebral kinematics. Contributions from each cervical motion segment to the primary head rotation were determined continuously during each of the three head movements. This study was funded by Synthes Spine (\$100,000-\$150,000).

RESULTS: For each head movement, motion segments in the lower cervical spine increased their contributions to head motion near the end of the ROM. Cervical motion segment contributions to left and right lateral bending were mirror images of each other, as were contributions to left and right axial rotation. However, cervical motion segment contributions to flexion were not mirror images of the contributions to extension.

CONCLUSIONS: Cervical motion segment contributions to head motion change over the full ROM and cannot be accurately characterized solely from endpoint data. The continuously changing segmental contributions suggest that the compressive and shear loads applied to each motion segment also change over the ROM. The clinical implication of increased contributions from the inferior motions segments near the end ROM are that the clinician may advise the patient to avoid end ROM positions in order to lessen the demand on the discs of inferior motion segments.

KEYWORDS: adjacent segment disease, three-dimensional, arthroplasty, fusion; cervical spine; kinematics; percent contributions; range of motion

PMID:26334229

Preexisting factors in developing chronic neck pain

Psychosocial, physical, and neurophysiological risk factors for chronic neck pain: A prospective inception cohort study

Bahar Shahidi Douglas Curran-Everett Katrina S. Maluf

Highlights

- Psychosocial, physical, and neurophysiological factors affect risk for neck pain.
- Depressed mood is the strongest predictor for development of chronic neck pain.
- Diffuse noxious inhibitory control is impaired in those developing chronic neck pain.
- Poor cervical extensor endurance increases risk for developing chronic neck pain.

Abstract

The purpose of this investigation was to identify modifiable risk factors for the development of first-onset chronic neck pain among an inception cohort of healthy individuals working in a high risk occupation. Candidate risk factors identified from previous studies were categorized into psychosocial, physical, and neurophysiological domains, which were assessed concurrently in a baseline evaluation of 171 office workers within the first 3 months of hire. Participants completed monthly online surveys over the subsequent year to identify the presence of chronic interfering neck pain, defined as a Neck Disability Index score ≥ 5 points for 3 or more months. Data were analyzed using backwards logistic regression to identify significant predictors within each domain, which were then entered into a multivariate regression model adjusted for age, sex, and body mass index. Development of chronic interfering neck pain was predicted by depressed mood (OR=3.36(1.10-10.31), $p=0.03$), cervical extensor endurance (OR=0.92(0.87-0.97), $p=0.001$), and diffuse noxious inhibitory control (OR=0.90(0.83-0.98), $p=0.02$) at baseline. These findings provide the first evidence that individuals with pre-existing impairments in mood and descending pain modulation may be at greater risk for developing chronic neck pain when exposed to peripheral nociceptive stimuli such as that produced during muscle fatigue.

Perspective

Depressed mood, poor muscle endurance, and impaired endogenous pain inhibition are predisposing factors for the development of new onset chronic neck pain of non-specific origin in office workers. These findings may assist with primary prevention by allowing clinicians to screen for individuals at risk of developing chronic neck pain.

Keywords: neck pain, chronic, prospective, risk factors

12 A. WHIPLASH**CBT in management**

BMC Musculoskelet Disord. 2015 Sep 1;16(1):232. doi: 10.1186/s12891-015-0687-y.

Value-based cognitive-behavioural therapy for the prevention of chronic whiplash associated disorders: protocol of a randomized controlled trial.

Andersen TE¹, Ravn SL², Roessler KK³.
Author information

Abstract

BACKGROUND:

Whiplash injury is the most common traffic-related injury affecting thousands of people every year. Conservative treatments have not proven effective in preventing persistent symptoms and disability after whiplash injury. Early established maladaptive pain behaviours within the first weeks after the injury may explain part of the transition from acute to chronic whiplash associated disorder (WAD). Hence, early targeting of psychological risk factors such as pain catastrophizing, fear-avoidance-beliefs, depression, and symptoms of posttraumatic stress disorder (PTSD) may be important in preventing the development of chronic WAD. Some evidence exists that targeting fear-avoidance beliefs and PTSD with exposure strategies and value-based actions may prevent development of persistent disability after whiplash injury. Yet, the results have to be tested in a randomized controlled trial (RCT). The primary objective of the present study is to test whether a specifically tailored value-based cognitive-behavioural therapy program (V-CBT) is able to prevent the development of persistent disability, pain, and psychological distress if delivered within the first three months after a whiplash injury.

METHODS/DESIGN:

The current study is a two-armed randomized controlled study with a crossover design. Group A is scheduled for V-CBT within one week of randomization and group B with a delayed onset 3 months after randomization.

DISCUSSION:

If the study detects significant effects of V-CBT as a preventive intervention, the study will provide new insights of preventive treatment for patients with WAD and thereby serve as an important step towards preventing the chronic condition.

TRIAL REGISTRATION:

Current Controlled Trials Registration September 19, 2014: NCT02251028.

PMID: 26323830

13. CRANIUM/TMJ**Smile and facial development**

Prog Orthod. 2015 Dec;16(1):99. doi: 10.1186/s40510-015-0099-4. Epub 2015 Sep 4.

Smile analysis in different facial patterns and its correlation with underlying hard tissues.

Grover N¹, Kapoor DN, Verma S, Bharadwaj P.
Author information

Abstract

BACKGROUND:

The subject's inherent growth pattern can be an effective factor in characteristics of smile. More vertical growth in the posterior maxilla than in the anterior maxilla could result in a changed relationship between the occlusal plane and the curvature of the lower lip upon smile. In order to broaden the understanding of how smile gets affected by growth pattern and the underlying hard tissues, the present study was undertaken to compare smile in various growth patterns, to determine sexual dimorphism, if any; as well as to correlate smile with underlying hard tissues.

METHODS:

One hundred and fifty subjects were selected amongst the students in the Dental Institute and from the outpatient department of Department Orthodontics and Dentofacial Orthopedics. Sample selected for the study ranged in the age group of 17 to 25 years. Selected individuals were subjected to lateral head cephalometric radiography in the Department of Oral Medicine and Radiology and videography. Cephalograms were traced and the subjects were divided into horizontal, average, and vertical growth pattern on the basis of GoGn-SN, lower anterior facial height, and Jaraback's ratio. The video clip was downloaded to obtain frame of posed smile. Cephalometric and photographic measurements were recorded and subjected to statistical analysis.

RESULTS:

The mean values of smile parameters were significantly higher in males as compared to females irrespective of the growth pattern. The mean incisal display, interlabial gap, lower lip to incisal edge distance, upper vertical lip length, and occlusal plane angle was highest in both males and females of vertical facial growth pattern group; whereas, the smile index, posterior corridor (left and right) were less in vertical facial growth pattern group in both males and females. Thus, the parameters in vertical dimension were increased in vertical growers whereas, the parameters in transverse dimension decreased.

CONCLUSIONS:

The facial growth pattern has significant influence on the parameters of smile along with definite sexual dimorphism. The angular and linear parameters, except saddle angle and lower incisor to NB (linear and angular), influenced smile.

PMID:26341345

Biomechanics of occlusion

J Oral Rehabil. 2015 Sep 15. doi: 10.1111/joor.12345.

Biomechanics of occlusion - implications for oral rehabilitation.

Peck CC¹.

Author information

Abstract

The dental occlusion is an important aspect of clinical dentistry; there are diverse functional demands ranging from highly precise tooth contacts to large crushing forces. Further, there are dogmatic, passionate and often diverging views on the relationship between the dental occlusion and various diseases and disorders including temporomandibular disorders, non-carious cervical lesions and tooth movement. This study provides an overview of the biomechanics of the masticatory system in the context of the dental occlusion's role in function. It explores the adaptation and precision of dental occlusion, its role in bite force, jaw movement, masticatory performance and its influence on the oro-facial musculoskeletal system. Biomechanics helps us better understand the structure and function of biological systems and consequently an understanding of the forces on, and displacements of, the dental occlusion. Biomechanics provides insight into the relationships between the dentition, jaws, temporomandibular joints, and muscles. Direct measurements of tooth contacts and forces are difficult, and biomechanical models have been developed to better understand the relationship between the occlusion and function. Importantly, biomechanical research will provide knowledge to help correct clinical misperceptions and inform better patient care. The masticatory system demonstrates a remarkable ability to adapt to a changing biomechanical environment and changes to the dental occlusion or other components of the musculoskeletal system tend to be well tolerated.

KEYWORDS: biomechanics; bite force; dental occlusion; stomatognathic system; temporomandibular disorders; temporomandibular joint
PMID: 26371622

14. HEADACHES

Changes in the brain

Cephalalgia. 2015 Sep 16. pii: 0333102415606080.

Interictal photosensitivity associates with altered brain structure in patients with episodic migraine.

Chong CD¹, Starling AJ¹, Schwedt TJ².
Author information

Abstract

BACKGROUND:

Migraine attacks manifest with hypersensitivities to light, sound, touch and odor. Some people with migraine have photosensitivity between migraine attacks, suggesting persistent alterations in the integrity of brain regions that process light. Although functional neuroimaging studies have shown visual stimulus induced "hyperactivation" of visual cortex regions in migraineurs between attacks, whether photosensitivity is associated with alterations in brain structure is unknown.

METHODS:

Levels of photosensitivity were evaluated using the Photosensitivity Assessment Questionnaire in 48 interictal migraineurs and 48 healthy controls. Vertex-by-vertex measurements of cortical thickness were assessed in 28 people with episodic migraine who had interictal photosensitivity (mean age = 35.0 years, SD = 12.1) and 20 episodic migraine patients without symptoms of interictal photosensitivity (mean age = 36.0 years, SD = 11.4) using a general linear model design.

RESULTS:

Migraineurs have greater levels of interictal photosensitivity relative to healthy controls. Relative to migraineurs without interictal photosensitivity, migraineurs with interictal photosensitivity have thicker cortex in several brain areas including the right lingual, isthmus cingulate and pericalcarine regions, and the left precentral, postcentral and supramarginal regions.

CONCLUSION:

Episodic migraineurs with interictal photosensitivity have greater cortical thickness in the right parietal-occipital and left fronto-parietal regions, suggesting that persistent light sensitivity is associated with underlying structural alterations.

KEYWORDS:

MRI; Migraine; cortical thickness; magnetic resonance imaging; neuroimaging; photophobia; photosensitivity; visual sensitivity

PMID:26378082

Breathing and HA's

J Headache Pain. 2015 Dec;16(1):82. doi: 10.1186/s10194-015-0567-8. Epub 2015 Sep 16.

Responsiveness of the autonomic nervous system during paced breathing and mental stress in migraine patients.

Rauschel V^{1,2}, Straube A^{3,4}, Süß F^{5,6}, Ruscheweyh R^{7,8}.

Author information

Abstract**BACKGROUND:**

Migraine is a stress-related disorder, suggesting that there may be sympathetic hyperactivity in migraine patients. However, there are contradictory results concerning general sympathetic activation in migraine patients. To shed more light on the involvement of the autonomic nervous system (ANS) in migraine pathophysiology, we investigated cardiac and cardiovascular reactions during vagal (paced breathing) and sympathetic activation (mental stress test).

METHODS:

Heart rate variability parameters and skin conductance responses were recorded interictally in 22 episodic migraine patients without aura and 25 matched controls during two different test conditions. The paced breathing test consisted of a five-minute baseline, followed by two minutes of paced breathing (6 breathing cycles per minute) and a five-minute recovery phase. The mental stress test consisted of a five-minute baseline, followed by one minute of stress anticipation, three and a half minutes of mental stress and a five-minute recovery phase. Furthermore we measured blood pressure and heart rate once daily over 2 weeks. Subjects rated their individual current stress level and their stress level during paced breathing and during the mental stress test.

RESULTS:

There were no significant differences between migraine patients and controls in any of the heart rate variability parameters in either time domain or frequency domain analysis. However, all parameters showed a non-significant tendency for larger sympathetic activation in migraine patients. Also, no significant differences could be observed in skin conductance responses and average blood pressure. Only heart rates during the 2-week period and stress ratings showed significantly higher values in migraine patients compared to controls.

CONCLUSIONS:

Generally there were no significant differences between migraine patients and controls concerning the measured autonomic parameters. There was a slight but not significant tendency in the migraine patients to react with less vagal and more sympathetic activation in all these tests, indicating a slightly changed set point of the autonomic system. Heart rate variability and blood pressure in migraine patients should be investigated for longer periods and during more demanding sympathetic activation.

KEYWORDS:

Autonomic nervous system; Blood pressure; Heart rate; Heart rate variability; Mental stress; Migraine; Paced breathing; Skin conductance response; Stress rating

PMID:26377932

Altered Motor Control

Headache. 2015 Sep 21. doi: 10.1111/head.12644.

Cervical Muscle Strength and Muscle Coactivation During Isometric Contractions in Patients With Migraine: A Cross-Sectional Study.

Florencio LL¹, de Oliveira AS¹, Carvalho GF¹, Tolentino GA¹, Dach F², Bigal ME³, Fernández-de-Las-Peñas C⁴, Bevilacqua Grossi D¹.

Author information

Abstract

OBJECTIVES:

This cross-sectional study investigated potential differences in cervical musculature in groups of migraine headaches vs. non-headache controls. Differences in cervical muscle strength and antagonist coactivation during maximal isometric voluntary contraction (MIVC) were analyzed between individuals with migraine and non-headache subjects and relationships between force with migraine and neck pain clinical aspects.

METHOD:

A customized hand-held dynamometer was used to assess cervical flexion, extension, and bilateral lateral flexion strength in subjects with episodic migraine (n=31), chronic migraine (n = 21) and healthy controls (n = 31). Surface electromyography (EMG) from sternocleidomastoid, anterior scalene, and splenius capitis muscles were recorded during MIVC to evaluate antagonist coactivation. Comparison of main outcomes among groups was conducted with one-way analysis of covariance with the presence of neck pain as covariable. Correlations between peak force and clinical variables were demonstrated by Spearman's coefficient.

RESULTS:

Chronic migraine subjects exhibited lower cervical extension force (mean diff. from controls: 4.4 N/kg; mean diff from episodic migraine: 3.7 N/kg; P = .006) and spent significantly more time to generate peak force during cervical flexion (mean diff. from controls: 0.5 seconds; P = .025) and left lateral-flexion (mean diff. from controls: 0.4 seconds; mean diff. from episodic migraine: 0.5 seconds; P = .007). Both migraine groups showed significantly higher antagonist muscle coactivity of the splenius capitis muscle (mean diff. from controls: 20%MIVC, P = .03) during cervical flexion relative to healthy controls. Cervical extension peak force was moderately associated with the migraine frequency (r_s : -0.30, P = .034), neck pain frequency (r_s :-0.26, P = .020), and neck pain intensity (r_s :-0.27, P = .012).

CONCLUSION:

Patients with chronic migraine exhibit altered muscle performance, took longer to reach peak of force during some cervical movements, and had higher coactivation of the splenius capitis during maximal isometric cervical flexion contraction. Finally, patients with migraine reported the presence of neck and head pain complaints during maximal isometric voluntary cervical contractions.

KEYWORDS: cervical spine; isometric contraction; migraine; surface electromyography

PMID: 26388193

Cortical thickness and HA's

Cephalalgia. 2015 Sep 16. pii: 0333102415606080.

Interictal photosensitivity associates with altered brain structure in patients with episodic migraine.

Chong CD¹, Starling AJ¹, Schwedt TJ².
Author information

Abstract

BACKGROUND:

Migraine attacks manifest with hypersensitivities to light, sound, touch and odor. Some people with migraine have photosensitivity between migraine attacks, suggesting persistent alterations in the integrity of brain regions that process light. Although functional neuroimaging studies have shown visual stimulus induced "hyperactivation" of visual cortex regions in migraineurs between attacks, whether photosensitivity is associated with alterations in brain structure is unknown.

METHODS:

Levels of photosensitivity were evaluated using the Photosensitivity Assessment Questionnaire in 48 interictal migraineurs and 48 healthy controls. Vertex-by-vertex measurements of cortical thickness were assessed in 28 people with episodic migraine who had interictal photosensitivity (mean age = 35.0 years, SD = 12.1) and 20 episodic migraine patients without symptoms of interictal photosensitivity (mean age = 36.0 years, SD = 11.4) using a general linear model design.

RESULTS:

Migraineurs have greater levels of interictal photosensitivity relative to healthy controls. Relative to migraineurs without interictal photosensitivity, migraineurs with interictal photosensitivity have thicker cortex in several brain areas including the right lingual, isthmus cingulate and pericalcarine regions, and the left precentral, postcentral and supramarginal regions.

CONCLUSION:

Episodic migraineurs with interictal photosensitivity have greater cortical thickness in the right parietal-occipital and left fronto-parietal regions, suggesting that persistent light sensitivity is associated with underlying structural alterations.

KEYWORDS: MRI; Migraine; cortical thickness; magnetic resonance imaging; neuroimaging; photophobia; photosensitivity; visual sensitivity
PMID:26378082

26. CARPAL TUNNEL SYNDROME

Obesity and CTS

Obes Rev. 2015 Sep 23. doi: 10.1111/obr.12324.

The effect of excess body mass on the risk of carpal tunnel syndrome: a meta-analysis of 58 studies.

Shiri R¹, Pourmemari MH², Falah-Hassani K³, Viikari-Juntura E¹.

Author information

Abstract

We aimed to estimate the effects of overweight and obesity on carpal tunnel syndrome (CTS), and to assess whether sex modifies the associations. Literature searches were conducted in PubMed, Embase, Web of Science, Scopus, Google Scholar and ResearchGate databases from 1953 to February 2015. Fifty-eight studies consisting of 1,379,372 individuals qualified for a meta-analysis. We used a random-effects meta-analysis, assessed heterogeneity and publication bias, and performed sensitivity analyses. Overweight increased the risk of CTS or carpal tunnel release 1.5-fold (pooled confounder-adjusted odds ratio [OR] = 1.47, 95% CI 1.37-1.57, N = 1,279,546) and obesity twofold (adjusted OR = 2.02, 95% CI 1.92-2.13, N = 1,362,207). Each one-unit increase in body mass index increased the risk of CTS by 7.4% (adjusted OR = 1.074, 95% CI 1.071-1.077, N = 1,258,578). Overweight and obesity had stronger effects on carpal tunnel release than CTS. The associations did not differ between men and women, and they were independent of study design. Moreover, the associations were not due to bias or confounding. Excess body mass markedly increases the risk of CTS. As the prevalence of overweight and obesity is increasing globally, overweight-related CTS is expected to increase. Future studies should investigate whether a square-shaped wrist and exposure to physical workload factors potentiate the adverse effect of obesity on the median nerve.

KEYWORDS: Body mass index; carpal tunnel syndrome; median neuropathy; obesity

PMID: 26395787

Biomechanical factors

BMC Musculoskelet Disord. 2015 Sep 1;16(1):231. doi: 10.1186/s12891-015-0685-0.

Association between work-related biomechanical risk factors and the occurrence of carpal tunnel syndrome: an overview of systematic reviews and a meta-analysis of current research.

Kozak A¹, Schedlbauer G², Wirth T³, Euler U⁴, Westermann C⁵, Nienhaus A^{6,7}.
Author information

Abstract

BACKGROUND:

Occupational risks for carpal tunnel syndrome (CTS) have been examined in various occupations, and several systematic reviews (SRs) have been published on this topic. There has been no critical appraisal or synthesis of the evidence in the SRs. The aims of this study are (1) to synthesise the observational evidence and evaluate the methodological quality of SRs that assess the effect of biomechanical risk factors on the development of CTS in workers, (2) to provide an update of current primary research on this association, (3) to assess a potential dose-response relationship.

METHODS:

We searched MEDLINE, EMBASE, CINAHL, the Cochrane Library and the reference lists of articles. The first step covered SRs (1998-2014), and the second step covered current primary studies (2011-2014). The methodological quality of the SRs was evaluated by using the AMSTAR-R tool; primary studies were assessed using a list of 20 items. A qualitative approach was used for synthesising evidence. In addition, we undertook a meta-analysis of the primary studies to determine risk ratios in the dose-response relationship.

RESULTS:

We identified ten SRs that covered a total of 143 original studies. Seven primary studies met the criteria for inclusion, of which four provided longitudinal data. We found high quality of evidence for risk factors such as repetition, force and combined exposures. Moderate quality of evidence was observed for vibration, and low quality of evidence was found for wrist postures. An association between computer use and CTS could not be established. Recent primary studies supported the existence of a significant relationship between CTS and repetition, force and combined exposure. The meta-analysis of current research revealed a dose-response relationship between CTS and the American Conference of Governmental Industrial Hygienists' (ACGIH) threshold limit value (TLV) for hand-activity level (HAL). Those between the action limit and TLV and above TLV had RR of 1.5 (95 % CI 1.02-2.31) and RR 2.0 (95 % CI 1.46-2.82), respectively.

CONCLUSIONS:

Occupational biomechanical factors play a substantial role in the causation of CTS. Data from current primary studies on dose-response suggest that the risk of CTS increases with the ACGIH TLV levels.

PMID:26323649

27. HIP

Cartilage

Clin Orthop Relat Res. 2015 Sep 2.

Does Periacetabular Osteotomy Have Depth-related Effects on the Articular Cartilage of the Hip?Hingsammer AM¹, Miller PE, Millis MB, Kim YJ.

Author information

Abstract

BACKGROUND: Osteoarthritis may result from abnormal mechanics leading to biochemically mediated degradation of cartilage. In a dysplastic hip, the periacetabular osteotomy (PAO) is designed to normalize the mechanics and our initial analysis suggests that it may also alter the cartilage biochemical composition. Articular cartilage structure and biology vary with the depth from the articular surface including the concentration of glycosaminoglycans (GAG), which are the charge macromolecules that are rapidly turned over and are lost in early osteoarthritis. Delayed gadolinium-enhanced magnetic resonance imaging of cartilage (dGEMRIC) enables noninvasive measurement of cartilage GAG content. The dGEMRIC index represents an indirect measure of GAG concentration with lower values indicating less GAG content. GAG content can normally vary with mechanical loading; however, progressive loss of GAG is associated with osteoarthritis. By looking at the changes in amounts of GAG in response to a PAO at different depths of cartilage, we may gain further insights into the types of biologic events that are occurring in the joint after a PAO.

QUESTIONS/PURPOSES: We (1) measured the GAG content in the superficial and deep zones for the entire joint before and after PAO; and (2) investigated if the changes in the superficial and deep zone GAG content after PAO varied with different locations within the joint.

METHODS: This prospective study included 37 hips in 37 patients (mean age 26 ± 9 years) who were treated with periacetabular osteotomy for symptomatic acetabular dysplasia and had preoperative and 1-year follow up dGEMRIC scans. Twenty-eight of the 37 also had 2-year scans. Patients were eligible if they had symptomatic acetabular dysplasia with lateral center-edge angle $< 20^\circ$ and no or minimal osteoarthritis. The change in dGEMRIC after surgery was assessed in the superficial and deep cartilage zones at five acetabular radial planes.

RESULTS: The mean \pm SD dGEMRIC index in the superficial zone fell from 480 ± 137 msec preoperatively to 409 ± 119 msec at Year 1 (95% confidence interval [CI], -87 to -54; $p < 0.001$) and recovered to 451 ± 115 msec at Year 2 (95% CI, 34-65; $p < 0.001$), suggesting that there is a transient event that causes the biologically sensitive superficial layer to lose GAG. In the deep acetabular cartilage zone, dGEMRIC index fell from 527 ± 148 msec preoperatively to 468 ± 143 msec at Year 1 (95% CI, -66 to -30; $p < 0.001$) and recovered to 494 ± 125 msec at Year 2 (95% CI, 5-32; $p = 0.008$). When each acetabular radial plane was looked at separately, the change from before surgery to 1 year after was confined to zones around the superior part of the joint. The only significant change from 1 to 2 years was an increase in the superficial layer of the superior zone (1 year 374 ± 123 msec, 2 year 453 ± 117 msec, $p < 0.006$).

CONCLUSIONS: This study suggests that PAO may alter the GAG content of the articular cartilage with a greater effect on the superficial zone compared with the deeper acetabular cartilage zone, especially at the superior aspect of the joint. Some surgeons have observed that surgery itself can be a stressor that can accelerate joint degeneration. Perhaps the decrease in dGEMRIC index seen in the superficial layer may be a catabolic response to postsurgical inflammation given that some recovery was seen at 2 years. The decrease in dGEMRIC index in the deep layer seen mainly near the superior part of the joint is persistent and may represent a response of articular cartilage to normalization of increased mechanical load seen in this region after osteotomy, which may be a normal response to alteration in loading.

CLINICAL RELEVANCE: This study looks at the biochemical changes in the articular cartilage before and after a PAO for dysplastic hips using MRI in a similar manner to using histological methods to study alterations in articular cartilage with mechanical loading. Although PAO alters alignment and orientation of the acetabulum, its effects on cartilage biology are not clear. dGEMRIC provides a noninvasive method of assessing these effects.

PMID:26329795

Gluteal tendinopathy

Gluteal Tendinopathy: Pathomechanics and Implications for Assessment and Management

Authors: Alison Grimaldi, PhD^{1,2}, Angela Fearon, PhD^{3,4,5}

Published: Journal of Orthopaedic & Sports Physical Therapy, Ahead of Print Pages: 1-41 doi:10.2519/jospt.2015.5829

Abstract

Synopsis

Gluteal tendinopathy is now believed to be the primary local source of lateral hip pain, or greater trochanteric pain syndrome, previously referred to as trochanteric bursitis. This condition is prevalent, particularly in post-menopausal women, and has a considerable negative influence on quality of life. Improved prognosis and outcomes in the future for those with gluteal tendinopathy will be underpinned by advances in diagnostic testing, a clearer understanding of risk factors and co-morbidities, and evidence based management programs. High quality studies that meet these requirements are still lacking.

This clinical commentary provides direction to assist the clinician with assessment and management of the patient with gluteal tendinopathy, based on currently limited available evidence on this condition and the wider tendon literature, in addition to the combined clinical experience of the authors.

J Orthop Sports Phys Ther, Epub 17 Sep 2015. doi:10.2519/jospt.2015.5829

Keyword: greater trochanteric pain syndrome, hip, lateral hip pain, trochanteric bursitis

Read More: <http://www.jospt.org/doi/abs/10.2519/jospt.2015.5829#.Vf9EP2SqPHw>

28. REPLACEMENTS

Lumbar spine mobility and hip djd

Eur Spine J. 2015 Sep 2.

Importance of the spinopelvic factors on the pelvic inclination from standing to sitting before total hip arthroplasty.

Ochi H¹, Baba T, Homma Y, Matsumoto M, Nojiri H, Kaneko K.
Author information

Abstract

PURPOSE:

Dislocation after total hip arthroplasty (THA) is a major postoperative complication. Even if the cup is in the safe zone, dislocation caused by implant impingement may occur during postural changes. The aim of the present study was to investigate the spinopelvic factors that influence pelvic inclination changes from standing to sitting in patients with hip diseases who were candidates for THA.

METHODS:

74 patients who underwent primary THA were included according to our criteria. The analysis of the sagittal balance of the spinopelvic complex was performed on standing and sitting lateral radiographs. Pelvic incidence (PI), sacral slope (SS), pelvic tilt (PT), lumbar lordosis angle (LLA), thoracic kyphosis angle (TK), and sagittal vertical axis (SVA) were measured. The differences between the standing and sitting positions regarding the spinal and pelvic parameters were analyzed. Correlations between the variables of the spinopelvic parameters were examined using Spearman's rank correlation coefficient.

RESULTS:

The changes in SVA, TK, LLA, SS, PT, and PI from the standing to sitting positions, respectively, were -3.9 ± 48.2 mm, $-0.1^\circ \pm 6.4^\circ$, $21.4^\circ \pm 17.7^\circ$, $22.2^\circ \pm 12.2^\circ$, $-22.3^\circ \pm 13.2^\circ$, and $0.4^\circ \pm 6.9^\circ$. The lumbar lordosis was reduced and pelvic rotation was extended from the standing to the sitting position. The correlation coefficient between the change in the SS and that in the LLA was 0.72 ($p < 0.0001$). The correlation coefficient between the change in PT and that in the LLA was -0.68 ($p < 0.0001$).

CONCLUSIONS:

The change in pelvic inclination from standing to sitting is strongly related to the mobility of the lumbar spine in patients with hip diseases.

PMID:26329653

Factors in determining success

Am J Phys Med Rehabil. 2015 Oct;94(10):758-67. doi: 10.1097/PHM.0000000000000243.

Late Isometric Assessment of Hip Abductor Muscle and Its Relationship with Functional Tests in Elderly Women Undergoing Replacement of Unilateral Hip Joint.

Melchiorri G¹, Viero V, Triossi T, Sorge R, Marchetti C, Arena NE, Tancredi V.
Author information

Abstract

OBJECTIVE:

The aim of this study was to evaluate the recovery of muscle strength and measure autonomy 3 yrs after hip replacement surgery in a sample of patients.

DESIGN:

Seventy-eight female patients (70.7 ± 6.3 yrs old) operated on for hip replacement were evaluated. They underwent evaluation tests for hip abductor muscle strength on the healthy and operated limb using strength curves obtained with isometric assessments. Autonomy was evaluated with a rating scale Western Ontario and McMaster Universities Arthritis Index (WOMAC), Harris and MOS 36-Item Short-Form Health Survey (SF-36) and functional assessment (Timed 'Up and Go' test).

RESULTS:

Three years after surgery, a muscle strength deficit was still noticeable on the operated limb compared with the healthy limb ranging from 9% at 5 degrees of adduction to 12% at 0 degree of abduction. The strength curves obtained on the operated side maintained the same descending trend as the healthy side. The authors found no significant correlations between the patient-reported functional measures and the hip abductor strength deficit. The Timed Up and Go test was moderately correlated with the muscle strength deficit. The association between the deficit and the Timed Up and Go test was statistically significant.

CONCLUSIONS:

The evaluation of muscle strength and functional tests are more useful than the rating scales in patients 3 yrs after surgery. The strength curves are useful to have different levels of information and describe joint function.

PMID:25415395

30 B. LABRUM

Not all hip pain is labrum

Curr Sports Med Rep. 2015 Sep-Oct;14(5):373-9. doi: 10.1249/JSR.0000000000000192.

Hip Pain in Athletes - When It is Not the Labrum.

Seidenberg PH¹, Lynch SA.

Author information

Abstract

Hip pain is a relatively common complaint in sports. It is tempting to blame the athlete's symptoms on labral pathology. However, there is a high incidence of asymptomatic labral disease. Therefore, even when a labral tear is present, it may not be the underlying cause of the patient's pain. Clinicians should familiarize themselves with the large differential diagnosis for hip and pelvis pain to include nonmusculoskeletal pathology. This article reviews nonlabral causes of hip pain in athletes. For ease of classification, the hip is divided into anterior, lateral, and posterior regions.

PMID:26359838

31. KNEE

Knee valgus

Association Between Anatomical Characteristics, Knee Laxity and Muscle Strength, and Peak Knee Valgus During Vertical Drop Jump Landings

Authors: Agnethe Nilstad, PT, PhD1, Tron Krosshaug, PhD1, Kam-Ming Mok, MPhil1, Roald Bahr, MD, PhD1, Thor Einar Andersen, MD, PhD1

26 doi:10.2519/jospt.2015.5612

Study Design Controlled laboratory study; cross-sectional.

Objectives To investigate the relationship among anatomical variables, knee laxity, muscle strength, and peak knee valgus angles during a vertical drop jump landing task.

Background Excessive knee valgus has been associated with anterior cruciate ligament (ACL) injury in females, however the influence of anatomical characteristics, knee laxity and muscle strength on frontal plane knee motion is not completely understood.

Methods Norwegian elite female soccer players (N=209, age: 21 ± 4 years; height: 167 ± 6 cm; body mass: 63 ± 7 kg) were evaluated from 2009 through 2012. The evaluation included three-dimensional (3D) motion analysis of a vertical drop jump, anatomical measures (height, static knee valgus, leg length and static foot posture), knee laxity, and muscle strength (quadriceps, hamstrings and hip abductors). Multiple linear regression analyses were used to investigate the relationships among anatomical characteristics, knee laxity and muscle strength, and peak knee valgus angles.

Results Anatomical characteristics explained 11% of the variance in peak knee valgus angles ($p < 0.001$), with height and static knee valgus being significant predictors.

Conclusion Greater body height and static knee valgus were associated with greater peak knee valgus angles during a vertical drop jump landing task. However these variables only explained 11% of the variance in peak knee valgus. *J Orthop Sports Phys Ther*, Epub 17 Sep 2015.

doi:10.2519/jospt.2015.5612

Keyword: anterior cruciate ligament, biomechanics, female, football, screening, soccer

34. PATELLA

Rehabilitation of Patellar Tendinopathy Using Hip Extensors Strengthening and Landing Strategy Modification: Case Report With 6-Months Follow-Up

Authors: Rodrigo Scattone Silva, PT, MSc¹, Ana Luisa G. Ferreira, PT, MSc¹, Theresa H. Nakagawa, PT, PhD¹, José E. M. Santos, MD, PhD², Fábio V. Serrão, PT, PhD¹

Published: *Journal of Orthopaedic & Sports Physical Therapy*, Ahead of Print **Pages:** 1-
Study Design Case report.

Background Although eccentric exercises have been a cornerstone for the rehabilitation of athletes with patellar tendinopathy, the effectiveness of this intervention is sometimes less than ideal. Athletes with patellar tendinopathy have been shown to have different jump-landing patterns and lower hip extensor strength compared to asymptomatic athletes. To our knowledge, the effectiveness of an intervention addressing these impairments has not yet been investigated.

Case Description The patient was a 21-years-old male volleyball athlete with a 9-month history of patellar tendon pain. Pain was measured with a visual analogue scale. Disability was measured with the Victorian Institute of Sport Assessment-Patella questionnaire. These assessments were conducted before and after an 8-week intervention, as well as 6 months post-intervention. Hip and knee kinematics and kinetics during drop vertical jump and isometric strength were also measured before and after the intervention at 8 weeks. The intervention consisted of hip extensor muscles strengthening and jump-landing strategy modification training. The patient did not interrupt volleyball practice/competition during rehabilitation.

Outcomes After the 8-week intervention and at 6 months post-intervention, the athlete was completely asymptomatic during sports participation. This favorable clinical outcome was accompanied by a 50% increase in hip extensor moment, a 21% decrease in knee extensor moment, and a 26% decrease in patellar tendon force during jump-landing measured at 8 weeks.

Discussion An 8-week intervention of hip muscles strengthening and jump-landing modification decreased pain and disability and improved jump-landing biomechanics in an athlete with patellar tendinopathy.

Level of Evidence Therapy, level 4. *J Orthop Sports Phys Ther*, Epub 21 Sep 2015.
doi:10.2519/jospt.2015.6242

Keyword: biomechanics, jumper's knee, overuse, tendon, volleyball

37. OSTEOARTHRITIS/KNEE

Early onset

Clin Rheumatol. 2015 Oct;34(10):1769-79. doi: 10.1007/s10067-014-2774-0. Epub 2014 Sep 13.

Identification of factors associated with the development of knee osteoarthritis in a young to middle-aged cohort of patients with knee complaints.

Huétink K¹, Stoel BC², Watt I², Kloppenburg M³, Bloem JL², Malm SH⁴, Van't Klooster R², Nelissen RG⁵.

Author information

Abstract

The objective of this study was to identify risk factors for knee osteoarthritis (OA) development in a young to middle-aged population with sub-acute knee complaints. This, in order to define high risk patients who may benefit from early preventive or future disease modifying therapies. Knee OA development visible on radiographs and MR in 319 patients (mean age 41.5 years) 10 years after sub-acute knee complaints and subjective knee function (KOOS score) was studied. Associations between OA development and age, gender, activity level, BMI, meniscal or anterior cruciate ligament (ACL) lesions, OA in first-degree relatives and radiographic hand OA were determined using multivariable logistic regression analysis. OA on radiographs and MR in the TFC is associated with increased age (OR: 1.10, 95 % 1.04-1.16 and OR: 1.07, 95 % 1.02-1.13). TFC OA on radiographs only is associated with ACL and/or meniscal lesions (OR: 5.01, 95 % 2.14-11.73), presence of hand OA (OR: 4.69, 95 % 1.35-16.32) and higher Tegner activity scores at baseline before the complaints (OR: 1.20, 95 % 1.01-1.43). The presence of OA in the TFC diagnosed only on MRI is associated with a family history of OA (OR: 2.44, 95 % 1.18-5.06) and a higher BMI (OR: 1.13, 95 % 1.04-1.23). OA in the PFC diagnosed on both radiographs and MR is associated with an increased age (OR: 1.06, 95 % 1.02-1.12 and OR: 1.05, 95 % 1.00-1.09). PFC OA diagnosed on radiographs only is associated with a higher BMI (OR: 1.12, 95 % 1.02-1.22). The presence of OA in the PFC diagnosed on MR only is associated with the presence of hand OA (OR: 3.39, 95 % 1.10-10.50). Compared to normal reference values, the study population had significantly lower KOOS scores in the different subscales. These results show that knee OA development in young to middle aged patients with a history of sub-acute knee complaints is associated with the presence of known risk factors for knee OA. OA is already visible on radiographs and MRI after 10 years. These high risk patients may benefit from adequate OA management early in life.

KEYWORDS: Associated factors; Knee complaints; Knee osteoarthritis; Young population

PMID: 25213328

Mechanical stress and OA

Ann Rheum Dis. 2015 Oct;74(10):1842-7. doi: 10.1136/annrheumdis-2013-205012. Epub 2014 May 20.

The relative contribution of mechanical stress and systemic processes in different types of osteoarthritis: the NEO study.

Visser AW¹, de Mutsert R², le Cessie S³, den Heijer M⁴, Rosendaal FR⁵, Kloppenburg M⁶; NEO Study Group.

Collaborators (21)

Author information

Abstract

OBJECTIVE:

To study the relative contribution of surrogates for mechanical stress and systemic processes with osteoarthritis (OA) in weight-bearing and non-weight-bearing joints.

METHODS:

The Netherlands Epidemiology of Obesity study is a population-based cohort including 6673 participants (range 45-65 years, 56% women, median body mass index 26 kg/m²). Weight (kg) and fat mass (kg) were measured, fat-free mass (kg) was calculated. The metabolic syndrome was defined following the Adult Treatment Panel III criteria. Knee and hand OA were defined according to the American College of Rheumatology clinical criteria. Logistic regression analyses were performed to associate surrogates for mechanical stress (such as weight, fat-free mass) and systemic processes (such as metabolic syndrome) with OA in knees alone, knees and hands or hands alone, adjusted for age, sex, height, smoking, education and ethnicity, and when appropriate for metabolic factors and weight.

RESULTS:

Knee, knee and hand, and hand OA were present in 10%, 4% and 8% of the participants, respectively. Knee OA was associated with weight and fat-free mass, adjusted for metabolic factors (OR 1.49 (95% CI 1.32 to 1.68) and 2.05 (1.60 to 2.62), respectively). Similar results were found for OA in knees and hands (OR 1.51 (95% CI 1.29 to 1.78) and 2.17 (95% CI 1.52 to 3.10) respectively). Hand OA was associated with the metabolic syndrome, adjusted for weight (OR 1.46 (95% CI 1.06 to 2.02)).

CONCLUSIONS:

In knee OA, whether or not in co-occurrence with hand OA, surrogates for mechanical stress are suggested to be the most important risk factors, whereas in hand OA alone, surrogates for systemic processes are the most important risk factors.

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KEYWORDS: Epidemiology; Hand Osteoarthritis; Knee Osteoarthritis

PMID: 24845389

38 A. FOOT AND ANKLE

Proximal Tibiofibular joint**Proximal tibiofibular joint: Rendezvous with a forgotten articulation**

Sarma A, Borgohain B, Saikia B. Proximal tibiofibular joint: Rendezvous with a forgotten articulation. Indian J Orthop 2015;49:489-95

Year : 2015 | Volume : 49 | Issue : 5 | Page : 489-495

Abstract

The proximal tibiofibular joint (PTFJ) is a plane type synovial joint. The primary function of the PTFJ is dissipation of torsional stresses applied at the ankle and the lateral tibial bending moments besides a very significant tensile, rather than compressive weight bearing. Though rare, early diagnosis and treatment of the PTFJ dislocation are essential to prevent chronic joint instability and extensive surgical intervention to restore normal PTFJ biomechanics, ankle and knee function, especially in athletes prone to such injuries. PTFJ dislocations often remain undiagnosed in polytrauma scenario with ipsilateral tibial fracture due to the absence of specific signs and symptoms of PTFJ injury. Standard orthopedic textbooks generally describe no specific tests or radiological signs for assessment of the integrity of this joint. The aim of this paper was to review the relevant clinical anatomy, biomechanics and traumatic pathology of PTFJ with its effect on the knee emphasizing the importance of early diagnosis through a high index of suspicion. Dislocation of the joint may have serious implications for the knee joint stability since fibular collateral ligament and posterolateral ligament complex is attached to the upper end of the fibula. Any high energy knee injury with peroneal nerve palsy should immediately raise the suspicion of PTFJ dislocation especially if the mechanism of injury involved knee twisting in flexion beyond 80° and in such cases a comparative radiograph of the contralateral side should be performed. Wider clinical awareness can avoid both embarrassingly extensive surgeries due to diagnostic delays or unnecessary overtreatment due to misinformation on the part of the treating surgeon.

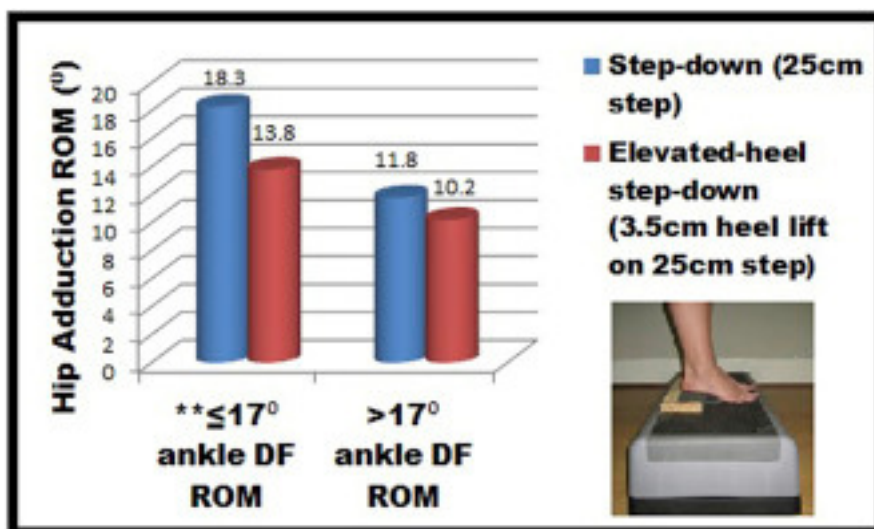
Keywords: Biomechanics, dislocations, knee injury, proximal tibiofibular joint

Mesh terms: Biomechanics, dislocation, knee injuries

Impact of limited dorsi flexion on knee mechanics

The Association Between Loss of Ankle Dorsiflexion Range of Movement, and Hip Adduction and Internal Rotation During a Step Down Test

T. Bell-Jenje, MSc Physiotherapy B. Olivier, PhD W. Wood, PhD S. Rogers, MSc Physiotherapy A. Green, MSc Physiology W. McKinon, PhD



Highlights

- Limited ankle dorsiflexion range of motion increase hip adduction range of motion utilized during a step-down test
- Elevating the heel by 35mm decreases amount of hip adduction range of motion used
- Step-down test can be used to evaluate dynamic valgus of the knee
- Elevated-heel step-down test can be used to establish the influence of ankle dorsiflexion range of motion on hip kinematics

Abstract

A pattern of excessive hip adduction and internal rotation with medial deviation of the knee has been associated with numerous musculo-skeletal dysfunctions. Research into the role that ankle dorsiflexion (DF) range of motion (ROM) play in lower limb kinematics is lacking. The objective of this cross-sectional, observational study was to investigate the relationship between ankle DF ROM and hip adduction and hip internal rotation during a step down test with and without heel elevation in a healthy female population. Hip and ankle ROM was measured kinematically using a ten-camera Optitrack motion analysis system. Thirty healthy female participants (mean age=20.4 years; SD=0.9 years) first performed a step-down test with the heel of the weight bearing foot flat on the step and then with the heel elevated on a platform. Ankle DF, hip adduction and hip internal rotation were measured kinematically for the supporting leg. Participants who had 17° or less of ankle DF ROM displayed significantly more hip adduction ROM (p=0.001; Cohen’s d effect size=1.2) than the participants with more than 17° of DF during the step-down test. Participants with limited DF ROM showed a significant reduction in hip adduction ROM during the elevated-heel step-down test (p=0.008). Hip internal rotation increased in both groups during the EHSD compared to the step-down test (p>0.05) Reduced ankle DF ROM is associated with increased hip adduction utilised during the step-down test. Ankle DF should be taken into account when assessing patients with aberrant frontal plane lower limb alignment.

Keywords: Kinematics, Range of movement, Alignment

41 B. COMPARTMENT SYNDROME

Diagnosis of

Curr Sports Med Rep. 2015 Sep-Oct;14(5):380-5. doi: 10.1249/JSR.000000000000187.

Chronic Exertional Compartment Syndrome Testing.

Flick D¹, Flick R.

[Author information](#)

Abstract

Chronic exertional compartment syndrome is diagnosed based on historical and physical exam findings combined with elevated intracompartmental pressures. Direct static testing with a large bore needle device is the most common instrument used for diagnosis. Based on the most recent systematic reviews, there is poor evidence for the traditional diagnostic pressures used in practice with no standardization of the procedure. New research has introduced a standardized approach with dynamic testing of the limb with transducer-tipped catheters. Less invasive methods of testing using radiologic techniques are currently under investigation. A detailed understanding of the anatomy and physiology of the limb is paramount in executing a safe and accurate procedure.

PMID:26359839

44. RHUMATOID ARTHRITIS

Sensory loss and RA

Impact of Sensory Impairments on Functional Disability in Adults With Arthritis

Diana E. Fisher, MA

,Michael M. Ward, MD, MPH,Howard J. Hoffman, MA,Chuan-Ming Li, MD, PhD,Mary Frances Cotch, PhD

Published Online: September 22, 2015

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Introduction

Mobility is reduced in people with sensory impairments and those with arthritis. The combined impact of these conditions may be underappreciated. This study examines the associations between impairments in vision, hearing, and balance and functional ability in adults with versus without arthritis.

Methods

Using National Health and Nutrition Examination Survey data from 1999–2004, arthritis status, functional ability, and sensory impairments (vision, hearing, and balance) were assessed from self-reported responses by 6,654 individuals aged ≥ 50 years (mean age, 63.4 years; 46.3% male). Multivariable regression analyses, conducted in 2014, assessed the associations between sensory impairment and arthritis on functional ability and mobility.

Results

Among study participants, 41.8% reported having arthritis; of these, 27.1%, 44.9%, and 35.1% reported impaired vision, hearing, or balance, respectively. Having multiple sensory impairments was significantly associated with reduced functional ability in people with arthritis; individuals with three sensory impairments reported the highest levels of disability for all functional domains (compared with no impairment; lower extremity mobility, 80.2% vs 39.1%; general physical activities, 94.7% vs 75.9%; activities of daily living, 69.7% vs 27.2%; instrumental activities of daily living, 77.2% vs 37.4%; leisure and social activities, 66.3% vs 30.6%; impaired gait speed, 48.1% vs 16.3%; all $p < 0.001$). Importantly, visual deficits, in combination with arthritis, had the greatest impact on mobility, with odds of impaired mobility at least twice as high as for individuals without arthritis.

Conclusions

Addressing sensory deficits, especially difficulties with vision, may improve functional ability, which may be particularly helpful for adults with arthritis.

RA and pregnancy

Ann Rheum Dis. 2015 Oct;74(10):1836-41. doi: 10.1136/annrheumdis-2014-205383. Epub 2014 May 15.

Fertility in women with rheumatoid arthritis: influence of disease activity and medication.

Brouwer J¹, Hazes JM², Laven JS³, Dolhain RJ².
Author information

Abstract

OBJECTIVES:

Many female rheumatoid arthritis (RA) patients attempting to conceive have a time to pregnancy (TTP) of >12 months. During this period RA often cannot be treated optimally. We sought to identify clinical factors associated with prolonged TTP in female RA patients.

METHODS:

In a nationwide prospective cohort study on pregnancy in RA patients (PARA study), women were included preconceptionally or during the first trimester. Cox regression analysis was used to study the association of disease characteristics and medication use with TTP.

RESULTS:

TTP exceeded 12 months in 42% of 245 patients. Longer TTP was related to age, nulliparity, disease activity (DAS28), and preconception use of non-steroidal anti-inflammatory drugs (NSAIDs) and prednisone. These variables were independently associated with TTP, with HRs for occurrence of pregnancy of 0.96 (95% CI 0.92 to 1.00) per year of age, 0.52 (0.38 to 0.70) for nulliparity, 0.81 (0.71 to 0.93) per point increase in DAS28, 0.66 (0.46 to 0.94) for NSAIDs and 0.61 (0.45 to 0.83) for prednisone use. The impact of prednisone use was dose dependent, with significantly longer TTP when daily dose was >7.5 mg. Smoking, disease duration, rheumatoid factor, anti-citrullinated protein antibodies, past methotrexate use, and preconception sulfasalazine use did not prolong TTP.

CONCLUSIONS:

TTP in RA is longer if patients are older or nulliparous, have higher disease activity, use NSAIDs or use prednisone >7.5 mg daily. Preconception treatment strategies should aim at maximum suppression of disease activity, taking account of possible negative effects of NSAIDs use and higher prednisone doses.

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KEYWORDS:

DAS28; NSAIDs; Rheumatoid Arthritis

PMID:24833784

45 B. MANUAL THERAPY CERVICAL**Chiropractic for chronic neck pain**

J Manipulative Physiol Ther. 2015 Sep 15. pii: S0161-4754(15)00081-0. doi: 10.1016/j.jmpt.2015.06.014.

Prognostic Factors for Recurrences in Neck Pain Patients Up to 1 Year After Chiropractic Care.

Langenfeld A¹, Humphreys BK², Swanenburg J³, Peterson CK².
Author information

Abstract

OBJECTIVE:

Information about recurrence and prognostic factors is important for patients and practitioners to set realistic expectations about the chances of full recovery and to reduce patient anxiety and uncertainty. Therefore, the purpose of this study was to assess recurrence and prognostic factors for neck pain in a chiropractic patient population at 1 year from the start of the current episode.

METHODS:

Within a prospective cohort study, 642 neck pain patients were recruited by chiropractors in Switzerland. After a course of chiropractic therapy, patients were followed up for 1 year regarding recurrence of neck pain. A logistic regression analysis was used to assess prognostic factors for recurrent neck pain. The independent variables age, pain medication usage, sex, work status, duration of complaint, previous episodes of neck pain and trauma onset, numerical rating scale, and Bournemouth questionnaire for neck pain were analyzed. Prognostic factors that have been identified in previous studies to influence recovery of neck pain are psychologic distress, poor general health at baseline, and a previous history of pain elsewhere.

RESULTS:

Five hundred forty five patients (341 females), with a mean age of 42.1 years (SD, 13.1) completed the 1-year follow-up period. Fifty-four participants (11%) were identified as "recurrent." Prognostic factors associated with recurrent neck pain were previous episodes of neck pain and increasing age.

CONCLUSION:

The results of this study suggest that recurrence of neck pain within 1 year after chiropractic intervention in Swiss chiropractic patients presenting from varied onsets is low. This study found preliminary findings that older age and a previous episode of neck may be useful predictors of neck pain recurrence within 1 year.

KEYWORDS: Chiropractic; Forecasting; Neck Pain; Recurrence
PMID:26385743

45 C. MANUAL THERAPY THORACIC**Upper T manip and cervical muscle activity – no change**

J Manipulative Physiol Ther. 2015 Sep 18. pii: S0161-4754(15)00084-6. doi: 10.1016/j.jmpt.2015.06.016.

Immediate and Short-Term Effects of Upper Thoracic Manipulation on Myoelectric Activity of Sternocleidomastoid Muscles in Young Women With Chronic Neck Pain: A Randomized Blind Clinical Trial.

Pires PF¹, Packer AC², Dibai-Filho AV³, Rodrigues-Bigaton D⁴.
Author information

Abstract

OBJECTIVE:

The aim of this study was to assess the immediate and short-term effects of upper thoracic spine manipulation on pain intensity and myoelectric activity of the sternocleidomastoid muscles in young women with chronic neck pain.

METHODS:

A randomized clinical trial was carried out involving 32 women with chronic neck pain (mean age, 24.8 ± 5.4 years) allocated to an experimental group and a placebo group. Three evaluations were carried out: baseline, immediate postintervention, and short-term postintervention (48-72 hours after intervention). Myoelectric activity of the right and left sternocleidomastoid muscles was assessed at rest and during isometric contractions for cervical flexion and elevation of the shoulder girdle. Neck pain intensity was assessed at rest using a visual analog scale. Comparisons of the data were performed using 2-way repeated-measures analysis of variance with the Bonferroni correction. The level of significance was set at $P < .05$.

RESULTS:

A moderate treatment effect on myoelectric activity of the right and left sternocleidomastoid muscles during isometric elevation of the shoulder girdle was found in the experimental group only on the short-term postintervention evaluation ($d > 0.40$). No statistically significant differences were found for any of the variables analyzed in the intergroup comparisons at the different evaluation times ($P > .05$).

CONCLUSION:

No statistically significant differences were found in the intragroup or intergroup analyses of the experimental and placebo groups regarding myoelectric activity of the cervical muscles or the intensity of neck pain at rest in the immediate or short-term postintervention evaluations.

KEYWORDS: Electromyography; Musculoskeletal Manipulations; Neck Pain
PMID:26387859

46 A. UPPER LIMB NEUROMOBILIZATION**Nervous system sensitization****Evidence of Nervous System Sensitization in Commonly Presenting and Persistent Painful Tendinopathies: A Systematic Review**

Authors: Melanie L. Plinsinga, BSc¹, Michel S. Brink, PhD, MSc¹, Bill Vicenzino, PhD, MSc, Grad Dip Sports Phty, BPhty², Paul van Wilgen, PT, PhD, MSc^{3,4}

Published: *Journal of Orthopaedic & Sports Physical Therapy*, Ahead of Print **Pages:** 1-34 doi:10.2519/jospt.2015.5895

Study Design Systematic review.

Objectives Elucidate if there is sensitization of the nervous system in those with persistent rotator cuff (shoulder), lateral elbow, patellar, and Achilles tendinopathies.

Background Tendinopathy can be difficult to treat and persistent intractable pain and dysfunction frequent. It is hypothesized that induction or maintenance of persistent pain in tendinopathy is at least in part based on changes in the nervous system.

Methods Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines were followed. Relevant articles were identified through a computerized search in Embase, PubMed, and Web of Science followed by a manual search of reference lists of retained articles. To be eligible, studies had to include quantitative sensory testing (QST) and evaluate individuals diagnosed with a persistent tendinopathy of the rotator cuff (shoulder), lateral elbow, patellar, or Achilles tendon. Methodological quality assessment was evaluated with the Newcastle-Ottawa Scale.

Results In total, 16 full-text articles met the criteria for inclusion, of which the majority were case-control studies with heterogeneous methodological quality. No studies on Achilles tendinopathy were found. Mechanical algometry was the predominant QST used. Lowered pressure pain threshold was observed across different tendinopathies at the site of tendinopathy as well as at other sites, with the latter being suggestive of central sensitization.

Conclusion Although more research on sensory abnormalities is warranted, it appears likely that there is an association between persistent tendon pain and sensitization of the nervous system. This evidence is primarily from studies of upper limb tendinopathy and caution should be exercised with inference to lower limb tendinopathy. *J Orthop Sports Phys Ther*, Epub 21 Sep 2015. doi:10.2519/jospt.2015.5895

Keyword: athletic injuries, central sensitization, chronic pain, pain threshold

48 A. STM**Impact of touch**

Pain. 2015 Oct;156(10):1936-44. doi: 10.1097/j.pain.0000000000000253.

Touch inhibits subcortical and cortical nociceptive responses.

Mancini F¹, Beaumont AL, Hu L, Haggard P, Iannetti GD.
Author information

Abstract

The neural mechanisms of the powerful analgesia induced by touching a painful body part are controversial. A long tradition of neurophysiologic studies in anaesthetized spinal animals indicate that touch can gate nociceptive input at spinal level. In contrast, recent studies in awake humans have suggested that supraspinal mechanisms can be sufficient to drive touch-induced analgesia. To investigate this issue, we evaluated the modulation exerted by touch on established electrophysiologic markers of nociceptive function at both subcortical and cortical levels in humans. A δ and C skin nociceptors were selectively activated by high-power laser pulses. As markers of subcortical and cortical function, we recorded the laser blink reflex, which is generated by brainstem circuits before the arrival of nociceptive signals at the cortex, and laser-evoked potentials, which reflect neural activity of a wide array of cortical areas. If subcortical nociceptive responses are inhibited by concomitant touch, supraspinal mechanisms alone are unlikely to be sufficient to drive touch-induced analgesia.

Touch induced a clear analgesic effect, suppressed the laser blink reflex, and inhibited both A δ -fibre and C-fibre laser-evoked potentials. Thus, we conclude that touch-induced analgesia is likely to be mediated by a subcortical gating of the ascending nociceptive input, which in turn results in a modulation of cortical responses. Hence, supraspinal mechanisms alone are not sufficient to mediate touch-induced analgesia.

PMID:26058037

Massage and HA's**A randomized controlled trial on the effectiveness of court-type traditional Thai massage versus amitriptyline in patients with chronic tension-type headache**

Evidence-based Complementary and Alternative Medicine , 09/24/2015

Damapong P, et al. – This study aimed to evaluate the effectiveness of the court-type traditional Thai massage (CTTM) to treat patients with chronic tension-type headaches (CTTHs) comparing with amitriptyline taking. A randomized controlled trial was conducted. CTTM could be an alternative therapy for treatment of patients with CTTHs.

Methods

- A randomized controlled trial was conducted.
- Sixty patients diagnosed with CTTH were equally divided into a treatment and a control group.
- The treatment group received a 45-minute course of CTTM twice per week lasting 4 weeks while the control group was prescribed 25 mg of amitriptyline once a day before bedtime lasting 4 weeks.
- Outcome measures were evaluated in week 2, week 4 and followed up in week 6 consisting of visual analog scale (VAS), tissue hardness, pressure pain threshold (PPT), and heart rate variability (HRV).

Results

- The results demonstrated a significant decrease in VAS pain intensity for the CTTM group at different assessment time points while a significant difference occurred in within-group and between-group comparison ($P < 0.05$) for each evaluated measure.
- Moreover, the tissue hardness of the CTTM group was significantly lower than the control group at week 4 ($P < 0.05$).
- The PPT and HRV of the CTTM group were significantly increased ($P < 0.05$).

48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE**Auricular Acupuncture and pain****Evaluation of the immediate effect of auricular acupuncture on pain and electromyographic activity of the upper trapezius muscle in patients with nonspecific neck pain: A Randomized, Single-Blinded, Sham-Controlled, Crossover Study**

Evidence-based Complementary and Alternative Medicine , 09/24/2015

de Oliveira Silva AC, et al. – The aim of the present study was to assess the immediate effects of auricular acupuncture (AA) on the electromyographic (EMG) activity of the upper trapezius muscle and pain in nonspecific neck pain (NS-NP) patients. This study demonstrated the immediate effect of auricular acupuncture on the electromyographic activity of the upper trapezius muscle but the effect of this intervention on pain symptoms in patients with nonspecific neck pain was inconclusive.

Methods

- Twelve patients with NS-NP (NS-NP group) and 12 healthy subjects (HS Group) were enrolled in a randomized, single-blinded, crossover study.
- Each subject received a single session of AA and sham AA (SAA). Surface EMG activity was measured in the upper trapezius muscle at different “step contractions” of isometric shoulder elevation (15%, 20%, 25%, and 30% MVC).
- The outcome measure in patients with NS-NP was based on the numerical pain rating scale (NRS).

Results

- AA treatment led to a significant decrease in EMG activity in both groups (NS-NP group: $p = 0.0001$; HS group: $p < 0.0001$ —ANOVA test).
- This was not the case for the SAA treatment (NS-NP group: $p = 0.71$; HS group: $p < 0.54$).
- Significant decreases ($p < 0.001$) in the NRS were found for both treatments (AA and SAA).

Acupuncture and LBP**The efficacy of acupuncture for the treatment of sciatica: a systematic review and meta-analysis**

Evidence-based Complementary and Alternative Medicine , 09/24/2015 Ji M, et al.

This study aims to assess the effectiveness of acupuncture therapy for sciatica. Acupuncture may be effective in treating the pain associated with sciatica.

Methods

- Comprehensive searches of 8 databases were conducted up until April 2015.
- Outcomes included effectiveness (proportion of patients who improved totally or partly in clinical symptoms), pain intensity, and pain threshold.
- Effect sizes were presented as risk ratio (RR) and mean difference (MD).
- Pooled effect sizes were calculated by fixed effects or random effects model.

Results

- A total of 12 studies (involving 1842 participants) were included.
- Results showed that acupuncture was more effective than conventional Western medicine (CWM) in outcomes effectiveness (RR 1.21, 95% CI: 1.16–1.25), pain intensity (MD – 1.25, 95% CI: –1.63 to –0.86), and pain threshold (MD: 1.08, 95% CI: 0.98–1.17).
- Subgroup and sensitivity analysis found that the results did not change in different treatment method and drug categories substantially.
- The reported adverse effects were acceptable.

TP's and back pain

J Manipulative Physiol Ther. 2015 Sep 18. pii: S0161-4754(15)00127-X. doi: 10.1016/j.jmpt.2015.08.004.

Prevalence, Incidence, Localization, and Pathophysiology of Myofascial Trigger Points in Patients With Spinal Pain: A Systematic Literature Review.

Lluch E¹, Nijs J², De Kooning M², Van Dyck D³, Vanderstraeten R³, Struyf F⁴, Roussel NA⁴.
Author information

Abstract

OBJECTIVE:

A systematic review was performed to evaluate the existing evidence related to the prevalence, incidence, localization, and pathophysiology of myofascial trigger points (MTrPs) in patients with spinal (back and neck) pain.

METHODS:

A systematic review following Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines was performed in 2 electronic databases (PubMed and Web of Science) using predefined keywords regarding MTrPs and spinal pain. A "PICOS" questionnaire was used to set up the search strategies and inclusion criteria. Full-text reports concerning MTrPs in patients with back or neck pain, which described their prevalence, incidence, location, or underlying physiopathology were included and screened for methodological quality by 3 independent researchers. Each study was assessed for risk of bias using a checklist derived from the Web site of the Dutch Cochrane Centre.

RESULTS:

Fourteen articles were retrieved for quality assessment and data extraction. Studies reporting the incidence of MTrPs in patients with spinal pain were lacking. Within spinal pain, patients with neck pain were found to have the highest prevalence rates of MTrPs. The trapezius descendens, levator scapulae, and suboccipitales muscles were the most prevalent locations for active MTrPs in patients with neck pain. Latent MTrPs were present in asymptomatic people, but no significant differences were found in the prevalence rate of latent MTrPs between patients with spinal (neck) pain and healthy controls. The only study investigating prevalence of MTrPs in different localizations of the same muscle reported no significant differences in prevalence between active and latent MTrPs within the trapezius descendens muscle. Studies examining pathophysiological mechanisms underlying MTrPs demonstrated an acidic environment, high concentration of algogenic/inflammatory substances, stiffer muscle tissue, retrograde diastolic blood flows, spontaneous muscle activity at rest, and loss of muscle contractibility in muscles with MTrPs. Altered central processing was also found to play a role in the development of MTrPs.

CONCLUSIONS:

Myofascial trigger points are a prevalent clinical entity, especially in patients with neck pain. Evidence was not found to support or deny the role of MTrPs in other spinal pain. Compelling evidence supports local mechanisms underlying MTrPs. Future research should unravel the relevance of central mechanisms and investigate the incidence of MTrPs in patients with spinal pain.

KEYWORDS: Low Back Pain; Myofascial Pain Syndromes; Neck Pain; Systematic Review; Trigger Points

PMID: 26387860

LBP and gluteal TP's

Am J Phys Med Rehabil. 2015 Oct;94(10):784-91. doi: 10.1097/PHM.0000000000000261.

Is There an Association Between Lumbosacral Radiculopathy and Painful Gluteal Trigger Points?: A Cross-sectional Study.

Adelmanesh F¹, Jalali A, Jazayeri Shooshtari SM, Raissi GR, Ketabchi SM, Shir Y.

Author information

Abstract

OBJECTIVE:

The objective of this study was to compare the prevalence of gluteal trigger point in patients with lumbosacral radiculopathy with that in healthy volunteers.

DESIGN:

In a cross-sectional, multistage sampling method, patients with clinical, electromyographic, and magnetic resonance imaging findings consistent with lumbosacral radiculopathy were examined for the presence of gluteal trigger point. Age- and sex-matched clusters of healthy volunteers were selected as the control group. The primary outcome of the study was the presence or absence of gluteal trigger point in the gluteal region of the patients and the control group.

RESULTS:

Of 441 screened patients, 271 met all the inclusion criteria for lumbosacral radiculopathy and were included in the study. Gluteal trigger point was identified in 207 (76.4%) of the 271 patients with radiculopathy, compared with 3 (1.9%) of 152 healthy volunteers ($P < 0.001$). The location of gluteal trigger point matched the side of painful radiculopathy in 74.6% of patients with a unilateral radicular pain. There was a significant correlation between the side of the gluteal trigger point and the side of patients' radicular pain ($P < 0.001$).

CONCLUSIONS:

Although rare in the healthy volunteers, most of the patients with lumbosacral radiculopathy had gluteal trigger point, located at the painful side. Further studies are required to test the hypothesis that specific gluteal trigger point therapy could be beneficial in these patients.

PMID:25768072

48 C. MUSCLES**Recovery from hamstring tears**

Br J Sports Med. 2015 Aug 24. pii: bjsports-2015-094892. doi: 10.1136/bjsports-2015-094892.

MRI does not add value over and above patient history and clinical examination in predicting time to return to sport after acute hamstring injuries: a prospective cohort of 180 male athletes.

Wangenstein A¹, Almusa E², Boukarroum S², Farooq A², Hamilton B³, Whiteley R², Bahr R¹, Tol JL⁴.

Author information

Abstract

BACKGROUND:

MRI is frequently used in addition to clinical evaluation for predicting time to return to sport (RTS) after acute hamstring injury. However, the additional value of MRI to patient history taking and clinical examination remains unknown and is debated.

AIM:

To prospectively investigate the predictive value of patient history and clinical examination at baseline alone and the additional predictive value of MRI findings for time to RTS using multivariate analysis while controlling for treatment confounders.

METHODS:

Male athletes (N=180) with acute onset posterior thigh pain underwent standardised patient history, clinical and MRI examinations within 5 days, and time to RTS was registered. A general linear model was constructed to assess the associations between RTS and the potential baseline predictors. A manual backward stepwise technique was used to keep treatment variables fixed.

RESULTS:

In the first multiple regression model including only patient history and clinical examination, maximum pain score (visual analogue scale, VAS), forced to stop within 5 min, length of hamstring tenderness and painful resisted knee flexion (90°), showed independent associations with RTS and the final model explained 29% of the total variance in time to RTS. By adding MRI variables in the second multiple regression model, maximum pain score (VAS), forced to stop within 5 min, length of hamstring tenderness and overall radiological grading, showed independent associations and the adjusted R² increased from 0.290 to 0.318. Thus, additional MRI explained 2.8% of the variance in RTS.

SUMMARY:

There was a wide variation in time to RTS and the additional predictive value of MRI was negligible compared with baseline patient history taking and clinical examinations alone. Thus, clinicians cannot provide an accurate time to RTS just after an acute hamstring injury. This study provides no rationale for routine MRI after acute hamstring injury.

TRIAL REGISTRATION NUMBER: ClinicalTrials.gov Identifier: NCT01812564.

KEYWORDS: Hamstring; Injuries; MRI

PMID: 26305004

55. SCOLIOSIS

Sensory changes in

Gait Posture. 2015 Sep 6. pii: S0966-6362(15)00834-6. doi: 10.1016/j.gaitpost.2015.08.013.

Sensory reweighting is altered in adolescent patients with scoliosis: Evidence from a neuromechanical model.

Pialasse JP¹, Descarreaux M², Mercier P³, Simoneau M⁴.

Author information

Abstract

Idiopathic scoliosis is the most frequent spinal deformity in adolescence. While its aetiology remains unclear, impairments in balance control suggest a dysfunction of the sensorimotor control mechanisms. The objective of this paper is to evaluate the ability of patients with idiopathic scoliosis to reweigh sensory information. Using a neuromechanical model, the relative sensory weighting of vestibular and proprioceptive information was assessed. Sixteen healthy adolescents and respectively 20 and 16 adolescents with mild or severe scoliosis were recruited. Binaural bipolar galvanic vestibular stimulation was delivered to elicit postural movement along the coronal plane. The kinematics of the upper body, using normalized horizontal displacement of the 7th cervical vertebra, was recorded 1s before, 2s during, and 1s following vestibular stimulation. The neuromechanical model included active feedback mechanisms that generated corrective torque from the vestibular and proprioceptive error signals. The model successfully predicted the normalized horizontal displacement of the 7th cervical vertebra. All groups showed similar balance control before vestibular stimulation; however, the amplitude (i.e., peak horizontal displacement) of the body sway during and immediately following vestibular stimulation was approximately 3 times larger in patients compared to control adolescents. The outcome of the model revealed that patients assigned a larger weight to vestibular information compared to controls; vestibular weight was 6.03% for controls, whereas it was 13.09% and 13.26% for the mild and severe scoliosis groups, respectively. These results suggest that despite the amplitude of spine deformation, the sensory reweighting mechanism is altered similarly in adolescent patients with scoliosis.

KEYWORDS: Adolescent idiopathic scoliosis; Balance control; Galvanic vestibular stimulation; Mathematical modelling; Sensorimotor integration

PMID:26371828

56. ATHLETICS

Factors in injury

Br J Sports Med. 2015 Sep 15. pii: bjsports-2015-094622. doi: 10.1136/bjsports-2015-094622.

The psychological factor 'self-blame' predicts overuse injury among top-level Swedish track and field athletes: a 12-month cohort study.

Timpka T¹, Jacobsson J², Dahlström Ö³, Kowalski J⁴, Bargaría V⁵, Ekberg J¹, Nilsson S², Renström P⁶.

Author information

Abstract

BACKGROUND:

Athletes' psychological characteristics are important for understanding sports injury mechanisms. We examined the relevance of psychological factors in an integrated model of overuse injury risk in athletics/track and field.

METHODS:

Swedish track and field athletes (n=278) entering a 12-month injury surveillance in March 2009 were also invited to complete a psychological survey. Simple Cox proportional hazards models were compiled for single explanatory variables. We also tested multiple models for 3 explanatory variable groupings: an epidemiological model without psychological variables, a psychological model excluding epidemiological variables and an integrated (combined) model.

RESULTS:

The integrated multiple model included the maladaptive coping behaviour self-blame (p=0.007; HR 1.32; 95% CI 1.08 to 1.61), and an interaction between athlete category and injury history (p<0.001). Youth female (p=0.034; HR 0.51; 95% CI 0.27 to 0.95) and youth male (p=0.047; HR 0.49; 95% CI 0.24 to 0.99) athletes with no severe injury the previous year were at half the risk of sustaining a new injury compared with the reference group. A training load index entered the epidemiological multiple model, but not the integrated model.

CONCLUSIONS:

The coping behaviour self-blame replaced training load in an integrated explanatory model of overuse injury risk in athletes. What seemed to be more strongly related to the likelihood of overuse injury was not the athletics load per se, but, rather, the load applied in situations when the athlete's body was in need of rest.

KEYWORDS: Athletics; Epidemiology; Injuries; Psychology

PMID:26373585

57. GAIT**Balance training**

Clin Rehabil. 2015 Sep 22. pii: 0269215515605553.

Long-term effects of a progressive and specific balance-training programme with multi-task exercises for older adults with osteoporosis: A randomized controlled study.

Halvarsson A¹, Oddsson L², Franzén E³, Ståhle A³.

Author information

Abstract

OBJECTIVE:

To evaluate long-term effects of balance-training on concerns about falling, gait, balance performance, and physical function in older adults with osteoporosis and increased risk of falling.

DESIGN:

Randomized controlled trial, including three groups (training, training+physical activity, and control group), with follow-ups at three, nine, and 15 months. Short-term, three-month follow-up, benefits for those who fulfilled the first follow-up (n = 69) have previously been reported.

SETTING:

Stockholm, Sweden.

PARTICIPANTS:

A total of 96 elderly, age 66-87, with verified osteoporosis.

INTERVENTIONS:

Balance-training programme including dual- and multitasks, with or without supplementary physical activity, three times/week over 12 weeks.

MEASUREMENTS:

Concerns about falling Falls Efficacy Scale -International (FES-I), walking at preferred speed with and without a cognitive dual-task and at fast speed, balance tests (one-leg stance and modified figure-of-eight), and physical function Late-Life Function and Disability Instrument (LLFDI).

RESULTS:

Participants in the training group maintained positive effects throughout the study period for concerns about falling (baseline vs. 15 months, median 27.5 vs. 23 points, $p < 0.001$) and walking performance (baseline vs. 15 months, $p \leq 0.05$ with an improvement of 0.9-1.4 m/s). The Training+physical activity group declined to baseline values at the nine-month follow-up, and were even lower at the 15-month follow-up for concerns about falling (median 26 vs. 26 points), walking performance (changes of -0.02 to 0.04 m/s), and physical function (mean 44.0 vs. 42.9 points). The control group remained unchanged throughout the study period.

CONCLUSIONS:

This balance-training programme reduced concerns about falling, and also improved gait in older adults with osteoporosis and increased risk of falling in a long-term perspective - important issues for fall prevention.

KEYWORDS: Balance; fear of falling; long-term follow-up; osteoporosis; training
PMID: 26396164

59. PAIN**Neuropathic pain**

J Pain. 2015 Sep 18. pii: S1526-5900(15)00842-1. doi: 10.1016/j.jpain.2015.08.008.

Neuropathic pain and functional reorganization in the primary sensorimotor cortex after spinal cord injury.

Jutzeler CR¹, Freund P², Huber E³, Curt A³, Kramer JL⁴.
Author information

Abstract

Refractory to most types of treatment, neuropathic pain (NP) is a major problem for people living with spinal cord injury (SCI). Among problems related to treatment, underlying mechanisms are poorly understood. The aim of the present study was to investigate the association between cortical reorganization and NP after SCI. 24 individuals with sensorimotor complete and incomplete para- and tetraplegia (12 suffering from NP, 13 pain-free) and 31 healthy subjects were examined. Functional magnetic resonance imaging was used to assess activation in primary somatosensory and motor cortices in response to motor (i.e., active and passive wrist extension) and sensory (i.e., heat and brushing) tasks applied on the dorsum of the hand. In individuals with SCI, there were no group-level differences in task related activation (i.e., movement or sensory) compared to healthy control subjects. However, based on the Euclidean Distance measure, individuals with SCI demonstrated a lateral shift of peak activity in primary sensory and motor cortices ($p < 0.05$). Among those with NP, chronic pain intensity inversely correlated with magnitude of the shift in the primary motor cortex during active wrist extension. The findings reveal that neuropathic pain in motor and sensory tasks at/above the level of lesion is not associated with increased plasticity. In line with previous studies changes in somatotopy and activation following SCI are rather limited while the influence of neuropathic pain on plasticity remains controversial.

KEYWORDS: Euclidean distance; magnetic resonance imaging; paraplegia; plasticity; primary motor cortex; primary somatosensory cortex; tetraplegia

PMID: 26392031

Inflammation and pain sensitization

Pain. 2015 Oct;156(10):1954-64. doi: 10.1097/j.pain.0000000000000256.

Inflammation-induced pain sensitization in men and women: does sex matter in experimental endotoxemia?

Wegner A¹, Elsenbruch S, Rebernik L, Roderigo T, Engelbrecht E, Jäger M, Engler H, Schedlowski M, Benson S.

Author information

Abstract

A role of the innate immune system is increasingly recognized as a mechanism contributing to pain sensitization. Experimental administration of the bacterial endotoxin lipopolysaccharide (LPS) constitutes a model to study inflammation-induced pain sensitization, but all existing human evidence comes from male participants. We assessed visceral and musculoskeletal pain sensitivity after low-dose LPS administration in healthy men and women to test the hypothesis that women show greater LPS-induced hyperalgesia compared with men. In this randomized, double-blind, placebo-controlled crossover study, healthy men (n = 20) and healthy women using oral contraceptives (n = 20) received an intravenous injection of 0.4 ng/kg body weight LPS or placebo. Pain sensitivity was assessed with established visceral and musculoskeletal pain models (ie, rectal pain thresholds; pressure pain thresholds for different muscle groups), together with a heartbeat perception (interoceptive accuracy) task. Plasma cytokines (tumor necrosis factor- α and interleukin-6) were measured along with state anxiety at baseline and up to 6-hour postinjection. Lipopolysaccharide application led to significant increases in plasma cytokines and state anxiety and decreased interoceptive awareness in men and women ($P < 0.001$, condition effects), with more pronounced LPS-induced cytokine increases in women ($P < 0.05$, interaction effects). Although both rectal and pressure pain thresholds were significantly decreased in the LPS condition (all $P < 0.05$, condition effect), no sex differences in endotoxin-induced sensitization were observed. In summary, LPS-induced systemic immune activation leads to visceral and musculoskeletal hyperalgesia, irrespective of biological sex. These findings support the broad applicability of experimental endotoxin administration as a translational preclinical model of inflammation-induced pain sensitization in both sexes.

PMID: 26058036

Cognition and pain

Pain. 2015 Oct;156(10):1978-90. doi: 10.1097/j.pain.0000000000000257.

The Experience of Cognitive Intrusion of Pain: scale development and validation.

Attridge N¹, Crombez G, Van Ryckeghem D, Keogh E, Eccleston C.

Author information

Abstract

Patients with chronic pain often report their cognition to be impaired by pain, and this observation has been supported by numerous studies measuring the effects of pain on cognitive task performance. Furthermore, cognitive intrusion by pain has been identified as one of 3 components of pain anxiety, alongside general distress and fear of pain. Although cognitive intrusion is a critical characteristic of pain, no specific measure designed to capture its effects exists. In 3 studies, we describe the initial development and validation of a new measure of pain interruption: the Experience of Cognitive Intrusion of Pain (ECIP) scale. In study 1, the ECIP scale was administered to a general population sample to assess its structure and construct validity. In study 2, the factor structure of the ECIP scale was confirmed in a large general population sample experiencing no pain, acute pain, or chronic pain. In study 3, we examined the predictive value of the ECIP scale in pain-related disability in fibromyalgia patients. The ECIP scale scores followed a normal distribution with good variance in a general population sample.

The scale had high internal reliability and a clear 1-component structure. It differentiated between chronic pain and control groups, and it was a significant predictor of pain-related disability over and above pain intensity. Repairing attentional interruption from pain may become a novel target for pain management interventions, both pharmacologic and nonpharmacologic.

PMID: 6067388

Inflammatory mediators

Pain. 2015 Oct;156(10):1852-63. doi: 10.1097/j.pain.000000000000204.

Facilitated spinal neuropeptide signaling and upregulated inflammatory mediator expression contribute to postfracture nociceptive sensitization

Shi X¹, Guo TZ, Wei T, Li WW, Clark DJ, Kingery WS.

Author information

Abstract

Tibia fracture induces exaggerated substance P (SP) and calcitonin gene-related peptide (CGRP) signaling and neuropeptide-dependent nociceptive and inflammatory changes in the hind limbs of rats similar to those seen in complex regional pain syndrome. Inflammatory changes in the spinal cord contribute to nociceptive sensitization in a variety of animal pain models. This study tested the hypothesis that fracture-induced exaggerated neuropeptide signaling upregulates spinal inflammatory mediator expression, leading to postfracture hind limb nociceptive sensitization. At 4 weeks after performing tibia fracture and casting in rats, we measured hind limb allodynia, unweighting, warmth, edema, and spinal cord neuropeptide and inflammatory mediator content. The antinociceptive effects of intrathecally injected neuropeptide and inflammatory mediator receptor antagonists were evaluated in fracture rats. Transgenic fracture mice lacking SP or the CGRP RAMP1 receptor were used to determine the effects of neuropeptide signaling on postfracture pain behavior and spinal inflammatory mediator expression. Hind limb allodynia, unweighting, warmth, edema, increased spinal SP and CGRP, and increased spinal inflammatory mediator expression (TNF, IL-1, IL-6, CCL2, and nerve growth factor) were observed at 4 weeks after fracture in rats.

Fracture-induced increases in spinal inflammatory mediators were not observed in fracture mice lacking SP or the CGRP receptor, and these mice had attenuated postfracture nociceptive sensitization. Intrathecal injection of selective receptor antagonists for SP, CGRP, TNF, IL-1, IL-6, CCL2, or nerve growth factor each reduced pain behaviors in the fracture rats. Collectively, these data support the hypothesis that facilitated spinal neuropeptide signaling upregulates the expression of spinal inflammatory mediators contributing to nociceptive sensitization in a rodent fracture model of complex regional pain syndrome.

PMID: 25932690

Cold decreases pain

Pain. 2015 Oct;156(10):1906-12. doi: 10.1097/j.pain.0000000000000250.

Distinct temporal filtering mechanisms are engaged during dynamic increases and decreases of noxious stimulus intensity.

Mørch CD¹, Frahm KS, Coghill RC, Arendt-Nielsen L, Andersen OK.

Author information

Abstract

Physical stimuli are subject to pronounced temporal filtering during afferent processing such that changes occurring at certain rates are amplified and others are diminished. Temporal filtering of nociceptive information remains poorly understood. However, the phenomenon of offset analgesia, where a disproportional drop in perceived pain intensity is caused by a slight drop in noxious heat stimulation, indicates potent temporal filtering in the pain pathways. To develop a better understanding of how dynamic changes in a physical stimulus are constructed into an experience of pain, a transfer function between the skin temperature and the perceived pain intensity was modeled. Ten seconds of temperature-controlled near-infrared (970 nm) laser stimulations above the pain threshold with a 1°C increment, decrement, or constant temperature were applied to the dorsum of the hand of healthy human volunteers. The skin temperature was assessed by an infrared camera. Offset analgesia was evoked by laser heat stimulation. The estimated transfer functions showed shorter latencies when the temperature was increased by 1°C (0.53 seconds [0.52-0.54 seconds]) than when decreased by 1°C (1.15 seconds [1.12-1.18 seconds]) and smaller gains (increase: 0.89 [0.82-0.97]; decrease: 2.61 [1.91-3.31]).

The maximal gain was observed at rates around 0.06 Hz. These results show that temperature changes occurring around 0.06 Hz are best perceived and that a temperature decrease is associated with a larger but slower change in pain perception than a comparable temperature increase. These psychophysical findings confirm the existence of differential mechanisms involved in temporal filtering of dynamic increases and decreases in noxious stimulus intensity.

PMID: 26035254

Catastrophizing and motor control

The effects of catastrophizing on central motor activity

European Journal of Pain, 09/23/2015 Henderson LA, et al.

The aim of this investigation was to determine the effect of pain catastrophizing on ongoing brain activity and movement-evoked brain activity during acute orofacial muscle pain. These data show that during pain, catastrophic thinking has a significant impact on activity in motor and sensory integrative regions. Reducing negative coping strategies may be an effective means in reducing fear avoidance behaviours and the intensity of ongoing pain.

Methods

- Thirty-four healthy, pain-free subjects were recruited.
- In 17 subjects, the effect of catastrophizing on regional brain activity was determined.
- In 19 subjects, functional magnetic resonance imaging was used to determine the effects of pain catastrophizing on brain activation patterns during jaw movements in the presence of ongoing pain.

Results

- The authors found that in the presence of pain, catastrophizing was significantly correlated with activity in multi-sensory integrative brain regions, including the dorsolateral and medial prefrontal cortices.
- Importantly, this relationship did not exist when subjects were not experiencing pain.
- In addition, during repetitive open-close jaw movements in the presence of pain, activity in the primary motor cortex, cerebellar cortex and the trigeminal motor nucleus was positively correlated with pain catastrophizing scores.
- In contrast, in the dorsolateral prefrontal cortex, as pain catastrophizing scores increased, the magnitude of signal intensity change during jaw movements decreased.
- Again, no such relationships occurred when the individual was not in pain.

CBT for CFS

Clin J Pain. 2015 Oct;31(10):914-21. doi: 10.1097/AJP.0000000000000191.

The Process of Change in Pain During Cognitive-Behavior Therapy for Chronic Fatigue Syndrome.

Bloot L¹, Heins MJ, Donders R, Bleijenberg G, Knoop H.
Author information

Abstract

BACKGROUND:

Cognitive-behavior therapy (CBT) leads to a reduction of fatigue and pain in chronic fatigue syndrome. The processes underlying the reduction in pain have not been investigated. Recently, it was shown that increased self-efficacy, decreased focusing on symptoms, increased physical functioning, and a change in beliefs about activity contribute to the decrease in fatigue.

OBJECTIVES:

The present study has 2 objectives: (1) to determine the relationship between the reduction of fatigue and pain during CBT; (2) test to what extent the model for change in fatigue is applicable to the reduction in pain.

MATERIALS AND METHODS:

One hundred forty-two patients meeting United States centers for Disease Control and Prevention criteria for chronic fatigue syndrome, currently reporting pain, and starting CBT were included. A cross-lagged analysis was performed to study the causal direction of change between pain and fatigue. Pain and process variables were assessed before therapy, 3 times during CBT, and after therapy. Actual physical activity was also assessed. The model was tested with multiple regression analyses.

RESULTS:

The direction of change between pain and fatigue could not be determined. An increase in physical functioning and decrease in focusing on symptoms explained 4% to 14% of the change in pain.

CONCLUSIONS:

Pain and fatigue most probably decrease simultaneously during CBT. Pain reduction can partly be explained by a reduction of symptom focusing and increased physical functioning. Additional, yet unknown cognitive-behavioral factors also play a role in the reduction of pain.

PMID: 25503595

Catastrophizing and motor activity

Eur J Pain. 2015 Sep 22. doi: 10.1002/ejp.781.

The effects of catastrophizing on central motor activity.

Henderson LA¹, Akhter R^{2,3}, Youssef AM¹, Reeves JM¹, Peck CC², Murray GM², Svensson P^{4,5,6}.
Author information

Abstract

BACKGROUND:

Pain catastrophizing significantly affects an individual's experience of pain. High pain catastrophizing is associated with increased fear avoidance behaviours, pain intensity and disability. The aim of this investigation was to determine the effect of pain catastrophizing on ongoing brain activity and movement-evoked brain activity during acute orofacial muscle pain.

METHODS:

Thirty-four healthy, pain-free subjects were recruited. In 17 subjects, the effect of catastrophizing on regional brain activity was determined. In 19 subjects, functional magnetic resonance imaging was used to determine the effects of pain catastrophizing on brain activation patterns during jaw movements in the presence of ongoing pain.

RESULTS:

We found that in the presence of pain, catastrophizing was significantly correlated with activity in multi-sensory integrative brain regions, including the dorsolateral and medial prefrontal cortices. Importantly, this relationship did not exist when subjects were not experiencing pain. In addition, during repetitive open-close jaw movements in the presence of pain, activity in the primary motor cortex, cerebellar cortex and the trigeminal motor nucleus was positively correlated with pain catastrophizing scores. In contrast, in the dorsolateral prefrontal cortex, as pain catastrophizing scores increased, the magnitude of signal intensity change during jaw movements decreased. Again, no such relationships occurred when the individual was not in pain.

CONCLUSIONS:

These data show that during pain, catastrophic thinking has a significant impact on activity in motor and sensory integrative regions. Reducing negative coping strategies may be an effective means in reducing fear avoidance behaviours and the intensity of ongoing pain.

PMID:26392220

Overactivity and chronic pain

Pain. 2015 Oct;156(10):1991-2000. doi: 10.1097/j.pain.0000000000000259.

Overactivity in chronic pain: is it a valid construct?

Andrews NE¹, Strong J, Meredith PJ.

Author information

Abstract

Overactivity is a frequently used term in chronic pain literature. It refers to the phenomenon whereby individuals engage in activity in a way that significantly exacerbates pain, resulting in periods of incapacity. Overactivity, as a construct, has been derived solely from patients' self-reports, raising concerns about the legitimacy of the construct. Self-reported overactivity reflects an individual's "belief," collected retrospectively, that their earlier activity levels have resulted in increased levels of pain. This may be different to an individual actually engaging in activity in a way that significantly exacerbates pain. In this study, a 5-day observational study design was used to investigate the validity of overactivity as a construct by examining the relationship between a self-report measure of overactivity, patterns of pain, and objectively measured physical activity over time. A sample of 68 adults with chronic pain completed a questionnaire investigating self-reported habitual engagement in overactivity and activity avoidance behaviour, before commencing 5 days of data collection. Over the 5-day period, participants wore an activity monitor and recorded their pain intensity 6 times a day using a handheld computer. Associations were found between (1) high levels of pain and both high overactivity and high avoidance, (2) high levels of overactivity and more variation in pain and objective activity across days, and (3) high levels of overactivity and the reoccurrence of prolonged activity engagement followed by significant pain increases observed in data sets. These results offer some preliminary support for the validity of overactivity as a legitimate construct in chronic pain.

PMID: 26067583

Cannabis and chronic pain

J Pain. 2015 Sep 15. pii: S1526-5900(15)00837-8. doi: 10.1016/j.jpain.2015.07.014.

Cannabis for the Management of Pain: Assessment of Safety Study (COMPASS).

Ware MA¹, Wang T², Shapiro S³, Collet JP⁴; COMPASS study team.

Collaborators (6)

Author information

Abstract

Cannabis is widely used as a self-management strategy by patients with a wide range of symptoms and diseases including chronic noncancer pain. The safety of cannabis use for medical purposes has not been systematically evaluated. We conducted a prospective cohort study to describe safety issues among subjects with chronic noncancer pain. A standardized herbal cannabis product (12.5% THC) was dispensed to eligible subjects for a one-year period; controls were subjects with chronic pain from the same clinics who were not cannabis users. The primary outcome consisted of serious adverse events (SAEs) and non-serious adverse events (AEs). Secondary safety outcomes included pulmonary and neurocognitive function and standard hematology, biochemistry, renal, liver and endocrine function. Secondary efficacy parameters included pain and other symptoms, mood, and quality of life. Two hundred and sixteen individuals with chronic pain were recruited to the cannabis group (141 current users and 58 ex-users) and 215 controls (chronic pain but no current cannabis use) from seven clinics across Canada. The median daily cannabis dose was 2.5g/d. There was no difference in risk of SAEs (adjusted IRR=1.08, 95% CI=0.57-2.04) between groups. Medical cannabis users were at increased risk of non-serious AEs (adjusted IRR=1.73, 95% CI=1.41-2.13); most were mild to moderate. There were no differences in secondary safety assessments. Quality-controlled herbal cannabis, when used by cannabis-experienced patients as part of a monitored treatment program over one year, appears to have a reasonable safety profile. Longer term monitoring for functional outcomes is needed.

STUDY REGISTRATION: The study was registered with www.controlled-trials.com (ISRCTN19449752).

PERSPECTIVE: This study evaluated the safety of cannabis use by patients with chronic pain over one year. The study found that there was a higher rate of adverse events among cannabis users compared to controls but not for serious adverse events at an average dose of 2.5g herbal cannabis per day.

KEYWORDS: Cannabis; adverse events; chronic pain; cohort study; safety

PMID:26385201

62 A. NUTRITION/VITAMINS**Fish consumption and depression**

J Epidemiol Community Health. 2015 Sep 10. pii: jech-2015-206278. doi: 10.1136/jech-2015-206278.

Fish consumption and risk of depression: a meta-analysis.

Li F¹, Liu X¹, Zhang D¹.

Author information

Abstract

BACKGROUND:

The association between fish consumption and risk of depression is controversial. We performed a meta-analysis to evaluate the association.

METHODS:

A literature search was performed in PubMed, EMBASE and Web of Science database for all relevant studies up to March 2015. We pooled the relative risks (RRs) with 95% CIs from individual studies with random effects model, and conducted meta-regression to explore potential sources of heterogeneity. Publication bias was estimated by Egger's test and the funnel plot.

RESULTS:

A total of 26 studies involving 150 278 participants were included in the present meta-analysis. The pooled RR of depression for the highest versus lowest consumption of fish was 0.83 (95% CI 0.74 to 0.93). The findings remained significant in the cohort studies (RR=0.84, 95% CI 0.75 to 0.94, n=10) as well as in the cross-sectional studies (RR=0.82, 95% CI 0.68 to 1.00, n=16). When men and women were analysed separately, a significant inverse association was also observed. There was no evidence of publication bias.

CONCLUSIONS:

This meta-analysis indicates that high-fish consumption can reduce the risk of depression.

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KEYWORDS: DEPRESSION; DIET; EPIDEMIOLOGY

PMID:26359502

Diet decreases dementia

Alzheimers Dement. 2015 Sep 2. pii: S1552-5260(15)02701-6. doi: 10.1016/j.jalz.2015.08.002.

Prudent diet may attenuate the adverse effects of Western diet on cognitive decline.

Shakersain B¹, Santoni G², Larsson SC³, Faxén-Irving G⁴, Fastbom J², Fratiglioni L⁵, Xu W⁶.
Author information

Abstract

BACKGROUND:

The influence of mixed dietary patterns on cognitive changes is unknown.

METHODS:

A total of 2223 dementia-free participants aged ≥ 60 were followed up for 6 years to examine the impact of dietary patterns on cognitive decline. Mini-mental state examination (MMSE) was administrated. Diet was assessed by a food frequency questionnaire. By factor analysis, Western and prudent dietary patterns emerged. Mixed-effect models for longitudinal data with repeated measurements were used.

RESULTS:

Compared with the lowest adherence to each pattern, the highest adherence to prudent pattern was related to less MMSE decline ($\beta = 0.106$, $P = .011$), whereas the highest adherence to Western pattern was associated with more MMSE decline ($\beta = -0.156$, $P < .001$). The decline associated with Western diet was attenuated when accompanied by high adherence to prudent pattern.

CONCLUSION:

High adherence to prudent diet may diminish the adverse effects of high adherence to Western diet on cognitive decline.

KEYWORDS: Cognitive decline; Dietary patterns; Longitudinal study; Population-based
PMID:26342761

Vit D and Osteoporosis

Osteoporos Int. 2015 Sep 22.

Cost-effectiveness of personalized supplementation with vitamin D-rich dairy products in the prevention of osteoporotic fractures.

Ethgen O¹, Hiligsmann M², Burlet N¹, Reginster JY³.
Author information

Abstract

Titration supplementations with vitamin D-fortified yogurt, based on spontaneous calcium and vitamin D intakes, can be cost-effective in postmenopausal women with or without increased risk of osteoporotic fractures.

INTRODUCTION:

The objective of this study is to assess the cost-effectiveness of the vitamin D-fortified yogurt given to women with and without an increased risk of osteoporotic fracture.

METHODS:

A validated cost-effectiveness microsimulation Markov model of osteoporosis management was used. Three personalized supplementation scenarios to reflect the Ca/Vit D needs taking into account the well-known variations in dietary habits and a possible pharmacological supplementation in Ca/Vit D, given above or in combination with anti-osteoporosis medications: one yogurt per day, i.e., 400 mg of Ca + 200 IU of Vit D (scenario 1 U), two yogurts per day, i.e., 800 mg of Ca + 400 IU of Vit D (scenario 2 U), or three yogurts per day, i.e., 1,200 mg of Ca + 600 IU of Vit D (scenario 3 U).

RESULTS:

One yogurt is cost-effective in the general population above the age of 70 years and in all age groups in women with low bone mineral density (BMD) or prevalent vertebral fracture (PVF). The daily intake of two yogurts is cost-effective above 80 years in the general population and above 70 years in the two groups of women at increased risk of fractures. However, an intake of three yogurts per day is only cost-effective above 80 years old in the general population, as well as in women with low BMD or PVF.

CONCLUSIONS:

Our study is the first economic analysis supporting the cost-effectiveness of dairy products, fortified with vitamin D, in the armamentarium against osteoporotic fractures.

KEYWORDS: Cost-effectiveness; Dairy products; Fracture; Osteoporosis; Yogurt

PMID:26395885

Fish oil and Knee OA

Ann Rheum Dis. 2015 Sep 9. pii: annrheumdis-2014-207169. doi: 10.1136/annrheumdis-2014-207169.

Fish oil in knee osteoarthritis: a randomised clinical trial of low dose versus high dose.

Hill CL¹, March LM², Aitken D³, Lester SE⁴, Battersby R⁴, Hynes K², Fedorova T², Proudman SM⁵, James M⁵, Cleland LG⁵, Jones G².

Author information

Abstract

OBJECTIVES:

To determine whether high-dose fish oil is superior to low-dose supplementation for symptomatic and structural outcomes in knee osteoarthritis (OA).

METHODS:

A randomised, double-blind, multicentre trial enrolled 202 patients with knee OA and regular knee pain. They were randomised 1:1 to high-dose fish oil (4.5 g omega-3 fatty acids) 15 mL/day or (2) low-dose fish oil (blend of fish oil and sunola oil; ratio of 1:9, 0.45 g omega-3 fatty acids) 15 mL/day. The primary endpoints were Western Ontario and McMaster Universities Arthritis Index (WOMAC) pain score at 3, 6, 12 and 24 months, and change in cartilage volume at 24 months. Secondary outcomes included WOMAC function, quality of life, analgesic and non-steroidal anti-inflammatory drug use and bone marrow lesion score.

RESULTS:

Although there was improvement in both groups, the low-dose fish oil group had greater improvement in WOMAC pain and function scores at 2 years compared with the high-dose group, whereas between-group differences at 1 year did not reach statistical significance. There was no difference between the two groups in cartilage volume loss at 2 years. For other secondary endpoints, there was no difference between the two groups at 2 years.

CONCLUSIONS:

In people with symptomatic knee OA, there was no additional benefit of a high-dose fish oil compared with low-dose fish oil. The combination comparator oil appeared to have better efficacy in reducing pain at 2 years, suggesting that this requires further investigation.

TRIAL REGISTRATION NUMBER:

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