

ABSTRACTS

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LUMBAR SPINE

LBP

Course of LBP

Eur J Pain. 2015 Jan 6. doi: 10.1002/ejp.633.

Prognosis and course of pain in patients with chronic non-specific low back pain: A 1-year follow-up cohort study.

Verkerk K¹, Luijsterburg PA, Heymans MW, Ronchetti I, Pool-Goudzwaard AL, Miedema HS, Koes BW.

Author information

Abstract

BACKGROUND:

It remains unclear to what extent patients recover from chronic non-specific low back pain (NSLBP). The objective of this study was to determine (1) the course of chronic NSLBP in tertiary care and (2) which factors predicted 5- and 12-month outcomes.

METHODS:

This prospective study includes 1760 chronic NSLBP patients from a rehabilitation clinic (mean age 40.1 years, SD 10.6). After baseline measurement, patients followed a 2-month multidisciplinary therapy programme; evaluation took place at 2, 5 and 12 months post baseline. Recovery was defined as (1) relative recovery [30% improvement on the pain, visual analogue scale (VAS) compared with baseline] and (2) absolute recovery (VAS pain \leq 10 mm). The multivariate logistic regression analysis included 23 baseline characteristics.

RESULTS:

Patient-reported intensity of back pain decreased from 55.5 (SD 23.0) at baseline to 37.0 (SD 23.8), 35.3 (SD 26.1) and 32.3 (SD 26.9) at 2-, 5- and 12-month follow-up, respectively. Younger age, back pain at baseline, no psychological/physical dysfunction (Symptom Check List-90, item 9), and higher baseline scores on the physical component scale and mental component scale of quality of life (Short Form-36) were positively associated with recovery at 5 and 12 months. At 5-month follow-up, higher work participation at baseline was also a prognostic factor for both definitions of recovery. At 12-month follow-up, having co-morbidity was predictive for both definitions.

CONCLUSION:

The results of this study indicate that in chronic NSLBP patients, bio-psychosocial prognostic factors may be important for clinicians when predicting recovery in back pain intensity during a 1-year period.

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PMID: 25565501

Obesity, genetics an LBP

Spine J. 2015 Feb 5. pii: S1529-9430(15)00099-6. doi: 10.1016/j.spinee.2015.02.001.

The relationship between obesity, low back pain and lumbar disc degeneration when genetics and the environment are considered: a systematic review of twin studies.

Dario AB¹, Ferreira ML², Refshauge K³, Lima T⁴, Ordoñana JR⁵, Ferreira PH³.

Author information

Abstract

BACKGROUND: The relationships between obesity and both low back pain (LBP) and lumbar disc degeneration (LDD) remain unclear. It is possible that familial factors, including genetics and early environment, affect these relationships.

PURPOSE: To investigate the relationship between obesity-related measures (e.g. weight, BMI) and LBP and LDD using twin studies, where the effect of genetics and early environment can be controlled for.

STUDY DESIGN: Systematic review with meta-analysis.

METHODS: MEDLINE, CINAHL, Scopus, Web of Science and EMBASE databases were searched from the earliest records to August 2014. All cross-sectional and longitudinal observational twin studies identified by the search strategy were considered for inclusion. Two investigators independently assessed eligibility, conducted the quality assessment, and extracted the data. Meta-analyses (fixed or random effects, as appropriate) were used to pool studies' estimates of association.

RESULTS: In total, 11 articles met the inclusion criteria. Five studies were included in the LBP analysis and seven in the LDD analysis. For the LBP analysis, pooling of the five studies showed that the risk of having LBP for individuals with the highest levels of BMI or weight was almost twice that of people with a lower BMI (OR 1.8 95% CI 1.6 - 2.0; $I^2=0\%$). A dose-response relationship was also identified. When genetics and the effects of a shared early environment were adjusted for using a within-pair twin case-control analysis, pooling of three studies showed a reduced but statistically positive association between obesity and prevalence of LBP (OR 1.5 95% CI 1.1 - 2.1; $I^2=0\%$). However, the association was further diminished and not significant (OR 1.4 95% CI 0.8 - 2.3; $I^2=0\%$) when pooling included two studies on monozygotic twin pairs only. Seven studies met the inclusion criteria for LDD. When familial factors were not controlled for, body weight was positively associated with LDD in all five cross-sectional studies. Only two cross-sectional studies investigated the relationship between obesity-related measures and LDD accounting for familial factors, and results were conflicting. One longitudinal study in LBP and three longitudinal studies in LDD found no increase in risk in obese individuals, whether or not familial factors were controlled for.

CONCLUSIONS: Findings from this review suggest that genetics and early environment are possible mechanisms underlying the relationship between obesity and LBP, however a direct casual link between these conditions appears to be weak. Further longitudinal studies using the twin design are needed to better understand the complex mechanisms underlying the associations between obesity, LBP and LDD.

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KEYWORDS: Body mass index; Body weight; Genetics; Low back pain; Lumbar disc degeneration; Obesity; Twins

PMID: 25661432

Bacteria, LBP and cognitive behavior therapy

Man Ther. 2015 Feb;20(1):96-102. doi: 10.1016/j.math.2014.07.003. Epub 2014 Jul 25.

Prognostic factors and course for successful clinical outcome quality of life and patients' perceived effect after a cognitive behavior therapy for chronic non-specific low back pain: A 12-months prospective study.

Verkerk K¹, Luijsterburg PA², Heymans MW³, Ronchetti I⁴, Miedema HS⁵, Koes BW², Pool-Goudzwaard A⁶.

Author information

Abstract

This study investigates the clinical course of and prognostic factors for quality of life (Short Form 36 items Health survey (SF-36)) and global perceived effect (GPE) in patients treated for chronic non-specific low back pain at 5 and 12-months follow-up. Data from a prospective cohort (n = 1760) of a rehabilitation center were used, where patients followed a 2-months cognitive behavior treatment. The outcome 'improvement in quality of life (SF-36)' was defined as a 10% increase in score on the SF-36 at follow-up compared with baseline. On the GPE scale, patients who indicated to be 'much improved' were coded as 'clinically improved'. Multivariable logistic regression analysis included 23 baseline characteristics. At 5-months follow-up, scores on the SF-36 Mental Component Scale (SF-36; MCS) and the Physical Component Scale (SF-36; PCS) had increased from 46.6 (SD 10.3) to 50.4 (SD 9.8) and from 31.9 (SD 7.1) to 46.6 (SD 10.3), respectively. At 5-months follow-up, 53.0% of the patients reported clinical improvement (GPE) which increased to 60.3% at 12-months follow-up.

The 10% improvement in quality of life (SF-36 MCS) at 5-months follow-up was associated with patient characteristics and psychological factors. At 5-months follow-up, the 10% improvement in quality of life (SF-36 PCS) and GPE was associated with patient characteristics, physical examination, work-related factors and psychological factors; for GPE, an association was also found with clinical status. At 12-months follow-up GPE was associated with patient characteristics, clinical status, physical examination and work-related factors. The next phase in this prognostic research is external validation of these results.

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KEYWORDS: Chronic non-specific low back pain; Course; Prognosis; Psychological factors
PMID: 25107827

Tactile changes and LBP

Man Ther. 2015 Feb;20(1):63-7. doi: 10.1016/j.math.2014.06.010. Epub 2014 Jul 15.

Are tactile acuity and clinical symptoms related to differences in perceived body image in patients with chronic nonspecific lower back pain?

Nishigami T¹, Mibu A², Osumi M³, Son K², Yamamoto S², Kajiwara S², Tanaka K², Matsuya A⁴, Tanabe A².

Author information**Abstract**

Clinically, perceived image of the lower back and the two-point discrimination (TPD) test are used as markers for evaluating alterations of cortical reorganization. The purpose of the present study was to examine whether TPD and selected clinical findings are different in subgroups of individuals with chronic nonspecific lower back pain (CNLBP) based on body image drawings. Forty-two patients with CNLBP and seventeen healthy individuals were recruited. Perceived body image, TPD and clinical profiles was measured. Of the patients with CNLBP, 42.8% had a normal perceived body image, 28.5% an expanded image, and 28.5% a shrunken image. The TPD distance threshold was significantly larger for the expanded subgroup (13.3 ± 6.8 mm) compared with the control (5.5 ± 3.8 mm; Difference, 7.8; 95%CI, 1.83 to 13.66; $p < 0.05$) and normal subgroups (4.5 ± 5.5 mm; Difference, 8.8; 95%CI, 2.90 to 14.59; $p < 0.05$).

No significant differences in pain intensity, duration of pain, Roland Morris Disability Questionnaire (RDQ), and Pain Catastrophizing Scale (PCS) scores were found between three body image subgroups. Our results suggest that TPD is increased in patients who report an expanded perceived image of the lower back compared with healthy individuals and patients who report a normal image. The effectiveness of new rehabilitation techniques may be evaluated by assessing perceived image of the lower back and TPD values for patients with CNLBP before and after treatment.

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KEYWORDS: Body image; Cortical reorganization; Low back pain; Tactile acuity
PMID: 25081221

History and LBP

Man Ther. 2015 Feb;20(1):18-27. doi: 10.1016/j.math.2014.08.002. Epub 2014 Aug 29.

Diagnostic accuracy of self-report and subjective history in the diagnosis of low back pain with non-specific lower extremity symptoms: A systematic review.

Shultz S¹, Averell K¹, Eickelman A¹, Sanker H¹, Donaldson MB².

Author information

Abstract

Subjective history questions/self-report items are commonly used to triage the patient with low back pain and related leg symptoms. However the value of the history taking process for decision-making to identify common classifications/diagnosis for patients presenting with low back related leg pain (LBRLP) have not been considered. The purpose of this study was to investigate the diagnostic accuracy of self-report items/history-taking questions used to identify patients with LBRLP. Eligible studies included: 1)subjects with low back pain AND related lower extremity pain, 2)details of subjective examination/self-report items, 3)cohort, prospective/longitudinal studies, and randomized control trials, 4)use of statistical reporting, 5)an acceptable reference standard. Quality was evaluated using the Quality Assessment of Diagnostic Accuracy Studies 2. A synthesis of history items that met the threshold for at least a small shift in the likelihood of the condition with a $+LR \geq 2$ or $-LR \leq 0.5$ were reported. Conditions commonly reported in the literature: lumbar spinal stenosis, lumbosacral nerve root compression/radiculopathy, disc herniation and neurophysiological low back pain \pm leg pain. Eleven studies met the inclusion criteria. This is the first systematic review of diagnostic accuracy studies that examined only the history-taking items for their ability to identify LBRLP conditions.

Clustering key items may provide a more precise clinical picture necessary to detect and treat a patient's presentation. History questions formed within the interview and their contributing value for decision-making remain understudied. There is a need for better designs to determine a more accurate diagnostic power to identify conditions with LBRLP.

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KEYWORDS: Diagnostic accuracy; History taking; Low back related leg pain
PMID: 25231775

DISC

PRP for disc degeneration

Int Orthop. 2015 Feb 5.

Growth factors and platelet-rich plasma: promising biological strategies for early intervertebral disc degeneration.

Wang SZ¹, Chang Q, Lu J, Wang C.
Author information

Abstract

Intervertebral disc degeneration (IDD) is a complex process with the mechanism not fully elucidated. The current clinical treatments for IDD are mainly focused on providing symptomatic relief without addressing the underlying cause of the IDD. Biological therapeutic strategies to repair and regenerate the degenerated discs are drawing more attention. Growth factor therapy is one of the biological strategies and holds promising prospects. As a promising bioactive substance, platelet-rich plasma (PRP) is considered to be an ideal growth factor "cocktail" for intervertebral disc (IVD) restoration.

Results from many in vitro and in vivo studies have confirmed the efficacy of growth factors and PRP in IVD repair and regeneration. It is essential to advance the research on growth factor therapy and associated mechanism for IDD. This article reviews the background of IDD, current concepts in growth factor and PRP-related therapy for IDD. Future research perspectives and clinical directions are also discussed.

PMID: 25653173

INJECTIONS

SURGERY

PELVIC GIRDLE

SI pain

Pain Med. 2015 Feb;16(2):257-65. doi: 10.1111/pme.12630.

Diagnosis and treatment of posterior sacroiliac complex pain: a systematic review with comprehensive analysis of the published data.

King W¹, Ahmed SU, Baisden J, Patel N, Kennedy DJ, MacVicar J, Duszynski B.

Author information

Abstract

OBJECTIVE:

To assess the evidence on the validity of sacral lateral branch blocks and the effectiveness of sacral lateral branch thermal radiofrequency neurotomy in managing sacroiliac complex pain.

DESIGN:

Systematic review with comprehensive analysis of all published data.

INTERVENTIONS:

Six reviewers searched the literature on sacral lateral branch interventions. Each assessed the methodologies of studies found and the quality of the evidence presented.

OUTCOME MEASURES:

The outcomes assessed were diagnostic validity and effectiveness of treatment for sacroiliac complex pain. The evidence found was appraised in accordance with the Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) system of evaluating scientific evidence.

RESULTS:

The searches yielded two primary publications on sacral lateral branch blocks and 15 studies of the effectiveness of sacral lateral branch thermal radiofrequency neurotomy. One study showed multisite, multidepth sacral lateral branch blocks can anesthetize the posterior sacroiliac ligaments. Therapeutic studies show sacral lateral branch thermal radiofrequency neurotomy can relieve sacroiliac complex pain to some extent. The evidence of the validity of these blocks and the effectiveness of this treatment were rated as moderate in accordance with the GRADE system.

CONCLUSIONS:

The literature on sacral lateral branch interventions is sparse. One study demonstrates the face validity of multisite, multidepth sacral lateral branch blocks for diagnosis of posterior sacroiliac complex pain. Some evidence of moderate quality exists on therapeutic procedures, but it is insufficient to determine the indications and effectiveness of sacral lateral branch thermal radiofrequency neurotomy, and more research is required.

Wiley Periodicals, Inc.

KEYWORDS: Lateral Branch Block; Posterior Sacroiliac Complex Pain; Radiofrequency Lateral Branch Neurotomy; Sacroiliac Joint
PMID: 25677327

PELVIC ORGANS

Episiotomies

Midwifery. 2015 Jan 10. pii: S0266-6138(15)00005-4. doi: 10.1016/j.midw.2014.12.010.

A mixed methods study to explore women and clinician's response to pain associated with suturing second degree perineal tears and episiotomies [PRAISE].

Briscoe L¹, Lavender T², O'Brien E², Campbell M², McGowan L³.

Author information

Abstract

BACKGROUND:

perineal suturing is a common event which affects women across a variety of international settings. Women have expressed pain related to perineal trauma in the postnatal period but little is known about pain during suturing. In addition, there is a lack of evidence to identify how professional decisions are made about pain management during the suturing process.

OBJECTIVE:

to explore women and clinician's response to pain during the suturing of second degree tears and episiotomies.

DESIGN:

mixed method feasibility study which included observation, questionnaires and interviews.

SETTING:

a Hospital Trust in Northwest England.

PARTICIPANTS:

40 women and 21 clinicians participated.

MEASUREMENTS AND FINDINGS:

mild, moderate and severe pain was measured via the McGill Pain Questionnaire-Short Form (MCPQ-SF). Psychological distress was identified via the Hospital Anxiety and Depression Scale (HADS). Semi-structured face to face interviews identified three themes, Psychological distress and future functioning; Variation in practice and Style of communication.

KEY CONCLUSIONS:

women who experienced psychological distress during previous or current childbirth scored higher on HADS and MCPQ-SF, and appeared to express more concerns about future functioning and healing. Variation in practice exists and style of communication had the potential to make the difference for women.

IMPLICATIONS FOR PRACTICE AND RESEARCH:

the process of suturing is complex and is not a standalone event for a woman. It is crucial that health professionals consider previous and subsequent experience of perineal suturing. Future research aims to develop a decision tree to support pain management during suturing.

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KEYWORDS: Episiotomies; Mixed-methods; Pain; Perineal suturing; Tears

PMID: 25656307

VISCERA

THORACIC SPINE

CERVICAL SPINE

Management of neck pain

Mayo Clin Proc. 2015 Feb;90(2):284-299. doi: 10.1016/j.mayocp.2014.09.008.

Epidemiology, Diagnosis, and Treatment of Neck Pain.

Cohen SP¹.

Author information

Abstract

Neck pain is the fourth leading cause of disability, with an annual prevalence rate exceeding 30%. Most episodes of acute neck pain will resolve with or without treatment, but nearly 50% of individuals will continue to experience some degree of pain or frequent occurrences. History and physical examination can provide important clues as to whether the pain is neuropathic or mechanical and can also be used to identify "red flags" that may signify serious pathology, such as myelopathy, atlantoaxial subluxation, and metastases. Magnetic resonance imaging is characterized by a high prevalence of abnormal findings in asymptomatic individuals but should be considered for cases involving focal neurologic symptoms, pain refractory to conventional treatment, and when referring a patient for interventional treatment. Few clinical trials have evaluated treatments for neck pain. Exercise treatment appears to be beneficial in patients with neck pain.

There is some evidence to support muscle relaxants in acute neck pain associated with muscle spasm, conflicting evidence for epidural corticosteroid injections for radiculopathy, and weak positive evidence for cervical facet joint radiofrequency denervation. In patients with radiculopathy or myelopathy, surgery appears to be more effective than nonsurgical therapy in the short term but not in the long term for most people.

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PMID: 25659245

Predicting outcomes with arm pain

Pain. 2015 Feb 5.

Prognostic factors of Complaints of Arm, Neck and/or Shoulder: a systematic review of prospective cohort studies.

Bruls VE¹, Bastiaenen CH, de Bie RA.
Author information

Abstract

Complaints of the arm, neck or shoulder (CANS) are common musculoskeletal disorders. To gain insight in prognostic factors of CANS that are associated with recovery, we conducted a systematic review. We included longitudinal prognostic cohort studies which investigated associations between prognostic factors and recovery in terms of symptoms, disability or sickness absence. Twenty six papers reporting on 20 cohorts were included following a search of electronic databases (Pubmed, Embase, Cinahl and Psychinfo). The risk of bias (ROB) was independently assessed by two reviewers using the Quality In Prognosis Studies (QUIPS tool). Sixteen studies were assessed as having 'low' ROB, and ten studies were assessed as having 'high' ROB. Because of heterogeneity in included studies, pooling was not possible. In the qualitative analysis, the number of studies that evaluated a factor, the ROB of each cohort, and consistency of available evidence were taken into account when summarizing the evidence. We examined whether follow-up duration altered the association of prognostic factors with recovery.

The results of our best-evidence synthesis showed that for short term follow-up (<6 months) longer duration of complaints, higher symptom severity, more functional limitations, the use of specific coping styles, and accident as 'patients opinion regarding cause' were negatively associated with recovery. For long term follow-up, we found that longer duration of complaints at presentation had an unfavorable prognostic value for recovery. Our evidence synthesis revealed strong evidence for no prognostic impact of many factors which are suggested to be associated with recovery according to the primary studies.

PMID:25659066

Chronic neck pain and rx**Identifying prognostic factors predicting outcome in patients with chronic neck pain after multimodal treatment: A retrospective study**

Manual Therapy , 02/16/2015 Clinical Article

De Pauw R, et al.

This study was conducted to identify possible prognostic factors to predict drop-out and favorable outcome in patients following a multimodal treatment program at an outpatient rehabilitation clinic. It is important to assess these prognostic factors as they may help therapists to identify patients with a good prognosis or patients at risk. For those at risk, this would allow the treatment approach to be redirected to address their specific needs.

Methods

- A retrospective cohort study was conducted on 437 patients with chronic neck pain involved in an exercise-based rehabilitation program of an outpatient rehabilitation center between January 2008 and November 2011.
- Prognostic factors were analyzed through a univariate and a multivariate logistic regression analysis.

Results

- Multivariate logistic regression revealed that a higher age (OR = 0.960), presence of headache (OR = 0.436) or low back pain (OR = 0.525), and having low levels of depression (OR = 1.044) increase the odds to complete the multimodal treatment program.
- A high NDI-score (OR = 0.945), a high NRS-score for pain in the upper extremities (OR = 0.862), a low NRS score for pain in the neck (OR = 1.372), and a trauma in the patient's history (OR = 0.411) decrease the odds of responding to the given treatment program.

UPPER C SPINE

WHIPLASH

CRANIUM/TMJ

Fascial pain

The Journal of Headache and Pain
February 2015, 16:12,

The temporal evolution of a facial pain syndrome associated with neurovascular contact: a case report

- Sabrina Khan,
- Ida Wibrandt,
- Per Rochat,
- Messoud Ashina

Abstract

Background

Trigeminal autonomic cephalalgias are primary headaches characterized by unilateral pain and cranial autonomic symptoms. However, associated autonomic symptoms have also been reported in other headaches and facial pains, e.g. trigeminal neuralgia, with the clinical differentiation proving a complex task.

Case

A 54-year-old man presented with right-sided, sharp, intense facial pain in the distribution area of the trigeminal nerve. Pain duration was from seconds to a few minutes, and trigger factors included ipsilateral touching of the skin and hair. Over the next ten years, symptoms progressed and changed presentation, also displaying as right-sided, severe, orbital pain, lasting 60 to 90 minutes, with conjunctival injection and rhinorrhea. Neurological examination was normal. Numerous medications were tried with limited or no effect. In 2010, magnetic resonance imaging revealed a right-sided deviation of the basilar artery at the level of pons, creating neurovascular contact with the trigeminal nerve. Microvascular decompression was performed, and symptoms resolved within days.

Conclusion

Differentiating between trigeminal autonomic cephalalgias and trigeminal neuralgia with autonomic symptoms can be challenging. The distinct change and evolution over time in the clinical presentation of the patient's head pain suggests a temporal plasticity of the pain in head and facial syndromes, irrespective of underlying pathoanatomic features.

Headaches and TMD

Headache. 2015 Feb;55 Suppl 1:72-83. doi: 10.1111/head.12515. Epub 2015 Feb 3.

Temporomandibular dysfunction and headache disorder.

Speciali JG¹, Dach F.
Author information

Abstract

It has been well established that primary headaches (especially migraine, chronic migraine, and tension-type headache) and temporomandibular dysfunction (TMD) are comorbid diseases, with the presence of one of them in a patient increasing the prevalence of the others. The relationship between the 2 diseases may involve the sharing of common physiopathological aspects. Studies about the treatment of this disease association have shown that a simultaneous therapeutic approach to the 2 diseases is more effective than the separate treatment of each. As a consequence, specialists in orofacial pain are now required to know the criteria for the diagnosis of headaches, and headache physicians are required to know the semiologic aspects of orofacial pain. Nevertheless, a headache may be attributed to TMD, instead be an association of 2 problems - TMD and primary headaches - in these cases a secondary headache, described in item 11.7 of the International Classification of Headache Disorders, is still a controversial topic. Attempts to determine the existence of this secondary headache with a specific or suggestive phenotype have been frustrated. The conclusion that can be reached based on the few studies published thus far is that this headache has a preferential unilateral or bilateral temporal location and migraine-like or tension-type headache-like clinical characteristics.

In the present review, we will consider the main aspects of the TMD-headache relationship, that is, comorbidity of primary headaches and TMD and clinical aspects of the headaches attributed to TMD from the viewpoint of the International Headache Society and of a group of specialists in orofacial pain. This paper aims to explore our understanding of the association between TMD and headaches in general and migraine in particular.

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KEYWORDS: comorbidity; headache; pain; temporomandibular dysfunction
PMID: 25644695

TMD assessment

Temporomandibular joint effusion and its relationship with perceived disability assessed using musculoskeletal ultrasound and a patient-reported disability index

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Abstract

The relationship between effusion of the temporomandibular joint (TMJ) and patient-reported disability is poorly researched. This pilot study explored the link between TMJ inflammation as measured by ultrasound and patient disability assessed by the Steigerwald Maher TMD Disability Index (SMTDI). The study design used a prospective correlational approach involving a sample with TMJ dysfunction (TMD). Twenty-four patients were recruited from the European School of Osteopathy and a Kent dental practice. Participants completed the SMTDI to determine the level of TMD (symptomatic score >20). A SonoSite SLA “Hockey Stick” [13-6 MHz] musculo-skeletal transducer was placed over the TMJ in a transverse direction and effusion was calculated indirectly by measuring capsular width. An upper left quadrant protocol was used throughout. A regression analysis was run with participants’ gender, age and capsular width as predictor variables modelled against reported SMTDI. Larger capsular widths were found to be significant predictors of SMTDI scores ($r = 0.803$, $p < 0.0001$). The patient profile matched with the previous studies and the TMD sufferer population, indicating external validity.

Results suggest that the SMTDI could be integrated into practice life as a quick, accessible and easy tool to monitor patients’ progress and assess levels of inflammation, without the need for repetitive imaging. The study design proved reproducible and a larger scale study is indicated.

HEADACHES

VESTIBULAR

CONCUSSIONS

Youth football and concussions

Neurology. 2015 Jan 28. pii: 10.1212/WNL.0000000000001358.

Age of first exposure to football and later-life cognitive impairment in former NFL players.

Stamm JM¹, Bourlas AP¹, Baugh CM¹, Fritts NG¹, Daneshvar DH¹, Martin BM¹, McClean MD¹, Tripodis Y¹, Stern RA².

Author information

Abstract

OBJECTIVE:

To determine the relationship between exposure to repeated head impacts through tackle football prior to age 12, during a key period of brain development, and later-life executive function, memory, and estimated verbal IQ.

METHODS:

Forty-two former National Football League (NFL) players ages 40-69 from the Diagnosing and Evaluating Traumatic Encephalopathy using Clinical Tests (DETECT) study were matched by age and divided into 2 groups based on their age of first exposure (AFE) to tackle football: AFE <12 and AFE ≥12. Participants completed the Wisconsin Card Sort Test (WCST), Neuropsychological Assessment Battery List Learning test (NAB-LL), and Wide Range Achievement Test, 4th edition (WRAT-4) Reading subtest as part of a larger neuropsychological testing battery.

RESULTS:

Former NFL players in the AFE <12 group performed significantly worse than the AFE ≥12 group on all measures of the WCST, NAB-LL, and WRAT-4 Reading tests after controlling for total number of years of football played and age at the time of evaluation, indicating executive dysfunction, memory impairment, and lower estimated verbal IQ.

CONCLUSIONS:

There is an association between participation in tackle football prior to age 12 and greater later-life cognitive impairment measured using objective neuropsychological tests. These findings suggest that incurring repeated head impacts during a critical neurodevelopmental period may increase the risk of later-life cognitive impairment. If replicated with larger samples and longitudinal designs, these findings may have implications for safety recommendations for youth sports.

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PMID:25632088

SHOULDER GIRDLE**Motion of with arm motions**

Man Ther. 2015 Feb;20(1):46-55. doi: 10.1016/j.math.2014.06.006. Epub 2014 Jul 3.

A new description of scapulothoracic motion during arm movements in healthy subjects.

Roren A¹, Lefevre-Colau MM¹, Poiraudau S², Fayad F³, Pasqui V⁴, Roby-Brami A⁵.

Author information

Abstract

The participation of scapula motion in arm movement is clinically well known and recent three dimensional (3D) analyses using kinematic techniques have confirmed its importance. Scapular motion relative to the thorax has a theoretical maximum of 6 degrees of freedom (DoF), resulting from rotations at both clavicular joints (3 rotational DoF each). However, most recent kinematic studies have only analysed the 3D rotations of the scapula relative to the thorax. In the present study, the 3D translations of the barycentre of the scapula were considered in order to complete the description of movement at the shoulder complex. Eight healthy subjects performed arm elevation in the sagittal and frontal planes, simulated activities of daily living (hair combing and back washing) and maximum voluntary scapula movement (forward and backward rolling). Measurements were recorded using a 6 DoF electromagnetic device and the acromial method of analysis was used. The results showed that 3D scapular rotations and translation of its barycentre were functionally consistent for all tasks. A principal component analysis (PCA) yielded three factors, explaining 97.6% of the variance.

The first two factors (protraction and shrug, according to clinical descriptions) combined rotations and translations, consistent with the hypothesis that the scapula rolls over the curved thoracic surface. The third factor related to lateral-medial rotation, thus representing rotation in the plane tangential to the thorax. The PCA suggested that scapular motion can be described using these 3 DoF. This should be studied in a larger group of individuals, including patients with pathological conditions.

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KEYWORDS: Clavicle; Kinematics; Protraction; Scapula rotation
PMID: 25034959

CLAVICLE

GLENOHUMERAL/SHOULDER

Core of shoulder rehab

J Sport Rehabil. 2015 Feb 6.

Effects of Core Musculature Fatigue on Maximal Shoulder Strength.

Rosemeyer JR¹, Hayes BT, Switzler CL, Hicks-Little CA.
Author information

Abstract

CONTEXT:

Core stability has been shown to have an effect on lower extremity motion, but activation of the core has also been observed just prior to movements of the upper extremity. However, limited evidence exists regarding the effects that core musculature has on upper extremity strength.

OBJECTIVE:

The purpose of this study was to determine the effects of core fatigue on maximal shoulder strength.

DESIGN:

Cross-over study.

SETTING:

Sports Medicine Research Lab.

PARTICIPANTS:

Twenty-three participants (15 males and 8 females, age 21.3 ± 2.5 yrs, height 174.5 ± 10.3 cm, weight 71.3 ± 12.0 kg) participated in the study.

INTERVENTION:

All participants performed maximal voluntary isometric contractions in three different planes of shoulder joint motion (sagittal, frontal, transverse). A core fatiguing protocol was conducted and the same three shoulder strength tests were repeated and compared to the initial measurements.

MAIN OUTCOME MEASURES:

Strength measures were recorded in kilograms (kg) with a dynamometer.

RESULTS:

Results showed a significant decrease in strength in the frontal (-0.56 ± 1.06 kg; $p = .020$) and transverse (-0.89 ± 1.49 kg; $p = .012$) plane but not in the sagittal plane (-0.20 ± 0.98 kg; $p > 0.05$). Further, regardless of the specific strength test measured, results revealed that the first (-7.05 ± 11.65 %, $p = .012$) and second (-5.71 ± 12.03 %, $p = .042$) strength test measurements following the fatiguing protocol were significantly decreased, while the third strength test measurement (-4.19 ± 12.48 %, $p = .140$) did not show statistical significance.

CONCLUSION:

These results indicate that decrease in core stability may have an influence on shoulder strength. The literature suggests the core is designed for endurance and this study helps validate its recovery properties. Further research is needed to determine the significance of this effect and how injury rates coincide.

PMID: 25658299

Kinaesthesia and trauma

Man Ther. 2015 Feb;20(1):28-37. doi: 10.1016/j.math.2014.08.006. Epub 2014 Sep 3.

The effects of shoulder injury on kinaesthesia: A systematic review and meta-analysis.

Fyhr C¹, Gustavsson L¹, Wassinger C², Sole G³.

Author information

Abstract

The aim of this systematic review was to synthesize the evidence for changes for proprioceptive variables consisting of movement and position sense in participants with glenohumeral musculoskeletal disorders. Five databases were searched until 13th August 2013. Methodological quality was assessed and meta-analyses were performed for active and passive joint reposition sense (AJPS and PJPS) and movement sense, determined with threshold to detection of passive motion (TTDPM). The search yielded 17 studies, four of which were classified as having high methodological quality, seven as moderate and six as low quality. For participants with post-traumatic glenohumeral instability, pooled findings indicate moderate evidence for higher TTDPM for involved shoulders compared to control groups and the contralateral uninvolved side, indicating decreased movement sense. For AJPS and PJPS there was moderate to limited evidence for significant increased errors for involved compared to uninvolved shoulders, but not when compared to the control groups.

Limited evidence was found for decreased AJPS acuity for patients with chronic rotator cuff pain and for patients with unspecified shoulder pain compared to healthy controls. Movement sense is most likely to be impaired after shoulder injury involving post-traumatic instability when compared to the contralateral shoulder and to controls, while deficits for AJPS and PJPS are more likely to be evident compared to the contralateral shoulder in participants with glenohumeral musculoskeletal disorders.

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KEYWORDS: Kinestheasia; Movement sense; Position sense; Proprioception; Shoulder
PMID: 25241661

ROTATOR CUFF**Fatty infiltrate**

Knee Surg Sports Traumatol Arthrosc. 2015 Feb;23(2):399-407. doi: 10.1007/s00167-014-2992-7. Epub 2014 Apr 27.

Quantifying rotator cuff atrophy and fatty degeneration at the supraspinatus origin in the scapular fossa.

Yoo HJ¹, Choi JY, Hong SH, Kim EJ, Kim SH.
Author information

Abstract

PURPOSE:

The aim of this study was to evaluate the location difference (distance) between the conventional Y-view (CYV) and the bony origin of the supraspinatus, and therefore, to suggest hypotrophy measurement in the CYV could be highly influenced by retraction of a torn tendon.

METHODS:

Ninety five arthroscopically repaired rotator cuff tears were retrospectively enrolled in this study. The most lateral portion of the osseous origin of the supraspinatus muscle [the Y-view at the level was newly defined as the supraspinatus origin-view (SOV)] and the CYV were determined on the MRI, and location discrepancy between the two levels was measured. Fatty degeneration and cross-sectional areas of rotator cuff muscles were measured on both views. Subgroup analyses were performed in partial-thickness tears and full-thickness tears with tendon retraction.

RESULTS:

Distance between the SOV and CYV was 11.2 ± 3.7 mm. Discrepancy of the supraspinatus areas at the two views was greater in full-thickness tears than it was in partial-thickness tears without retraction. In the full-thickness tear group, correlation analysis between retraction and cross-sectional areas of the supraspinatus in both views exhibited statistical significance [Pearson's correlation coefficients = 0.500 ($P < 0.001$) in the CYV and 0.283 ($P = 0.017$) in the SOV]; however, the correlation was stronger in the CYV. Ratings of fatty degeneration were similar in both views.

CONCLUSIONS:

There is considerable location discrepancy between the osseous origin of the supraspinatus at the suprascapular fossa and the CYV in which fatty degeneration and hypotrophy are routinely measured.

LEVEL OF EVIDENCE: Case series, Level IV.
PMID: 24770380

ADHESIVE CAPSULITIS**Management****February 2015** Volume 20, Issue 1, Pages 2–9**Frozen shoulder contracture syndrome – Aetiology, diagnosis and management**Jeremy Lewis  DOI: <http://dx.doi.org/10.1016/j.math.2014.07.006>**Abstract**

Frozen shoulder is a poorly understood condition that typically involves substantial pain, movement restriction, and considerable morbidity. Although function improves overtime, full and pain free range, may not be restored in everyone. Frozen shoulder is also known as adhesive capsulitis, however the evidence for capsular adhesions is refuted and arguably, this term should be abandoned. The aim of this Masterclass is to synthesise evidence to provide a framework for assessment and management for Frozen Shoulder. Although used in the treatment of this condition, manipulation under anaesthetic has been associated with joint damage and may be no more effective than physiotherapy. Capsular release is another surgical procedure that is supported by expert opinion and published case series, but currently high quality research is not available. Recommendations that supervised neglect is preferable to physiotherapy have been based on a quasi-experimental study associated with a high risk of bias. Physiotherapists in the United Kingdom have developed dedicated care pathways that provide; assessment, referral for imaging, education, health screening, ultrasound guided corticosteroid and hydro-distension injections, embedded within physiotherapy rehabilitation.

The entire pathway is provided by physiotherapists and evidence exists to support each stage of the pathway. Substantial on-going research is required to better understand; epidemiology, patho-aetiology, assessment, best management, health economics, patient satisfaction and if possible prevention.

Keywords: Frozen shoulder, Assessment, Management

IMPINGMENT

SURGERY

ELBOW

WRIST AND HAND

CARPAL TUNNEL SYNDROME

HIP

Recovery from hip fracture

J Aging Health. 2015 Feb 2. pii: 0898264315569451.

Factors Influencing Performance-Oriented Mobility After Hip Fracture.

Martín-Martín LM¹, Arroyo-Morales M², Sánchez-Cruz JJ³, Valenza-Demet G², Valenza MC², Jiménez-Moleón JJ⁴.

Author information

Abstract

OBJECTIVE:

To identify the patient- and fracture-related determinants that influence performance-oriented mobility in hip fracture patients as measured by the Performance-Oriented Mobility Assessment (POMA) score.

METHOD:

A prospective study was conducted. Patients aged 65 or older (n = 186) were prospectively recruited. Patients were assessed for mobility (Tinetti POMA), level of independence (Modified Barthel Index), emotional distress (Goldberg General Health Questionnaire), comorbidities (Charlson Comorbidity Index), and Perceived Health (categorical scale).

RESULTS:

The study revealed that patient age, type of fracture, length of hospital stay, level of emotional distress, and level of independence were significant predictors of performance-oriented mobility. When combined, these factors explained 44.3% of the variance in performance-oriented mobility ($r^2 = .443$; r^2 adjusted = .414; $F = 15.46$; $p < .001$).

DISCUSSION:

Patients who are older, spend more days in hospital, have worse pre-fracture independence level or higher emotional distress levels at discharge, and sustain subtrochanteric or intertrochanteric fractures seem to have poorer performance-oriented mobility after hip fracture.

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KEYWORDS: function; hip fracture; performance-oriented mobility
PMID: 25649676

Piriformis syndrome

Curr Sports Med Rep. 2015 Jan;14(1):41-4. doi: 10.1249/JSR.0000000000000110.

Piriformis syndrome: a cause of nondiscogenic sciatica.

Cass SP¹.s

Author information

Abstract

Piriformis syndrome is a nondiscogenic cause of sciatica from compression of the sciatic nerve through or around the piriformis muscle. Patients typically have sciatica, buttocks pain, and worse pain with sitting. They usually have normal neurological examination results and negative straight leg raising test results. Flexion, adduction, and internal rotation of the hip, Freiberg sign, Pace sign, and direct palpation of the piriformis cause pain and may reproduce symptoms. Imaging and neurodiagnostic studies are typically normal and are used to rule out other etiologies for sciatica.

Conservative treatment, including medication and physiotherapy, is usually helpful for the majority of patients. For recalcitrant cases, corticosteroid and botulinum toxin injections may be attempted. Ultrasound and other imaging modalities likely improve accuracy of injections. Piriformis tenotomy and decompression of the sciatic nerve can be done for those who do not respond.

PMID: 25574881

Mobilization of hip fractures

Arch Gerontol Geriatr. 2015 Feb 3. pii: S0167-4943(15)00025-4. doi: 10.1016/j.archger.2015.01.017.

Factors influencing the progress of mobilization in hip fracture patients during the early postsurgical period?-A prospective observational study.

Buecking B¹, Bohl K², Eschbach D³, Bliemel C³, Aigner R³, Balzer-Geldsetzer M², Dodel R², Ruchholtz S³, Debus F³.

Author information

Abstract

OBJECTIVE:

The aim of the present study was to determine the independent factors influencing mobilization progress after geriatric hip fractures.

PATIENTS AND METHODS:

392 Hip fracture patients older than 60 years were included in this prospective, observational, cohort study. The progress of mobilization was measured with walking ability 4 days post-surgery, ability to climb stairs until discharge and the Tinetti test at discharge. Factors correlated with the progress of mobilization were determined using multivariate analyses.

RESULTS:

The independent factors influencing walking ability 4 days post-surgery were the pre-fracture Charlson Comorbidity Index (OR=0.834, p=0.005), the American Society of Anesthesiologists Score (OR=0.550, p=0.013), pre-fracture Barthel Index ([BI], OR=1.019, p=0.012) and risk for depression, as measured by the Geriatric Depression Scale, (OR=0.896, p=0.013). The probability of climbing stairs until discharge was influenced by the patient's age (OR=0.840, p<0.001), pre-fracture BI (OR=1.047, p=0.042), cognitive impairment, as measured by the mini mental state examination (OR=1.182 p=0.008), pre surgical hemoglobin (OR=1.026, p=0.044), time until surgery (OR=0.961, p=0.023), duration of surgery (OR=0.982, p=0.014), and surgery type (prosthesis, OR=4.545, p=0.001). Similar variables influenced the Tinetti test at discharge.

CONCLUSION:

While pre-fracture co-morbidities and function cannot be changed, the treatment of patients with cognitive impairment and depressive symptoms should be optimized. Efforts should be undertaken to ensure early surgery for all hip fractures.

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KEYWORDS: Fragility fracture; Geriatric fracture; Hip fracture; Mobilization; Rehabilitation
PMID: 25682536

REPLACEMENTS

OA

IMPINGEMENT

Impact of impingements

Br J Sports Med. 2015 Feb;49(4):230-242. doi: 10.1136/bjsports-2013-093340. Epub 2014 Sep 22.

Physical impairments and activity limitations in people with femoroacetabular impingement: a systematic review.

Diamond LE¹, Dobson FL¹, Bennell KL¹, Wrigley TV¹, Hodges PW², Hinman RS¹.
Author information

Abstract

BACKGROUND:

Femoroacetabular impingement (FAI) is a morphological hip condition that can cause hip and/or groin pain in younger active adults. Understanding the nature of physical impairments and activity limitations associated with symptomatic FAI is important to evaluate outcomes and guide development of rehabilitation strategies. The purpose of this systematic review was to establish: (1) whether people with symptomatic FAI demonstrate physical impairments and/or activity limitations compared with people without FAI; and (2) whether treatment affects these parameters.

METHODS:

Four databases (Pubmed, CINAHL, SportDISCUS and Cochrane Library) were searched until the 21 June 2013. Studies evaluated measures of physical impairment and/or activity limitations in people with symptomatic FAI and included either: (1) a comparison control group; or (2) a pretreatment and post-treatment comparison. Methodological quality was assessed using the Newcastle-Ottawa Scale.

RESULTS:

16 studies were included. The most commonly reported physical impairment was decreased range of motion (ROM) into directions of hip joint impingement. Other impairments included altered sagittal and frontal plane hip ROM during gait, altered sagittal plane hip ROM during stair climbing, and decreased hip adductor and flexor muscle strength. Effects of surgery on physical impairments are inconsistent but suggest improved hip ROM during gait, but not during stair climbing. Squatting depth improves following surgical intervention for symptomatic FAI.

CONCLUSIONS:

People with symptomatic FAI demonstrate physical impairments and activity limitations. Surgical intervention may restore some deficiencies, but not all. Further studies of physical impairment and activity limitation are needed to evaluate outcomes from surgical and conservative interventions and to inform rehabilitation programmes.

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KEYWORDS: Biomechanics; Hip; Strength isometric isokinetic
PMID: 25246442

KNEE**3D assessment of mechanics**

J Sport Rehabil. 2015 Feb 6.

2D and 3D Relationships Between Knee and Hip Kinematic Motion Analysis: Single Leg Drop Jump Landings.

Krftlyo; Sorenson B¹, Kernozek TW, Willson JD, Ragan R, Hove J.
Author information

Abstract

CONTEXT:

Hip and knee joint kinematics during drop landings are relevant to lower extremity injury mechanisms. In clinical research the "gold standard" for joint kinematic assessment is 3D motion analysis. However, 2D kinematic analysis is an objective and feasible alternative.

OBJECTIVE:

To quantify the relationship between 2D and 3D hip and knee kinematics in single leg drop landings and test for a set of 3D hip and knee kinematics that best predicts 2D kinematic measures during single leg drop landings DESIGN: A descriptive, comparative laboratory study.

PARTICIPANTS:

31 healthy college aged females (65.5 kg (SD 12.3), 168.1 cm (SD 6.7)).

METHODS:

Participants performed five 40 cm single leg landings during motion capture at 240 Hz. Multiple regressions were used to predict relationships for knee and hip between 2D frontal plane projection angles and 3D measurements.

RESULTS:

2D knee frontal plane projection angles had a strong relationship with 3D frontal plane knee kinematics at initial contact (IC) ($r^2=0.72$), which was only minimally improved with the addition of knee sagittal plane and hip transverse plane positions at IC ($r^2=0.77$). In contrast, 2D knee frontal plane projection angles had a low relationship with 3D knee abduction excursion ($r^2=0.06$). The addition of knee sagittal plane and hip transverse plane motions did not improve this relationship ($r^2=0.14$). 2D hip frontal plane projection angles had a moderate relationship with 3D frontal plane hip position at IC ($r^2=0.52$), which was strengthened with the addition of hip sagittal plane position ($r^2=0.60$). Additionally, hip 2D frontal plane projection angles into adduction excursion had a strong association with 3D hip adduction excursion ($r^2=0.70$).

CONCLUSION:

2D kinematics can predict 3D frontal plane hip and knee position at IC during a single leg landing but predict 3D frontal plane knee excursion with far less accuracy.

PMID: 25658442

Medial knee pain and exercise

Arthritis Care Res (Hoboken). 2015 Jan 26. doi: 10.1002/acr.22558.

The influence of biomechanical characteristics on pain and function outcomes from exercise in medial knee osteoarthritis and varus malalignment: exploratory analyses from a randomised controlled trial.

Bennell KL¹, Dobson F, Roos EM, Skou SR, Hodges P, Wrigley TV, Kyriakides M, Metcalf B, Hunt MA, Hinman RS.

Author information

Abstract

Objective: To investigate whether selected biomechanical characteristics influence changes in pain and physical function with exercise in people with medial knee osteoarthritis (OA) and varus malalignment. **Methods:** Post-hoc exploratory analyses from a randomised controlled trial involving 100 people with medial knee OA and varus malalignment who were randomly allocated to one of two 12-week exercise programs; quadriceps strengthening or neuromuscular exercise. Outcome measures were change in overall average knee pain (visual analogue scale) and self-reported physical function (Western Ontario and McMaster Universities Osteoarthritis Index). Candidate biomechanical characteristics measured at baseline included: i) visually-observed varus thrust during walking; ii) obesity determined by body mass index; iii) static varus alignment; and iv) isometric quadriceps strength. Data were analysed with separate two-way analyses of covariance using the interaction term of exercise group by biomechanical characteristic. **Results:** 92 participants were analysed for each characteristic except varus thrust where 85 participants were included. For change in pain, there was a significant interaction effect between type of exercise and both varus thrust ($p=0.001$) and obesity ($p=0.023$). Neuromuscular exercise was more effective for non-obese participants (mean(95%CI) change=29.5(20.5-38.5)mm) and for those with a varus thrust (mean change=28.7(19.4-38.1)mm), whereas quadriceps strengthening was more effective for obese people (mean change=24.7(14.9-34.4)mm) and for those without a varus thrust (mean change=29.4(21.2-37.7)mm). Biomechanical characteristics did not influence the effect of exercise on physical function ($p>0.05$).

Conclusions: These preliminary findings suggest varus thrust and obesity influence the pain-relieving effects of two different types of exercise. Further research is needed to confirm whether exercise that is prescribed according to specific biomechanical characteristics optimises knee OA outcomes. This article is protected by copyright. All rights reserved.

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KEYWORDS: OA; biomechanics; neuromuscular exercise; osteoarthritis; pain; quadriceps; strengthening; varus thrust

PMID: 25623617

Return to play MLB

Arthroscopy. 2015 Feb 3. pii: S0749-8063(14)00985-2. doi: 10.1016/j.arthro.2014.12.008.

Return to Play After Anterior Cruciate Ligament Reconstruction in Major League Baseball Athletes.

Fabricant PD¹, Chin CS², Conte S³, Coleman SH⁴, Pearle AD⁴, Dines JS⁴.
Author information

Abstract

PURPOSE:

The purpose of the study was to (1) investigate the rate of return to play among Major League Baseball (MLB) athletes after anterior cruciate ligament reconstruction (ACLR), (2) determine the impact of ACL injury on ability to perform baseball-specific planting and pivoting tasks (batting and stealing bases), and (3) to explore the effect of the injured side on these metrics.

METHODS:

ACL injury data from 1999 to 2012 were compiled, along with player performance statistics recorded for players with at least 30 games before ACL injury. Predictor variables included side of injury and outcome variables focused on batting average, stolen bases, and number of times caught stealing before injury and after surgery.

RESULTS:

Twenty-three of 26 (88%) players were able to return to at least 30 games after ACLR, although they experienced a decline of 21.2% in number of games played ($P = .004$). Those who had a ACLR for a rear batting leg injury averaged a 12.3% decline in batting average, whereas those who had ACLR for a lead leg injury had a 6.4% increase in batting average ($P = .04$). Side of injury was not predictive of stolen base metrics.

CONCLUSIONS:

The overall rate of return to play among MLB position players after ACLR was 88%, although there was a 21.2% decline in the number of games played postoperatively. Injury to the rear batting leg resulted in a lower returning batting average compared with an injury to the lead batting leg. Side of injury had no effect on stolen bases or on the number of times a player was caught stealing.

LEVEL OF EVIDENCE: Level IV, therapeutic case series.

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PMID: 25660011

Evolution of surgery

Anterior cruciate ligament reconstruction - evolution and current concepts

Orthopaedics and Trauma, 02/18/2015 Review Article

Lord B, et al.

Abstract

Since the early 20th century, the considerable evolution of anterior cruciate ligament reconstruction has been an essential impetus for our understanding of knee anatomy and biomechanics, and their relation to function, injury and rehabilitation. Traditional use of non-anatomic intra- and extra-articular reconstructions has moved to an emphasis on restoring anatomy and native knee kinematics whilst preserving biology.

With new evidence and technology, old concepts such as ACL repair and lateral procedures are being revisited with a fresh perspective in an attempt to restore normal knee function. Every aspect of the technique is a source of constant innovation with new concepts and controversy. This review describes the key milestones of this evolution then provides an appraisal overview of current concepts and the rationale for variations in technique.

[Hip flexor diminished after ACL](#)

Int Orthop. 2015 Feb 3.

Hip flexion strength remains decreased in anterior cruciate ligament reconstructed patients at one-year follow up compared to healthy controls.

Mouzopoulos G¹, Siebold R, Tzurbakis M.
Author information

Abstract

PURPOSE:

The aim of this study was to evaluate hip muscle flexion strength in patients who underwent anterior cruciate ligament (ACL) reconstruction with patellar or hamstrings tendon graft and compare them with healthy controls.

METHODS:

Sixty-eight male ACL deficient patients who underwent reconstruction (36 patients with hamstrings tendon graft and 32 patients with patellar tendon graft; randomized selection of type of graft) in our department, between July 2011 and July 2012, were enrolled in this randomised prospective study. Also 64 healthy male weekend athletes participated in the study as a control group. Hip flexor strength was measured by isokinetic dynamometer (Biodex), pre-operatively and one year after reconstruction. The statistical packet STATA 8.0 was used and statistical significance was set at $p < 0.05$.

RESULTS:

Hip flexion strength in ACL reconstructed patients either with patellar tendon or hamstrings grafts, one year after reconstruction is significantly decreased compared to healthy controls ($p < 0.0001$). Patients reconstructed with patellar tendon have stronger hip flexors than those reconstructed with hamstrings graft ($p < 0.0001$).

CONCLUSION:

Hip flexion strength remains decreased one year after ACL surgery compared to healthy controls. Patellar tendon could be the graft of choice for ACL reconstruction in athletes who must preserve stronger hip flexors.

PMID: 25645436

Prevention programs

Sports Med. 2015 Feb 7.

Biomechanical and Neuromuscular Characteristics of Male Athletes: Implications for the Development of Anterior Cruciate Ligament Injury Prevention Programs.

Sugimoto D¹, Alentorn-Geli E, Mendiguchía J, Samuelsson K, Karlsson J, Myer GD.
Author information

Abstract

Prevention of anterior cruciate ligament (ACL) injury is likely the most effective strategy to reduce undesired health consequences including reconstruction surgery, long-term rehabilitation, and pre-mature osteoarthritis occurrence. A thorough understanding of mechanisms and risk factors of ACL injury is crucial to develop effective prevention programs, especially for biomechanical and neuromuscular modifiable risk factors. Historically, the available evidence regarding ACL risk factors has mainly involved female athletes or has compared male and female athletes without an intra-group comparison for male athletes. Therefore, the principal purpose of this article was to review existing evidence regarding the investigation of biomechanical and neuromuscular characteristics that may imply aberrant knee kinematics and kinetics that would place the male athlete at risk of ACL injury. Biomechanical evidence related to knee kinematics and kinetics was reviewed by different planes (sagittal and frontal/coronal), tasks (single-leg landing and cutting), situation (anticipated and unanticipated), foot positioning, playing surface, and fatigued status.

Neuromuscular evidence potentially related to ACL injury was reviewed. Recommendations for prevention programs for ACL injuries in male athletes were developed based on the synthesis of the biomechanical and neuromuscular characteristics. The recommendations suggest performing exercises with multi-plane biomechanical components including single-leg maneuvers in dynamic movements, reaction to and decision making in unexpected situations, appropriate foot positioning, and consideration of playing surface condition, as well as enhancing neuromuscular aspects such as fatigue, proprioception, muscle activation, and inter-joint coordination.

PMID: 25663251

Assessment for return

Knee Surg Sports Traumatol Arthrosc. 2015 Feb 15.

Functional assessments for decision-making regarding return to sports following ACL reconstruction. Part I: development of a new test battery.

Hildebrandt C¹, Müller L, Zisch B, Huber R, Fink C, Raschner C.
Author information

Abstract

PURPOSE:

Return to activity remains the most common concern following an injury. To facilitate the decision regarding a patient's return to sport, we developed a standardized and easy-to-use test battery to enable an objective evaluation of knee function.

METHODS:

The test battery consisted of seven functional tests: the two-leg stability test, one-leg stability test (OL-ST), two-leg countermovement jump (CMJ), one-leg CMJ (OL-CMJ), plyometric jumps, speedy test and quick feet test. For each test, the reliability was determined based on the intraclass correlation coefficient. For all one-leg tests, the limb symmetry index (LSI) was calculated.

RESULTS:

All tests showed a moderate-to-high reliability. Normative data from 434 participants were included in the analysis. The subjects were categorized according to age as follows: children (10-14 years), youth (15-19 years), young adults (20-29 years) and adults (30-50 years). The establishment of the functional test values allowed the classification into five normative categories. The LSI for the OL-ST (98 %) indicated a better performance of the non-dominant leg. In contrast, high LSI values were found for the OL-CMJ (124 %), indicating a better performance of the dominant leg.

CONCLUSION:

Each test was found to be reliable and simple to perform. The better performance of the non-dominant leg in stability tasks must be considered when interpreting side-to-side differences. The established norm data from healthy individuals of each test battery represents an important basis for a clinical setting. Test results from an ACL-reconstructed patient should be at least classified as a functionally average outcome to support a safe return to sports. LEVEL OF EVIDENCE: IV.

PMID: 25682164

In patient vs. outpatient

Knee. 2014 Nov 22. pii: S0968-0160(14)00274-9. doi: 10.1016/j.knee.2014.11.007.

Pain experience and functional outcome of inpatient versus outpatient anterior cruciate ligament reconstruction, an equivalence randomized controlled trial with 12months follow-up.

Valkering KP¹, van Bergen CJ², Buijze GA², Nagel PH³, Tuinebreijer WE³, Breederveld RS³.
Author information

Abstract

BACKGROUND:

Arthroscopic reconstruction of the anterior cruciate ligament (ACL) has traditionally been performed in an inpatient setting. Outpatient treatment may offer the advantages of cost reduction and higher patient satisfaction.

HYPOTHESIS/PURPOSE:

We investigated whether ACL reconstruction in an outpatient setting is equally safe as in an inpatient setting and whether comparable functional outcomes can be achieved. We hypothesized that the outcomes of outpatient ACL reconstruction result in similar outcomes as inpatient ACL reconstruction.

STUDY DESIGN:

A prospective randomized controlled trial was conducted at one centre.

METHODS:

Forty-six patients were randomized to outpatient treatment or a 2-day admission after ACL reconstruction. The functional outcome was evaluated with the Lysholm, Tegner and International Knee Documentation Committee scores. Safety of the procedures was judged according to pain experience and readmission rate. The duration of follow-up was 1 year after ACL reconstruction. The patients were provided with a simple postoperative analgesic protocol. The linear mixed effect model for repeated measures was used for testing the differences between the study groups.

RESULTS:

No significant differences were found between the study groups in all the outcome measures. No readmissions were recorded related to pain. One complication was recorded in the outpatient group versus three in the inpatient group.

CONCLUSION:

This study indicates that outpatient care after ACL reconstruction yields comparable functional results and postoperative pain experience as inpatient care and is a safe option. A simple analgesic protocol provides adequate pain relief during the postoperative phase. Level of evidence: I.

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KEYWORDS: Anterior cruciate ligament; Inpatient; Outcome; Outpatient; Rehabilitation
PMID: 25662474

MENISCUS

Accuracy of MRI

Knee Surg Sports Traumatol Arthrosc. 2015 Mar;23(3):826-30. doi: 10.1007/s00167-013-2766-7. Epub 2013 Nov 17.

Accuracy of MRI in the diagnosis of meniscal tears in patients with chronic ACL tears.

Sharifah MI¹, Lee CL, Suraya A, Johan A, Syed AF, Tan SP.
Author information

Abstract

PURPOSE:

This study was conducted to evaluate the accuracy of magnetic resonance imaging (MRI) in diagnosing meniscal tears in patients with anterior cruciate ligament (ACL) tears and to determine the frequency of missed meniscal tears on MRI.

METHODS:

This prospective comparative study was conducted from 2009 to 2012. Patients with ACL injuries who underwent knee arthroscopy and MRI were included in the study. Two radiologists who were blinded to the clinical history and arthroscopic findings reviewed the pre-arthroscopic MR images. The presence and type of meniscal tears on MRI and arthroscopy were recorded. Arthroscopic findings were used as the reference standard. The accuracy, sensitivity, specificity, negative predictive value (NPV), and positive predictive value (PPV) of MRI in the evaluation of meniscal tears were calculated.

RESULTS:

A total of 65 patients (66 knees) were included. The sensitivity, specificity, accuracy, PPV, and NPV for the MRI diagnosis of lateral meniscal tears in our patients were 83, 97, 92, 96, and 90 %, respectively, whereas those for medial meniscus tears were 82, 92, 88, 82, and 88 %, respectively. There were five false-negative diagnoses of medial meniscus tears and four false-negative diagnoses of lateral meniscus tears. The majority of missed meniscus tears on MRI affected the peripheral posterior horns.

CONCLUSION:

The sensitivity for diagnosing a meniscal tear was significantly higher when the tear involved more than one-third of the meniscus or the anterior horn. The sensitivity was significantly lower for tears located in the posterior horn and for vertically oriented tears. Therefore, special attention should be given to the peripheral posterior horns of the meniscus, which are common sites of injury that could be easily missed on MRI. The high NPVs obtained in this study suggest that MRI is a valuable tool prior to arthroscopy.

LEVEL OF EVIDENCE: IV.

PMID: 24240983

Posterior lateral tear in ACL

Arthroscopy. 2015 Feb 3. pii: S0749-8063(14)00979-7. doi: 10.1016/j.arthro.2014.12.003.

Posteromedial Meniscal Tears May Be Missed During Anterior Cruciate Ligament Reconstruction.

Peltier A¹, Lording TD², Lustig S¹, Servien E¹, Maubisson L³, Neyret P¹.
Author information

Abstract

PURPOSE:

This study aimed to assess the benefit of using an arthroscopic intercondylar view and a posterior medial viewing portal during anterior cruciate ligament (ACL) reconstruction in the diagnosis of posterior horn of the medial meniscus (PHMM) tears. A secondary objective was to determine clinical and radiological risk factors for the PHMM.

METHODS:

Forty-one patients undergoing isolated ACL reconstruction were prospectively evaluated. At ACL reconstruction, the PHMM was assessed using a standard 30° arthroscope in 3 sequential stages: a "classic" anterolateral portal view, an intercondylar view, and a view through a posteromedial portal.

RESULTS:

Thirty-nine patients were included (12 female patients and 27 male patients). A posteromedial tear of the medial meniscus was found in 17 patients using the anterolateral portal view. The intercondylar view identified 4 new additional lesions and extensions of 3 previously identified lesions. The posteromedial portal view identified 6 new lesions and 5 extensions of known lesions compared with the anterolateral portal view. Two lesions seen through the posteromedial portal were not identified by either the anterolateral portal view or the intercondylar view.

CONCLUSIONS:

Tears of the PHMM may be underdiagnosed by intraoperative assessment using only an anterolateral portal view during ACL reconstruction. The intercondylar view combined with a posteromedial portal aids in the diagnosis of PHMM tears and should be considered in routine ACL reconstruction to assess meniscal status, particularly when the interval from injury to surgery is prolonged.

LEVEL OF EVIDENCE:

Level IV, therapeutic case series.

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PMID: 25660007

Body mass index and results

Knee. 2014 Dec 27. pii: S0968-0160(14)00311-1. doi: 10.1016/j.knee.2014.12.008.

Effect of body mass index and osteoarthritis on outcomes following arthroscopic meniscectomy: A prospective nationwide study.

Bailey O¹, Gronkowsk K², Leach WJ³.
Author information

Abstract

BACKGROUND:

Current evidence suggests limiting arthroscopic meniscectomy to those patients with no or early arthritis however outcomes of arthroscopic meniscectomy with patients of a higher body mass index (BMI) are not as widely available. The aim of this study was to determine if patient reported outcome scores for arthroscopic meniscectomy are adversely affected by the degree of knee osteoarthritis or patient BMI.

METHODS:

All patients who underwent arthroscopic meniscectomy within the NHS in Scotland between the 6th of February and 29th of April 2012 were audited as part of the Scottish Government Musculoskeletal Audit and were eligible for inclusion within this study. A total of 270 patients returned both their pre-operative and post-operative EuroQol 5Q5D5L descriptive questionnaire and Knee injury and Osteoarthritis Outcome Scores. Patients were stratified according to BMI, degree of osteoarthritis, history of injury, and duration of knee symptoms.

RESULTS:

Pre-operative to post-operative EuroQol index scores [0.642 ± 0.253 to 0.735 ± 0.277 , median \pm SD] and Knee injury and Osteoarthritis Outcome Scores [44.63 ± 18.78 to 62.28 ± 24.94 , median \pm SD] improved across all patients ($p < 0.0001$). This was irrespective of degree of BMI, history of injury, or duration of symptoms. There was no such improvement in patients with moderate to severe osteoarthritis. Those patients with a BMI $> 35 \text{ kg/m}^2$ had lower post-operative scores than the pre-operative scores of those of BMI $< 30 \text{ kg/m}^2$.

CONCLUSIONS:

Arthroscopic meniscectomy is beneficial regardless of patient BMI, duration of symptoms, history of injury, or in the presence of early osteoarthritis.

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KEYWORDS: Arthritis; Arthroscopy; Body mass index; Knee; Meniscectomy
PMID: 25662473

PATELLA

Kinematics

Knee. 2014 Nov 23. pii: S0968-0160(14)00273-7. doi: 10.1016/j.knee.2014.11.006.

The effect of coordinate system variation on in vivo patellofemoral kinematic measures.

Kedgley AE¹, McWalter EJ², Wilson DR³.

Author information

Abstract

BACKGROUND:

The use of different coordinate system definitions for the patella leads to difficulties in comparing kinematic results between studies. The purpose of this work was to establish the effect of using a range of coordinate system definitions to quantify patellar kinematics. Additionally, intra- and inter-investigator repeatabilities of the digitization of anatomic landmarks on the patella were determined.

METHODS:

Four different patellar coordinate system definitions were applied using digitisations in two and three dimensions and a single femoral coordinate system was used for comparison. Intra-investigator variability was established by having one investigator digitize the patellar landmarks of three subjects on five separate occasions. Inter-investigator variability was quantified by having five participants digitize the same landmarks on the same three subjects. Patellofemoral kinematics were quantified for ten subjects, at six angles of tibiofemoral flexion, using MRI.

RESULTS:

As a result of changes in the patellar coordinate system, differences of up to 11.5° in flexion, 5.0° in spin, and 27.3° in tilt were observed in the resultant rotations for the same motion, illustrating the importance of standardizing the coordinate system definition.

CONCLUSIONS:

To minimize errors due to variability while still maintaining physiologically sensible kinematic angles, a coordinate system based upon an intermediate flexion axis between the most medial and lateral points on the patella, and a superiorly-directed long axis located between the most proximal and distal points on the patella, with an origin at the centre of the most proximal, distal, medial, and lateral points on the patella is recommended.

CLINICAL RELEVANCE:

The recommended anatomic coordinate frame may be employed in the calculation of dynamic in vivo patellar kinematics when used in combination with any method that reliably quantifies patellar motion.

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KEYWORDS:

Coordinate system; Landmarks; Patella; Patellofemoral kinematics

PMID:25656245

KNEE/TOTAL

OA and replacements

J Spinal Disord Tech. 2015 Mar;28(2):47-52. doi: 10.1097/BSD.0b013e31828d003d.

Prognostic factors for surgical outcomes including preoperative total knee replacement and knee osteoarthritis status in female patients with lumbar spinal stenosis.

Ho Lee B¹, Kim TH, Chong HS, Lee SH, Park JO, Kim HS, Shim DW, Lee HM, Moon SH.
Author information

Abstract

STUDY DESIGN:

A retrospective clinical case series.

OBJECTIVE:

To investigate knee osteoarthritis (KOA) and total knee replacement (TKR) status as prognostic factors for surgical outcomes in female patients with lumbar spinal stenosis (LSS).

SUMMARY OF BACKGROUND DATA:

There have been many reports on numerous prognostic factors for surgical outcomes in patients with degenerative lumbar conditions; however, there has been no report on the surgical outcome in patients who underwent spinal surgery with coexisting KOA and TKR.

METHODS:

This study included 141 female patients (mean age, 67.6 y) who underwent spinal surgery for LSS between January 2006 and December 2010. At 1 year postoperatively, surgical outcomes were measured using the Oswestry disability index (ODI). Various clinical factors including KOA and TKR were analyzed as prognostic factors for surgical outcomes.

RESULTS:

Mean average scores at preoperative evaluation were 26.1±6.6 in the no KOA group, 23.6±7.9 in the KOA group, and 30.4±6.7 in the TKR group (P<0.05). Mean average scores at postoperative 1 year were 13.8±8.5 in the no KOA group, 16.8±9.5 in the KOA group, and 21.4±5.7 in the TKR group (P<0.05, Mann-Whitney U test). Preoperative ODI scores were shown to be significantly affected by the TKR status only (P<0.05), and were significantly higher in the TKR patient group. ODI scores at postoperative 3 months were significantly correlated with the preoperative ODI and the operational level (P<0.05). At postoperative 1 year, ODI scores were shown to be affected by the operational level, the preoperative ODI, and the presence of advanced radiographic KOA (Kellgren/Lawrence grades III and IV) (P<0.05).

CONCLUSIONS:

A poor preoperative functional score, the presence of preoperative KOA, and longer operational levels were shown to be poor prognostic factors for the 1-year surgical outcome of LSS. Also, patients in the TKR group showed the worst ODI scores at preoperative and postoperative 1-year evaluations. Consideration of these factors when planning for spine surgery could be helpful in predicting the surgical outcomes of lumbar spinal surgery.

PMID: 23563328

KNEE/EXERCISE**OSTEOARTHRITIS/KNEE****Gait and OA**

Clin Rehabil. 2015 Feb 17. pii: 0269215515570098.

Effects of exercise therapy on walking ability in individuals with knee osteoarthritis: A systematic review and meta-analysis of randomised controlled trials.

Tanaka R¹, Ozawa J², Kito N², Moriyama H³.
Author information

Abstract

OBJECTIVE:

To examine the effect of exercise therapy on the walking ability of individuals with knee osteoarthritis.

DATA SOURCES:

Randomised clinical trials (RCTs) were identified by searching through PubMed, Cochrane Central Register of Controlled Trials, Physiotherapy Evidence Database, and Cumulative Index to Nursing and Allied Health Literature. All literature published to October 2014 were included in the search.

REVIEW METHODS:

Data were collected from RCTs that compared the effects of exercise therapy on walking ability with the effects of no intervention or psychoeducational intervention in participants with knee osteoarthritis. The outcome data on the total distance walked (6-minute walk test); the amount of time spent walking (the time to walk arbitrary distances); and gait velocity were obtained and analyzed. Standardized mean differences (SMDs) and 95% confidence intervals (CIs) were calculated.

RESULTS:

Twenty-eight RCTs were identified. Meta-analysis provided very-low-quality evidence that exercise therapy increased the total distance walked in the 6-minute walk test, in comparison with the effects of the control interventions (SMD = 0.44, 95% CI 0.27 to 0.60). Meta-analysis also provided low- or moderate-quality evidence that the amount of time spent walking and gait velocity were improved more by exercise therapy than by the control interventions (the amount of time spent walking: SMD = -0.50, 95% CI -0.70 to -0.30; gait velocity: SMD = 1.78, 95% CI 0.98 to 2.58).

CONCLUSION:

In individuals with knee osteoarthritis, exercise therapy can improve the amount of time spent walking, gait velocity, and maybe the total distance walked.

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KEYWORDS: Exercise; knee osteoarthritis; meta-analysis; systematic review; walking
PMID:25691583

FOOT AND ANKLE**Forefoot varus and changes in the hip and knee motion**

February 2015 Volume 20, Issue 1, Pages 79–83

The effects of forefoot varus on hip and knee kinematics during single-leg squat☆

Rodrigo Scattone Silva Carlos D. Maciel Fábio V. Serrão

DOI: <http://dx.doi.org/10.1016/j.math.2014.07.001>

Abstract

Foot misalignments, such as forefoot varus (FV), have been associated with musculoskeletal injuries in the proximal joints of the lower limb. Previous theories suggested that this association occurs because FV influences knee and hip kinematics during closed kinetic chain activities. However, research on the effects of FV in the kinematics of the lower limb is very scarce. Therefore, the purpose of this study was to compare the knee and hip kinematics between subjects with and without FV during a functional weight-bearing activity. Forty-six healthy adolescents were divided into two groups: group of subjects with FV (VG, $n = 23$) and group of subjects with aligned forefoot (CG, $n = 23$). A kinematic evaluation was conducted while the subjects performed a single-leg squat task. The variables of interest were hip internal rotation and adduction and knee abduction excursions at 15° , 30° , 45° and 60° of knee flexion. Between-group comparisons were performed with multivariate analysis of variance.

Results showed that the VG presented greater hip internal rotation when compared with the CG across all evaluated knee flexion angles ($P = 0.02$ – 0.0001). No differences between groups were observed in hip adduction or knee abduction ($P > 0.05$). These results indicate that FV influences the transverse plane hip movement patterns during a functional weight-bearing activity. Considering that excessive hip internal rotation has been associated with knee injuries, these findings might contribute for a better understanding of the link between FV and injuries of the proximal joints of the lower limb.

Keywords: Subtalar hyperpronation, Patellofemoral pain, Biomechanics

SHOES/ORTHOTICS**ANKLE/INSTABILITY****Compression**

Eur J Orthop Surg Traumatol. 2015 Feb 4.

The role of compression in the management of soft tissue ankle injuries: a systematic review.

Hansrani V¹, Khanbhai M, Bhandari S, Pillai A, McCollum CN.

Author information

Abstract

BACKGROUND:

Ankle sprains are very common injuries which can lead to long-term pain, swelling and instability. Compression is often used in the treatment of these common injuries but is it effective and how best is it delivered?

METHODS:

MEDLINE (1966-current), EMBASE (1980-current), Cochrane Library (2011:1) and MEDION were included in our search. Studies evaluating compression in the treatment of ankle sprains were included. Two authors independently reviewed potential studies according to a set eligibility criteria.

RESULTS:

Twelve studies including 1,701 patients with ankle sprains were identified (level of evidence: four grade 1b; five grade 2b; three grade 4). Intermittent pneumatic compression (IPC), elastic tubular bandage and compression bandaging were all evaluated. Five of the 12 studies reported that compression therapy improves recovery after ankle injury, of which one evaluated IPC, and the remaining four elastic bandages (Elastoplast, class II elastic stockings, wool and crepe, focal compression with air stirrup). Five studies evaluating Tubigrip in ankle sprains concluded that Tubigrip has no positive effect on functional recovery and may increase the requirement for analgesia compared with no intervention.

CONCLUSION:

Compression may be an effective tool in the management of ankle injuries and has been shown to reduce swelling and improve quality of life in single studies. Definitive conclusions are hampered by the poor quality of evidence and the variety of treatments used. The most effective form of compression to treat ankle sprains or is yet to be determined. Adequately designed randomized control trials are clearly needed.

PMID: 25649317

Tapping and instability

Int J Sports Med. 2015 Feb 9.

Effect of Tape on Dynamic Postural Stability in Subjects with Chronic Ankle Instability.

De Ridder R¹, Willems TM², Vanrenterghem J³, Roosen P².

Author information

Abstract

The objective of our study was to evaluate the effect of taping on the dynamic postural stability during a jump landing protocol in subjects with chronic ankle instability (CAI). For this purpose, 28 subjects with CAI performed a sagittal and frontal plane landing task in a non-taped and taped condition. As main outcome measure, the dynamic postural stability index (DPSI) was calculated. In addition, subjective feelings of instability and perceived difficulty level were assessed. Furthermore, mechanical effectiveness of the tape on the ankle joint was determined by registering 3D kinematics. 3 subjects were excluded based on discomfort during the landing protocol.

Study results indicated that the tape reduced plantar flexion and inversion at the ankle at touchdown and range of motion in the landing phase. There was, however, no effect on the DPSI or on its directional subcomponents. Subjective feelings of stability with tape improved significantly, whereas perceived difficulty did not change. In conclusion, our taping procedure did not improve postural control during a sagittal and frontal plane landing task in subjects with CAI. Perceived instability did improve and is considered an important treatment outcome, which suggests that taping could be considered as a treatment modality by clinicians.

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PMID: 25665000

ACHILLES TENDON**Achilles tears and function**

Knee Surg Sports Traumatol Arthrosc. 2015 Mar;23(3):868-74. doi: 10.1007/s00167-013-2512-1. Epub 2013 Apr 23.

Compensatory muscle activation caused by tendon lengthening post-Achilles tendon rupture.

Suydam SM¹, Buchanan TS, Manal K, Silbernagel KG.
Author information

Abstract

PURPOSE:

The purpose of this study was to establish a relationship between the lengthening of the Achilles tendon post-rupture and surgical repair to muscle activation patterns during walking in order to serve as a reference for post-surgical assessment.

METHOD:

The Achilles tendon lengths were collected from 4 patients with an Achilles tendon rupture 6 and 12 months post-surgery along with 5 healthy controls via ultrasound. EMG was collected from the triceps surae muscles and tibialis anterior during overground walking.

RESULTS:

Achilles lengths at 6 and 12 months post-surgery were significantly longer ($p < 0.05$) on the involved side compared to the uninvolved side, but there were no side-to-side differences in the healthy controls. The integrated EMG (iEMG) of the involved side was significantly higher than the uninvolved side in the lateral gastrocnemius at 6 months and for the medial gastrocnemius at 12 months in the patients with Achilles tendon rupture; no side-to-side difference was found in the healthy controls. The triceps surae muscles' activations were fair to moderately correlated to the Achilles lengths ($0.38 < r < 0.52$).

CONCLUSIONS:

The increased Achilles tendon length and iEMG from the triceps surae muscles indicate that loss of function is primarily caused by anatomical changes in the tendon and the appearance of muscle weakness is due to a lack of force transmission capability. This study indicates that when aiming for full return of function and strength, an important treatment goal appears to be to minimize tendon elongation.

LEVEL OF EVIDENCE: Prognostic prospective case series, Level IV.
PMID: 23609529

Tear and 19 weeks of healing

Knee Surg Sports Traumatol Arthrosc. 2015 Mar;23(3):884-9. doi: 10.1007/s00167-013-2720-8. Epub 2013 Oct 27.

Healing of human Achilles tendon ruptures: radiodensity reflects mechanical properties.

Schepull T¹, Aspenberg P.
Author information

Abstract**PURPOSE:**

This study tests the idea of using radiodensity from computed tomography to quantitatively evaluate the healing of ruptured Achilles tendons.

METHODS:

The radiodensity of the healing tendons in sixty-five patients who were treated for Achilles tendon rupture was measured. The hypothesis was that density would correlate with an estimate for e-modulus, derived from strain, measured by radiostereometry with different mechanical loadings.

RESULTS:

Radiodensity 7 weeks after injury was decreased to 67 % (SD 11) of the contralateral, uninjured tendon. There was no improvement in radiodensity from 7 to 19 weeks, whereas at 1 year, it had increased to 106 % (SD 7). Only 2 of 52 measured values at 1 year were lower than the highest value at 19 weeks, i.e. there was minimal overlap. The variation in radiodensity could explain 80 % of the variation in e-modulus, but radiodensity correlated only weakly with e-modulus at each time point separately. At 1 year, both radiodensity and e-modulus correlated with functional results, although weakly.

CONCLUSIONS:

From 19 weeks onwards, radiodensity appears to reflect mechanical properties of the tendon and might to some extent predict the final outcome. Radiodensity at 7 weeks is difficult to interpret, probably because it reflects both callus and damaged tissues.

LEVEL OF EVIDENCE: Prospective, diagnostic study, Level II.

PMID: 24162760

PLANTAR SURFACE

HALLUX VALGUS

RHUMATOID ARTHRITIS

MANUAL THERAPY

LBP clinical prediction rules

Validation and impact analysis of prognostic clinical prediction rules for low back pain is needed: a systematic review

Journal of Clinical Epidemiology, 02/20/2015 Evidence Based Medicine Review Article
Haskins R, et al

Abstract

Objective

To identify prognostic forms of clinical prediction rules (CPRs) related to the non-surgical management of adults with low back pain (LBP) and to evaluate their current stage of development.

Study Design and Setting

Systematic review using a sensitive search strategy across 7 databases with hand-searching and citation tracking.

Results

10,005 records were screened for eligibility with 35 studies included in the review. The included studies report on the development of 30 prognostic LBP CPRs. The majority of the identified CPRs are in their initial phase of development. Three CPRs were found to have undergone validation – the Cassandra rule for predicting long-term significant functional limitations and the 5-item and 2-item Flynn manipulation CPRs for predicting a favourable functional prognosis in patients being treated with lumbopelvic manipulation. No studies were identified that investigated whether the implementation of a CPR resulted in beneficial patient outcomes or improved resource efficiencies.

Conclusion

The majority of the identified prognostic CPRs for LBP are in the initial phase of development and are consequently not recommended for direct application in clinical practice at this time. The body of evidence provides emergent confidence in the limited predictive performance of the Cassandra rule and the 5-item Flynn manipulation CPR in comparable clinical settings and patient populations.

Manipulation for LBP

Spine (Phila Pa 1976). 2015 Feb 15;40(4):209-17. doi: 10.1097/BRS.0000000000000724.

Comparison of spinal manipulation methods and usual medical care for acute and subacute low back pain: a randomized clinical trial.

Schneider M¹, Haas M, Glick R, Stevans J, Landsittel D.
Author information

Abstract

STUDY DESIGN:

Randomized controlled trial with follow-up to 6 months.

OBJECTIVE:

This was a comparative effectiveness trial of manual-thrust manipulation (MTM) versus mechanical-assisted manipulation (MAM); and manipulation versus usual medical care (UMC).

SUMMARY OF BACKGROUND DATA:

Low back pain (LBP) is one of the most common conditions seen in primary care and physical medicine practice. MTM is a common treatment for LBP. Claims that MAM is an effective alternative to MTM have yet to be substantiated. There is also question about the effectiveness of manipulation in acute and subacute LBP compared with UMC.

METHODS:

A total of 107 adults with onset of LBP within the past 12 weeks were randomized to 1 of 3 treatment groups: MTM, MAM, or UMC. Outcome measures included the Oswestry LBP Disability Index (0-100 scale) and numeric pain rating (0-10 scale). Participants in the manipulation groups were treated twice weekly during 4 weeks; subjects in UMC were seen for 3 visits during this time. Outcome measures were captured at baseline, 4 weeks, 3 months, and 6 months.

RESULTS:

Linear regression showed a statistically significant advantage of MTM at 4 weeks compared with MAM (disability = -8.1, P = 0.009; pain = -1.4, P = 0.002) and UMC (disability = -6.5, P = 0.032; pain = -1.7, P < 0.001). Responder analysis, defined as 30% and 50% reductions in Oswestry LBP Disability Index scores revealed a significantly greater proportion of responders at 4 weeks in MTM (76%; 50%) compared with MAM (50%; 16%) and UMC (48%; 39%). Similar between-group results were found for pain: MTM (94%; 76%); MAM (69%; 47%); and UMC (56%; 41%). No statistically significant group differences were found between MAM and UMC, and for any comparison at 3 or 6 months.

CONCLUSION:

MTM provides greater short-term reductions in self-reported disability and pain scores compared with UMC or MAM.

LEVEL OF EVIDENCE: 2.

PMID: 25423308

Tissue damage and manips?

Dis Markers. 2014; 2014: 815379.

Published online 2014 Dec 25. doi: 10.1155/2014/815379

Tissue Damage Markers after a Spinal Manipulation in Healthy Subjects: A Preliminary Report of a Randomized Controlled Trial

A. Achalandabaso, 1 G. Plaza-Manzano, 2 R. Lomas-Vega, 3 A. Martínez-Amat, 3 M. V. Camacho, 4 M. Gassó, 4 F. Hita-Contreras, 3 and F. Molina 3

Abstract

Spinal manipulation (SM) is a manual therapy technique frequently applied to treat musculoskeletal disorders because of its analgesic effects. It is defined by a manual procedure involving a directed impulse to move a joint past its physiologic range of movement (ROM). In this sense, to exceed the physiologic ROM of a joint could trigger tissue damage, which might represent an adverse effect associated with spinal manipulation. The present work tries to explore the presence of tissue damage associated with SM through the damage markers analysis. Thirty healthy subjects recruited at the University of Jaén were submitted to a placebo SM (control group; $n = 10$), a single lower cervical manipulation (cervical group; $n = 10$), and a thoracic manipulation ($n = 10$). Before the intervention, blood samples were extracted and centrifuged to obtain plasma and serum.

The procedure was repeated right after the intervention and two hours after the intervention. Tissue damage markers creatine phosphokinase (CPK), lactate dehydrogenase (LDH), C-reactive protein (CRP), troponin-I, myoglobin, neuron-specific enolase (NSE), and aldolase were determined in samples. Statistical analysis was performed through a 3×3 mixed-model ANOVA. Neither cervical manipulation nor thoracic manipulation did produce significant changes in the CPK, LDH, CRP, troponin-I, myoglobin, NSE, or aldolase blood levels.

Our data suggest that the mechanical strain produced by SM seems to be innocuous to the joints and surrounding tissues in healthy subjects.

PMCID: PMC4291009

Manipulation of C spine with degenerative radiculopathy

Clin Rehabil. 2015 Feb 13. pii: 0269215515570382.

Does cervical spine manipulation reduce pain in people with degenerative cervical radiculopathy? A systematic review of the evidence, and a meta-analysis.

Zhu L¹, Wei X², Wang S³.
Author information

Abstract**OBJECTIVE:**

To access the effectiveness and safety of cervical spine manipulation for cervical radiculopathy.

DATA SOURCES:

PubMed, the Cochrane Central Registry of Controlled Trials (CENTRAL) in the Cochrane Library, EMBASE, Chinese Biomedical Literature Database (CBM), Chinese National Knowledge Infrastructure (CNKI), Chinese Scientific Journal Database (VIP), Wanfang data, the website of Chinese clinical trial registry and international clinical trial registry by US National Institutes of Health.

REVIEW METHODS:

Randomized controlled trials that investigated the effects of cervical manipulation compared with no treatment, placebo or conventional therapies on pain measurement in patients with degenerative cervical radiculopathy were searched. Two authors independently evaluated the quality of the trials according to the risk of bias assessment provided by the PEDro (physiotherapy evidence database) scale. RevMan V.5.2.0 software was employed for data analysis. The GRADE approach was used to evaluate the overall quality of the evidence.

RESULTS:

Three trials with 502 participants were included. Meta-analysis suggested that cervical spine manipulation (mean difference 1.28, 95% confidence interval 0.80 to 1.75; $P < 0.00001$; heterogeneity: $\text{Chi}^2 = 8.57$, $P = 0.01$, $I^2 = 77\%$) improving visual analogue scale for pain showed superior immediate effects compared with cervical computer traction. The overall strength of evidence was judged to be moderate quality. One out of three trials reported the adverse events and none with a small sample size.

CONCLUSION:

There was moderate level evidence to support the immediate effectiveness of cervical spine manipulation in treating people with cervical radiculopathy. The safety of cervical manipulation cannot be taken as an exact conclusion so far.

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KEYWORDS: Neck pain; manipulation; meta-analysis
PMID: 25681406

T spine manip with chronic neck pain

Neuropsychiatr Dis Treat. 2015 Jan 12;11:137-44. doi: 10.2147/NDT.S69579. eCollection 2015.

Acute effects of single and multiple level thoracic manipulations on chronic mechanical neck pain: a randomized controlled trial.

Puntumetakul R¹, Suvarnnato T², Werasirirat P³, Uthaikhup S⁴, Yamauchi J⁵, Boucaut R⁶.
Author information

Abstract**BACKGROUND:**

Thoracic spine manipulation has become a popular alternative to local cervical manipulative therapy for mechanical neck pain. This study investigated the acute effects of single-level and multiple-level thoracic manipulations on chronic mechanical neck pain (CMNP).

METHODS:

Forty-eight patients with CMNP were randomly allocated to single-level thoracic manipulation (STM) at T6-T7 or multiple-level thoracic manipulation (MTM), or to a control group (prone lying). Cervical range of motion (CROM), visual analog scale (VAS), and the Thai version of the Neck Disability Index (NDI-TH) scores were measured at baseline, and at 24-hour and at 1-week follow-up.

RESULTS:

At 24-hour and 1-week follow-up, neck disability and pain levels were significantly ($P<0.05$) improved in the STM and MTM groups compared with the control group. CROM in flexion and left lateral flexion were increased significantly ($P<0.05$) in the STM group when compared with the control group at 1-week follow-up. The CROM in right rotation was increased significantly after MTM compared to the control group ($P<0.05$) at 24-hour follow-up. There were no statistically significant differences in neck disability, pain level at rest, and CROM between the STM and MTM groups.

CONCLUSION:

These results suggest that both single-level and multiple-level thoracic manipulation improve neck disability, pain levels, and CROM at 24-hour and 1-week follow-up in patients with CMNP.

KEYWORDS: neck disability; neck pain; pain level; thoracic manipulation
PMID: 25624764

Mobilizing with leg movement**February 2015** Volume 20, Issue 1, Pages 103–108**The effects of a modified spinal mobilization with leg movement (SMWLM) technique on sympathetic outflow to the lower limbs**Vasilis Tsirakis   Jo PerryDOI: <http://dx.doi.org/10.1016/j.math.2014.07.002>**Abstract**

Physiotherapy management of lumbar disorders, based on Mulligan's mobilization techniques, is a treatment of choice by many physiotherapists, however, there is only limited evidence of any neurophysiological effects and much of this has focused on the cervical spine and upper limbs. This study aims to extend the knowledge base underpinning the use of a modified Mulligan's spinal mobilisation with leg movement technique (SMWLM) by exploring its effects on the peripheral sympathetic nervous system (SNS) of the lower limbs. Using a single blind, placebo controlled, independent groups study design, 45 normal naive healthy males were randomly assigned to one of three experimental groups (control, placebo or treatment; SMWLM). SNS activity was determined by recording skin conductance (SC) obtained from lower limb electrodes connected to a BioPac unit. Validation of the placebo technique was performed by post-intervention questionnaire.

Results indicated that there was a significant change in SC from baseline levels (30%) that was specific to the side treated for the treatment group during the intervention period (compared to placebo and control conditions). This study provides preliminary evidence that a modified SMWLM technique results in side-specific peripheral SNS changes in the lower limbs.

Keywords: Mulligan, Mobilization, Sympathetic outflow, Lower limbs

NEUROMOBILIZATION

STRETCHING/MUSCLES

STM

TP's scapula muscles

Man Ther. 2015 Feb;20(1):124-9. doi: 10.1016/j.math.2014.07.014. Epub 2014 Aug 1.

Study of the trapezius muscle region pressure pain threshold and latency time in young people with and without depressed scapula.

Lee KT¹, Chuang CC², Lai CH³, Ye JJ¹, Wu CL⁴.

Author information

Abstract

The scapula is stabilized in or moved to a certain position to coordinate shoulder function and achieve shoulder and arm movement during the athletic and daily activities. An alteration in the scapular position both at rest and during arm movements is commonly associated with shoulder injury or dysfunction. The purpose of this study was to assess the influence of the depressed scapular position using pressure pain threshold (PPT) and delayed muscle activation of the upper and middle trapezius muscles. The study included 20 subjects who were divided into normal shoulder (n = 12) and depressed shoulder (n = 8) group. PPT was measured in a relaxed position. Muscle activity was recorded using surface electromyography and by calculating each shrug's muscle latency time (MLT).

The results revealed that the healthy young subjects with depressed scapular position had significantly lower PPT levels than those with normal scapular position both in the upper and middle trapezius muscle ($P < 0.05$). MLT of the upper trapezius was significantly delayed in both sides during the shoulder shrugs ($P < 0.05$).

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KEYWORDS:

Electromyography; Pressure pain threshold; Scapula; Trapezius muscles

PMID: 25130137

MUSCLES

STRETCHING

MOTOR CONTROL

CFS/BET

Clinical vignettes

Clin Rehabil. 2015 Feb 4. pii: 0269215515570499.

Comparison of clinical vignettes and standardized patients as measures of physiotherapists' activity and work recommendations in patients with non-specific low back pain.

Brunner E¹, Probst M², Meichtry A³, Luomajoki H³, Dankaerts W².
Author information

Abstract

OBJECTIVE: To validate clinical vignettes as a measure of physiotherapists' activity and work recommendations given to patients with non-specific low back pain.

DESIGN: Validation study comparing two methods for measuring aspects of health providers' clinical management: Clinical vignettes and unannounced visits of standardized patients (the gold standard).

SETTING: Outpatient physiotherapy clinics.

SUBJECTS: Physiotherapists (N = 59) who consented to see unannounced standardized patients in their clinical practice.

MAIN MEASURES: Clinical vignettes were used to initially measure physiotherapists' self-reported activity and work recommendations. Subsequently, actors performing as standardized patients visited physiotherapists in their clinical practice and rated the advice given by the physiotherapist regarding activity and work. A total of 23 standardized patients were randomly scheduled to physiotherapists. Physiotherapists were blinded towards the standardized patients. To test whether standardized patients were detected, physiotherapists reported if they suspected that they had treated an actor.

RESULTS: The 23 standardized patients visited 22 different physiotherapists. Physiotherapists detected 12 out of 23 unannounced standardized patients (detection rate: 52%). The estimated agreement between the two measures was poor, for both activity and work recommendations (weighted kappa coefficients: 0.29 resp. -0.21).

CONCLUSION: The poor concordance between clinical vignettes and standardized patients indicates the potentially limited validity of clinical vignettes as a measure of health providers' activity and work recommendations in low back pain practice.

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KEYWORDS: Low back pain; clinical vignettes; physiotherapy; standardized patients; validity
PMID: 25652442

Sitting

Br J Sports Med. 2015 Feb;49(4):255-8. doi: 10.1136/bjsports-2013-093014. Epub 2014 Feb 18.

Associations of overall sitting time and TV viewing time with fibrinogen and C reactive protein: the AusDiab study.

Howard BJ¹, Balkau B², Thorp AA¹, Magliano DJ¹, Shaw JE³, Owen N⁴, Dunstan DW⁵.
Author information

Abstract

BACKGROUND/AIM: Sedentary behaviour is associated with increased risk for all-cause and cardiovascular mortality. Plasma fibrinogen and C reactive protein (CRP)-key inflammatory and/or haemostatic markers-may contribute to this association; however, few studies have examined their relationships with sedentary behaviours. We examined associations of overall sitting and TV viewing time with fibrinogen and high-sensitivity CRP (hsCRP).

METHODS: Plasma fibrinogen and hsCRP were measured in 3086 Australian adults (mean age: 55±12 years) who participated in the 2004-2005 AusDiab (Australian Diabetes, Obesity and Lifestyle) study. Multiple linear regression analyses examined cross-sectional associations of self-reported overall sitting and TV viewing time (h/day) with plasma fibrinogen and hsCRP, adjusting for sociodemographic, behavioural and medical treatments and conditions as potential covariates.

RESULTS: Overall sitting time and TV viewing time were positively associated with plasma fibrinogen (sitting: β : 0.02 g/L, 95% CI (0.01 to 0.02); TV time: 0.03 g/L (0.02 to 0.05)) and hsCRP (sitting: 2.4% (1.2% to 3.6%); TV time: 4.5% (1.7% to 7.4%)). Associations were independent of leisure-time physical activity, but after adjusting for waist circumference, they remained for fibrinogen, but for hsCRP were attenuated to the null. Interactions were observed for gender×TV ($p=0.011$) with fibrinogen (associations in women only) and for waist circumference×TV ($p=0.084$) with hsCRP (associations in low-risk only).

CONCLUSIONS: Overall sitting time was positively associated with plasma fibrinogen and hsCRP in men and women; associations of TV viewing time with fibrinogen were observed in women only. Abdominal adiposity-mediated associations for hsCRP but not for fibrinogen. Prospective and intervention studies are needed to establish likely causality and elucidate potential mechanisms.

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PMID: 24550208

EXERCISE**Pain science and exercise**

Man Ther. 2015 Feb;20(1):216-20. doi: 10.1016/j.math.2014.07.004. Epub 2014 Jul 18.

Exercise therapy for chronic musculoskeletal pain: Innovation by altering pain memories.

Nijs J¹, Lluch Girbés E², Lundberg M³, Malfliet A⁴, Sterling M⁵.

Author information

Abstract

Even though nociceptive pathology has often long subsided, the brain of patients with chronic musculoskeletal pain has typically acquired a protective (movement-related) pain memory. Exercise therapy for patients with chronic musculoskeletal pain is often hampered by such pain memories. Here the authors explain how musculoskeletal therapists can alter pain memories in patients with chronic musculoskeletal pain, by integrating pain neuroscience education with exercise interventions. The latter includes applying graded exposure in vivo principles during exercise therapy, for targeting the brain circuitries orchestrated by the amygdala (the memory of fear centre in the brain). Before initiating exercise therapy, a preparatory phase of intensive pain neuroscience education is required. Next, exercise therapy can address movement-related pain memories by applying the 'exposure without danger' principle.

By addressing patients' perceptions about exercises, therapists should try to decrease the anticipated danger (threat level) of the exercises by challenging the nature of, and reasoning behind their fears, assuring the safety of the exercises, and increasing confidence in a successful accomplishment of the exercise. This way, exercise therapy accounts for the current understanding of pain neuroscience, including the mechanisms of central sensitization.

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KEYWORDS: Chronic pain; Exercise therapy; Neuroscience; Sensitization

PMID: 25090974

Exercise and LBP

Clin Rehabil. 2015 Feb 13. pii: 0269215515570379.

Exercise interventions for the treatment of chronic low back pain: A systematic review and meta-analysis of randomised controlled trials.

Searle A¹, Spink M², Ho A³, Chuter V⁴.

Author information

Abstract

OBJECTIVE:

To determine, for adults with chronic low back pain, which exercise interventions are the most effective at reducing pain compared to other treatments.

DATA SOURCES:

A search of MEDLINE, CINAHL, EMBASE, SPORTDiscus, PsycINFO and The Cochrane Library was conducted up to October 2014.

REVIEW METHODS:

Databases were searched for published reports of randomised trials that investigated the treatment of chronic low back pain of non-specific origin with an exercise intervention. Two authors independently reviewed and selected relevant trials. Methodological quality was evaluated using the Downs and Black tool.

RESULTS:

Forty-five trials met the inclusion criteria and thirty-nine were included in the meta-analysis. Combined meta-analysis revealed significantly lower chronic low back pain with intervention groups using exercise compared to a control group or other treatment group (Standard Mean Deviation (SMD) = -0.32, CI 95% -0.44 to -0.19, P < 0.01). Separate exploratory subgroup analysis showed a significant effect for strength/resistance and coordination/stabilisation programs.

CONCLUSIONS:

Our results found a beneficial effect for strength/resistance and coordination/stabilisation exercise programs over other interventions in the treatment of chronic low back pain and that cardiorespiratory and combined exercise programs are ineffective.

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KEYWORDS: Chronic low back pain; exercise; meta-analysis; systematic review
PMID: 25681408

Exercise and neck and shoulder pain

Man Ther. 2015 Feb;20(1):56-62. doi: 10.1016/j.math.2014.06.007. Epub 2014 Jul 2.

Tailored exercise program reduces symptoms of upper limb work-related musculoskeletal disorders in a group of metalworkers: A randomized controlled trial.

Rasotto C¹, Bergamin M², Simonetti A³, Maso S³, Bartolucci GB³, Ermolao A¹, Zaccaria M¹.
Author information

Abstract

Work-related musculoskeletal disorders (WRMDs) are a leading cause of work-related disability and loss of productivity in the developed countries; these disorders may concur with the indirect costs of an illness or injury included losses of potential output. Literature on workplace physical activity program provided a mixed but positive impact on health and important worksite outcomes. Therefore, programs of physical activity organized and performed in the workplace could reveal as essential tool to reduce musculoskeletal symptoms. This investigation aimed to assess the effectiveness of a tailored physical activity program, performed in a work-environment, to reduce the symptoms in upper extremities and neck with the novelty in personalizing the approach applied to the exercise protocol, basing on pain and disability levels, to reduce the onset and symptoms in upper extremity and neck WRMDs increasing upper-limb strength and flexibility. 68 metalworkers were recruited, 34 were randomly allocated to an intervention group (IG), while the other 34 to a control group. Primary outcomes concerned pain symptoms measured with visual analog scales while disability was measured by DASH (Disability of the Arm, Shoulder and Hand), and NPDS-I (Neck Pain and Disability Scale) questionnaires. Grip strength, upper-limb mobility, neck and shoulder range of motion were also assessed. After the 9-month intervention, IG reduced pain symptoms on neck, shoulders, elbows and on wrists. Grip strength and upper-limb mobility improved as well as scores on questionnaires. This protocol suggests that performing a tailored physical activity program is beneficial to reduce pain and disability on upper-limb WRMDs.

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KEYWORDS: Exercise; Metalworkers; Upper-limb; Work related musculoskeletal disorders
PMID: 25027479

Trauma and LB muscle size

Am J Phys Med Rehabil. 2015 Feb;94(2):123-30. doi: 10.1097/PHM.0000000000000149.

Sex differences in predicting chronicity of low-back pain after acute trauma using lumbar muscle area.

Lee HI¹, Lee ST, Kim M, Ryu JS.

Author information

Abstract

OBJECTIVE:

The aim of this study was to investigate sex differences in predicting chronicity of low-back pain after acute trauma using cross-sectional areas of paraspinal (multifidus and erector spinae) and psoas muscles.

DESIGN:

Between January 2006 and December 2010, a total of 54 patients were interviewed at least 6 mos after the trauma event. The subjects were classified into chronic low-back pain group and improved low-back pain group according to the presence of low-back pain for more than 6 mos. The cross-sectional area of the multifidus, erector spinae, and psoas muscles was measured at the level of the lower margin of the L3 and L5 vertebrae using magnetic resonance imaging.

RESULTS:

The cross-sectional area of the multifidus and erector spinae muscles at L5 in the chronic low-back pain group was significantly smaller than that of the improved low-back pain group ($P < 0.05$) in the men. There were no significant differences in the other parameters between the groups in the men. There were no significant differences in any parameters in the women.

CONCLUSIONS:

In the men, the cross-sectional area of the multifidus and erector spinae muscles at the lower lumbar level can be considered to be prognostic factors for the chronic low-back pain after acute trauma. The authors thus suggest that strengthening of lumbar paraspinal muscles could be helpful for preventing chronicity of low-back pain.

PMID: 25122093

CORE**Disturbance rehabilitation**

J Sport Rehabil. 2015 Feb 6.

Unexpected Disturbance Program for Rehabilitation of High Performance Athletes.

Teichmann J¹, Suwarganda EK, Lendewig C, Wilson BD, Yeo WK, Aziz RA, Schmidtbleicher D.

Author information

Abstract

CONTEXT:

The Unexpected Disturbance Program promotes exercises in response to so-called involuntary short to mid latency disturbances.

OBJECTIVE:

This study investigates the effectiveness of Unexpected Disturbance Program in the last 6 weeks of rehabilitation DESIGN: A pre - post study design. Two-tailed paired t-tests were used for limited a-priori comparisons to examine differences.

SETTING:

National Sports Institute of Malaysia.

PARTICIPANTS:

24 Malaysian national athletes.

INTERVENTIONS:

A total of 7 sessions per week of 90 minutes with 3 sessions allocated for 5-6 Unexpected Disturbance Program exercises.

MAIN OUTCOMES:

Significant improvements for men and women were noted. Tests included 20-meter sprint, 1-repetition maximum single leg press, standing long jump, single leg sway test and a psychological questionnaire.

RESULTS:

For men and women average strength improvements by 22% (d =0.96) and 29% (d=1.05), sprint time by 3% (d=1.06) and 4% (d=0.58), distance jumped by 4% (d=0.59) and 6% (d =0.47) were noted. Additionally athletes reported improved perceived confidence in their abilities. All athletes improved in each functional test except for long jump in two of the athletes. The medial-lateral sway decreased with 18 out of the 22 athletes for the injured limb.

CONCLUSION:

The prevention training with Unexpected Disturbance Program resulted in improved conditioning and seems to decrease medial-lateral sway.

PMID: 25658597

TA in adolescents

Man Ther. 2015 Feb;20(1):117-23. doi: 10.1016/j.math.2014.07.009. Epub 2014 Jul 18.

Lateral abdominal muscle size at rest and during abdominal drawing-in manoeuvre in healthy adolescents.

Linek P¹, Saulicz E², Wolny T², Myśliwiec A², Kokosz M².

Author information

Abstract

Lateral abdominal wall muscles in children and adolescents have not been characterised to date. In the present report, we examined the reliability of the ultrasound measurement and thickness of the oblique external muscle (OE), oblique internal muscle (OI) and transverse abdominal muscle (TrA) at rest and during abdominal drawing-in manoeuvre (ADIM) on both sides of the body in healthy adolescents. We also determined possible differences between boys and girls and defined any factors-such as body mass, height and BMI-that may affect the thickness of the abdominal muscles. B-mode ultrasound was used to assess OE, OI and TrA on both sides of the body in the supine position. Ultrasound measurements at rest and during ADIM were reliable in this age group (ICC3,3 > 0.92). OI was always the thickest and TrA the thinnest muscle on both sides of the body. In this group, an identical pattern of the contribution of the individual muscles to the structure of the lateral abdominal wall (OI > OE > TrA) was observed. At rest and during ADIM, no statistically significant side-to-side differences were demonstrated in either gender.

The body mass constitutes between 30% and <50% of the thickness differences in all muscles under examination at rest and during ADIM. The structure of lateral abdominal wall in adolescents is similar to that of adults. During ADIM, the abdominal muscles in adolescents react similarly to those in adults. This study provided extensive information regarding the structure of the lateral abdominal wall in healthy adolescents.

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KEYWORDS:

Abdominal wall; Adolescents; Muscle size; Ultrasound

PMID: 25088309

POSTURE**Spondylolisthesis and posture**

Eur Spine J. 2015 Feb 5.

Sagittal spinopelvic alignment in 654 degenerative spondylolisthesis.

Ferrero E¹, Ould-Slimane M, Gille O, Guigui P; French Spine Society (SFCR).
Author information

Abstract

PURPOSE:

Degenerative spondylolisthesis (DS) is common degenerative spinal disease. Recent studies highlighted relationship between DS and high pelvic incidence (PI). Moreover, impact of spinopelvic alignment on clinical outcomes has been emphasized. We aimed at describing epidemiologic and sagittal spinopelvic parameters in patients with DS, comparing them with asymptomatic volunteers, and determining a classification of DS patients.

METHODS:

In this retrospective multicenter study of prospectively collected data, any adult patients treated for lumbar DS were included. Demographic data as well as radiographic parameters such as PI, pelvic tilt (PT), maximal lumbar lordosis (LLmax), lumbosacral lordosis, thoracic kyphosis, and C7tilt were recorded. DS patients were compared to 709 asymptomatic, age-matched volunteers. Cluster analyses were used to classify patients in homogenous groups.

RESULTS:

654 patients were included (72 % female, 67 years). DS patients had greater PI (58.8° vs. 53.2°, $p < 0.001$) and C7tilt ($p < 0.001$). LLmax and lumbosacral lordosis were significantly smaller in the DS group. Cluster analysis allowed for the identification of 2 groups of patients according to C7tilt-159 patients with anterior C7tilt and 495 with normal C7tilt. In each group, 3 subgroups were found with different PI and sagittal spinopelvic parameters.

CONCLUSION:

Predominance of high PI and female gender was emphasized in DS population. Moreover, these findings highlighted the importance of sagittal alignment analysis in DS with 24 % of patients with anterior malalignment and in the remaining 76 % (normal C7Tilt), more than 50 % had pelvic retroversion. Consequently, DS sagittal malalignment should lead to specific surgical correction adapted to each subgroup of patients.

PMID: 25652553

Hip pain and posture

Postural correction reduces hip pain in adult with acetabular dysplasia: a case report

Manual Therapy , 02/16/2015

Lewis CL, et al.

Developmental dysplasia of the hip is often diagnosed in infancy, but less severe cases of acetabular dysplasia are being detected in young active adults. The purpose of this case report is to present a non-surgical intervention for a 31-year-old female with mild acetabular dysplasia and an anterior acetabular labral tear. The patient presented with right anterior hip and groin pain, and she stood with the trunk swayed posterior to the pelvis (swayback posture). The hip pain was reproduced with the anterior impingement test. During gait, the patient maintained the swayback posture and reported 6/10 hip pain. Following correction of the patient's posture, the patient's pain rating was reduced to a 2/10 while walking.

The patient was instructed to maintain the improved posture. At the 1 year follow-up, she demonstrated significantly improved posture in standing and walking. She had returned to recreational running and was generally pain-free. The patient demonstrated improvement on self-reported questionnaires for pain, function and activity. These findings suggest that alteration of posture can have an immediate and lasting effect on hip pain in persons with structural abnormality and labral pathology.

SCOLIOSIS

Adolescent scoliosis

Scoliosis. 2015 Jan 27;10:2. doi: 10.1186/s13013-015-0030-2. eCollection 2015.

Mechanism of right thoracic adolescent idiopathic scoliosis at risk for progression; a unifying pathway of development by normal growth and imbalance.

Wong C¹.

Author information

Abstract

Adolescent idiopathic scoliosis is regarded as a multifactorial disease and none of the many suggested causal etiologies have yet prevailed. I will suggest that adolescent idiopathic scoliosis has one common denominator, namely that initial curve development is mediated through one common normal physiological pathway of thoracic rotational instability. This is a consequence of gender specific natural growth of the passive structural components of thoracic spinal tissues for the adolescent female. This causes an unbalanced mechanical situation, which progresses if the paravertebral muscles cannot maintain spinal alignment. The alteration in the coronal plane with the lateral curve deformity is an uncoupling effect due to a culmination of a secondary, temporary sagittal plane thoracic flattening and of a primary, temporary transverse plane rotational instability for the adolescent female. Treatment of adolescent idiopathic scoliosis should address this physiological pathway and the overall treatment strategy is early intervention with strengthening of thoracic rotational stability for small curve adolescent idiopathic scoliosis.

PMID: 25657814

ATHLETICS

Performance enhancing drugs

Sports Med. 2015 Feb 8.

Performance-Enhancing Substances in Sports: A Review of the Literature.

Momaya A¹, Fawal M, Estes R.
Author information

Abstract

Performance-enhancing substances (PESs) have unfortunately become ubiquitous in numerous sports, often tarnishing the spirit of competition. Reported rates of PES use among athletes are variable and range from 5 to 31 %. More importantly, some of these substances pose a serious threat to the health and well-being of athletes. Common PESs include anabolic-androgenic steroids, human growth hormone, creatine, erythropoietin and blood doping, amphetamines and stimulants, and beta-hydroxy-beta-methylbutyrate. With recent advances in technology, gene doping is also becoming more conceivable. Sports medicine physicians are often unfamiliar with these substances and thus do not routinely broach the topic of PESs with their patients.

However, to effect positive change in the sports community, physicians must educate themselves about the physiology, performance benefits, adverse effects, and testing methods. In turn, physicians can then educate athletes at all levels and prevent the use of potentially dangerous PESs.

PMID: 25663250

GAIT**Gait and knee OA**

Clin Rehabil. 2015 Feb 17. pii: 0269215515570098.

Effects of exercise therapy on walking ability in individuals with knee osteoarthritis: A systematic review and meta-analysis of randomised controlled trials.

Tanaka R¹, Ozawa J², Kito N², Moriyama H³.

Author information

Abstract

OBJECTIVE:

To examine the effect of exercise therapy on the walking ability of individuals with knee osteoarthritis.

DATA SOURCES:

Randomised clinical trials (RCTs) were identified by searching through PubMed, Cochrane Central Register of Controlled Trials, Physiotherapy Evidence Database, and Cumulative Index to Nursing and Allied Health Literature. All literature published to October 2014 were included in the search.

REVIEW METHODS:

Data were collected from RCTs that compared the effects of exercise therapy on walking ability with the effects of no intervention or psychoeducational intervention in participants with knee osteoarthritis. The outcome data on the total distance walked (6-minute walk test); the amount of time spent walking (the time to walk arbitrary distances); and gait velocity were obtained and analysed. Standardized mean differences (SMDs) and 95% confidence intervals (CIs) were calculated.

RESULTS:

Twenty-eight RCTs were identified. Meta-analysis provided very-low-quality evidence that exercise therapy increased the total distance walked in the 6-minute walk test, in comparison with the effects of the control interventions (SMD = 0.44, 95% CI 0.27 to 0.60). Meta-analysis also provided low- or moderate-quality evidence that the amount of time spent walking and gait velocity were improved more by exercise therapy than by the control interventions (the amount of time spent walking: SMD = -0.50, 95% CI -0.70 to -0.30; gait velocity: SMD = 1.78, 95% CI 0.98 to 2.58).

CONCLUSION:

In individuals with knee osteoarthritis, exercise therapy can improve the amount of time spent walking, gait velocity, and maybe the total distance walked.

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KEYWORDS: *Exercise; knee osteoarthritis; meta-analysis; systematic review; walking*

PMID: 25691583

Ankle taping and gait

J Sport Rehabil. 2015 Feb 6.

Ankle Taping Alters Shank-Rearfoot Joint Coupling During Gait in Patients With Chronic Ankle Instability and Healthy Controls.

Herb CC¹, Chinn L, Hertel J.
Author information

Abstract**CONTEXT:**

Lateral ankle sprain (LAS) is one of the most common injuries in active individuals. Chronic ankle instability (CAI) is a condition that commonly occurs following LAS and is associated with long term disability and a high risk of multiple ankle sprains. Ankle taping is a commonly used intervention for the prevention of ankle sprains.

OBJECTIVE:

To analyze the ankle joint coupling using vector coding during walking and jogging gait with the application of ankle tape and without ankle tape in young adults with and without chronic ankle instability.

DESIGN:

This was an observational laboratory study design. Patients walked and jogged on an instrumented treadmill while taped and not taped. Fifteen strides for each subject were collected and analyzed using a vector coding technique to compare magnitude coupled motion, ratio of coupled motion and the variability (VCV) within groups. Within-group means and 90% confidence intervals (CI) were compared between the taped and not taped condition and where the CI did not overlap was considered significant.

SETTING:

A 12 camera 3D motion capture system with instrumented treadmill.

PATIENTS:

Twelve patients with CAI and 11 healthy controls were included in the study.

MAIN OUTCOME MEASURES:

magnitude to coupled motion, ratio of coupled motion and the variability (VCV) of shank-rearfoot joint coupling.

RESULTS:

Magnitude of coupled motion and VCV was significantly lower in a taped condition compared to the non-taped condition in both groups. Magnitude differences were identified near initial contact during walking and during swing phase of jogging. VCV differences were identified throughout the gait cycle at both walking and jogging. No differences were identified in theta between tape and non-taped conditions.

CONCLUSIONS:

A decrease in the magnitude of coupled motion and VCV may represent a protective mechanism of ankle taping in CAI and healthy patients during gait.

PMID: 25658069

LBP and gait

PM R. 2015 Jan 26. pii: S1934-1482(15)00045-3. doi: 10.1016/j.pmrj.2015.01.013.

Trunk muscles activation pattern during walking in subjects with and without chronic low back pain: A Systematic Review.

Ghamkhar L¹, Kahlaee AH².
Author information

Abstract

OBJECTIVE:

The purpose of this study was to identify how activity patterns of trunk muscles change in chronic LBP during walking. Type A systematic review Literature survey ELSEVIER, Pro Quest, PubMed, Google scholar and MEDLINE electronic databases were explored for the earliest researchable time to August 2014 period. Articles investigating patients with chronic LBP and analyzing trunk muscles with surface electromyography (EMG) during walking were included.

METHOD:

ology: All studies had a case-control design. Characteristics of the LBP patients, sample size, studied muscles and EMG parameters, gait condition and velocity were investigated. Studies were rated as "A" to "E" (five grades defined) based on study design and performance.

RESULTS:

Multifidus (MF), erector spinae (ES), external oblique (EO) and rectus abdominus (RA) muscles activity level were found to be increased in LBP subjects in comparison with controls. ES activity in low back pain subjects was found not to be so adaptive to walking velocity alterations such as in healthy controls.

CONCLUSIONS:

Chronic LBP subjects exhibit higher global trunk muscles activity. However, the activation pattern appears to vary depending on sub-phases of gait. It seems that increased walking velocity challenges the stability of the spine and the control system increases muscular activation and variability level to cope with this problem. Further standardized studies with sub-typed LBP cases are needed to clarify the controversial findings.

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PMID: 25633636

RUNNING

Shod runners and heel strike

Phys Ther Sport. 2015 Feb;16(1):29-33. doi: 10.1016/j.ptsp.2014.02.005. Epub 2014 Feb 26.

Is the rearfoot pattern the most frequently foot strike pattern among recreational shod distance runners?

de Almeida MO¹, Saragiotto BT², Yamato TP², Lopes AD².

Author information

Abstract

OBJECTIVE:

To determine the distribution of the foot strike patterns among recreational shod runners and to compare the personal and training characteristics between runners with different foot strike patterns.

DESIGN:

Cross-sectional study.

SETTING:

Areas of running practice in São Paulo, Brazil.

PARTICIPANTS:

514 recreational shod runners older than 18 years and free of injury.

OUTCOMES MEASURES:

Foot strike patterns were evaluated with a high-speed camera (250 Hz) and photocells to assess the running speed of participants. Personal and training characteristics were collected through a questionnaire.

RESULTS:

The inter-rater reliability of the visual foot strike pattern classification method was 96.7% and intra-rater reliability was 98.9%. 95.1% (n = 489) of the participants were rearfoot strikers, 4.1% (n = 21) were midfoot strikers, and four runners (0.8%) were forefoot strikers. There were no significant differences between strike patterns for personal and training characteristics.

CONCLUSION:

This is the first study to demonstrate that almost all recreational shod runners were rearfoot strikers. The visual method of evaluation seems to be a reliable and feasible option to classify foot strike pattern.

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KEYWORDS:

Biomechanics; Jogging; Running; Sports

PMID: 24894762

Training running

PM R. 2015 Jan 26. pii: S1934-1482(15)00042-8. doi: 10.1016/j.pmrj.2015.01.010.

Effects of Form-Focused Training on Running Biomechanics: A Pilot Randomized Trial in Untrained Individuals.

Kumar D¹, McDermott K², Feng H², Goldman V², Luke A³, Souza RB⁴, Hecht FM⁵.
Author information

Abstract

OBJECTIVE:

To investigate the changes in running biomechanics after training in form-focused running using ChiRunning versus not-form focused training and self-directed training in untrained individuals.

DESIGN:

Pilot study-randomized controlled trial.

SETTING:

Research institution with tertiary care medical center.

PARTICIPANTS:

Seventeen subjects (9 men, 8 women) with prehypertension.

METHODS:

Twenty-two participants were randomized to 3 study arms but 17 completed the study. The study arms were: (1) group-based Form-Focused running using ChiRunning (enrolled, n = 10; completed, n = 7); (2) group-based conventional running (enrolled, n = 6; completed, n = 4); and (3) self-directed training with educational materials (enrolled, n = 6; completed, n = 6). The training schedule was prescribed for 8 weeks with 4 weeks of follow-up. All subjects completed overground running motion analyses before and after training.

OUTCOMES:

Ankle, knee, hip joint peak moments, and powers; average vertical loading rate (AVLR); impact peak; cadence; stride length; strike index; and stride reach. Paired t tests were used to compare differences within groups over time.

RESULTS:

Form-Focused group reduced their Stride Reach ($P = .047$) after the training but not the other groups. Form-Focused group showed a close to significant reduction in knee adduction moment ($P = .051$) and a reduction in the peak ankle eversion moment ($P = .027$). Self-Directed group showed an increase in the running speed ($P = .056$) and increases in ankle and knee joint powers and moments.

CONCLUSIONS:

There are differences in the changes in running biomechanics between individuals trained in running form that emphasizes mid-foot strike, greater cadence, and shorter stride compared with those not trained in these techniques. These differences may be associated with reduced lower extremity stress in individuals trained in this running form, but more studies are needed to confirm these findings in larger samples.

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PMID: 25633634

PAIN

Chronic pain and exercise

Clin J Pain. 2015 Feb;31(2):108-14. doi: 10.1097/AJP.0000000000000099.

Exercise, not to exercise, or how to exercise in patients with chronic pain? Applying science to practice.

Daenen L¹, Varkey E, Kellmann M, Nijs J.
Author information

Abstract

BACKGROUND:

Exercise is an effective treatment strategy in various chronic musculoskeletal pain disorders, including chronic neck pain, osteoarthritis, headache, fibromyalgia and chronic low back pain. Although exercise can benefit those with chronic pain (CP), some patients (eg, those with fibromyalgia, myalgic encephalomyelitis/chronic fatigue syndrome and chronic whiplash associated disorders) encounter exercise as a pain inducing stimulus and report symptom flares due to exercise.

OBJECTIVES:

This paper focuses on the clinical benefits and detrimental effects of exercise in patients with CP. It summarizes the positive and negative effects of exercise therapy in migraine and tension-type headache and provides an overview of the scientific evidence of dysfunctional endogenous analgesia during exercise in patients with certain types of CP. Further, the paper explains the relationship between exercise and recovery highlighting the need to address recovery strategies as well as exercise regimes in the rehabilitation of these patients. The characteristics, demands and strategies of adequate recovery to compensate stress from exercise and return to homeostatic balance will be described.

METHODS:

narrative review.

RESULTS:

Exercise is shown to be effective in the treatment of chronic tension-type headache and migraine. Aerobic exercise is the best option in migraine prophylaxis, whereas specific neck and shoulder exercises is a better choice in treating chronic tension-type headache. Besides the consensus that exercise therapy is beneficial in the treatment of CP, the lack of endogenous analgesia in some CP disorders should not be ignored. Clinicians should account for this when treating CP patients. Furthermore, optimizing the balance between exercise and recovery is of crucial merit in order to avoid stress-related detrimental effects and achieve optimal functioning in patients with CP.

CONCLUSION:

Exercise therapy has found to be beneficial in CP, but it should be appropriately and individually tailored with emphasis on prevention of symptom flares and applying adequate recovery strategies.

PMID: 24662498

COMPLEX REGIONAL PAIN

FIBROMYALGIA

Negative impact of daytime napping

Daytime napping associated with increased symptom severity in fibromyalgia syndrome

Full Text

BMC Musculoskeletal Disorders, 02/20/2015 Clinical Article

Theadom A, et al. – The purpose of this study was to explore how people use daytime naps and to determine the links between daytime napping and symptom severity in fibromyalgia syndrome. Frequent use and longer duration of daytime napping was linked with greater symptom severity in people with fibromyalgia. Given the common use of daytime napping in people with fibromyalgia evidence based guidelines on the use of daytime napping in people with chronic pain are urgently needed.

Obesity and sleepiness

Rheumatol Int. 2015 Feb;35(2):281-7. doi: 10.1007/s00296-014-3091-2. Epub 2014 Jul 24.

Obesity and sleepiness in women with fibromyalgia.

de Araújo TA¹, Mota MC, Crispim CA.
Author information

Abstract

Fibromyalgia (FM) is associated with a number of comorbidities, including chronic widespread pain, fatigue and non-restorative sleep. Evidence has shown that FM is closely associated with overweight and obesity. The objective of the present study was to investigate the relationship between obesity and sleepiness in women with FM. A total of 100 adult female patients with a prior medical diagnosis of FM participated in the study. Body mass, height and waist circumference were measured, and body mass index (BMI) was calculated. The diet quality was evaluated by the Healthy Eating Index. Subjective analyses of daytime sleepiness [Epworth Sleepiness Scale (ESS)] and sleep quality (Pittsburgh Sleep Quality) were performed. An obesity rate of 41 % was found in all women (56.1 % were sleepy and 43.9 % were not, $p = 0.04$). Obese women showed a greater level of sleepiness when compared with non-obese (10.2 and 7.0, respectively, $p = 0.004$). Sleepy women showed a greater weight gain after the diagnosis of FM when compared with non-sleepy women (11.7 and 6.4 kg, respectively, $p = 0.04$). A positive and significant correlation between BMI and sleepiness ($r = 0.35$, $p = 0.02$) was also found.

In multivariate logistic regression, moderate or severe sleepiness (ESS >12) was associated with obesity (odds ratio 3.44, 95 % CI 1.31-9.01, $p = 0.04$). These results demonstrate an important association between sleepiness and FM, suggesting that the occurrence of obesity may be involved with sleepiness in these patients.

PMID: 25056401

NUTRITION/VITAMINS

Gluten

Small amounts of gluten in subjects with suspected nonceliac gluten sensitivity: A randomized, double-blind, placebo-controlled, cross-over trial

Clinical Gastroenterology and Hepatology , 02/20/2015

Clinical Article

Di Sabatino A, et al. – The authors performed a randomized, double-blind, placebo-controlled, cross-over trial to determine the effects of administration of low doses of gluten to subjects with suspected NCGS. Furthermore, they conclude that in a cross-over trial of subjects with suspected NCGS, the severity of overall symptoms increased significantly during 1 week of intake of small amounts of gluten, compared with placebo.

Methods

- They enrolled 61 adults without celiac disease or wheat allergy who believe ingestion of gluten-containing food to be the cause of their intestinal and extra-intestinal symptoms.
- Participants were randomly assigned to groups given either 4.375 g/day gluten or rice starch (placebo) for 1 week, each via gastro-soluble capsules.
- After a 1 week of gluten-free diet, participants crossed over to the other group.
- The primary outcome was the change in overall (intestinal and extra-intestinal) symptoms, determined by established scoring systems, between gluten and placebo intake.
- A secondary outcome was the change in individual symptom scores between gluten vs placebo.

Results

- According to the per-protocol analysis of data from the 59 patients who completed the trial, intake of gluten significantly increased overall symptoms compared with placebo ($P=.034$).
- Abdominal bloating ($P=.040$) and pain ($P=.047$), among the intestinal symptoms, and foggy mind ($P=.019$), depression ($P=.020$), and aphthous stomatitis ($P=.025$), among the extra-intestinal symptoms, were significantly more severe when subjects received gluten than placebo.

Coffee and reduced risk of Breast CA

Breast Cancer Res. 2015 Jan 31;17(1):15.

Coffee and tea consumption and risk of pre- and postmenopausal breast cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort study.

Bhoo-Pathy N, Peeters P, Uiterwaal C, Bueno-de-Mesquita H, Bulgiba AM, Bech B, Overvad K, Tjønneland A, Olsen A, Clavel-Chapelon F, Fagherazzi G, Perquier F, Teucher B, Kaaks R, Schütze M, Boeing H, Lagiou P, Orfanos P, Trichopoulou A, Agnoli C, Mattiello A, Palli D, Tumino R, Sacerdote C, van Duijnhoven F, Braaten T, Lund E, Skeie G, Redondo ML, Buckland G, Pérez M, Chirlaque MD, Ardanaz E, Amiano P, Wirfält E, Wallström P, Johansson I, Nilsson L, Khaw KT, Wareham N, Allen NE, Key TJ, Rinaldi S, Romieu I, Gallo V, Riboli E, van Gils CH.

Abstract

Introduction:

Specific coffee subtypes and tea may impact risk of pre- and post-menopausal breast cancer differently. We investigated the association between coffee (total, caffeinated, decaffeinated) and tea intake and risk of breast cancer. **Methods** A total of 335,060 women participating in the European Prospective Investigation into Nutrition and Cancer (EPIC) Study, completed a dietary questionnaire from 1992 to 2000, and were followed-up until 2010 for incidence of breast cancer. Hazard ratios (HR) of breast cancer by country-specific, as well as cohort-wide categories of beverage intake were estimated. **Results** During an average follow-up of 11 years, 1064 premenopausal, and 9134 postmenopausal breast cancers were diagnosed. Caffeinated coffee intake was associated with lower risk of postmenopausal breast cancer: adjusted HR_i=_i0.90, 95% confidence interval (CI): 0.82 to 0.98, for high versus low consumption; P trend_i=_i0.029. While there was no significant effect modification by hormone receptor status (P_i=_i0.711), linear trend for lower risk of breast cancer with increasing caffeinated coffee intake was clearest for estrogen and progesterone receptor negative (ER-PR-), postmenopausal breast cancer (P_i=_i0.008). For every 100 ml increase in caffeinated coffee intake, the risk of ER-PR- breast cancer was lower by 4% (adjusted HR: 0.96, 95% CI: 0.93 to 1.00). Non-consumers of decaffeinated coffee had lower risk of postmenopausal breast cancer (adjusted HR_i=_i0.89; 95% CI: 0.80 to 0.99) compared to low consumers, without evidence of dose_iresponse relationship (P trend_i=_i0.128). Exclusive decaffeinated coffee consumption was not related to postmenopausal breast cancer risk, compared to any decaffeinated-low caffeinated intake (adjusted HR_i=_i0.97; 95% CI: 0.82 to 1.14), or to no intake of any coffee (HR: 0.96; 95%: 0.82 to 1.14). Caffeinated and decaffeinated coffee were not associated with premenopausal breast cancer. Tea intake was neither associated with pre- nor post-menopausal breast cancer.

Conclusions: Higher caffeinated coffee intake may be associated with lower risk of postmenopausal breast cancer. Decaffeinated coffee intake does not seem to be associated with breast cancer.

PMID: 25637171

Sugar sweetened beverages and early menarche

Hum Reprod. 2015 Mar;30(3):675-83. doi: 10.1093/humrep/deu349. Epub 2015 Jan 27.

Sugar-sweetened beverage consumption and age at menarche in a prospective study of US girls.

Carwile JL¹, Willett WC², Spiegelman D³, Hertzmark E⁴, Rich-Edwards J⁵, Frazier AL⁶, Michels KB⁷.

Author information

Abstract

STUDY QUESTION:

Is sugar-sweetened beverage (SSB) consumption associated with age at menarche?

SUMMARY ANSWER:

More frequent SSB consumption was associated with earlier menarche in a population of US girls.

WHAT IS KNOWN ALREADY:

SSB consumption is associated with metabolic changes that could potentially impact menarcheal timing, but direct associations with age at menarche have yet to be investigated.

STUDY DESIGN, SIZE, DURATION:

The Growing up Today Study, a prospective cohort study of 16 875 children of Nurses' Health Study II participants residing in all 50 US states. This analysis followed 5583 girls, aged 9-14 years and premenarcheal at baseline, between 1996 and 2001. During 10 555 person-years of follow-up, 94% (n = 5227) of girls reported their age at menarche, and 3% (n = 159) remained premenarcheal in 2001; 4% (n = 197) of eligible girls were censored, primarily for missing age at menarche.

PARTICIPANTS/MATERIALS, SETTING, METHODS:

Cumulative updated SSB consumption (composed of non-carbonated fruit drinks, sugar-sweetened soda and iced tea) was calculated using annual Youth/Adolescent Food Frequency Questionnaires from 1996 to 1998. Age at menarche was self-reported annually. The association between SSB consumption and age at menarche was assessed using Cox proportional hazards regression.

MAIN RESULTS AND THE ROLE OF CHANCE:

More frequent SSB consumption predicted earlier menarche. At any given age between 9 and 18.5 years, premenarcheal girls who reported consuming >1.5 servings of SSBs per day were, on average, 24% more likely [95% confidence interval (CI): 13, 36%; P-trend: <0.001] to attain menarche in the next month relative to girls consuming ≤ 2 servings of SSBs weekly, adjusting for potential confounders including height, but not BMI (considered an intermediate). Correspondingly, girls consuming >1.5 SSBs daily had an estimated 2.7-month earlier menarche (95% CI: -4.1, -1.3 months) relative to those consuming ≤ 2 SSBs weekly. The frequency of non-carbonated fruit drink (P-trend: 0.03) and sugar-sweetened soda (P-trend: 0.001), but not iced tea (P-trend: 0.49), consumption also predicted earlier menarche. The effect of SSB consumption on age at menarche was observed in every tertile of baseline BMI. Diet soda and fruit juice consumption were not associated with age at menarche.

LIMITATIONS, REASONS FOR CAUTION:

Although we adjusted for a variety of suspected confounders, residual confounding is possible. We did not measure SSB consumption during early childhood, which may be an important window of exposure.

WIDER IMPLICATIONS OF THE FINDINGS:

More frequent SSB consumption may predict earlier menarche through mechanisms other than increased BMI. Our findings provide further support for public health efforts to reduce SSB consumption.

STUDY FUNDING/COMPETING INTERESTS:

The Growing up Today Study is supported by grant R03 CA 106238. J.L.C. was supported by the Breast Cancer Research Foundation; Training Grant T32ES007069 in Environmental Epidemiology from the National Institute of Environmental Health Sciences, National Institutes of Health; and Training Grant T32HD060454 in Reproductive, Perinatal and Pediatric Epidemiology from the National Institute of Child Health and Human Development, National Institutes of Health. A.L.F. is supported by the American Cancer Society, Research Scholar Grant in Cancer Control. K.B.M. was supported in part by the National Cancer Institute at the National Institutes of Health (Public Health Service grants R01CA158313 and R03CA170952). There are no conflicts of interest to declare.

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KEYWORDS: diet; menarche; sugar-sweetened beverage
PMID: 25628346

Alcohol and breast cancer

Int J Cancer. 2015 Feb 9. doi: 10.1002/ijc.29469.

Alcohol intake and breast cancer in the European Prospective investigation into Cancer and Nutrition: Short title: Alcohol intake and breast cancer: Alcohol intake and breast cancer.

Romieu I¹, Scoccianti C, Chajes V, de Batlle J, Biessy C, Dossus L, Baglietto L, Clavel-Chapelon F, Overvad K, Olsen A, Tjønneland A, Kaaks R, Lukanova A, Boeing H, Trichopoulou A, Lagiou P, Trichopoulos D, Palli D, Sieri S, Tumino R, Vineis P, Panico S, Bueno-de-Mesquita HB, Gils CH, Peeters P, Lund E, Skeie G, Weiderpass E, Quirós JR, Chirlaque MD, Ardanaz E, Sánchez MJ, Duell EJ, Amiano P, Borgquist S, Wirfält E, Hallmans G, Johansson I, Nilsson LM, Khaw KT, Wareham N, Key TJ, Travis RC, Murphy N, Wark PA, Ferrari P, Riboli E.

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Abstract

Alcohol intake has been associated to breast cancer in pre and postmenopausal women; however results are inconclusive regarding tumor hormonal receptor status, and potential modifying factors like age at start drinking. Therefore, we investigated the relation between alcohol intake and the risk of breast cancer using prospective observational data from the European Prospective Investigation into Cancer and Nutrition (EPIC). Up to 334,850 women, aged 35-70 years at baseline, were recruited in ten European countries and followed up an average of 11 years. Alcohol intake at baseline and average lifetime alcohol intake were calculated from country-specific dietary and lifestyle questionnaires. The study outcomes were the Hazard ratios (HR) of developing breast cancer according to hormonal receptor status. During 3,670,439 person-years, 11,576 incident breast cancer cases were diagnosed. Alcohol intake was significantly related to breast cancer risk, for each 10g/day increase in alcohol intake the HR increased by 4.2% (95% CI: 2.7%-5.8%). Taking 0 to 5g/day as reference, alcohol intake of >5 to 15g/day was related to a 5.9% increase in breast cancer risk (95% CI: 1%-11%). Significant increasing trends were observed between alcohol intake and ER+/PR+, ER-/PR-, HER2- and ER-/PR-/HER2- tumors. Breast cancer risk was stronger among women who started drinking prior to first full-time pregnancy. Overall, our results confirm the association between alcohol intake and both hormone receptor positive and hormone receptor negative breast tumors, suggesting that timing of exposure to alcohol drinking may affect the risk.

Therefore, women should be advised to control their alcohol consumption. This article is protected by copyright. All rights reserved.

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KEYWORDS: Alcohol consumption; Breast cancer; Prospective study
PMID: 25677034

Inflammatory diet and colorectal cancer

Cancer Causes Control. 2014 Dec 31.

The association between dietary inflammatory index and risk of colorectal cancer among postmenopausal women: results from the Women's Health Initiative.

Tabung FK¹, Steck SE, Ma Y, Liese AD, Zhang J, Caan B, Hou L, Johnson KC, Mossavar-Rahmani Y, Shivappa N, Wactawski-Wende J, Ockene JK, Hebert JR.

[Author information](#)

Abstract**PURPOSE:**

Inflammation is a process central to carcinogenesis and in particular to colorectal cancer (CRC). Previously, we developed a dietary inflammatory index (DII) from extensive literature review to assess the inflammatory potential of diet. In the current study, we utilized this novel index in the Women's Health Initiative to prospectively evaluate its association with risk of CRC in postmenopausal women.

METHODS:

The DII was calculated from baseline food frequency questionnaires administered to 152,536 women aged 50-79 years without CRC at baseline between 1993 and 1998 and followed through 30 September 2010. Incident CRC cases were ascertained through a central physician adjudication process. Multiple covariate-adjusted Cox proportional hazards regression models were used to estimate hazard ratios (HR) and 95 % confidence intervals (95 % CI) for colorectal, colon (proximal/distal locations), and rectal cancer risk, by DII quintiles (Q).

RESULTS:

During an average 11.3 years of follow-up, a total of 1,920 cases of CRC (1,559 colon and 361 rectal) were identified. Higher DII scores (representing a more pro-inflammatory diet) were associated with an increased incidence of CRC (HR_{Q5-Q1} 1.22; 95 % CI 1.05, 1.43; $p_{\text{trend}} = 0.02$) and colon cancer, specifically proximal colon cancer (HR_{Q5-Q1} 1.35; 95 % CI 1.05, 1.67; $p_{\text{trend}} = 0.01$) but not distal colon cancer (HR_{Q5-Q1} 0.84; 95 % CI 0.61, 1.18; $p_{\text{trend}} = 0.63$) or rectal cancer (HR_{Q5-Q1} 1.20; 95 % CI 0.84, 1.72; $p_{\text{trend}} = 0.65$).

CONCLUSION:

Consumption of pro-inflammatory diets is associated with an increased risk of CRC, especially cancers located in the proximal colon. The absence of a significant association for distal colon cancer and rectal cancer may be due to the small number of incident cases for these sites. Interventions that may reduce the inflammatory potential of the diet are warranted to test our findings, thus providing more information for colon cancer prevention.

PMID: 25549833

Gluten

Am J Gastroenterol. 2015 Feb 10. doi: 10.1038/ajg.2015.8.

Trends and Racial/Ethnic Disparities in Gluten-Sensitive Problems in the United States: Findings from the National Health and Nutrition Examination Surveys From 1988 to 2012.

Choung RS¹, Ditah IC¹, Nadeau AM¹, Rubio-Tapia A¹, Marietta EV¹, Brantner TL¹, Camilleri MJ², Rajkumar SV³, Landgren O⁴, Everhart JE⁵, Murray JA¹.

Author information

Abstract

Objectives: Racial disparities in the prevalence of celiac disease (CD) and the number of people without CD avoiding gluten (PWAG) in the United States are unknown. We aimed to describe racial differences in the prevalence of CD and PWAG, and evaluate the trends of CD in the noninstitutionalized civilian adult population of the US between 1988 and 2012. **Methods:** A population-based cross-sectional study was conducted using data from the National Health and Nutrition Examination Surveys (NHANES) from 1988 to 1994, 1999 to 2004, and 2009 to 2012. Serum samples from the NHANES participants were tested for CD serology, which included IgA tissue transglutaminase (tTG IgA) and, if findings were abnormal, for IgA endomysial antibodies. Information about adherence to a gluten-free diet was obtained by means of an interviewer-administered questionnaire.

Results: In NHANES 2009-2012, the adjusted prevalence of CD was significantly higher ($P < 0.0001$) among non-Hispanic whites (1.0%) than among non-Hispanic blacks (0.2%) and Hispanics (0.3%), whereas the adjusted prevalence of PWAG was significantly higher ($P = 0.01$) in blacks (1.2%) as compared with Hispanics (0.5%) and whites (0.7%). The seroprevalence of CD in adults aged 50 years and older increased from 0.17% (95% confidence interval (CI) 0.03-0.33) in 1988-1994 to 0.44% (95% CI 0.24-0.81) in 2009-2012 ($P < 0.05$).

Conclusions: The overall prevalence of CD increased between 1988 and 2012 and is significantly more common in whites. In addition, a higher proportion of individuals maintaining a gluten-free diet in the absence of a diagnosis of CD are blacks. Am J Gastroenterol advance online publication, 10 February 2015; doi:10.1038/ajg.2015.8.

PMID: 25665935

ABSTRACTS

PHARMACOLOGY

ELECTROTHERAPY

NEUROLOGICAL CONDITIONS