

ABSTRACTS

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1. LUMBAR SPINE

Stenosis/ conservative care

Spine (Phila Pa 1976). 2016 Jul 15;41(14):E857-68. doi: 10.1097/BRS.0000000000001635.

Surgical Versus Nonsurgical Treatment for Lumbar Spinal Stenosis.

Zaina F¹, Tomkins-Lane C, Carragee E, Negrini S.

Author information

Abstract

STUDY DESIGN:

A systematic review.

OBJECTIVES:

The aim of this study is to evaluate the effectiveness of different types of surgery compared with different types of nonsurgical interventions in adults with symptomatic lumbar spinal stenosis (LSS).

SUMMARY OF BACKGROUND DATA:

LSS is a debilitating condition associated with degeneration of the spine with aging. People with LSS experience a range of symptoms, including back pain, leg pain, numbness and tingling in the legs, and reduced physical function. Main treatment options are surgery, physical therapy, exercise, braces, and injections into the spine.

METHODS:

We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, five other databases, and two trials registries up to February 2015, reference lists, and conference proceedings related to treatment of the spine. Randomized controlled trials (RCTs) compared surgical versus nonoperative treatments in participants with LSS. Outcomes included quality of life, disability, function, pain, complication rates, and side effects.

RESULTS:

From the 12,966 citations screened, we included five RCTs (643 participants). Three studies compared spine surgery versus various types of nonsurgical treatment. It is difficult to draw conclusions from these studies because nonsurgical treatments were inadequately described. One study that compared surgery versus bracing and exercise found no differences in pain. Another study compared surgery versus spinal injections and found better physical function with injections, and better pain relief with surgery at six weeks. Still another trial compared surgery with an implanted device versus nonsurgical care. This study reported favorable outcomes of surgery for symptoms and physical function.

CONCLUSION:

We cannot conclude on the basis of this review whether surgical or nonsurgical treatment is better for individuals with LSS. Nevertheless, we can report on the high rate of effects reported in three of five surgical groups, ranging from 10% to 24%. No side effects were reported for any of the conservative treatment options.

LEVEL OF EVIDENCE: 1

PMID: [27128388](https://pubmed.ncbi.nlm.nih.gov/27128388/)

2. LBP

MRI findings can help to locate pain

Arthritis Care Res (Hoboken). 2016 Aug 2. doi: 10.1002/acr.22999.

Is site of back pain related to location of MRI lesion in patients with chronic back pain included in the SPACE-cohort?

de Hooge M¹, de Bruin F², de Beer L², Bakker P¹, van den Berg R¹, Ramiro S¹, van Gaalen F¹, Fagerli K³, Landewé R⁴, van Oosterhout M⁵, Ramonda R⁶, Huizinga T¹, Bloem H², Reijnierse M², van der Heijde D¹.

Author information

Abstract

OBJECTIVES:

To determine associations between MRI-lesions originating from either axial spondyloarthritis (axSpA) or from degeneration and pain in patients with chronic back pain of <2 years duration.

METHODS:

Patients from the SPondyloArthritis-Caught-Early-cohort localized the sites of pain (thoracic, lumbar, buttock). Average MRI-scores from two readers for axSpA lesions and from two different readers for degenerative lesions were used. Associations between sacroiliac joint (SIJ) lesions and buttock pain were investigated by logistic regression analysis and associations between axSpA or degenerative lesions and pain in the spine (thoracic and lumbar) were investigated by generalized estimating equations. Interactions with gender, age, HLA-B27 and fulfilment of ASAS criteria were tested.

RESULTS:

In 348 patients (126 males, 127 fulfilling ASAS-criteria, mean age 29.4 years) spinal MRI (n=342 also SIJ images) were available. Pain was localized in the thoracic spine (35.9%), the lumbar spine (82.5%) or in the buttock(s) (57.8%). Inflammatory lesions of the SIJs (OR 1.06, p=0.04) -and erosions of the SIJs in patients <25 years (OR 1.16, p=0.04)- were associated with buttock pain. AxSpA spinal lesions were not associated with pain. Modic type 1 lesions in patients >35 years (OR 5.19, p=0.001), high intensity zone lesions in females not fulfilling ASAS-criteria (OR 5.09, p=0.001) and herniation in various subgroups (OR ranged 2.07-4.66) were associated with pain.

CONCLUSIONS:

Specific degenerative lesions -but not typical axSpA lesions- of the spine are associated with pain at the same location in given subgroups. Inflammatory lesions in the SIJ are associated with buttock pain. This article is protected by copyright. All rights reserved.

PMID: [27483411](#)

Balance and its role in LBP

J Orthop Sports Phys Ther. 2011 Aug;41(8):542-52. doi: 10.2519/jospt.2011.3413. Epub 2011 Jun 7.

Efficacy of trunk balance exercises for individuals with chronic low back pain: a randomized clinical trial.

Gatti R¹, Faccendini S, Tettamanti A, Barbero M, Balestri A, Calori G.
Author information

Abstract

STUDY DESIGN:

Randomized clinical trial.

OBJECTIVES:

To determine the efficacy of trunk balance exercises for individuals with chronic low back pain.

BACKGROUND:

The majority of exercises focusing on restoring lumbopelvic stability propose targeting the feedforward control of the lumbopelvic region. Less attention has been paid to feedback control during balance adjustments.

METHODS:

Seventy-nine patients were randomly allocated to 2 different groups. The experimental group performed trunk balance exercises in addition to standard trunk flexibility exercises. The control group performed strengthening exercises in addition to the same standard trunk flexibility exercises. The primary outcome measures were pain intensity (visual analogue scale), disability (Roland-Morris Questionnaire), and quality of life (12-Item Short-Form Health Survey). Secondary outcomes were painful positions, use of analgesic drugs, and referred pain. Analysis of variance and relative risk were used to analyze the data for the primary and secondary outcome measures, respectively. The number of participants reaching the minimal clinically important difference in the 2 groups for each outcome measure was compared using relative risk.

RESULTS:

A significant difference in scores on the Roland-Morris Questionnaire ($P = .011$) and the physical component of the 12-Item Short-Form Health Survey ($P = .048$), and in the number of participants reaching the minimal clinically important difference for the Roland-Morris Questionnaire (relative risk, 1.79; 95% confidence interval [CI]: 1.05, 3.04) and the secondary outcome of painful positions (relative risk, 1.37; 95% CI: 1.03, 1.83) were found in favor of the experimental treatment.

CONCLUSIONS:

Trunk balance exercises combined with flexibility exercises were found to be more effective than a combination of strength and flexibility exercises in reducing disability and improving the physical component of quality of life in patients with chronic low back pain.

PMID:[21654092](#)

No correlation between LBP and degenerative changes

European Spine Journal
June 2015, Volume 24, Issue 6, pp 1289–1295

Systematic review of observational studies reveals no association between low back pain and lumbar spondylolysis with or without isthmic spondylolisthesis

Nicholas S. Andrade, Carol M. Ashton, Nelda P. Wray, Curtis Brown, Review Article

Cite this article as:

Andrade, N.S., Ashton, C.M., Wray, N.P. et al. Eur Spine J (2015) 24: 1289. doi:10.1007/s00586-015-3910-5

Abstract**Purpose**

The hypothesis that spondylolysis (SL) and/or isthmic spondylolisthesis (IS) cause low back pain (LBP) is widely accepted representing surgical indication in symptomatic cases. If SL/IS cause LBP, individuals with these conditions should be more prone to LBP than those without SL/IS. Therefore, the goal of the study was to assess whether the published primary data demonstrate an association between SL/IS and LBP in the general adult population.

Methods

Systematic review of published observational studies to identify any association between SL/IS and LBP in adults. The methodological quality of the cohort and case–control studies was evaluated using the Newcastle-Ottawa scale.

Results

Fifteen studies met inclusion criteria (one cohort, seven case–control, seven cross-sectional). Neither the cohort study nor the two highest-quality case–control studies detected an association between SL/IS and LBP; the same is true for the remaining studies.

Conclusions

There is no strong or consistent association between SL/IS and LBP in epidemiological studies of the general adult population that would support a hypothesis of causation. It is possible that SL/IS coexist with LBP, and observed effects of surgery and other treatment modalities are primarily due to benign natural history and nonspecific treatment effects. We conclude that traditional surgical practice for the adult general population, in which SL/IS is assumed to be the cause of non-radicular LBP whenever the two coexist, should be reconsidered in light of epidemiological data accumulated in recent decades.

PT for LBP

Spine (Phila Pa 1976). 2016 Aug 15;41(16):1325-1329.

How Effective is Physical Therapy for Common Low Back Pain Diagnoses?: A Multivariate Analysis of 4597 Patients.

Eleswarapu AS¹, Divi SN, Dirschl DR, Mok JM, Stout C, Lee MJ.
Author information

Abstract

STUDY DESIGN:

A retrospective review.

OBJECTIVE:

The aim of this study is to evaluate whether the treatment of low back pain with physical therapy results in clinically significant improvements in patient-reported pain and functional outcomes.

SUMMARY OF BACKGROUND DATA:

Low back pain is a major cause of morbidity and disability in health care. Previous studies have found poor efficacy for surgery in the absence of specific indications. A variety of nonoperative treatments are available; however, there is scant evidence to guide the practitioner as to the efficacy of these treatments.

METHODS:

Four thousand five hundred ninety-seven patients who underwent physical therapy for the nonoperative treatment of low back pain were included. The primary outcome measures were pre- and post-treatment scores on the Oswestry Disability Index (ODI), Numeric Pain Rating Scale (NPRS) during activity, and NPRS during rest. Previously published thresholds for minimal clinically important difference (MCID) were used to determine the proportion of patients meeting MCID for each of our outcomes. Patients with starting values below the MCID for each variable were excluded from analysis. Logistic regression analysis was used to determine patient risk factors predictive of treatment failure.

RESULTS:

About 28.5% of patients met the MCID for improvement in ODI. Presence of night symptoms, obesity, and smoking were predictors of treatment failure for ODI. Fifty-nine percent of patients met the MCID for improvement in resting NPRS, with a history of venous thromboembolism, night symptoms, psychiatric disease, workers' compensation status, smoking, and obesity predictive of treatment failure. Sixty percent of patients met the MCID for improvement in activity NPRS, with night symptoms, workers' compensation status, and smoking predictive of treatment failure.

CONCLUSION:

We observed that a substantial percentage of the population did not meet MCID for pain and function following treatment of low back pain with physical therapy. Common risk factors for treatment failure included smoking and presence of night symptoms.

LEVEL OF EVIDENCE: 4.

PMID: [26890953](#)

Education in LBP

Occup Med (Lond). 2016 Jul 18. pii: kqw072.

Effectiveness of educational materials to prevent occupational low back pain.

Shorthouse FM¹, Roffi V², Tack C².

Author information

Abstract

BACKGROUND:

Low back pain (LBP) in association with occupation is well documented. A subpopulation of workers can be defined as 'non-heavy' manual workers with either light or sedentary roles who may be at risk of LBP due to insufficient physical activity. Educational materials are a potential intervention, which are cost-effective and easily targeted at this population.

AIMS:

To investigate the evidence for using information material among 'non-heavy' manual workers and the effect on their sickness absence.

METHODS:

A search investigating the effect of educational material on LBP in non-heavy manual workers. Electronic databases were searched and selected references were reviewed. Specific key terms were used including: 'worker', 'non-heavy manual', 'booklet', 'leaflet', 'advice', 'sickness', 'absenteeism', 'prevention' and 'low back pain'. Methodological quality was assessed by predefined criteria.

RESULTS:

Four studies were identified: one guideline review, one prospective study and two randomized controlled trials. Methodological quality was deemed moderate to high. There was insufficient evidence to show written education altered sickness absence. There was evidence that information given to workers can help change attitudes and beliefs about LBP.

CONCLUSIONS:

Educational materials alone do not appear to reduce sickness absence for LBP in the 'non-heavy' manual working population. However, they can facilitate behavioural change and modify health beliefs and attitudes. Educational materials may be a useful medium to engage workers, provide information regarding practical modifications to their work environment and activities and potentially reduce psychological distress regarding ill-health at work.

KEYWORDS: Education; low back pain; occupational health; prevention; systematic review.

PMID: [27432254](#)

Kinesio Taping

Spine (Phila Pa 1976). 2016 Jul 15;41(14):E821-8. doi: 10.1097/BRS.0000000000001447.

Effect of Kinesio Taping on Pain and Functional Disability in Chronic Nonspecific Low Back Pain: A Randomized Clinical Trial.

Al-Shareef AT¹, Omar MT, Ibrahim AH.

Author information

Abstract

STUDY DESIGN:

A randomized controlled trial with 2-week Kinesio taping intervention.

OBJECTIVE:

The aim of the study was to investigate the effectiveness of Kinesio taping application on pain, functional disability, and trunk flexion range of motion (ROM) in patients with chronic nonspecific low back pain (chronic NSLBP).

SUMMARY OF BACKGROUND DATA:

Kinesio taping is a therapeutic tool used for treatment of chronic NSLBP. However, there is little scientific evidence that describes its clinical efficacy.

METHODS:

Forty-four patients with chronic NSLBP were randomized into experimental group (n=21) and placebo group (n=23). The experimental group was treated with Erector Spinae Taping, whereas the placebo group was treated with placebo taping. The primary endpoint was pain intensity on visual analog scale. Secondary endpoints were functional disability on Arabic version of Oswestry disability index (ODI) and trunk flexion ROM on Modified Schober's test. All measurements were recorded at baseline (W0), after 2-week intervention (W2), and at 4-week (W4) follow-up.

RESULTS:

Both groups were comparable at baseline ($P > 0.05$). The experimental group had a greater decrease in pain than the placebo group after W2 of intervention (mean between-group difference 2.05 cm, 95% confidence interval [CI]=1.38-2.71 points). This was maintained to W4 follow-up (2.25 cm, 95% CI=1.67-2.82 points). At W2, the experimental group had significantly greater improvement in disability, by 3.90 points (95% CI=1.68-8.54 points). This effect was significant at W4 follow-up (5.6, 95% CI=2.65-8.54 points). Similarly trunk flexion ROM was significantly better at W2 (-0.71 cm, 95% CI=-0.85 to -0.56) and W4 follow-up (-0.73 cm, 95% CI=-0.88 to -0.58).

CONCLUSION:

Kinesio taping reduces pain and disability and improves trunk flexion ROM after 2 weeks of application. However, these effects were very small to be considered clinically relevant and meaningful when compared with placebo taping.

LEVEL OF EVIDENCE: 2.

PMID:[27392262](https://pubmed.ncbi.nlm.nih.gov/27392262/)

3. DISC

Alternative care for herniations helps

Spine (Phila Pa 1976). 2016 Aug 15;41(16):E955-E963.

Long-Term Course of Alternative and Integrative Therapy for Lumbar Disc Herniation and Risk Factors for Surgery: A Prospective Observational 5-Year Follow-Up Study.

Shin JS¹, Lee J, Lee YJ, Kim MR, Ahn YJ, Park KB, Shin BC, Lee MS, Ha IH.

Author information

Abstract

STUDY DESIGN:

Prospective observational 5-year study.

OBJECTIVE:

To assess pain, functional disability, surgical status, and health care use of patients who actively selected complementary and alternative medicine treatment and risk factors for lumbar surgery.

SUMMARY OF BACKGROUND DATA:

Controversy continues regarding difference in long-term outcomes of conservative and surgical treatment.

METHODS:

We recruited 150 consecutive lumbar disc herniation patients with radiating pain (numeric rating scale ≥ 5) from November, 2006 at a Korean medicine hospital outpatient department, of which 128 patients completed 6 months of complementary and alternative medicine treatment (herbal medicine, acupuncture, bee-venom pharmacopuncture, and Chuna manipulation). Follow-up data was collected every year for 5 years.

RESULTS:

We assessed surgical status in 105 patients (82%), of which 8 replied that they had received surgery. Ninety-two patients (72%) attended the 5-year follow-up. Visual analog scale of back pain which was 4.19 ± 2.60 at baseline improved after treatment, decreasing to 0.94 ± 1.13 at 6 months, and was maintained at 1.25 ± 1.81 at 5 years. Visual analog scale of leg pain decreased from 7.50 ± 1.32 to 0.94 ± 1.29 and was sustained at 0.98 ± 1.73 . Participants reported less disability with Oswestry Disability Index scores decreasing from 41.50 ± 15.07 at baseline to 11.24 ± 10.44 at 6 months, which then declined further to 7.61 ± 9.82 at 5 years. SF-36 quality-of-life health survey scores also improved, increasing from 33.41 ± 12.67 at baseline to 66.04 ± 15.77 at 6 months, and reaching 75.43 ± 15.79 at 5 years. In assessment of satisfaction with current state, 20% replied "highly satisfied," 67% "satisfied," 10% "fairly satisfied," and 2% "dissatisfied." Patients with younger age, previous treatment for current pain episode, and higher levels of sensory impairment and pain in the lower extremities were at higher risk of lumbar surgery.

CONCLUSION:

The long-term results of lumbar disc herniation patients receiving nonsurgical complementary and alternative medicine treatment were favorable and satisfaction rates were high.

LEVEL OF EVIDENCE: 2.

8. VISCERA

Prostrate CA

World J Urol. 2016 Aug 12.

Prostate cancer progression and mortality: a review of diet and lifestyle factors.

Peisch SF¹, Van Blarigan EL^{2,3}, Chan JM^{2,3}, Stampfer MJ^{1,4,5}, Kenfield SA^{6,7}.

Author information

Abstract

PURPOSE:

To review and summarize evidence on the role of diet and lifestyle factors and prostate cancer progression, with a specific focus on habits after diagnosis and the risk of subsequent disease recurrence, progression, or death.

METHODS:

Given the well-documented heterogeneity of prostate cancer and the long survivorship of the majority of diagnoses, our goal was to summarize and describe modifiable risk factors for clinically relevant prostate cancer. We focused where possible on epidemiologic studies of post-diagnostic habits and prostate cancer progression, defined as recurrence (e.g., PSA risk, secondary treatment), metastasis, or death. Where data were limited, we also describe evidence on risk factors and indicators of prostate cancer aggressiveness at diagnosis.

RESULTS:

A variety of dietary and lifestyle factors appear to affect prostate cancer progression. Several generally widely recommended lifestyle factors such as not smoking, maintaining a healthy body weight, and regular vigorous physical exercise also appear to affect prostate cancer progression. Several dietary factors, such as tomato sauce/lycopene, cruciferous vegetables, healthy sources of vegetable fats, and coffee, may also have a role in reducing risk of prostate cancer progression.

CONCLUSION:

Diet and lifestyle factors, in particular exercise and smoking cessation, may reduce the risk of prostate cancer progression and death. These promising findings warrant further investigation, as their overall impact might be large.

KEYWORDS: Diet; Lethal prostate cancer; Lifestyle; Prostate cancer progression

PMID: [27518576](#)

UC and Vit. D3

Saudi J Gastroenterol. 2016 Jul-Aug;22(4):316-23. doi: 10.4103/1319-3767.187606.

A randomized controlled trial on the effect of vitamin D3 on inflammation and cathelicidin gene expression in ulcerative colitis patients.

Sharifi A¹, Hosseinzadeh-Attar MJ¹, Vahedi H², Nedjat S³.

Author information

Abstract

BACKGROUND:

Inflammatory bowel disease (IBD) is an intestinal chronic inflammatory condition and includes Crohn's disease (CD) and ulcerative colitis (UC). It has been proposed that Vitamin D supplementation may have a beneficial role in IBD.

AIM:

To characterize the effects of Vitamin D on cathelicidin (hCAP/LL37) gene expression, ESR, and serum hs-CRP levels.

MATERIALS AND METHODS:

Ninety UC patients on remission were randomized to receive 300,000 IU intramuscular Vitamin D or 1 mL normal saline as placebo, respectively. Before and 90 days after intervention, serum levels of 25 (OH)-Vitamin D3, PTH, Calcium, ESR, and hs-CRP were measured. Cathelicidin gene expression was also quantified using qRT-PCR.

RESULTS:

Baseline serum 25-OH-Vitamin D3 levels were not different between the two groups and after intervention, increased only in Vitamin D group ($P < 0.001$). Hs-CRP levels were lower in Vitamin D group after intervention (Before: 3.43 ± 3.47 vs 3.86 ± 3.55 mg/L, $P = 0.56$; after: 2.31 ± 2.25 vs 3.90 ± 3.97 mg/L, $P = 0.023$). ESR decreased significantly in Vitamin D group (Before: 12.4 ± 6.1 vs 12.1 ± 5.3 mm/h, $P = 0.77$; after: 6.7 ± 4.5 vs 11.4 ± 5.5 mm/h, $P < 0.001$). The mean fold change in hCAP18 gene expression in Vitamin D group was significantly higher than placebo group. (Mean \pm SD: 3.13 ± 2.56 vs 1.09 ± 0.56 ; median \pm interquartile range: 2.17 ± 3.81 vs 0.87 ± 0.53 , $P < 0.001$).

CONCLUSION:

Decreases in ESR and hs-CRP levels and increase in LL37 gene expression support the hypothesis that Vitamin D supplementation may have a beneficial role in UC patients.

PMID: [27488327](#)

Cognitive impairment in Crohn's disease

Cognitive impairment in Crohn's disease is associated with systemic inflammation, symptom burden and sleep disturbance

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United European Gastroenterology Journal, 08/17/2016 van Langenberg DR, et al.

Abstract

Background Patients with Crohn's disease (CD) frequently complain of cognitive difficulties such as problems with concentration and clouding of thought, yet this has scarcely been objectively defined and underlying mechanisms remain unknown.

Objective The objective of this article is to objectively measure cognitive impairments in patients with CD compared with healthy controls, and if present, to identify potentially modifiable, contributing factors associated with cognitive impairment.

Methods CD patients and healthy age-/sex-matched controls completed surveys encompassing clinical, demographic, psychiatric, fatigue and sleep parameters. Contemporaneously, disease activity assessment with serum CRP, faecal calprotectin, Harvey–Bradshaw Index and the Subtle Cognitive Impairment test (SCIT) were performed, with the primary measure of response time (SCIT-RT) compared between groups. Multiple linear regression assessed for factors associated with slower SCIT-RT, denoting subtle cognitive impairment.

Results A total of 49 CD and 31 control individuals participated, with median age 44 years (range 22–65) and 43 years (21–63), respectively. Compared to controls, SCIT-RT was slower across all timepoints in CD patients (ANOVA $p < 0.001$). In multivariate analysis, serum CRP (standardised beta coefficient 0.27, 95% CI (0.02, 0.51)), abdominal pain (0.43 (0.16, 0.70)), plasma haemoglobin (1.55 (1.42, 1.68)), and concurrent fatigue (0.56 (0.25, 0.88)) were each independently associated with slower SCIT-RT in CD (each $p < 0.05$), with a trend for poorer sleep quality 0.54 (−0.03, 1.11) ($p = 0.06$), yet conversely, higher faecal calprotectin titres were associated with faster SCIT-RT (−1.77 (−1.79, −1.76), $p < 0.01$).

Conclusions Patients with CD demonstrated subtle cognitive impairment utilising the objective SCIT, correlating with systemic inflammation and other disease burden measures, although higher faecal calprotectin titres were unexpectedly associated with less cognitive impairment.

10 A. CERVICAL SPINE

Cervical relocation test

The reliability of the cervical relocation test on people with and without a history of neck pain

Sarah Burke, Kristina Lynch, Zakkee Moghul, Craig Young, Kristen Saviola & **Ron Schenk**
Page 210-214 | Received 31 Mar 2015, Accepted 20 Jul 2015, Published online: 04 Jul 2016
<http://dx.doi.org/10.1179/2042618615Y.0000000016>

Abstract

Background: Physical therapy intervention is often sought to treat cervical spine conditions and a comprehensive physical therapy examination has been associated with more favourable outcomes. The cervical relocation test (CRT) is one method used to assess joint position sense (PS) integrity of the cervical spine. Previous research has found significant differences in the CRT between symptomatic and asymptomatic subjects. Impaired kinaesthetic awareness in the cervical spine may be associated with degenerative joint disease, chronicity of the complaint and increased susceptibility to re-injury.

Purpose: The purpose of this study was to determine the intertester and intratester reliability of cervical relocation using the cervical range of motion instrument (CROM) and an affixed laser (AL) device among subjects with and without a history of neck pain. In addition, it was hypothesised that those individuals with a history of neck pain would have greater difficulty on the CRT.

Methods: A total of 50 asymptomatic subjects ($n = 50$) were assigned to two researchers. The CRT was performed for each tester by the subject rotating the cervical spine for three trials to the right and left for the CROM and AL.

Results: The results indicate a significant intertester reliability of the CROM (interclass correlation coefficient (ICC) = 0.717[0.502–0.839]; 0.773[0.595–0.873]) for the subjects in this sample.

Conclusion: This study demonstrated that the CROM is a reliable device for measuring cervical relocation between different testers. Future research should investigate if the CRT is predictive of prognosis in patients with cervical pathology.

Keywords: Cervical relocation test, CROM, Laser,

10 B. CERVICAL EXERCISES**Deep neck flexors**

J Back Musculoskelet Rehabil. 2016 Jul 22.

The clinical and EMG assessment of the effects of stabilization exercise on nonspecific chronic neck pain: A randomized controlled trial.

Ghaderi F¹, Jafarabadi MA², Javanshir K³.

Author information

Abstract

BACKGROUND:

Neck pain is an important cause of disability. In spite of its high prevalence rate, treatment of the disorder is a challenging topic. Stabilization exercise has been the topic of many studies.

OBJECTIVE:

To compare the effects of stabilization and routine exercises on chronic neck pain.

METHODS:

Forty patients were randomly assigned into either stabilization or routine exercise groups and undertook a 10-week training program. Electromyographic (EMG) activity was recorded from Sternocleidomastoid (SCM), Anterior Scalene (AS) and Splenius Capitis (SC) muscles bilaterally. Endurance time of deep flexor muscles was measured by chronometer. Pain and disability were measured using Visual Analogue Scale (VAS) and neck disability index (NDI) questionnaire, respectively before and after training period.

RESULTS:

Findings revealed significant decreased pain and disability in both groups after intervention ($P < 0/001$). Flexor muscles endurance of stabilization group was significantly increased compared with that of routine ($P < 0/001$). Also EMG activity of SCM, AS and SC muscles were significantly decreased in stabilization group compared with routine ($P < 0/001$).

CONCLUSION:

Increased deep flexor endurance and decreased EMG activity of SCM, AS and SC muscles suggest an important role for stabilizing exercises on reducing the activity of superficial muscles in chronic neck pain.

KEYWORDS: Neck pain; electromyography; stabilization exercise

PMID: [27472855](#)

Exercise is helpful

Man Ther. 2016 Aug;24:25-45. doi: 10.1016/j.math.2016.04.005. Epub 2016 Apr 20.

Exercises for mechanical neck disorders: A Cochrane review update.

Gross AR¹, Paquin JP², Dupont G³, Blanchette S³, Lalonde P³, Cristie T³, Graham N⁴, Kay TM⁵, Burnie SJ⁶, Gelley G⁷, Goldsmith CH⁸, Forget M⁹, Santaguida PL¹⁰, Yee AJ¹¹, Radisic GG¹², Hoving JL¹³, Bronfort G¹⁴; Cervical Overview Group.

Author information

Abstract

BACKGROUND:

Neck pain (NP) is disabling and costly.

OBJECTIVES:

To assess the effectiveness of exercise on pain, disability, function, patient satisfaction, quality of life (QoL) and global perceived effect (GPE) in adults with NP.

METHODS:

We searched computerised databases up to May 2014 for randomized controlled trials (RCTs) comparing exercise to a control in adults with NP with/without cervicogenic headache (CGH) or radiculopathy. Two reviewers independently conducted selection, data abstraction and assessed risk of bias. Meta-analyses were performed to establish pooled standardised mean differences (SMDp). The Grade of Recommendation, Assessment, Development and Evaluation (GRADE) was used to summarise the body of evidence.

MAIN RESULTS:

The following exercises (27 trials) were supported by 'Moderate GRADE' evidence: For chronic NP, 1) cervico-scapulothoracic and upper extremity (UE) strengthening for moderate to large pain reduction immediately post treatment (IP) and at short-term (ST) follow-up; 2) scapulothoracic and UE endurance training for a small pain reduction (IP/ST); 3) cervical, shoulder and scapulothoracic strengthening and stretching exercise for a small to large pain reduction in the long-term (LT) (SMDp -0.45 [95%CI: -0.72 to -0.18]) and function improvement; 4) cervico-scapulothoracic strengthening/stabilisation exercises for pain and function at intermediate-term (IT) (SMDp -14.90 [95%CI: -22.40 to -7.39]). 5) mindfulness exercises (Qigong) for minor improved function but not GPE (ST). For chronic CGH, cervico-scapulothoracic strengthening and endurance exercises including pressure biofeedback for small/moderate improvement of pain, function and GPE (IP/LT).

AUTHORS' CONCLUSIONS:

Specific strengthening exercises of the neck, scapulothoracic and shoulder for chronic NP and chronic CGH are beneficial. Future research should explore optimal dosage.

KEYWORDS: Cochrane review; Exercise; Meta-analysis; Neck pain

PMID: [27317503](https://pubmed.ncbi.nlm.nih.gov/27317503/)

13. CRANIUM/TMJ

Cranial bone motion

Orthod Craniofac Res. 2016 Aug 10. doi: 10.1111/ocr.12128.

Relationship between the cranial base and the mandible in artificially deformed skulls.

Ferros I¹, Mora MJ¹, Obeso IF¹, Jimenez P², Martinez-Insua A¹.

Author information

Abstract

OBJECTIVES:

There is controversy regarding the relationship between mandibular position and alterations of the cranial base that provoke a more anterior location of the glenoid fossa. Artificially deformed skulls display marked alterations of the cranial base. This study evaluates mandibular changes as function of the morphology of the cranial base in these skulls.

MATERIAL AND METHODS:

A geometric morphometric study was performed on lateral cephalometric X-rays of three groups of skulls: 32 with anteroposterior deformity, 17 with circumferential deformity and 39 with no apparent deformity.

RESULTS:

In artificially deformed skulls, the cranial base was deformed causing the mandibular condyle to be in a more anterior position. There was a complete remodelling of the mandible involving narrowing and elongation of the mandibular ramus, rotation of the corpus of the mandible and increased vertical height of the symphysis. Forward displacement did not occur. Integration between mandible and cranial base is not altered by deformation of the skull.

CONCLUSIONS:

Deformity of the cranial vault exerts an influence on the mandible, supporting the theory of modular units in complete integration. This also supports the theory that mandibular prognathism is a multifactorial result and not a direct effect of displacement of the cranial base.

KEYWORDS: deformed skull; geometric morphometric; mandible; skull base

PMID: [27506322](#)

Fixed orthodontic treatment

Evaluation of inflammation during fixed orthodontic treatment

Archives of Oral Biology, 08/16/2016 Bilgic F, et al.

Authors evaluated the effects of fixed orthodontic therapy on high-sensitivity C-reactive protein (hs-CRP) level, CBC parameters and levels of aspartate aminotransferase (AST) and alanine aminotransferase (ALT), gamma glutamyl transferase (GGT), alkaline phosphatase (ALP), urea, creatinine, sodium (Na), potassium (K), calcium (Ca), total protein (TP), and albumin (Alb). According to the results, elevation in serum hs-CRP levels and neutrophil: lymphocyte ratio within first 3 months indicated a systemic immune response developed against therapy in patients undergoing fixed orthodontic therapy.

Maxillary expansion

Eur J Orthod. 2016 Jul 20. pii: cjlw048.

Volumetric upper airway changes after rapid maxillary expansion: a systematic review and meta-analysis.

Buck LM¹, Dalci O¹, Darendeliler MA¹, Papageorgiou SN², Papadopoulou AK³.

Author information

Abstract

BACKGROUND:

Although Rapid Maxillary Expansion (RME) has been used for over a century, its effect on upper airways has not yet adequately been assessed in an evidence-based manner.

OBJECTIVE:

To investigate the volumetric changes in the upper airway spaces following RME in growing subjects by means of acoustic rhinometry, three-dimensional radiography and digital photogrammetry.

SEARCH METHODS:

Literature search of electronic databases and additional manual searches up to February 2016.

SELECTION CRITERIA:

Randomized clinical trials, prospective or retrospective controlled clinical trials and cohort clinical studies of at least eight patients, where the RME appliance was left in place for retention, and a maximum follow-up of 8 months post-expansion.

DATA COLLECTION AND ANALYSIS:

After duplicate data extraction and assessment of the risk of bias, the mean differences and 95 per cent confidence intervals (CIs) of upper airway volume changes were calculated with random-effects meta-analyses, followed by subgroup analyses, meta-regressions, and sensitivity analyses.

RESULTS:

Twenty studies were eligible for qualitative synthesis, of which 17 (3 controlled clinical studies and 14 cohort studies) were used in quantitative analysis. As far as total airway volume is concerned patients treated with RME showed a significant increase post-expansion (5 studies; increase from baseline: 1218.3mm³; 95 per cent CI: 702.0 to 1734.6mm³), which did not seem to considerably diminish after the retention period (11 studies; increase from baseline: 1143.9mm³; 95 per cent CI: 696.9 to 1590.9mm³).

LIMITATIONS:

However, the overall quality of evidence was judged as very low, due to methodological limitations of the included studies, absence of untreated control groups, and inconsistency among studies.

CONCLUSIONS:

RME seems to be associated with an increase in the nasal cavity volume in the short and in the long term. However, additional well-conducted prospective controlled clinical studies are needed to confirm the present findings.

FUNDING: Australian Society of Orthodontics Foundation for Research and Education Inc

Arthrocentesis of TMJ

Int J Oral Maxillofac Surg. 2016 Jun 27. pii: S0901-5027(16)30107-2. doi: 10.1016/j.ijom.2016.06.009.

Is arthrocentesis plus platelet-rich plasma superior to arthrocentesis plus hyaluronic acid for the treatment of temporomandibular joint osteoarthritis: a randomized clinical trial.

Cömert Kiliç S¹, Güngörmüş M².
Author information

Abstract

A randomized clinical trial was implemented in adult patients with temporomandibular joint osteoarthritis (TMJ OA). The sample comprised 49 osteoarthritic joints in 31 consecutive patients. Patients were divided randomly into two groups according to the treatment technique applied: the platelet-rich plasma (PRP) group patients underwent initial arthrocentesis plus PRP injection and then four consecutive PRP injections; the hyaluronic acid (HA) group patients underwent one session of arthrocentesis plus HA injection. The predictor variable was the treatment technique. The outcome variables included visual analogue scale (VAS) evaluations and maximum inter-incisal opening (MIO) measurements. Outcome variables were recorded preoperatively and at 12 months postoperative. Descriptive and bivariate statistics were computed and significance was set at $P < 0.05$. The PRP group included 32 joints in 18 subjects, and the HA group included 17 joints in 13 subjects. No statistically significant difference was observed between the groups for any of the changes in VAS parameters or MIO measurements. Both treatment techniques resulted in significant clinical improvements in all VAS parameters and painless MIO. These findings suggest that arthrocentesis plus PRP injections is not superior to arthrocentesis plus a single HA injection; thus PRP injection should not be considered as the first line treatment. Arthrocentesis plus HA injection would appear to be more acceptable for patients.

KEYWORDS: TMJ osteoarthritis; arthrocentesis; hyaluronic acid; intra-articular injection; platelet-rich plasma
PMID: [27364372](https://pubmed.ncbi.nlm.nih.gov/27364372/)

Sleep apnea and pain

Arthritis Care Res (Hoboken). 2016 Jul 31. doi: 10.1002/acr.22994.

Musculoskeletal joint pain in men is not associated with obstructive sleep apnea or daytime sleepiness but is associated with poor sleep quality.

Li JJ^{1,2}, Appleton SL¹, Gill TK³, Vakulin A^{4,5}, Wittert GA², Antic NA⁴, Taylor AW⁶, Adams RJ¹, Hill CL^{1,7}.

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- ⁵The NHMRC Centres of Research Excellence, CIRUS and NEUROSLEEP, Woolcock Institute of Medical Research, Central Clinical School, University of Sydney, New South Wales, Australia.
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- ⁷Rheumatology Unit, The Queen Elizabeth Hospital, Woodville, South Australia, 5011, Australia.

Abstract

OBJECTIVE: To investigate the association of musculoskeletal pain with objectively-determined obstructive sleep apnea (OSA) and subjective sleep measures in a population-based sample.

METHODS: Participants were community-dwelling men (n=360) aged ≥ 35 years from the Men Androgen Inflammation Lifestyle Environment and Stress Study. Shoulder, back, hip, knee, hand, and foot pain were assessed by Computer-Assisted Telephone Interview or self-completed questionnaire. OSA was determined with full in-home unattended polysomnography (Embletta X100) scored by 2007 AASM (alternative) criteria. Epworth Sleepiness Scale assessed daytime sleepiness and Pittsburgh Sleep Quality Index assessed sleep quality.

RESULTS: OSA was not associated with the presence of any joint pain (adjusted odds ratio 1.03 [95% CI 0.61-1.76]). There was no association between OSA and pain in any specific joint (shoulder, back, hip, knee, hand or foot); nor was the number of joints in pain associated with OSA. There was similarly no association between pain variables and excessive daytime sleepiness, except for hand pain (3.10 [1.50-6.39]). However, pain was associated with poor sleep quality: any pain (2.19 [1.25-3.82]), shoulder pain (2.16 [1.25-3.75]), back pain (2.24 [1.41-3.55]), foot pain (2.47 [1.43-4.26]). The number of painful joints was also associated with poor sleep quality (5-6 joints vs. no joints, 7.34 [2.30-23.42]).

CONCLUSION: No association between OSA and pain or between daytime sleepiness and pain was found. Consistent with previous reports, poor sleep quality was associated with musculoskeletal pain in this general population sample. The etiological differences between OSA-related sleep disruption and poor subjective sleep quality require further investigation. This article is protected by copyright. All rights reserved.

14. HEADACHES**Familial presence of HA****Familial occurrence of headache disorders: A population-based study in mainland China**

Shengyuan Yu Ruo Zhuo Liu Xiaosu Yang Gang Zhao Xiangyang Qiao Jiachun Feng Yannan Fang Xiutang Cao Timothy J. Steiner

Highlights

- Headache disorders were common among FDRs of those with headache.
- Similar headache proportions in FDRs were significantly higher in other than in TTH.
- Familial occurrence was a highly influential factor in headache on ≥ 15 days/month.

Abstract**Background**

Headache disorders are highly prevalent worldwide, and familial occurrence and heredity are contributory factors attracting the interest of epidemiological researchers. Our purpose, in a large sample drawn nationwide from the Chinese general population, was to evaluate the frequency of similar headache in first-degree relatives (FDRs) of those with different headache types.

Methods

This was a questionnaire-based nationwide cross-sectional door-to-door survey using cluster random-sampling, selecting one adult (18–65 years) per household. Headache was diagnosed by ICHD-II criteria. Participants with headache were asked whether or not any FDRs had similar headache to their own. Chi-squared test and multivariate logistic regression analysis were used to assess the strength and significance of associations.

Results

Of 5041 survey participants (participation rate 94.1%), 1060 (21.0%) were diagnosed with headache (migraine 469 [9.3%], tension-type headache [TTH] 543 [10.8%], headache on ≥ 15 days/month 48 [0.95%]). From these, 31 were excluded because of missing data about FDRs, leaving 1029 for analysis (male 350 [mean age: 46.7 ± 11.4 years]; female 679 [mean age 46.3 ± 11.2 years]). Similar headache in one or more FDRs was reported by 22.2% (95% CI: 19.6–24.7%) overall, by 25.1% (21.1–29.1%) of those with migraine, by 19.1% (15.7–22.4%) with TTH and by 29.2% (16.3–42.0%) with headache on ≥ 15 days/month. The differences was significant between migraine and TTH (OR = 1.4, $p = 0.023$), but were not significant between headache on ≥ 15 days/month and TTH (OR = 1.7, $p = 0.093$), migraine and headache on ≥ 15 days/month (OR = 1.2, $p = 0.534$). In multivariate analysis: for migraine *versus* TTH, AOR = 1.2 ($p = 0.015$); for headache on ≥ 15 days/month *versus* TTH, AOR 2.3 ($p = 0.018$).

Conclusion

Headache was highly prevalent in China and common among FDRs of those with any type of headache (headache on ≥ 15 days/month > migraine > TTH). Against the background of the general-population prevalence of each disorder, familial occurrence was a very highly influential factor in headache on ≥ 15 days/month. There are important implications in this for public health and education.

Rectus capitis and HA's

Cephalalgia. 2016 Aug 17. pii: 0333102416664775.

Correlation between chronic headaches and the rectus capitis posterior minor muscle: A comparative analysis of cross-sectional trail.

Yuan XY1, Yu SB1, Liu C2, Xu Q3, Zheng N1, Zhang JF1, Chi YY1, Wang XG4, Lin XT5, Sui HJ6.

Author information

Abstract

OBJECTIVE:

We aimed to investigate the morphological changes and potential correlation between chronic headaches and the rectus capitis posterior minor muscle (RCPmi).

METHODS:

Comparison of RCPmi between patients with chronic headaches and healthy adult volunteers were collected using magnetic resonance imaging (MRI) and Mimics software.

RESULTS:

Among the 235 MRI images analyzed, the data between the two groups were considered statistically significant. The number of males was larger than that of females ($p < 0.001$) and the headache group showed greater hypertrophy than the control group in both males ($p < 0.001$) and females ($p = 0.001$).

CONCLUSIONS:

Chronic headaches were correlated with the RCPmi. Patients with chronic headaches suffered from more obvious hypertrophy than that of the control group. Additionally, it was supposed that RCPmi hypertrophy may be one pathogenesis of the chronic headaches.

Placebo is helpful in HA's

Cephalalgia. 2016 Aug 12. pii: 0333102416660552.

Comparative tolerability of treatments for acute migraine: A network meta-analysis.

Thorlund K¹, Toor K², Wu P³, Chan K³, Druyts E⁴, Ramos E⁵, Bhambri R⁵, Donnet A⁶, Stark R⁷, Goadsby PJ⁸.

Author information

Abstract

INTRODUCTION:

Migraine headache is a neurological disorder whose attacks are associated with nausea, vomiting, photophobia and phonophobia. Treatments for migraine aim to either prevent attacks before they have started or relieve attacks (abort) after onset of symptoms and range from complementary therapies to pharmacological interventions. A number of treatment-related adverse events such as somnolence, fatigue, and chest discomfort have previously been reported in association with triptans. The comparative tolerability of available agents for the abortive treatment of migraine attacks has not yet been systematically reviewed and quantified.

METHODS:

We performed a systematic literature review and Bayesian network meta-analysis for comparative tolerability of treatments for migraine. The literature search targeted all randomized controlled trials evaluating oral abortive treatments for acute migraine over a range of available doses in adults. The primary outcomes of interest were any adverse event, treatment-related

adverse events, and serious adverse events. Secondary outcomes were fatigue, dizziness, chest discomfort, somnolence, nausea, and vomiting.

RESULTS:

Our search yielded 141 trials covering 15 distinct treatments. Of the triptans, sumatriptan, eletriptan, rizatriptan, zolmitriptan, and the combination treatment of sumatriptan and naproxen were associated with a statistically significant increase in odds of any adverse event or a treatment-related adverse event occurring compared with placebo. Of the non-triptans, only acetaminophen was associated with a statistically significant increase in odds of an adverse event occurring when compared with placebo. Overall, triptans were not associated with increased odds of serious adverse events occurring and the same was the case for non-triptans. For the secondary outcomes, with the exception of vomiting, all triptans except for almotriptan and frovatriptan were significantly associated with increased risk for all outcomes. Almotriptan was significantly associated with an increased risk of vomiting, whereas all other triptans yielded non-significant lower odds compared with placebo. Generally, the non-triptans were not associated with decreased tolerability for the secondary outcomes.

DISCUSSION:

In summary, triptans were associated with higher odds of any adverse event or a treatment-related adverse event occurring when compared to placebo and non-triptans. Non-significant results for non-triptans indicate that these treatments are comparable with one another and placebo regarding tolerability outcomes.

KEYWORDS: Migraine; adverse events; ergotamines; non-steroidal anti-inflammatory drugs; safety; tolerability; triptans

PMID: [27521843](#)

Trigeminal nerve

Cephalalgia. 2016 Aug 13. pii: 0333102416665223.

Reduced insula habituation associated with amplification of trigeminal brainstem input in migraine.

Lee J¹, Lin RL², Garcia RG³, Kim J⁴, Kim H⁴, Loggia ML⁵, Mawla I⁵, Wasan AD⁶, Edwards RR⁷, Rosen BR⁵, Hadjikhani N⁵, Napadow V⁸.

Author information

Abstract

BACKGROUND:

Impaired sensory processing in migraine can reflect diminished habituation, increased activation, or even increased gain or amplification of activity from the primary synapse in the brainstem to higher cortical/subcortical brain regions.

METHODS:

We scanned 16 episodic migraine (interictal) and 16 healthy controls (cross-sectional study), and evaluated brain response to innocuous air-puff stimulation over the right forehead in the ophthalmic nerve (V₁) trigeminal territory. We further evaluated habituation, and cortical/subcortical amplification relative to spinal trigeminal nucleus (Sp5) activation.

RESULTS:

Migraine subjects showed greater amplification from Sp5 to the posterior insula and hypothalamus. In addition, while controls showed habituation to repetitive sensory stimulation in all activated cortical regions (e.g. the bilateral posterior insula and secondary somatosensory cortices), for migraine subjects, habituation was not found in the posterior insula. Moreover, in migraine, the habituation slope was correlated with the amplification ratio in the posterior insula and secondary somatosensory cortex, i.e. greater amplification was associated with reduced habituation in these regions.

CONCLUSIONS:

These findings suggest that in episodic migraine, amplified information processing from spinal trigeminal relay nuclei is linked to an impaired habituation response. This phenomenon was localized in the posterior insula, highlighting the important role of this structure in mechanisms supporting altered sensory processing in episodic migraine.

KEYWORDS: Migraine; amplification; habituation; posterior insula cortex; spinal trigeminal nucleus

Sphenopalatine stimulation

Cephalalgia. 2016 May 9. pii: 0333102416649092.

Long-term effectiveness of sphenopalatine ganglion stimulation for cluster headache.

Jürgens TP¹, Barloese M², May A³, Láinez JM⁴, Schoenen J⁵, Gaul C⁶, Goodman AM⁷, Caparso A⁷, Jensen RH⁸.

Author information

Abstract

OBJECTIVES:

The sphenopalatine ganglion (SPG) plays a pivotal role in cluster headache (CH) pathophysiology as the major efferent parasympathetic relay. We evaluated the long-term effectiveness of SPG stimulation in medically refractory, chronic CH patients.

METHODS:

Thirty-three patients were enrolled in an open-label follow-up study of the original Pathway CH-1 study, and participated through 24 months post-insertion of a microstimulator. Response to therapy was defined as acute effectiveness in $\geq 50\%$ of attacks or a $\geq 50\%$ reduction in attack frequency versus baseline.

RESULTS:

In total, 5956 attacks (180.5 ± 344.8 , range 2-1581 per patient) were evaluated. At 24 months, 45% (n = 15) of patients were acute responders. Among acute responders, a total of 4340 attacks had been treated, and in 78% of these, effective therapy was achieved using only SPG stimulation (relief from moderate or greater pain or freedom from mild pain or greater). A frequency response was observed in 33% (n = 11) of patients with a mean reduction of attack frequency of 83% versus baseline. In total, 61% (20/33) of all patients were either acute or frequency responders or both. The majority maintained their therapeutic response through the 24-month evaluation.

CONCLUSIONS:

In the population of disabled, medically refractory chronic CH patients treated in this study, SPG stimulation is an effective acute therapy in 45% of patients, offering sustained effectiveness over 24 months of observation. In addition, a maintained, clinically relevant reduction of attack frequency was observed in a third of patients. These long-term data provide support for the use of SPG stimulation for disabled patients and should be considered after medical treatments fail, are not tolerated or are inconvenient for the patients.

16. CONCUSSIONS

Blood biomarkers

Sports Med Arthrosc. 2016 Sep;24(3):108-15. doi: 10.1097/JSA.000000000000117.

Potential Blood-based Biomarkers for Concussion.

Papa L¹.

Author information

Abstract

Mounting research in the field of sports concussion biomarkers has led to a greater understanding of the effects of brain injury from sports. A recent systematic review of clinical studies examining biomarkers of brain injury following sports-related concussion established that almost all studies have been published either in or after the year 2000. In an effort to prevent chronic traumatic encephalopathy and long-term consequences of concussion, early diagnostic and prognostic tools are becoming increasingly important; particularly in sports and in military personnel, where concussions are common occurrences. Early and tailored management of athletes following a concussion with biomarkers could provide them with the best opportunity to avoid further injury. Should blood-based biomarkers for concussion be validated and become widely available, they

could have many roles. For instance, a point-of-care test could be used on the field by trained sport medicine professionals to help detect a concussion. In the clinic or hospital setting, it could be used by clinicians to determine the severity of concussion and be used to screen players for neuroimaging (computed tomography and/or magnetic resonance imaging) and further neuropsychological testing. Furthermore, biomarkers could have a role in monitoring progression of injury and recovery and in managing patients at high risk of repeated injury by being incorporated into guidelines for return to duty, work, or sports activities. There may even be a role for biomarkers as surrogate measures of efficacy in the assessment of new treatments and therapies for concussion.

PMID: [27482776](#)

Biomechanical components

Sports Med Arthrosc. 2016 Sep;24(3):100-7. doi: 10.1097/JSA.000000000000121.

Biomechanical Perspectives on Concussion in Sport.

Rowson S¹, Bland ML, Campolettano ET, Press JN, Rowson B, Smith JA, Sproule DW, Tyson AM, Duma SM.

Author information

Abstract

Concussions can occur in any sport. Often, clinical and biomechanical research efforts are disconnected. This review paper analyzes current concussion issues in sports from a biomechanical perspective and is geared toward Sports Med professionals. Overarching themes of this review include the biomechanics of the brain during head impact, role of protective equipment, potential population-based differences in concussion tolerance, potential intervention strategies to reduce the incidence of injury, and common biomechanical misconceptions.

PMID: [27482775](#)

17. SHOULDER GIRDLE

Scapula stabilization

A Critical and Theoretical Perspective on Scapular Stabilization: What Does It Really Mean, and Are We On the Right Track?

Kevin J. McQuade, John Borstad, Anamaria Siriani de Oliveira
DOI: 10.2522/ptj.20140230 Published February 4, 2016

Abstract

Stabilization exercises have been a focus and mainstay of much therapeutic and performance training programs for the past decade. Whether it is core stabilization for the spine or scapular stabilization, clinicians and trainers alike have endorsed these programs based largely on conceptual theory and anecdotal experience. The notion that an unstable scapula is related to shoulder dysfunction and pathology is well accepted, but is it accurate? This perspective intends to challenge the concept of scapula stabilization by applying biomechanical and motor control constructs. The objectives are to critically examine the current beliefs surrounding scapular stabilization, discuss the definitions of stabilization and stability in the context of the scapulothoracic region, and evaluate the key evidence regarding scapular stabilization and

scapular dyskinesis. We explore several new approaches that may impact understanding of normal and atypical scapular motion. Finally, we will draw a historical analogy and suggest future research and clinical directions. Our aim is to lead readers to the essential concepts implied on scapular stabilization, increase the critical thought process in rehabilitation practice, and suggest some open topics to be explored by future research.

19. GLENOHUMERAL/SHOULDER

Shoulder pain and psychological problems

Br J Sports Med. 2016 Jul 21. pii: bjsports-2016-096084. doi: 10.1136/bjsports-2016-096084.

Psychological factors are associated with the outcome of physiotherapy for people with shoulder pain: a multicentre longitudinal cohort study.

Chester R¹, Jerosch-Herold C², Lewis J³, Shepstone L⁴.
Author information

Abstract

BACKGROUND/AIM:

Shoulder pain is a major musculoskeletal problem. We aimed to identify which baseline patient and clinical characteristics are associated with a better outcome, 6 weeks and 6 months after starting a course of physiotherapy for shoulder pain.

METHODS:

1030 patients aged ≥ 18 years referred to physiotherapy for the management of musculoskeletal shoulder pain were recruited and provided baseline data. 840 (82%) provided outcome data at 6 weeks and 811 (79%) at 6 months. 71 putative prognostic factors were collected at baseline. Outcomes were the Shoulder Pain and Disability Index (SPADI) and Quick Disability of the Arm, Shoulder and Hand Questionnaire. Multivariable linear regression was used to analyse prognostic factors associated with outcome.

RESULTS:

Parameter estimates (β) are presented for the untransformed SPADI at 6 months, a negative value indicating less pain and disability. 4 factors were associated with better outcomes for both measures and time points: lower baseline disability ($\beta = -0.32$, 95% CI -0.23 to -0.40), patient expectation of 'complete recovery' compared to 'slight improvement' as 'a result of physiotherapy' ($\beta = -12.43$, 95% CI -8.20 to -16.67), higher pain self-efficacy ($\beta = -0.36$, 95% CI -0.50 to -0.22) and lower pain severity at rest ($\beta = -1.89$, 95% CI -1.26 to -2.51).

CONCLUSIONS:

Psychological factors were consistently associated with patient-rated outcome, whereas clinical examination findings associated with a specific structural diagnosis were not. When assessing people with musculoskeletal shoulder pain and considering referral to physiotherapy services, psychosocial and medical information should be considered.

STUDY REGISTRATION:

Protocol published at <http://www.biomedcentral.com/1471-2474/14/192>.

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KEYWORDS: Assessment; Physiotherapy; Psychology; Shoulder

21. ADHESIVE CAPSULITIS**Pathology of frozen shoulder****The pathophysiology associated with primary (idiopathic) frozen shoulder: A systematic review**

Victoria Ryan, Hazel Brown, Catherine J. Minns Lowe and Jeremy S. Lewis
BMC Musculoskeletal Disorders BMC series – open, inclusive and trusted 201617:340
DOI: 10.1186/s12891-016-1190-9
Published: 15 August 2016

Background

Frozen shoulder is a common yet poorly understood musculoskeletal condition, which for many, is associated with substantial and protracted morbidity. Understanding the pathology associated with this condition may help to improve management. To date this has not been presented in a

systematic fashion. As such, the aim of this review was to summarise the pathological changes associated with this primary frozen shoulder.

Methods

Databases: Medline, Embase, CINAHL, AMED, BNI and the Cochrane Library, were searched from inception to 2nd May, 2014. To be included participants must not have undergone any prior intervention. Two reviewers independently conducted the; searches, screening, data extraction and assessment of Risk of Bias using the Cochrane Risk of Bias Assessment Tool for non-Randomised Studies of Interventions (ACROBAT-NRSI). Only English language publications reporting findings in humans were included. The findings were summarised in narrative format.

Results

Thirteen observational studies (involving 417 shoulders) were included in the review. Eight studies reported magnetic resonance imaging or arthrography findings and 5 recorded histological findings. When reported mean ages of the participants ranged from 40.0 to 59.8 years. Duration of symptoms ranged from 0 to 30 months. The majority of studies ($n = 7$) were assessed to be of moderate risk of bias, two studies at high risk and the remaining four were rated as low risk of bias. Study characteristics were poorly reported and there was widespread variety observed between studies in respect of data collection methods and inclusion criteria employed. Pathological changes in the anterior shoulder joint capsule and related structures were commonly reported. Imaging identified pathological changes occurring in the coracohumeral ligament, axillary fold and rotator interval. Obliteration of the subcoracoid fat triangle also appeared to be pathognomonic. Histological studies were inconclusive but suggested that immune, inflammatory and fibrotic changes were associated with primary frozen shoulder.

Conclusions

This systematic review presents a summary of what is currently known about the tissue pathophysiology of primary frozen shoulder. Further studies that use standardised inclusion and exclusion criteria and investigate changes in naïve tissue at different stages of the condition are required.

26. CARPAL TUNNEL SYNDROME

Conservative care

Neurologia. 2016 Jul 22. pii: S0213-4853(16)30094-9. doi: 10.1016/j.nrl.2016.05.018.

Conservative treatment in patients with mild to moderate carpal tunnel syndrome: A systematic review.

Jiménez Del Barrio S¹, Bueno Gracia E², Hidalgo García C², Estébanez de Miguel E², Tricás Moreno JM², Rodríguez Marco S², Ceballos Laita L².

Author information

Abstract

BACKGROUND:

Carpal tunnel syndrome (CTS) is the most common peripheral neuropathy. It is characterised by the compression of the median nerve in the carpal tunnel. CTS presents a high prevalence and it is a disabling condition from the earliest stages. Severe cases are usually treated surgically, while conservative treatment is recommended in mild to moderate cases. The aim of this systematic review is to present the conservative treatments and determine their effectiveness in mild-to-moderate cases of CTS over the last 15 years.

METHODS:

A systematic review was performed according to PRISMA criteria. We used the Medline, PEDro, and Cochrane databases to find and select randomised controlled clinical trials evaluating the effects of conservative treatment on the symptoms and functional ability of patients with mild to moderate CTS; 32 clinical trials were included. There is evidence supporting the effectiveness of oral drugs, although injections appear to be more effective. Splinting has been shown to be effective, and it is also associated with use of other non-pharmacological techniques. Assessments of the use of electrotherapy techniques alone have shown no conclusive results about their effectiveness. Other soft tissue techniques have also shown good results but evidence on this topic is limited. Various treatment combinations (drug and non-pharmacological treatments) have been proposed without conclusive results.

CONCLUSIONS:

Several conservative treatments are able to relieve symptoms and improve functional ability of patients with mild-to-moderate CTS. These include splinting, oral drugs, injections, electrotherapy, specific manual techniques, and neural gliding exercises as well as different combinations of the above. We have been unable to describe the best technique or combination of techniques due to the limitations of the studies; therefore, further studies of better methodological quality are needed.

KEYWORDS: Carpal tunnel syndrome; Median neuropathy; Neuropatía del nervio mediano; Physiotherapy modalities; Resultados; Review; Revisión; Síndrome del túnel carpiano; Treatment outcomes; Técnicas de fisioterapia
PMID: [27461181](https://pubmed.ncbi.nlm.nih.gov/27461181/)

27. HIP**Hip anteversion and pelvic tilt**

Int Orthop. 2016 Aug;40(8):1571-5. doi: 10.1007/s00264-015-2949-6. Epub 2015 Aug 30.

Pelvic tilt compensates for increased acetabular anteversion.

Zahn RK¹, Grotjohann S², Ramm H³, Zachow S³, Putzier M², Perka C², Tohtz S⁴.

Author information

Abstract

PURPOSE:

Pelvic tilt determines functional orientation of the acetabulum. In this study, we investigated the interaction of pelvic tilt and functional acetabular anteversion (AA) in supine position.

METHODS:

Pelvic tilt and AA of 138 individuals were measured by computed tomography (CT). AA was calculated in relation to the anterior pelvic plane (APP) and relative to the table plane. We analysed these parameters for gender-specific and age-related differences.

RESULTS:

The mean pelvic tilt was $-0.1 \pm 5.5^\circ$. Pelvic sagittal rotation displayed no gender nor age related differences. Females showed higher angles of AA compared with males (20.0° vs 17.2° , $p < 0.001$; AA relative to the APP). Anterior tilting of the pelvis positively correlated with AA and individuals with high AA had a higher anterior pelvic tilt compared with those with low AA ($p < 0.0001$; AA relative to the APP).

CONCLUSIONS:

AA has to be calculated regarding pelvic sagittal rotation for correct acetabular orientation. Pelvic tilt is dependent on acetabular orientation and compensates for increased AA.

KEYWORDS: Acetabular anteversion; Acetabular orientation; Pelvic tilt; Spino-pelvic balance
PMID: [26318879](#)

Hip surgery evidence has improved

J Orthop Traumatol. 2016 Jul 21.

Hip surgery and its evidence base: progress over a decade?

Hasan K¹, Shankar S², Sharma A³, Carter A⁴, Zaidi R², Cro S⁵, Skinner J², Goldberg A².

Author information

Abstract

BACKGROUND:

The burden of traumatic and elective hip surgery is set to grow. With an increasing number of techniques and implants against the background of an aging population, the emphasis on evidence-based treatment has never been greater. The purpose of this study was to assess changes in the levels of evidence in the hip literature over a decade.

MATERIALS AND METHODS:

Articles pertaining to hip surgery from the years 2000 and 2010 in Hip International, Journal of Arthroplasty, Journal of Bone and Joint Surgery and The Bone and Joint Journal were analysed. Articles were ranked by a five-point level of evidence scale and by type of study, according to guidelines from the Centre for Evidence-based Medicine.

RESULTS:

531 articles were analysed from 48 countries. The kappa value for the inter-observer reliability showed excellent agreement between the reviewers for study type ($\kappa = 0.956$, $P < 0.01$) and for levels of evidence ($\kappa = 0.772$, $P < 0.01$). Between 2000 and 2010, the overall percentage of high-level evidence (levels I and II) studies more than doubled (12 to 31 %, $P < 0.001$). The most frequent study type was therapeutic; the USA and UK were the largest producers of published work in these journals, with contributions from other countries increasing markedly over the decade.

CONCLUSIONS:

There has been a significant increase in high levels of evidence in hip surgery over a decade ($P < 0.001$). We recommend that all orthopaedic journals consider implementing compulsory declaration by authors of the level of evidence to help enhance quality of evidence.

LEVEL OF EVIDENCE:

Level 2: economic and decision analysis.

KEYWORDS: Arthroplasty; Evidence-based medicine; Hip

29. OA

Strength improves function

Cross-sectional association between muscle strength and self-reported physical function in 195 hip osteoarthritis patients

Seminars in Arthritis and Rheumatism, 08/17/2016 Hall M, et al.

Taking in account the work done, it was signaled that greater isometric strength of specific hip and thigh muscle groups may be associated with better self-reported physical function in men and

women. In addition, in people with mild physical dysfunction, an estimate of MCII in physical function was associated with attainable increases in strength.

Methods

- Clinicians utilized cross-sectional data from 195 participants with symptomatic hip OA.
- They estimated the peak isometric torque of hip extensors, flexors, and abductors, and knee extensors, along with physical function using the Western Ontario and McMaster Universities Osteoarthritis Index questionnaire.
- Further to this, separate linear regressions in men and women were used to determine the association between strength and physical function accounting for age, pain and radiographic disease severity.
- According to severity of difficulty with physical function, magnitudes of strength associated with estimates of minimal clinically important improvement (MCII) in physical function were estimated.

Results

- Results accounted that for men, greater strength of the hip extensors, hip flexors and knee extensors was associated with better physical function.
- It was acknowledged that for women, greater muscle strength of all tested muscles was associated with better physical function.
- Further to this, for men and women, increases in muscle strength between 17–32%, 133–223%, and 150–284% may be associated with estimates of MCII in physical function for those with mild, moderate and severe physical dysfunction respectively.

30 A. IMPINGEMENT

Management of

Osteoarthritis Cartilage. 2016 Apr 20. pii: S1063-4584(16)30048-6. doi: 10.1016/j.joca.2016.04.014.

Management options for femoroacetabular impingement: a systematic review of symptom and structural outcomes.

Fairley J¹, Wang Y², Teichtahl AJ³, Seneviwickrama M⁴, Wluka AE⁵, Brady SR⁶, Hussain SM⁷, Liew S⁸, Cicuttini FM⁹.

Author information

Abstract

OBJECTIVE:

The optimal therapy for femoroacetabular impingement (FAI) is unclear. The aim of this systematic review was to examine the evidence for surgical and non-surgical treatment of FAI on symptom and structural outcomes.

DESIGN:

MEDLINE and EMBASE were searched electronically. Surgical and non-surgical management strategies were searched with "FAI". Studies which included comparison groups and reported symptom or structural outcomes were included (Levels I-III evidence). A risk of bias assessment was performed.

RESULTS:

Eighteen studies comparing management strategies for FAI were identified. Most studies had high risk of bias. No study compared surgical and non-surgical treatment. When surgical approaches were compared there was evidence of superior symptom outcomes with arthroscopy compared to open surgery and with labral preservation. There was some evidence that surgical interventions are effective in reducing alpha angle (improved hip shape), but no data on whether this affects long-term outcomes. There was some weak evidence that surgery is associated with structural progression of hip osteoarthritis (OA).

CONCLUSIONS:

Although evidence supports improvement in symptoms after surgery in FAI, no studies have compared surgical and non-surgical treatment. Therefore no conclusion regarding the relative efficacy of one approach over the other can be made. Surgery improves alpha angle but whether this alters the risk of development or progression of hip OA is unknown. This review highlights the lack of evidence for use of surgery in FAI. Given that hip geometry may be modified by non-surgical factors, clarifying the role of non-surgical approaches vs surgery for the management of FAI is warranted.

KEYWORDS: Arthroscopy; Conservative; Femoroacetabular impingement; Hip; Osteoarthritis; Surgery

PMID: [27107630](https://pubmed.ncbi.nlm.nih.gov/27107630/)

32 A. KNEE/ACL

Help for Kinesiophobia

Knee. 2016 Jul 23. pii: S0968-0160(16)30053-9. doi: 10.1016/j.knee.2016.05.008.

External supports improve knee performance in anterior cruciate ligament reconstructed individuals with higher kinesiophobia levels.

Harput G¹, Ulusoy B², Ozer H³, Baltaci G⁴, Richards J⁵.
Author information

Abstract

BACKGROUND:

The objectives of this study were to investigate the effects of knee brace (KB) and kinesiotaping (KT) on functional performance and self-reported function in individuals six months post-ACLR who desired to return to their pre-injury activity levels but felt unable to do so due to kinesiophobia.

METHODS:

This was a cross-sectional study involving 30 individuals six months post-ACLR with Tampa Kinesiophobia Scores >37. Individuals were tested under three conditions: no intervention, KB and KT in a randomized order. Isokinetic concentric quadriceps and hamstring strength tests, one leg hop test, star excursion balance test and global rating scale were assessed under the three conditions.

RESULTS:

The involved side showed that KT and KB significantly increased the hop distance (P=0.01, P=0.04) and improved balance (P=0.01, P=0.04), respectively, but only KB was found to increase the quadriceps and hamstring peak torques compared to no intervention (P<0.05). Individuals reported having better knee function with KB when compared to no intervention (P<0.001) and KT (P=0.03).

CONCLUSIONS:

Both KB and KT have positive effects in individuals post-ACLR which may assist in reducing kinesiophobia when returning to their pre-injury activity levels, with the KB appearing to offer the participants better knee function compared to KT.

KEYWORDS: ACL; Brace; Kinesiophobia; Kinesiotaping
PMID: [27460554](#)

33. MENISCUS

Types of tears and amount of DJD

The relationship between meniscal pathology and osteoarthritis depends on the type of meniscal damage visible on magnetic resonance images: data from the Osteoarthritis Initiative

Dr. Benny Antony Jeffrey B. Driban Lori Lyn Price Grace H. Lo Robert J. Ward
 Michael Nevitt John Lynch Charles B. Eaton Changhai Ding
 Timothy E. McAlindon

Summary

Objective

To determine the association of different types of meniscal pathology with common measures of osteoarthritis severity and progression: knee pain, bone marrow lesion (BML) volume, and end-stage knee osteoarthritis (esKOA).

Design

Participants were selected from an ancillary project to the Osteoarthritis Initiative (OAI) who had at least one knee with symptomatic osteoarthritis. Baseline magnetic resonance images (MRI) were evaluated for meniscal pathology using a modified International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine (ISAKOS) classification system. We collapsed 10 types of meniscal pathology into 5 categories: normal, intrameniscal signal, morphological deformity/extrusion (altered meniscal shape and/or extrusion but no apparent substance loss), tear, and maceration. Outcomes included WOMAC knee pain and BML volume at baseline and after 2-years. We defined the prevalence of esKOA based on a validated algorithm. We performed logistic regression and adjusted for age, sex, and body mass index (BMI).

Results

The 463 participants (53% male) included in the analysis had mean age 63 (9.2) years, BMI 29.6 (4.6) kg/m², and 71% had Kellgren-Lawrence grade ≥ 2 . Morphological deformity/extrusion and maceration, but no other types of meniscal pathology, were associated with BML volume (morphological deformity/extrusion odds ratio [OR]=2.47,95%CI:1.49,4.09, maceration OR=5.85,95%CI:3.40,10.06) and change in BML volume (morphological deformity/extrusion OR=2.17,95%CI:1.37,3.45, maceration OR=3.12,95%CI:1.87,5.19). Only maceration was associated with baseline WOMAC knee pain (OR=2.82,95%CI:1.79,4.43) and prevalence of esKOA (OR=7.53,95%CI:4.25,13.31).

Conclusions

Based on MRI, morphologic deformity/extrusion and maceration rather than intrameniscal signal or tear were associated with osteoarthritis severity and progression, which highlights the importance of differentiating distinct types of meniscal pathology.

34. PATELLA

PF pain and posture

Knee. 2016 Aug;23(4):616-21. doi: 10.1016/j.knee.2016.04.013. Epub 2016 May 16.

Dynamic postural stability and muscle strength in patellofemoral pain: Is there a correlation?

de Moura Campos Carvalho-E-Silva AP¹, Peixoto Leão Almeida G², Oliveira Magalhães M³, Renovato França FJ³, Vidal Ramos LA⁴, Comachio J³, Pasqual Marques A³.

Author information

Abstract

BACKGROUND:

Although females with patellofemoral pain (PFP) show a decrease in hip and knee muscle strength, there is a lack of studies that associates this with postural stability. The purpose of this study was to assess the dynamic postural stability and muscle strength in the hips and knees of females with and without PFP, and to verify the association between the postural stability and the muscle strength in the PFP group.

METHODS:

Two groups were tested: one with 25 PFP and one with 25 asymptomatic. Postural stability was evaluated during stepping up down tasks using a force platform to determine the center of pressure (COP) excursion and velocity. A handheld dynamometer was used to assess the muscles strength. The correlation analysis was conducted between the COP variables and the muscle strength.

RESULTS:

The PFP group demonstrated greater total and medial-lateral COP displacement (8887.7±761.7 vs. 8129.4±691.9mm, P<0.001; 32.3±5.5 vs. 21.7±2.7mm, P<0.001) and a higher total of medial-lateral COP velocity (22.2±5.2 vs. 17.0±1.6 P=0.001). The PFP group showed weaknesses in all muscles (P<0.05), and there was a good positive correlation between the anterior-posterior displacement and the velocity of the extensor hip muscle (r=0.52, P<0.01; r=0.55, P<0.001).

CONCLUSIONS:

Subjects with PFP have frontal dynamic postural stability deficit and show an association between hip extensor and sagittal plane stability.

KEYWORDS: Hip; Knee; Postural balance; Strength

PMID: [27198758](#)

OA of patella and strength

Osteoarthritis Cartilage. 2016 Jul 25. pii: S1063-4584(16)30180-7. doi: 10.1016/j.joca.2016.07.004.

Role of thigh muscle cross-sectional area and strength in progression of knee cartilage degeneration over 48 months - data from the Osteoarthritis Initiative.

Goldman LH¹, Tang K², Facchetti L³, Heilmeier U⁴, Joseph GB⁵, Nevitt MC⁶, McCulloch CE⁷, Souza RB⁸, Link TM⁹.

Author information

Abstract

OBJECTIVE:

To determine in a 48-month longitudinal study the association of thigh muscle cross-sectional area (CSA) and strength on progression of morphologic knee cartilage degeneration using 3T magnetic resonance imaging (MRI).

DESIGN:

Seventy Osteoarthritis Initiative (OAI) subjects aged 50-60 years, with no radiographic evidence of osteoarthritis (OA) and constant muscle strength over 48 months as measured by isometric knee extension testing were included. Baseline right thigh muscle CSAs were assessed on axial T1-weighted magnetic resonance (MR) images, and extensor to flexor CSA ratios were calculated. Degenerative knee abnormalities at baseline and 48-months were graded on right knee 3T MRIs using a modified whole organ MRI score (WORMS). Statistical analysis employed Student's t-tests and multivariable regression models adjusted for age, body mass index and gender.

RESULTS:

Extension strength was significantly and positively correlated with baseline thigh muscle CSA ($r = 0.65$, $P < 0.001$). Greater baseline total thigh muscle CSA was significantly associated with increase of cartilage WORMS scores over 48 months in patellar ($P = 0.027$) and trochlear ($P = 0.038$) compartments, but not in other knee compartments. Among specific muscle groups, CSA of extensors ($P = 0.021$) and vastus medialis (VM) ($P = 0.047$) were associated with patellar cartilage increase in WORMS. Baseline E/F ratio had a significant positive association with patellar WORMS cartilage score increase over 48 months, $P = 0.0015$. There were no other significant associations between muscle CSA/ratios and increase in WORMS scores.

CONCLUSION:

Maintenance of proper extensor to flexor muscle balance about the knee through decreased E/F ratios may slow patellofemoral cartilage deterioration, while higher extensor and VM CSA may increase patellofemoral cartilage loss.

KEYWORDS: Cartilage; Extension strength; Knee; MR imaging; Muscle cross-sectional area; Osteoarthritis

PMID: [27457100](#)

35. KNEE/TOTAL

Factors in women

Osteoarthritis Cartilage. 2016 Aug;24(8):1350-6. doi: 10.1016/j.joca.2016.04.001. Epub 2016 Apr 9.

Muscle strength, physical performance and physical activity as predictors of future knee replacement: a prospective cohort study.

Skou ST¹, Wise BL², Lewis CE³, Felson D⁴, Nevitt M⁵, Segal NA⁶; Multicenter Osteoarthritis Study Group.

Author information

Abstract

OBJECTIVE:

To investigate associations between lower levels of muscle strength, physical performance and physical activity and the risk of knee replacement (KR) in older adults with frequent knee pain.

METHOD:

Participants from the Multicenter Osteoarthritis Study (MOST) with knee pain on most of the past 30 days at baseline were included (n = 1257; mean (SD) age of 62.2 (8.2)). We examined the association between (1) baseline peak isokinetic knee extensor strength, (60°/sec, maximum out of four trials), (2) best time to stand in timed chair stand (2 trials of five repetitions), and (3) baseline Physical Activity Scale for the Elderly score (PASE) with incident KR between baseline and the 84-month follow-up.

RESULTS:

1252 (99.6%) participants (1682 knees) completed the follow-up visits. 331 participants (394 knees) underwent a KR during the 84 months (229 women and 102 men). The crude analysis demonstrated a decreased risk of KR in women (P < 0.0001) with higher knee extensor strength (Hazard Ratio (HR; 95% CI) 0.99 (0.98-0.99)). The risk remained significant (P = 0.03) when adjusting for age, BMI, race, clinic site, education, occupation, previous knee injury, previous knee surgery, and WOMAC pain (HR (95% CI) 0.99 (0.99-1.00)), but not when adjusting for Kellgren-Lawrence grade (P = 0.97).

CONCLUSION:

Lower levels of chair stand performance and self-reported physical activity are not associated with an increased risk of KR within 7 years, while the independent effect of knee extensor strength on risk for KR in women is non-significant after adjusting for radiographic severity.

KEYWORDS: Arthroplasty, Replacement; Knee; Motor activity; Muscle strength; Osteoarthritis; Prognosis

PMID: [27066879](#)

37. OSTEOARTHRITIS/KNEE

Central sensitization

Phys Ther. 2016 Aug;96(8):1196-207. doi: 10.2522/ptj.20150492. Epub 2016 Mar 3.

Expanded Distribution of Pain as a Sign of Central Sensitization in Individuals With Symptomatic Knee Osteoarthritis.

Lluch Girbés E¹, Dueñas L², Barbero M³, Falla D⁴, Baert IA⁵, Meeus M⁶, Sánchez-Frutos J⁷, Aguilera L⁸, Nijs J⁹.

Author information

Abstract

BACKGROUND:

Expanded distribution of pain is considered a sign of central sensitization (CS). The relationship between recording of symptoms and CS in people with knee osteoarthritis (OA) has been poorly investigated.

OBJECTIVE:

The aim of this study was to examine whether the area of pain assessed using pain drawings relates to CS and clinical symptoms in people with knee OA.

DESIGN:

This was a cross-sectional study.

METHODS:

Fifty-three people with knee OA scheduled to undergo primary total knee arthroplasty were studied. All participants completed pain drawings using a novel digital device, completed self-administration questionnaires, and were assessed by quantitative sensory testing. Pain frequency maps were generated separately for women and men. Spearman correlation coefficients were computed to reveal possible correlations between the area of pain and quantitative sensory testing and clinical symptoms.

RESULTS:

Pain frequency maps revealed enlarged areas of pain, especially in women. Enlarged areas of pain were associated with higher knee pain severity ($rs=.325$, $P<.05$) and stiffness ($rs=.341$, $P<.05$), lower pressure pain thresholds at the knee ($rs=-.306$, $P<.05$) and epicondyle ($rs=-.308$, $P<.05$), and higher scores with the Central Sensitization Inventory ($rs=.456$, $P<.01$). No significant associations were observed between the area of pain and the remaining clinical symptoms and measures of CS.

LIMITATIONS:

Firm conclusions about the predictive role of pain drawings cannot be drawn. Further evaluation of the reliability and validity of pain area extracted from pain drawings in people with knee OA is needed.

CONCLUSION:

Expanded distribution of pain was correlated with some measures of CS in individuals with knee OA. Pain drawings may constitute an easy way for the early identification of CS in people with knee OA, but further research is needed.

PMID: [26939604](#)

Cupping for knee OA

J Adv Pharm Technol Res. 2013 Oct-Dec; 4(4): 217–223.

doi: 10.4103/2231-4040.121417

PMCID: PMC3853699

Management of knee osteoarthritis with cupping therapy

Asim Ali Khan, Umar Jahangir, and Shaista Urooj¹

The study aimed to evaluate the effect of cupping therapy at a clinical setting for knee osteoarthritis. A randomized, controlled clinical trial was conducted. Cupping was performed on 0-6th day; 9-11th day and 14th day, i.e., 11 sittings follow-up to determine longer term carryover of treatment effects utilizing both objective and subjective assessment. The assessment was performed before and after treatment spreading over a period of 15 days. The results of this study shows significant and better results in the overall management of knee osteoarthritis, particularly in relieving pain, edema, stiffness and disability. The efficacy of treatment with cupping therapy in relieving signs and symptoms of knee osteoarthritis is comparable to that of acetaminophen 650 mg thrice a day orally, in terms of analgesia, anti-inflammatory and resolution of edema with minimal and temporary side-effects like echymosis and blister formation while as control drug has greater side-effects particularly on upper gastrointestinal tract. It is recommended that further studies are conducted with a larger study samples and of longer duration.

Keywords: Cupping therapy, knee osteoarthritis, regimenal therapy

41 A. ACHILLES TENDON AND CALF

Central pain processing

Br J Sports Med. 2016 Aug;50(16):1004-7. doi: 10.1136/bjsports-2015-095476. Epub 2015 Dec 23.

Central pain processing is altered in people with Achilles tendinopathy.

Tompra N¹, van Dieën JH¹, Coppieters MW².
Author information

Abstract

BACKGROUND:

Tendinopathy is often a chronic condition. The mechanisms behind persistent tendon pain are not yet fully understood. It is unknown whether, similar to other persistent pain states, central pain mechanisms contribute to ongoing tendon pain.

AIM:

We investigated the presence of altered central pain processing in Achilles tendinopathy by assessing the conditioned pain modulation (CPM) effect in people with and without Achilles tendinopathy.

METHODS:

20 people with Achilles tendinopathy and 23 healthy volunteers participated in this cross-sectional study. CPM was assessed by the cold pressor test. The pressure pain threshold (PPT) was recorded over the Achilles tendon before and during immersion of the participant's hand into cold water. The CPM effect was quantified as the absolute difference in PPT before and during the cold pressor test.

RESULTS:

An increase in PPT was observed in the Achilles tendinopathy and control group during the cold pressor test ($p < 0.001$). However, the CPM effect was stronger in the control group (mean difference = 160.5 kPa, SD = 84.9 kPa) compared to the Achilles tendinopathy group (mean difference = 36.4 kPa, SD = 68.1 kPa; $p < 0.001$).

SUMMARY:

We report a reduced conditioned pain modulation effect in people with Achilles tendinopathy compared to people without Achilles tendinopathy. A reduced conditioned pain modulation effect reflects altered central pain processing which is believed to contribute to the persistence of pain in other conditions. Altered central pain processing may also be an important factor in persistent tendon pain that has traditionally been regarded to be dominated by peripheral mechanisms.

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KEYWORDS: Achilles tendon; Assessment; Tendinopathy
PMID: 26701922

45 D. MANUAL THERAPY EXTREMITIES

Ankle mobilization

J Orthop Sports Phys Ther. 2012 Feb;42(2):125-34. doi: 10.2519/jospt.2012.3729. Epub 2012 Feb 1.

Effects of a proximal or distal tibiofibular joint manipulation on ankle range of motion and functional outcomes in individuals with chronic ankle instability.

Beazell JR¹, Grindstaff TL, Sauer LD, Magrum EM, Ingersoll CD, Hertel J.
Author information

Abstract

STUDY DESIGN:

Randomized clinical trial.

OBJECTIVES:

To determine whether manipulation of the proximal or distal tibiofibular joint would change ankle dorsiflexion range of motion and functional outcomes over a 3-week period in individuals with chronic ankle instability.

BACKGROUND:

Altered joint arthrokinematics may play a role in chronic ankle instability dysfunction. Joint mobilization or manipulation may offer the ability to restore normal joint arthrokinematics and improve function.

METHODS:

Forty-three participants (mean \pm SD age, 25.6 \pm 7.6 years; height, 174.3 \pm 10.2 cm; mass, 74.6 \pm 16.7 kg) with chronic ankle instability were randomized to proximal tibiofibular joint manipulation, distal tibiofibular joint manipulation, or a control group. Outcome measures included ankle dorsiflexion range of motion, the single-limb stance on foam component of the Balance Error Scoring System, the step-down test, and the Foot and Ankle Ability Measure sports subscale. Measurements were obtained prior to the intervention (before day 1) and following the intervention (on days 1, 7, 14, and 21).

RESULTS:

There was no significant change in dorsiflexion between groups across time. When groups were pooled, there was a significant increase ($P < .001$) in dorsiflexion at each postintervention time interval. No differences were found among the Balance Error Scoring System foam, step-down test, and Foot and Ankle Ability Measure sports subscale scores.

CONCLUSIONS:

The use of a proximal or distal tibiofibular joint manipulation in isolation did not enhance outcome effects beyond those of the control group. Collectively, all groups demonstrated increases in ankle dorsiflexion range of motion over the 3-week intervention period. These increases might have been due to practice effects associated with repeated testing.

LEVEL OF EVIDENCE: Therapy, level 2b-

Shoulder adding mobilization to ex effective

Clin Rehabil. 2016 Aug;30(8):786-94. doi: 10.1177/0269215515597294. Epub 2015 Jul 30.

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

Çelik D¹, Kaya Mutlu E².
Author information

Abstract

OBJECTIVE:

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

DESIGN:

A randomized controlled clinical pilot trial.

SETTING:

Department of Orthopedics and Traumatology.

SUBJECTS:

Thirty patients with frozen shoulder.

INTERVENTION:

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

MAIN MEASURES:

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

RESULTS:

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

CONCLUSION:

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

KEYWORDS: Adhesive capsulitis; exercise; manual therapy; shoulder function; shoulder pain
PMID: [26229109](#)

Knee OA

Osteoarthritis Cartilage. 2016 Aug;24(8):1340-9. doi: 10.1016/j.joca.2016.03.001. Epub 2016 Mar 10.

Exercise, manual therapy, and use of booster sessions in physical therapy for knee osteoarthritis: a multi-center, factorial randomized clinical trial.

Fitzgerald GK¹, Fritz JM², Childs JD³, Brennan GP⁴, Talisa V⁵, Gil AB⁶, Neilson BD⁷, Abbott JH⁸.

Author information

Abstract

OBJECTIVE:

(1) Do treatment effects differ between participants receiving manual therapy (MT) with exercise compared to subjects who don't, (2) are treatment effects sustained better when participants receive booster sessions compared to those who don't over a one year period in subjects with knee osteoarthritis (KOA)?

DESIGN:

Multi-center, 2 × 2 factorial randomized clinical trial. 300 participants with knee OA were randomized to four groups: exercise-no boosters (Ex), exercise-with boosters (Ex+B), manual therapy+exercise-no boosters (MT+Ex), manual therapy+exercise-with boosters (MT+Ex+B). The primary outcome was the Western Ontario and McMaster osteoarthritis index (WOMAC) at 1 year. Secondary outcomes included knee pain, physical performance tests, and proportions of participants meeting treatment responder criteria.

RESULTS:

There were no differences between groups on the WOMAC at 1 year or on any performance-based measures. Secondary analyses indicated a) better scores on the WOMAC and greater odds of being a treatment responder at 9 weeks for participants receiving MT, b) greater odds of being a treatment responder at 1 year for participants receiving boosters. Exploratory interaction analysis suggested knee pain decreases for participants receiving boosters and increases for participants not receiving boosters from 9 weeks to 1 year.

CONCLUSIONS:

MT or use of boosters with exercise did not result in additive improvement in the primary outcome at 1 year. Secondary outcomes suggest MT may have some short term benefit, and booster sessions may improve responder status and knee pain at 1 year. However, the role of booster sessions remains unclear in sustaining treatment effects and warrants further study.

CLINICAL TRIALS: gov ([NCT01314183](https://clinicaltrials.gov/ct2/show/study/NCT01314183)).

KEYWORDS: Booster sessions; Exercise; Knee; Manual therapy; Osteoarthritis; Physical therapy

PMID: [26973326](https://pubmed.ncbi.nlm.nih.gov/26973326/)

48 A. STM**Deep fascia of LE connected to neck**

BMC Sports Sci Med Rehabil. 2016 Jul 11;8:18. doi: 10.1186/s13102-016-0043-z. eCollection 2016.

Ultrasound assessment of fascial connectivity in the lower limb during maximal cervical flexion: technical aspects and practical application of automatic tracking.

Cruz-Montecinos C¹, Cerda M², Sanzana-Cuche R³, Martín-Martín J⁴, Cuesta-Vargas A⁵.
Author information

Abstract

BACKGROUND:

The fascia provides and transmits forces for connective tissues, thereby regulating human posture and movement. One way to assess the myofascial interaction is a fascia ultrasound recording. Ultrasound can follow fascial displacement either manually or automatically through two-dimensional (2D) method. One possible method is the iterated Lucas-Kanade Pyramid (LKP) algorithm, which is based on automatic pixel tracking during passive movements in 2D fascial displacement assessments. Until now, the accumulated error over time has not been considered, even though it could be crucial for detecting fascial displacement in low amplitude movements. The aim of this study was to assess displacement of the medial gastrocnemius fascia during cervical spine flexion in a kyphotic posture with the knees extended and ankles at 90°.

METHODS:

The ultrasound transducer was placed on the extreme dominant belly of the medial gastrocnemius. Displacement was calculated from nine automatically selected tracking points. To determine cervical flexion, an established 2D marker protocol was implemented. Offline pressure sensors were used to synchronize the 2D kinematic data from cervical flexion and deep fascia displacement of the medial gastrocnemius.

RESULTS:

Fifteen participants performed the cervical flexion task. The basal tracking error was 0.0211 mm. In 66 % of the subjects, a proximal fascial tissue displacement of the fascia above the basal error (0.076 mm ± 0.006 mm) was measured. Fascia displacement onset during cervical spine flexion was detected over 70 % of the cycle; however, only when detected for more than 80 % of the cycle was displacement considered statistically significant as compared to the first 10 % of the cycle (ANOVA, $p < 0.05$).

CONCLUSION:

By using an automated tracking method, the present analyses suggest statistically significant displacement of deep fascia. Further studies are needed to corroborate and fully understand the mechanisms associated with these results.

KEYWORDS: Connective tissue; Fascia; Myofascial; Rehabilitation; Tracking motion
PMID: [27403319](https://pubmed.ncbi.nlm.nih.gov/27403319/)

Cupping for knee OA

J Adv Pharm Technol Res. 2013 Oct-Dec; 4(4): 217–223.

doi: 10.4103/2231-4040.121417

PMCID: PMC3853699

Management of knee osteoarthritis with cupping therapy

Asim Ali Khan, Umar Jahangir, and Shaista Urooj¹

The study aimed to evaluate the effect of cupping therapy at a clinical setting for knee osteoarthritis. A randomized, controlled clinical trial was conducted. Cupping was performed on 0-6th day; 9-11th day and 14th day, i.e., 11 sittings follow-up to determine longer term carryover of treatment effects utilizing both objective and subjective assessment. The assessment was performed before and after treatment spreading over a period of 15 days. The results of this study shows significant and better results in the overall management of knee osteoarthritis, particularly in relieving pain, edema, stiffness and disability. The efficacy of treatment with cupping therapy in relieving signs and symptoms of knee osteoarthritis is comparable to that of acetaminophen 650 mg thrice a day orally, in terms of analgesia, anti-inflammatory and resolution of edema with minimal and temporary side-effects like echymosis and blister formation while as control drug has greater side-effects particularly on upper gastrointestinal tract. It is recommended that further studies are conducted with a larger study samples and of longer duration.

Keywords: Cupping therapy, knee osteoarthritis, regimenal therapy

48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE**TP's and HA**

Clin J Pain. 2016 Aug;32(8):711-8. doi: 10.1097/AJP.0000000000000318.

Muscle Triggers as a Possible Source of Pain in a Subgroup of Tension-type Headache Patients?

Arendt-Nielsen L¹, Castaldo M, Mechelli F, Fernández-de-Las-Peñas C.
Author information

Abstract

OBJECTIVES:

Tension-type headache (TTH) is a common condition but the underlying etiology is not understood. Episodic TTH may develop into chronic TTH, and some possible triggers may be involved in generation and maintenance. Nociceptive generators and hyperexcitable spots in neck and shoulder regions may to some degree contribute to TTH. The current paper highlights some of the possible triggers and associated pain mechanisms involved in TTH and discusses whether inhibition of these possible triggers may provide new treatment options.

RESULTS:

This paper presents possible pathophysiological factors in TTH, the role of muscle pain, and how referred pain from triggers can contribute to development, maintenance of sensitization, or both. Referred pain patterns from trigger points and associated muscle hyperalgesia seem to be clinically important factors. Damping the nociceptive peripheral drive may not only reduce the number of TTH attacks but may also prevent, delay the transition from episodic into more chronic TTH, or both. The role of muscle triggers in driving TTH is debated as the pathogenesis of such triggers is not fully understood. Furthermore, inhibiting the drive from the triggers does not consistently modulate TTH.

DISCUSSION:

Understanding the possible triggers in TTH, muscle hyperalgesia, and widespread pain sensitization, may help to develop better management regimes and possibly prevent TTH from developing into more chronic conditions. Currently, there is a striking difference between the clinical observational studies favoring the role of muscle triggers in TTH and the intervention studies generally not supporting the role of muscle triggers in TTH.

PMID: [26550960](#)

49. STRETCHING

Contract relax

J Strength Cond Res. 2016 Aug;30(8):2271-8. doi: 10.1097/JSC.0000000000000215.

Acute Effects of Contract-Relax Stretching vs. TENS in Young Subjects With Anterior Knee Pain: A Randomized Controlled Trial.

Valenza MC¹, Torres-Sánchez I, Cabrera-Martos I, Valenza-Demet G, Cano-Cappellacci M.
Author information

Abstract

Valenza, MC, Torres-Sánchez, I, Cabrera-Martos, I, Valenza-Demet, G, and Cano-Cappellacci, M. Acute effects of contract-relax stretching vs. TENS in young subjects with anterior knee pain: A randomized controlled trial. *J Strength Cond Res* 30(8): 2271-2278, 2016-The aim of this study was to examine the immediate effects on pressure point tenderness, range of motion (ROM), and vertical jump (VJ) of contract-relax stretching vs. transcutaneous electrical nerve stimulation (TENS) therapy in individuals with anterior knee pain (AKP). Eighty-four subjects with AKP were randomly assigned to 1 of 3 different intervention groups: a contract-relax stretching group (n = 28), a TENS intervention group (n = 28), and a control group (n = 28). The participants included in the sample were both sex (37.5% men vs. 62.5% women) at a mean age of 21 years, with mean values of height and weight of 169 cm and 64 kg, respectively. The main outcome measures were knee ROM, pressure pain threshold (PPT), and VJ. The participants were assessed at baseline and immediately after treatment. In the case of VJ, at baseline, immediately after the intervention, at 3 and at 6 minutes posttreatment. The data analysis showed that PPT scores of participants in the stretching and TENS group significantly increased from pretest to posttest ($p \leq 0.05$). A significant increase pre- to posttreatment in ROM ($p < 0.001$) was also observed in both treatment groups. In VJ measures, TENS and stretching groups showed significant differences between preintervention and all postintervention values ($p \leq 0.05$), whereas no significant differences were found in the control group. In conclusion, the results show significant pre-to-post-treatment effects in PPT, ROM, and VJ from both contract-relax stretching and TENS in young subjects with AKP.

PMID: [27457916](#)

Passive stretching helps

Physiother Theory Pract. 2016 Jul 26:1-8.

Influence of static stretching on hamstring flexibility in healthy young adults: Systematic review and meta-analysis.

Medeiros DM¹, Cini A¹, Sbruzzi G¹, Lima CS¹.
Author information

Abstract

The aim of the current study was to investigate the influence of static stretching on hamstring flexibility in healthy young adults by means of systematic review and meta-analysis. The search strategy included MEDLINE, PEDro, Cochrane CENTRAL, EMBASE, LILACS, and manual search from inception to June 2015. Randomized and controlled clinical trials studies that have compared static stretching to control group, and evaluated range of motion (ROM), were included. On the other hand, studies that have worked with special population such as children, elderly people, athletes, and people with any dysfunction/disease were excluded, as well as articles that have used contralateral leg as control group or have not performed static stretching. The meta-analysis was divided according to three types of tests. Nineteen studies were included out of the 813 articles identified. In all tests, the results favored static stretching compared to control group: passive straight leg raise (12.04; 95% CI: 9.61 to 14.47), passive knee extension test (8.58; 95% CI: 6.31 to 10.84), and active knee extension test (8.35; 95% CI: 5.15 to 11.55). In conclusion, static stretching was effective in increasing hamstring flexibility in healthy young adults.

KEYWORDS: Hamstring; range of motion; systematic review
PMID: [27458757](https://pubmed.ncbi.nlm.nih.gov/27458757/)

50 A. MOTOR CONTROL**Motor control ex for LBP minimally effective**

Spine (Phila Pa 1976). 2016 Aug 15;41(16):1284-1295.

Motor Control Exercise for Nonspecific Low Back Pain: A Cochrane Review.

Saragiotto BT¹, Maher CG, Yamato TP, Costa LO, Costa LC, Ostelo RW, Macedo LG.
Author information

Abstract

STUDY DESIGN: A systematic review.

OBJECTIVE: The aim of this review was to evaluate the effectiveness of motor control exercise (MCE) in patients with nonspecific low back pain (LBP).

SUMMARY OF BACKGROUND DATA: MCE is a common form of exercise used for managing LBP. MCE focuses on the activation of the deep trunk muscles and targets the restoration of control and coordination of these muscles, progressing to more complex and functional tasks integrating the activation of deep and global trunk muscles.

METHODS: We conducted electronic searches of CENTRAL, MEDLINE, EMBASE, five other databases, and two trials registers from their inception up to April 2015. Two independent review authors screened the search results, assessed risk of bias, and extracted the data. A third reviewer resolved any disagreement. We included randomized controlled trials comparing MCE with no treatment, another treatment, or as a supplement to other interventions in patients with nonspecific LBP. Primary outcomes were pain intensity and disability. We assessed risk of bias using the Cochrane Back and Neck (CBN) Review Group 12-item criteria. We combined results in a meta-analysis expressed as mean difference and 95% confidence interval. We assessed the overall quality of the evidence using the GRADE approach.

RESULTS: We included 32 trials (n=2628). Most included trials had a low risk of bias. For acute LBP, low to moderate quality evidence indicates no clinically important differences between MCE and spinal manipulative therapy or other forms of exercise. There is very low-quality evidence that the addition of MCE to medical management does not provide clinically important improvements. For recurrence at one year, there is very low-quality evidence that MCE and medical management decrease the risk of recurrence. For chronic LBP, there is low to moderate quality evidence that MCE is effective for reducing pain compared with minimal intervention. There is low to high-quality evidence that MCE is not clinically more effective than other exercises or manual therapy. There is very low to low quality evidence that MCE is clinically more effective than exercise and electrophysical agents (EPAs) or telerehabilitation for pain and disability.

CONCLUSION: MCE is probably more effective than a minimal intervention for reducing pain, but probably does not have an important effect on disability, in patients with chronic LBP. There was no clinically important difference between MCE and other forms of exercises or manual therapy for acute and chronic LBP.

50 B. PNF

Contract relax

J Strength Cond Res. 2016 Aug;30(8):2271-8. doi: 10.1097/JSC.0000000000000215.

Acute Effects of Contract-Relax Stretching vs. TENS in Young Subjects With Anterior Knee Pain: A Randomized Controlled Trial.

Valenza MC¹, Torres-Sánchez I, Cabrera-Martos I, Valenza-Demet G, Cano-Cappellacci M.
Author information

Abstract

Valenza, MC, Torres-Sánchez, I, Cabrera-Martos, I, Valenza-Demet, G, and Cano-Cappellacci, M. Acute effects of contract-relax stretching vs. TENS in young subjects with anterior knee pain: A randomized controlled trial. J Strength Cond Res 30(8): 2271-2278, 2016-The aim of this study was to examine the immediate effects on pressure point tenderness, range of motion (ROM), and vertical jump (VJ) of contract-relax stretching vs. transcutaneous electrical nerve stimulation (TENS) therapy in individuals with anterior knee pain (AKP). Eighty-four subjects with AKP were randomly assigned to 1 of 3 different intervention groups: a contract-relax stretching group (n = 28), a TENS intervention group (n = 28), and a control group (n = 28). The participants included in the sample were both sex (37.5% men vs. 62.5% women) at a mean age of 21 years, with mean values of height and weight of 169 cm and 64 kg, respectively. The main outcome measures were knee ROM, pressure pain threshold (PPT), and VJ. The participants were assessed at baseline and immediately after treatment. In the case of VJ, at baseline, immediately after the intervention, at 3 and at 6 minutes posttreatment. The data analysis showed that PPT scores of participants in the stretching and TENS group significantly increased from pretest to posttest ($p \leq 0.05$). A significant increase pre- to posttreatment in ROM ($p < 0.001$) was also observed in both treatment groups. In VJ measures, TENS and stretching groups showed significant differences between preintervention and all postintervention values ($p \leq 0.05$), whereas no significant differences were found in the control group. In conclusion, the results show significant pre-to-post-treatment effects in PPT, ROM, and VJ from both contract-relax stretching and TENS in young subjects with AKP.

PMID: [27457916](#)

54. POSTURE**Posture and facet pathology****Correlations between the feature of sagittal spinopelvic alignment and facet joint degeneration: a retrospective study***BMC Musculoskeletal Disorders* BMC DOI: 10.1186/s12891-016-1193-6**Published:** 15 August 2016

Sagittal spinopelvic alignment changes associated with degenerative facet joint arthritis have been assessed in a few studies. It has been documented that patients with facet joint degeneration have higher pelvic incidence, but the relationship between facet joint degeneration and other sagittal spinopelvic alignment parameters is still disputed. Our purpose was to evaluate the correlation between the features of sagittal spinopelvic alignment and facet joint degeneration.

Methods

Imaging data of 140 individuals were retrospectively analysed. Lumbar lordosis, pelvic tilt (PT), pelvic incidence (PI), sacral slope, and height of the lumbar intervertebral disc were measured on lumbar X-ray plates. Grades of facet joint degeneration were evaluated from the L2 to S1 on CT scans. Spearman's rank correlation coefficient and Student's t-test were used for statistical analyses, and a P -value <0.05 was considered statistically significant.

Results

PI was positively associated with degeneration of the facet joint at lower lumbar levels ($p < 0.001$ $r = 0.50$ at L5/S1 and $P = 0.002$ $r = 0.25$ at L4/5). A significant increase of PT was found in the severe degeneration group compared with the mild degeneration group: 22.0° vs 15.7° , $P = 0.034$ at L2/3; 21.4° vs 15.1° , $P = 0.006$ at L3/4; 21.0° vs 13.5° , $P = 0.000$ at L4/5; 20.8° vs 12.1° , $P = 0.000$ at L5/S1.

Conclusion

Our results indicate that a high PI is a predisposing factor for facet joint degeneration at the lower lumbar spine, and that severe facet joint degeneration may accompany with greater PT at lumbar spine.

Keywords

Pelvic incidence Facet joint degeneration Lumbar lordosis Sagittal spinopelvic balance

56. ATHLETICS**Hamstring tears**

Am J Sports Med. 2016 Aug;44(8):2112-21. doi: 10.1177/0363546516646086. Epub 2016 May 16.

Hamstring Reinjuries Occur at the Same Location and Early After Return to Sport: A Descriptive Study of MRI-Confirmed Reinjuries.

Wangenstein A¹, Tol JL², Witvrouw E³, Van Linschoten R⁴, Almusa E⁴, Hamilton B⁵, Bahr R⁶.
Author information

Abstract

BACKGROUND:

Despite relatively high reinjury rates after acute hamstring injuries, there is a lack of detailed knowledge about where and when hamstring reinjuries occur, and studies including imaging-confirmed reinjuries are scarce.

PURPOSE:

To investigate the location, radiological severity, and timing of reinjuries on magnetic resonance imaging (MRI) compared with the index injury.

STUDY DESIGN:

Case series; Level of evidence, 4.

METHODS:

A MRI scan was obtained ≤ 5 days after an acute hamstring index injury in 180 athletes, and time to return to sport (RTS) was registered. Athletes with an MRI-confirmed reinjury in the same leg ≤ 365 days after RTS were included. Categorical grading and standardized MRI parameters of the index injury and reinjury were scored by a single radiologist (with excellent intraobserver reliability). To determine the location of the reinjury, axial and coronal views of the index injury and reinjury were directly compared on proton density-weighted fat-suppressed images.

RESULTS:

In the 19 athletes included with reinjury, 79% of these reinjuries occurred in the same location within the muscle as the index injury. The median time to RTS after the index injury was 19 days (range, 5-37 days; interquartile range [IQR], 15 days). The median time between the index injury and reinjury was 60 days (range, 20-316 days; IQR, 131 days) and the median time between RTS after the index injury and the reinjury was 24 days (range, 4-311 days; IQR, 140 days). More than 50% of reinjuries occurred within 25 days (4 weeks) after RTS from the index injury and 50% occurred within 50 days after the index injury. All reinjuries with more severe radiological grading occurred in the same location as the index injury.

CONCLUSION:

The majority of the hamstring reinjuries occurred in the same location as the index injury, early after RTS and with a radiologically greater extent, suggesting incomplete biological and/or functional healing of the index injury. Specific exercise programs focusing on reinjury prevention initiated after RTS from the index injury are highly recommended.

KEYWORDS: hamstring injury; location; magnetic resonance imaging; reinjury; return to sport
PMID: [27184543](#)

Algorithm sport injuries

Br J Sports Med. 2016 Jul 21. pii: bjsports-2015-095850. doi: 10.1136/bjsports-2015-095850.

Complex systems approach for sports injuries: moving from risk factor identification to injury pattern recognition-narrative review and new concept.

Bittencourt NF¹, Meeuwisse WH², Mendonça LD³, Nettel-Aguirre A⁴, Ocarino JM⁵, Fonseca ST⁵.
Author information

Abstract

Injury prediction is one of the most challenging issues in sports and a key component for injury prevention. Sports injuries aetiology investigations have assumed a reductionist view in which a phenomenon has been simplified into units and analysed as the sum of its basic parts and causality has been seen in a linear and unidirectional way. This reductionist approach relies on correlation and regression analyses and, despite the vast effort to predict sports injuries, it has been limited in its ability to successfully identify predictive factors. The majority of human health conditions are complex. In this sense, the multifactorial complex nature of sports injuries arises not from the linear interaction between isolated and predictive factors, but from the complex interaction among a web of determinants. Thus, the aim of this conceptual paper was to propose a complex system model for sports injuries and to demonstrate how the implementation of complex system thinking may allow us to better address the complex nature of the sports injuries aetiology. According to this model, we should identify features that are hallmarks of complex systems, such as the pattern of relationships (interactions) among determinants, the regularities (profiles) that simultaneously characterise and constrain the phenomenon and the emerging pattern that arises from the complex web of determinants. In sports practice, this emerging pattern may be related to injury occurrence or adaptation. This novel view of preventive intervention relies on the identification of regularities or risk profile, moving from risk factors to risk pattern recognition.

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KEYWORDS: Injury prevention; Risk factor; Sport; Sporting injuries
PMID: [27445362](#)

57. GAIT**Clubfoot gait**

J Pediatr Orthop. 2016 Sep;36(6):565-71. doi: 10.1097/BPO.0000000000000515.

A Longitudinal Review of Gait Following Treatment for Idiopathic Clubfoot: Gait Analysis at 2 and 5 Years of Age.

Jeans KA¹, Erdman AL, Jo CH, Karol LA.
Author information

Abstract

BACKGROUND:

Initial correction following nonoperative (NonOp) treatment for idiopathic clubfoot has been reported in 95% of feet by age 2; however, by age 4, approximately one third of feet undergo surgery due to relapse. The purpose of this study was to assess the longitudinal effect of growth and surgical (Sx) intervention on gait following NonOp and Sx treatment for clubfoot.

METHODS:

Children with idiopathic clubfoot were seen for gait analysis at 2 and 5 years of age. Kinematic data were collected at both visits, and kinetic data were collected at age 5 years. Group comparisons were made between feet treated with the Ponseti casting technique (Ponseti) and the French physical therapy method (PT) and between feet treated nonoperatively and surgically. Comparisons were made between feet treated with a limited release or tendon transfer (fair) and those treated with a full posteromedial release (poor). The α was set to 0.05 for all statistical analyses.

RESULTS:

Gait data from 181 children with 276 idiopathic clubfeet were collected at both age 2 and 5 years. Each foot was initially treated with either the Ponseti (n=132) or PT (n=144) method but by the 5-year visit, 30 Ponseti and 61 PT feet required surgery. Gait outcomes showed limitations primarily in the Sx clubfeet. Normal ankle motion was only present in 17% of Ponseti and 21% of PT feet by age 5 following Sx management. Sx PT feet showed persistent intoeing at age 2 and 5. Within the Sx group, feet initially treated with PT had a clinically significant reduction in ankle power compared with those treated initially by the Ponseti method. Feet treated with posteromedial releases had significantly less ankle power than those treated with limited surgery or that remained NonOp at 5 years.

CONCLUSIONS:

This longitudinal study shows subtle changes between 2 and 5 years, and continues to support a NonOp approach in the treatment of clubfoot.

LEVEL OF EVIDENCE:

Level II-therapeutic.

PMID: [25985372](#)

59. PAIN

Chronic and acute pain

Assessment of acute and chronic pain

Tim McCormick Simon Law

Abstract

Acute and chronic pain states overlap in chronology and pathophysiology but both can remain under-managed. Assessment aims to elucidate underlying pain generators that can then guide treatment strategies. Assessment should be regularly repeated to assess efficacy of treatments and the presence of side effects. Self-report questionnaires are available to assist in diagnosis and monitoring of pain and its related dimensions but they do not replace a thorough assessment by an experienced clinician.

Keywords:

Acute, assessment, chronic, neuropathic, nociceptive, pain, pain measurement, questionnaires

The role of PT in the treatment of pain**The role of physiotherapy in the management of chronic pain**

Judith Semmons

Judith Semmons MCSP MSc is a Specialist Physiotherapist at the Chronic Pain Clinic, The Queen Elizabeth Hospital, King's Lynn, Norfolk, UK. Conflicts of interest: none

Royal College of Anaesthetists CPD Matrix: 1D02, 2E03

DOI: <http://dx.doi.org/10.1016/j.mpaic.2016.06.006>

Abstract

The role of physiotherapy in managing chronic pain is challenging. A multidisciplinary approach incorporating several specialities within the pain clinic is recommended. Treatment focuses on the bio–psycho–social model: part of the clinician's skill is to assess which part or parts of this bio–psycho–social ‘equation’ influence the patient's pain. In addition, three key physiotherapy treatments are described: education, patient empowerment and promoting exercise. Patients are often fearful of exercise due to a past bad experience or they believe it may cause more harm but exercise can relate to activities of daily living, such as getting out of bed. Patients are advised not to push through pain which will tend to cause ‘wind up’ and increased pain. Phased activities and goal-setting are described. More specific or individual treatments are briefly mentioned such as desensitization and graded motor imagery.

62 A. NUTRITION/VITAMINS

Omega 3's and PTSD

Effects of omega-3 polyunsaturated fatty acids on psychophysiological symptoms of post-traumatic stress disorder in accident survivors: A randomized, double-blind, placebo-controlled trial

Journal of Affective Disorders, 08/15/2016 Matsumura K, et al.

In a randomized, double-blind, placebo-controlled trial of Japanese accident survivors, researchers succeeded in achieving the secondary prevention of psychophysiological symptoms of PTSD by supplementing omega-3 PUFAs to the survivors after trauma.

Methods

- Research included 83 participants who received either omega-3 PUFAs (1470 mg docosahexaenoic acid and 147 mg eicosapentaenoic acid per day) or placebo within 10 days of the accidental injury.
- In this study, participants performed script-driven imagery of their traumatic event during monitoring of their heart rate and skin conductance after 12-week supplementation.

Results

- Findings demonstrated significantly lower heart rate during both rest and script-driven imagery in the omega-3 group than the placebo group, whereas baseline heart rate was comparable between the two groups.