

ABSTRACTS

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2. LBP

LBP and fatigue J Electromyogr Kinesiol. 2017 Feb 13;33:94-102. doi: 10.1016/j.jelekin.2017.02.003.

The effect of muscle fatigue and low back pain on lumbar movement variability and complexity.

Bauer CM¹, Rast FM², Ernst MJ², Meichtry A², Kool J², Rissanen SM³, Suni JH⁴, Kankaanpää M⁵.

Author information

Abstract

INTRODUCTION:

Changes in movement variability and complexity may reflect an adaptation strategy to fatigue. One unresolved question is whether this adaptation is hampered by the presence of low back pain (LBP). This study investigated if changes in movement variability and complexity after fatigue are influenced by the presence of LBP. It is hypothesised that pain free people and people suffering from LBP differ in their response to fatigue.

METHODS:

The effect of an isometric endurance test on lumbar movement was tested in 27 pain free participants and 59 participants suffering from LBP. Movement variability and complexity were quantified with %determinism and sample entropy of lumbar angular displacement and velocity. Generalized linear models were fitted for each outcome. Bayesian estimation of the group-fatigue effect with 95% highest posterior density intervals (95%HPDI) was performed.

RESULTS:

After fatiguing %determinism decreased and sample entropy increased in the pain free group, compared to the LBP group. The corresponding group-fatigue effects were 3.7 (95%HPDI: 2.3-7.1) and -1.4 (95%HPDI: -2.7 to -0.1). These effects manifested in angular velocity, but not in angular displacement.

DISCUSSION:

The effects indicate that pain free participants showed more complex and less predictable lumbar movement with a lower degree of structure in its variability following fatigue while participants suffering from LBP did not. This may be physiological responses to avoid overload of fatigued tissue, increase endurance, or a consequence of reduced movement control caused by fatigue.

individualized care

Spine J. 2017 Mar;17(3):346-359. doi: 10.1016/j.spinee.2016.10.004. Epub 2016 Oct 17.

Individualized functional restoration as an adjunct to advice for lumbar disc herniation with associated radiculopathy. A preplanned subgroup analysis of a randomized controlled trial.

Hahne AJ¹, Ford JJ², Hinman RS³, Richards MC², Surkitt LD², Chan AY², Slater SL², Taylor NF².

Author information

Abstract

BACKGROUND CONTEXT: Physical therapy is commonly sought by people with lumbar disc herniation and associated radiculopathy. It is unclear whether physical therapy is effective for this population.

PURPOSE: To determine the effectiveness of physical therapist-delivered individualized functional restoration as an adjunct to guideline-based advice in people with lumbar disc herniation and associated radiculopathy.

STUDY DESIGN: This is a preplanned subgroup analysis of a multicenter parallel group randomized controlled trial.

PATIENT SAMPLE: The study included 54 participants with clinical features of radiculopathy (6-week to 6-month duration) and imaging showing a lumbar disc herniation.

OUTCOME MEASURES: Primary outcomes were activity limitation (Oswestry Disability Index) and separate 0-10 numerical pain rating scales for leg pain and back pain. Measures were taken at baseline and at 5, 10, 26, and 52 weeks.

METHODS: The participants were randomly allocated to receive either individualized functional restoration incorporating advice (10 sessions) or guideline-based advice alone (2 sessions) over a 10-week period. Treatment was administered by 11 physical therapists at private clinics in Melbourne, Australia.

RESULTS: Between-group differences for activity limitation favored the addition of individualized functional restoration to advice alone at 10 weeks (7.7, 95% confidence interval [CI] 0.3-15.1) and 52 weeks (8.2, 95% CI 0.7-15.6), as well as back pain at 10 weeks (1.4, 95% CI 0.2-2.7). There were no significant differences between groups for leg pain at any follow-up. Several secondary outcomes also favored individualized functional restoration over advice.

CONCLUSIONS: In participants with lumbar disc herniation and associated radiculopathy, an individualized functional restoration program incorporating advice led to greater reduction in activity limitation at 10- and 52-week follow-ups compared with guideline-based advice alone. Although back pain was significantly reduced at 10 weeks with individualized functional restoration, this effect was not maintained at later timepoints, and there were no significant effects on leg pain, relative to guideline-based advice.

Who can benefit from PT

Spine (Phila Pa 1976). 2017 Mar 3. doi: 10.1097/BRS.0000000000002148.

Who Benefits Most from Individualized Physiotherapy or Advice for Low Back Disorders? A Pre-Planned Effect Modifier Analysis of a Randomized Controlled Trial.

Hahne AJ¹, Ford JJ, Richards MC, Surkitt LD, Chan AY, Slater SL, Taylor NF.
Author information

Abstract

STUDY DESIGN:

A pre-planned effect modifier analysis of the Specific Treatment of Problems of the Spine (STOPS) randomized controlled trial.

OBJECTIVE:

To identify characteristics associated with larger or smaller treatment effects in people with low back disorders undergoing either individualized physical therapy or guideline-based advice.

SUMMARY OF BACKGROUND DATA:

Identifying subgroups of people who attain a larger or smaller benefit from particular treatments has been identified as a high research priority for low back disorders.

METHODS:

The trial involved 300 participants with low back pain and/or referred leg pain (≥ 6 weeks, ≤ 6 month duration), who satisfied criteria to be classified into five subgroups (with 228 participants classified into three subgroups relating to disc related disorders, and 64 classified into the zygapophyseal joint dysfunction subgroup). Participants were randomly allocated to receive either two sessions of guideline based advice (n=144), or 10 sessions of individualized physical therapy targeting pathoanatomical, psychosocial and neurophysiological factors (n=156). Univariate and multivariate linear mixed models determined the interaction between treatment group and potential effect modifiers (defined a priori) for the primary outcomes of back pain, leg pain (0-10 Numerical Rating Scale) and activity limitation (Oswestry Disability Index) over a 52-week follow-up.

RESULTS:

Participants with higher levels of back pain, higher Örebro scores (indicative of higher risk of persistent pain) or longer duration of symptoms derived the largest benefits from individualized physical therapy relative to advice. Poorer coping also predicted larger benefits from individualized physical therapy in the univariate analysis.

CONCLUSION:

These findings suggest that people with low back disorders could be preferentially targeted for individualized physical therapy rather than advice if they have higher back pain levels, longer duration of symptoms, or higher Örebro scores.

Does age make a difference?

Do older adults with chronic low back pain differ from younger adults in regards to baseline characteristics and prognosis?

European Journal of Pain, 03/15/2017 Manogharan S, et al.

This research was designed to compare older adults consulting with chronic low back pain (LBP) to middle aged and young adults consulting with chronic LBP, in terms of their baseline characteristics, and pain and disability outcomes over 1 year. In older people with chronic LBP, the physicians found small baseline differences compared to middle-aged and younger adults. They found no associations between age groups and the clinical course.

Methods

- In a secondary care spine clinic, data were systematically collected as part of routine care.
- In this study, at initial presentation patients answered a self-report questionnaire and underwent a physical examination.
- The physicians classified patients older than 65 as older adults and compared to middle aged (45-65 years old) and younger adults (17-44 years old) for 10 baseline characteristics.
- At 6 and 12 month follow-ups, pain intensity and disability were collected and compared between age groups.

Results

- The authors included 14,479 participants in the study.
- Of these 3087 (21%) patients were older adults, 6071 (42%) were middle aged and 5321 (37%) were young adults.
- For most characteristics measured, at presentation older adults were statistically different to the middle-aged and younger adults (e.g. less intense back pain, more leg pain and more depression); though, the differences were small.
- Between age groups, the change in pain and disability over 12 months did not differ.

7. PELVIC ORGANS/WOMAN'S HEALTH

Vulvar pain

Aust N Z J Obstet Gynaecol. 2017 Mar 13. doi: 10.1111/ajo.12613.

The aetiology of chronic vulval pain and entry dyspareunia: a retrospective review of 525 cases.

Harris V¹, Fischer G², Bradford JA³.

Author information

Abstract

BACKGROUND:

There are few published data about the incidence of diagnoses or treatment outcomes, for chronic vulval pain.

AIMS:

To document diagnoses and treatment outcomes in a cohort of chronic vulval pain presentations.

MATERIALS AND METHODS:

A retrospective case review of the patient database of a private vulval clinic between January 2011 and March 2015.

RESULTS:

Five hundred and twenty-five out of 3360 patients (15.6%) met the criterion of vulval pain alone. Mean age was 47.1 years (range 17-86). Average duration of symptoms was 60 months (range 3-432). Overall, 277/525 (52.7%) patients had satisfactory responses to appropriate treatment and 90/525 (17%) had partial improvement. A dermatosis was identified in 322/525 (61.3%) patients and of these, 211/322 (65.5%) had satisfactory responses to appropriate dermatological treatment. In the remaining 203/525 (38.7%) the skin was normal. These patients were questioned around the possibility of a neuromuscular cause for their pain, including pre-existing dysfunction, trauma or previous operations involving the spine, hips or lower limbs. There were 181/203 (89%) patients considered to have a neuromuscular cause for their pain and considered suitable for physiotherapy and/or neuromodulating medications. Of these patients, 63/182 (34.6%) had satisfactory responses to this treatment. One hundred and sixty-six out of 525 (31.6%) described vulval pain only during sexual intercourse. There was no statistically significant difference between different diagnoses and responses to treatment between patients reporting dyspareunia only and those sexually active women who did not experience dyspareunia (29/525, 5.5%).

CONCLUSIONS:

The majority of this cohort with chronic vulval pain had a dermatological disease with a smaller proportion caused by neuromuscular dysfunction. Both groups are potentially treatable.

8. VISCERA

Probiotics helps

J Clin Gastroenterol. 2017 Apr;51(4):300-311. doi: 10.1097/MCG.0000000000000814.

Probiotics for Preventing and Treating Small Intestinal Bacterial Overgrowth: A Meta-Analysis and Systematic Review of Current Evidence.

Zhong C¹, Qu C, Wang B, Liang S, Zeng B.
Author information

Abstract

The present study conducted a meta-analysis and systematic review of current evidence to assess the efficacy of probiotics in preventing or treating small intestinal bacterial overgrowth (SIBO). Relevant studies from PubMed, Embase, and the Cochrane Central Register of Controlled Trials, until May 2016, were assimilated. The prevention efficacy was assessed by the incidence of SIBO in the probiotic group, and the treatment efficacy by the SIBO decontamination rate, reduction in H₂ concentration, and symptom improvement. The relative risk (RR) and weighted mean difference (WMD) were used as effect measures and the random-effects model used for meta-analysis. A total of 14 full-text articles and 8 abstracts were included for the systematic review, and 18 studies were eligible for data synthesis. Patients on probiotic usage showed an insignificant trend toward low SIBO incidence [RR=0.54; 95% confidence intervals (CI), 0.19-1.52; P=0.24]. The pooled SIBO decontamination rate was 62.8% (51.5% to 72.8%). The probiotics group showed a significantly higher SIBO decontamination rate than the nonprobiotic group (RR=1.61; 95% CI, 1.19-2.17; P<0.05). Also, the H₂ concentration was significantly reduced among probiotic users (WMD=-36.35 ppm; 95% CI, -44.23 to -28.47 ppm; P<0.05). Although probiotics produced a marked decrease in the abdominal pain scores (WMD=-1.17; 95% CI, -2.30 to -0.04; P<0.05), it did not significantly reduce the daily stool frequency (WMD=-0.09; 95% CI, -0.47 to 0.29).

Therefore, the present findings indicated that probiotics supplementation could effectively decontaminate SIBO, decrease H₂ concentration, and relieve abdominal pain, but were ineffective in preventing SIBO.

Belly fat and Crohn's

Aliment Pharmacol Ther. 2017 Feb 28. doi: 10.1111/apt.14018.

Visceral adiposity predicts post-operative Crohn's disease recurrence.

Holt DQ^{1,2}, Moore GT^{1,2}, Strauss BJ², Hamilton AL^{3,4}, De Cruz P⁴, Kamm MA^{3,4}.
Author information

Abstract

BACKGROUND:

Excessive visceral adipose tissue has been associated with poorer outcomes in patients with inflammatory bowel disease.

AIM:

To determine whether body composition is associated with outcome in a prospective study of post-operative Crohn's disease patients.

METHODS:

The POCER study evaluated management strategies for prevention of post-operative Crohn's disease recurrence; subjects were enrolled after resection of all macroscopic Crohn's disease and were randomised to early endoscopy and possible treatment escalation, or standard care. The primary endpoint was endoscopic recurrence at 18 months. 44 subjects with cross-sectional abdominal imaging were studied, and body composition analysis performed using established techniques to measure visceral adipose tissue area, subcutaneous adipose tissue area, and skeletal muscle area.

RESULTS:

The body composition parameter with the greatest variance was visceral adipose tissue. Regardless of treatment, all subjects with visceral adipose tissue/height² >1.5 times the gender-specific mean experienced endoscopic recurrence at 18 months (compared to 47%) [relative risk 2.1, 95% CI 1.5-3.0, P = 0.012]. Waist circumference correlated strongly with visceral adipose tissue area ($\rho = 0.840$, $P < 0.001$). Low skeletal muscle was prevalent (41% of patients), but did not predict endoscopic recurrence; however, appendicular skeletal muscle indices correlated inversely with faecal calprotectin ($\rho = 0.560$, $P = 0.046$).

CONCLUSIONS:

Visceral adiposity is an independent risk factor for endoscopic recurrence of Crohn's disease after surgery. Sarcopenia correlates with inflammatory biomarkers. Measures of visceral adipose tissue may help to stratify risk in post-operative management strategies.

Probiotics did not help IBS

Neurogastroenterol Motil. 2017 Mar 8. doi: 10.1111/nmo.13037.

A double-blind, placebo-controlled study to assess the effect of a probiotic mixture on symptoms and inflammatory markers in women with diarrhea-predominant IBS.

Hod K^{1,2}, Sperber AD³, Ron Y⁴, Boaz M⁵, Dickman R⁶, Berliner S⁷, Halpern Z⁴, Maharshak N⁴, Dekel R⁴.

Author information

Abstract

BACKGROUND:

Micro-inflammation is considered an element in the pathogenesis of irritable bowel syndrome (IBS). High-sensitivity C reactive protein (hs-CRP) was previously shown to be higher in IBS compared to healthy controls, albeit within the normal range. Since probiotics may suppress micro-inflammation in the gut, we tested if they reduce symptoms and inflammatory markers (hs-CRP and fecal calprotectin (FC) in diarrhea-predominant IBS (IBS-D). The aim of this study was to assess the clinical and laboratory effects of BIO-25, a multispecies probiotic, in women with IBS-D.

METHODS:

A double-blind, placebo-controlled study. Following a 2-week run-in, eligible women were assigned at random to a probiotic capsule or an indistinguishable placebo, twice daily for 8 weeks. IBS symptoms and stool consistency were rated daily by Visual Analogue Scales (VAS) and the Bristol Stool Scale (BSS). High-sensitivity C reactive protein was tested at baseline, 4 and 8 weeks. FC was tested at baseline and 8 weeks.

KEY RESULTS:

One hundred and seventy-two IBS-D patients were recruited and 107 eligible patients were allocated to the intervention (n=54) or placebo (n=53) group. All symptoms improved in both groups with no significant difference between them in symptom improvement, hs-CRP or FC levels.

CONCLUSIONS & INFERENCES:

An 8-week treatment with BIO-25 improved symptoms in women with IBS-D, but was not superior to placebo. This rigorously designed and executed study supports the findings of other studies that did not demonstrate superiority of probiotics over placebo in IBS. High quality clinical studies are necessary to examine the efficacy of other specific probiotics in IBS-D patients since data are still conflicting.

Gallstones and alcohol

Eur J Gastroenterol Hepatol. 2017 Apr;29(4):e19-e28. doi: 10.1097/MEG.0000000000000803.

Alcohol consumption and risk of gallstone disease: a meta-analysis.

Wang J¹, Duan X, Li B, Jiang X.

Author information

Abstract

Epidemiology studies have been carried out to investigate the association between alcohol consumption and the risk of gallstone disease, but the results remain controversial. We carried out a meta-analysis to quantitatively summarize the evidences from observational studies on alcohol consumption and the risk of gallstone disease. Eligible studies published in English were identified by searching PubMed, Web of Science, and Embase databases. The random-effect model was used to calculate the pooled relative risks (RRs) with 95% confidence intervals (CIs). Restricted cubic splines were used to assess the dose-response relationship. Eight cohort studies and 10 case-control studies were included in our meta-analysis. The pooled RR of gallstone disease for the highest versus the lowest alcohol consumption was 0.62 (95% CI: 0.49-0.78). Statistically significant associations were also found in stratified analysis by study design (cohort studies: RR=0.66, 95% CI: 0.48-0.91 and case-control studies: RR=0.58, 95% CI: 0.45-0.73). With respect to sex, both men (RR=0.57, 95% CI: 0.4-0.8) and women (RR=0.64, 95% CI: 0.53-0.77) showed statistically significant associations between alcohol consumption and the risk of gallstone disease. A linear dose-response relationship was found between alcohol consumption and gallstone disease risk and the risk of gallstone disease decreased by 12% (RR=0.88, 95% CI: 0.84-0.92; Pnonlinearity=0.079) for each 10 g/day increment in alcohol consumption. This meta-analysis suggests that alcohol consumption is associated with significantly decreased risk of gallstone disease.

Crohn's disease

Increased intestinal permeability in relatives of patients with Crohn's disease is not associated with small bowel ulcerations

Clinical Gastroenterology and Hepatology , 03/15/2017 Teshima CW, et al.

This study was coordinated to determine the association of increased intestinal permeability with small bowel ulcerations detectable by video capsule endoscopy (VCE) in healthy first-degree relatives of patients with Crohn's disease (CD). 30% of healthy, asymptomatic first-degree relatives of patients with CD have increased intestinal permeability. However, a strong association of small bowel ulceration observed on VCE with increased intestinal permeability was not seen.

Methods

- Between 2009 and 2012, the researchers conducted a cross-sectional study of 223 healthy, asymptomatic first-degree relatives of patients with CD (parents, siblings, and children; 9–45 years old) enrolled at the University of Alberta.
- Patients were given the lactulose and mannitol test to measure small bowel permeability.
- They used high-performance liquid chromatography to measure concentrations of lactulose and mannitol in urine samples (increased permeability defined as a ratio of lactulose:mannitol 0.025 or greater).
- For signs of small bowel inflammation and subclinical CD, patients with increased permeability (n=39) and randomly selected subjects with normal permeability (n=59) were then examined by VCE.
- They compared the prevalence of small bowel lesions between groups.
- To estimate odds ratios for the association of small bowel ulcerations with intestinal permeability, they performed logistic regression analyses.

Results

- 30% were found to have increased intestinal permeability among 223 first-degree relatives of patients with CD.
- VCE examination found 24% of subjects to have 3 or more small bowel ulcers.
- With increased intestinal permeability, 3 or more small bowel ulcers were detected in 28% of patients and 20% of patients with normal intestinal permeability (P=.37).
- With increased intestinal permeability, the adjusted odds ratio for the association 3 or more small bowel ulcers was 1.5 (95% CI, 0.6–3.8) (P=.46).

10 B. CERVICAL EXERCISES**Thoracic manip and axil elongation**

J Phys Ther Sci. 2017 Feb;29(2):282-284. doi: 10.1589/jpts.29.282. Epub 2017 Feb 24.

Effects of manipulation of the thorax and intensity of the pressure biofeedback unit on the superficial cervical flexors muscle during craniocervical flexion exercise.

Yang JM¹, Cha HG², Kim MK³.

Author information

Abstract

[Purpose] This study examined the effects of manipulation of the thorax and the intensity of the pressure biofeedback unit on the superficial cervical flexors muscle during craniocervical flexion exercise.

[Subjects and Methods] Thirty three subjects participated in the experiment. Thirty three healthy people without any orthopedic history were also selected. The subjects could monitor the pressure applied to cervical vertebra 3 of the craniocervical junction by markings on the pressure biofeedback unit. Craniocervical flexion exercise was performed for 20 seconds per pressure, and two minutes of rest was allowed after exercise to reduce muscle fatigue.

[Results] Significant differences in the post-training gains in the sternocleidomastoid and scalene were observed between the thorax fixation group and thorax non-fixation group. The thorax fixation group showed that muscle activation of the sternocleidomastoid and scalene was increased when the pressure biofeedback unit intensity was 40 mmHg than when pressure biofeedback unit intensity was 20 mmHg and 30 mmHg in the post-hoc result. The thorax non-fixation group showed that muscle activation of the sternocleidomastoid and scalene was higher when the pressure biofeedback unit intensity was 40mmHg compared to that when the pressure biofeedback unit intensity was 20mmHg in the post-hoc result.

[Conclusion] Craniocervical flexion exercise is a clinically effective method that reduces the superficial neck flexor muscle activation.

Cell phone exercises helps FHP

J Phys Ther Sci. 2017 Feb;29(2):328-331. doi: 10.1589/jpts.29.328. Epub 2017 Feb 24.

The effect of modified cervical exercise on smartphone users with forward head posture.

Kong YS¹, Kim YM², Shim JM².

Author information

Abstract

[Purpose] The purpose of this study was to evaluate the effect of modified cervical exercise and determine whether such exercise improves the range of motion of the cervical movement in smartphone users with forward head posture. [Subjects and Methods] Some 32 subjects with forward head posture participated in this study. They were randomly allocated to three groups, and the modified cervical exercises were performed either once, twice, or three times per day. The exercise program was followed for four weeks and then the joint range of motion of the participants was measured. [Results] A significantly increased range of motion was seen in all three groups that performed the modified cervical exercises. The analysis of the effects among the three groups indicated that the greatest effect was seen in Group C, members of which performed the modified exercises three times per day. In addition, a significant difference was found between Group A and Group C in terms of the inter-group results. [Conclusion] According to the results of this study, although the modified cervical exercises were performed for only a relatively short duration (four weeks), the exercises brought about an improvement in the forward head posture that was induced by using a smartphone.

Axial elongation

Am J Phys Med Rehabil. 2017 Feb 21. doi: 10.1097/PHM.0000000000000721.

The Effect of Different Exercise Programs on Size and Function of Deep Cervical Flexor Muscles in Patients with Chronic Nonspecific Neck Pain: A Systematic Review of Randomized Controlled Trials.

Amiri Arimi S¹, Mohseni Bandpei MA, Javanshir K, Rezasoltani A, Biglarian A.

Author information

Abstract

BACKGROUND:

Neck pain is one of the major public health problems, which has a great impact on people's lives.

OBJECTIVES:

The purpose of this study was to systematically review published studies conducted on the effect of different exercise programs on activity, size, endurance, and strength of deep cervical flexor (DCF) muscles in patients with chronic neck pain.

METHODS:

The PubMed, Science Direct, OVID, Google scholar, Cochrane Library, and Physiotherapy Evidence Databases were searched to determine relevant articles published from 1990 to March 2016. The articles were qualitatively assessed based on the Physiotherapy Evidence Databases scale for randomized controlled trials studies.

RESULTS:

Nine articles were identified and evaluated in the final analysis. Four studies had moderate quality, and five studies had good quality. From those nine studies, eight studies gave support to the effectiveness of specific low-load exercise training on DCF muscles parameters, while one study reported no significant difference between this exercise and other cervical exercise programs.

CONCLUSION:

The results of reviewed studies are in favor of specific low-load craniocervical flexion exercise, which seems to be a highly effective exercise regimen compared to other types of exercises in improving DCF muscles impairments in patients with chronic neck pain.

13. CRANIUM/TMJ

DN and bruxism

Acupunct Med. 2017 Mar;35(1):69-74. doi: 10.1136/acupmed-2016-011102. Epub 2016 Oct 3.

Effects of myofascial trigger point dry needling in patients with sleep bruxism and temporomandibular disorders: a prospective case series.

Blasco-Bonora PM¹, Martín-Pintado-Zugasti A².

Author information

Abstract

OBJECTIVES:

To investigate the effects of deep dry needling (DN) of myofascial trigger points (MTrPs) of the masseter and temporalis on pain, pressure pain threshold (PPT), pain-free maximal jaw opening and temporomandibular disorder (TMD)-related disability in patients with sleep bruxism (SB) and myofascial TMD.

METHODS:

Seventeen subjects (11 women, 6 men) aged 39±13 years (range 23-66) diagnosed with SB and myofascial TMD were invited to participate in this prospective case series study. Each subject received a deep DN intervention in the masseter and temporalis MTrPs. Pain intensity, PPT, pain-free maximal jaw opening and TMD-related disability were assessed before treatment, immediately after treatment and at 1-week follow-up. Jaw disability was assessed using the jaw disability checklist (JDC) at baseline and 1 week post-treatment only.

RESULTS:

One-way analyses of variance showed significant improvements in pain intensity, PPT and jaw opening ($p < 0.001$). Post-hoc analysis revealed significant differences between baseline and post-intervention follow-up time points in pain (immediate: Cohen's $d = 1.72$, $p < 0.001$; 1 week: $d = 3.24$, $p < 0.001$), jaw opening (immediate: $d = 0.77$, $p < 0.001$; 1 week: $d = 1.02$, $p < 0.001$) and PPT in the masseter (immediate: $d = 1.02$, $p < 0.001$; 1 week: $d = 1.64$, $p < 0.001$) and temporalis (immediate: $d = 0.91$, $p = 0.006$; 1 week: $d = 1.8$, $p < 0.001$). A dependent t-test showed a significant improvement in jaw functioning, reflected by a large reduction in 1-week JDC scores relative to baseline ($d = 3.15$, $p < 0.001$).

CONCLUSIONS:

Deep DN of active MTrPs in the masseter and temporalis in patients with myofascial TMD and SB was associated with immediate and 1-week improvements in pain, sensitivity, jaw opening and TMD-related disability.

TMJ and pain

J Headache Pain. 2016; 17(1): 103. MCID: PMC5095086

Chronic Temporomandibular Disorders: disability, pain intensity and fear of movement

Alfonso Gil-Martínez,^{1,2} Mónica Grande-Alonso,² Ibai López-de-Uralde-Villanueva,^{1,2} Almudena López-López,^{3,4} Josué Fernández-Carnero,^{1,2,3,5} and Roy La Touche^{1,2}

Background

The objective was to compare and correlate disability, pain intensity, the impact of headache on daily life and the fear of movement between subgroups of patients with chronic temporomandibular disorder (TMD).

Methods

A cross-sectional study was conducted in patients diagnosed with chronic painful TMD. Patients were divided into: 1) joint pain (JP); 2) muscle pain (MP); and 3) mixed pain. The following measures were included: Craniomandibular pain and disability (Craniofacial pain and disability inventory), neck disability (Neck Disability Index), pain intensity (Visual Analogue Scale), impact of headache (Headache Impact Test 6) and kinesiophobia (Tampa Scale of Kinesiophobia-11).

Results

A total of 154 patients were recruited. The mixed pain group showed significant differences compared with the JP group or MP group in neck disability ($p < 0.001$, $d = 1.99$; and $p < 0.001$, $d = 1.17$), craniomandibular pain and disability ($p < 0.001$, $d = 1.34$; and $p < 0.001$, $d = 0.9$, respectively), and impact of headache ($p < 0.001$, $d = 1.91$; and $p < 0.001$, $d = 0.91$, respectively). In addition, significant differences were observed between JP group and MP group for impact of headache ($p < 0.001$, $d = 1.08$). Neck disability was a significant covariate (37 % of variance) of craniomandibular pain and disability for the MP group ($\beta = 0.62$; $p < 0.001$). In the mixed chronic pain group, neck disability ($\beta = 0.40$; $p < 0.001$) and kinesiophobia ($\beta = 0.30$; $p = 0.03$) were significant covariate (33 % of variance) of craniomandibular pain and disability.

Conclusion

Mixed chronic pain patients show greater craniomandibular and neck disability than patients diagnosed with chronic JP or MP. Neck disability predicted the variance of craniofacial pain and disability for patients with MP. Neck disability and kinesiophobia predicted the variance of craniofacial pain and disability for those with chronic mixed pain.

Arterial dissection

Cervical artery dissection in patients ≥ 60 years

March 3, 2017, doi: <http://dx.doi.org/10.1212/WNL>.

000000000003788Neurology 10.1212/WNL.000000000003788

ABSTRACT

Objective: In a cohort of patients diagnosed with cervical artery dissection (CeAD), to determine the proportion of patients aged ≥ 60 years and compare the frequency of characteristics (presenting symptoms, risk factors, and outcome) in patients aged < 60 vs ≥ 60 years.

Methods: We combined data from 3 large cohorts of consecutive patients diagnosed with CeAD (i.e., Cervical Artery Dissection and Ischemic Stroke Patients–Plus consortium). We dichotomized cases into 2 groups, age ≥ 60 and < 60 years, and compared clinical characteristics, risk factors, vascular features, and 3-month outcome between the groups. First, we performed a combined analysis of pooled individual patient data. Secondary analyses were done within each cohort and across cohorts. Crude and adjusted odds ratios (OR [95% confidence interval]) were calculated.

Results: Among 2,391 patients diagnosed with CeAD, we identified 177 patients (7.4%) aged ≥ 60 years. In this age group, cervical pain (ORadjusted 0.47 [0.33–0.66]), headache (ORadjusted 0.58 [0.42–0.79]), mechanical trigger events (ORadjusted 0.53 [0.36–0.77]), and migraine (ORadjusted 0.58 [0.39–0.85]) were less frequent than in younger patients. In turn, hypercholesterolemia (ORadjusted 1.52 [1.1–2.10]) and hypertension (ORadjusted 3.08 [2.25–4.22]) were more frequent in older patients. Key differences between age groups were confirmed in secondary analyses. In multivariable, adjusted analyses, favorable outcome (i.e., modified Rankin Scale score 0–2) was less frequent in the older age group (ORadjusted 0.45 [0.25, 0.83]).

Conclusion: In our study population of patients diagnosed with CeAD, 1 in 14 was aged ≥ 60 years. In these patients, pain and mechanical triggers might be missing, rendering the diagnosis more challenging and increasing the risk of missed CeAD diagnosis in older patients.

14. HEADACHES

Temporalis TP's

Pain Pract. 2017 Feb 22. doi: 10.1111/papr.12565.

Topographical Pressure Pain Sensitivity Maps of the Temporalis Muscle in People with Frequent Episodic and Chronic Tension-Type Headache.

Palacios Ceña M^{1,2}, Castaldo M^{2,3,4}, Wang K², Madeleine P⁵, Guerrero ÁL⁶, Arendt-Nielsen L², Fernández de Las Peñas C^{1,2}.

Author information

Abstract

BACKGROUND:

Previous pilot studies suggest the presence of heterogeneous sensitivity to pressure in primary headaches without considering the frequency of headache episodes.

OBJECTIVE:

To investigate the differences in topographical pressure pain sensitivity maps in the temporalis muscle between individuals with frequent episodic (FETTH) and chronic (CTTH) tension-type headache by controlling the presence of anxiety and depression.

METHODS:

Pressure pain thresholds (PPTs) were assessed bilaterally from 9 points distributed over the temporalis muscle (3 points in the anterior portion, 3 in the middle portion, and the remaining 3 in the posterior portion of the muscle belly) in 113 patients with FETTH and 91 with CTTH in a blinded design. Topographical pressure pain sensitivity maps based on interpolation of the PPTs were constructed. Clinical features of headache were collected in a 4-week headache diary. Anxiety and depression (Hospital Anxiety and Depression Scale) were also assessed.

RESULTS:

The multilevel analysis of covariance found significant difference in PPT levels between points ($F = 47.649$; $P < 0.001$), but not between groups ($F = 0.801$; $P = 0.602$) or sides ($F = 0.331$; $P = 0.565$). No significant effect of gender ($F = 0.785$; $P = 0.667$), depression ($F = 0.515$; $P = 0.846$), or anxiety ($F = 0.639$; $P = 0.745$) was observed. Post hoc comparisons revealed: (1) no differences between FETTH or CTTH; (2) no side-to-side differences; and (3) anterior-to-posterior gradient with the most sensitive points located in the anterior column, followed by those located in the central column and the posterior column of the muscle (all, $P < 0.001$).

CONCLUSIONS:

This study confirmed an anterior-to-posterior gradient of sensitivity to pressure in both groups, with the highest sensitivity at the anterior part of the muscle. Further, we found similar pressure pain sensitivity in the trigeminal area in people with FETTH or CTTH with no association to depressive or anxiety levels. This article is protected by copyright. All rights reserved.

15. VESTIBULAR**Screen vestibular for concussions**

Scand J Med Sci Sports. 2017 Feb 17. doi: 10.1111/sms.12827.

Feasibility of early physical therapy for dizziness after a sports-related concussion: A randomized clinical trial.

Reneker JC¹, Hassen A², Phillips RS², Moughiman MC³, Donaldson M², Moughiman J³.
Author information

Abstract

The purpose of this study was to (a) assess the feasibility of recruitment/retention of participants, protocol/resource management, and participant safety, and (b) estimate the size of the effect between the experimental and control groups. This was a feasibility study conducted as a prospective pilot double-blind randomized clinical trial. Subjects aged 10-23 years old with acute concussion and dizziness were enrolled from sports medicine centers. Forty-one participants were randomized into treatment and were seen for physical therapy beginning at 10 days post-concussion. Subjects in the experimental group received individually tailored, pragmatically delivered progressive interventions. Subjects in the control received prescriptive sham to minimally progressive interventions. The two primary outcomes were medical clearance for return-to-play and symptomatic recovery. The median number of days to medical clearance for the experimental group was 15.5 and for the control was 26. The median number of days to symptomatic recovery was 13.5 for the experimental group and was 17 for the control. According to Cox proportional hazards regression for time to medical release for return-to-play, the experimental group demonstrated a hazard ratio of 2.91 (95% CI: 1.01, 8.43) compared to the control. For time-to-symptomatic recovery, those in the experimental group demonstrated a hazard ratio of 1.99 (95% CI: 0.95, 4.15) compared to the control. The results indicate that it is feasible and safe to complete this type of intervention study. The results provide strong support for the allocation of resources to conduct well-powered randomized clinical trials of this intervention.

Vestibular care for concussions

Br J Sports Med. 2017 Mar;51(5):442-451. doi: 10.1136/bjsports-2016-096081. Epub 2016 Sep 21.

Can vestibular rehabilitation exercises help patients with concussion? A systematic review of efficacy, prescription and progression patterns.

Murray DA¹, Meldrum D², Lennon O¹.
Author information

Abstract**OBJECTIVE:**

Concussion symptoms normally resolve within 7-10 days but vertigo, dizziness and balance dysfunction persist in 10-30% of cases causing significant morbidity. This study systematically evaluated the evidence supporting the efficacy, prescription and progression patterns of vestibular rehabilitation therapy (VRT) in patients with concussion.

DESIGN:

Systematic Review, guided by PRISMA guidelines and presenting a best evidence synthesis.

DATA SOURCES:

Electronic databases PubMed (1949 to May 2015), CINAHL (1982 to May 2015), EMBASE (1947 to May 2015), SPORTDiscus (1985 to May 2015), Web of Science (1945 to May 2015) and PEDRO (1999 to May 2015), supplemented by manual searches and grey literature.

ELIGIBILITY CRITERIA FOR STUDY SELECTION:

Article or abstract of original research, population of patients with concussion/mild traumatic brain injury (mTBI) with vestibular symptoms, interventions detailing VRT, measurement of outcomes pre-VRT/post-VRT. Study type was not specified.

RESULTS:

Following a double review of abstract and full-text articles, 10 studies met the inclusion criteria: randomised controlled trial (n=2), uncontrolled studies (n=3) and case studies (n=5). 4 studies evaluated VRT as a single intervention. 6 studies incorporated VRT in multimodal interventions (including manual therapy, strength training, occupational tasks, counselling or medication). 9 studies reported improvement in outcomes but level I evidence from only 1 study was found that demonstrated increased rates (OR 3.91; 95% CI 1.34 to 11.34; p=0.002) of medical clearance for return to sport within 8 weeks, when VRT (combined with cervical therapy) was compared with usual care. Heterogeneity in study type and outcomes precluded meta-analysis. Habituation and adaptation exercises were employed in 8 studies and balance exercises in 9 studies. Prescription and progression patterns lacked standardisation.

CONCLUSIONS:

Current evidence for optimal prescription and efficacy of VRT in patients with mTBI/concussion is limited. Available evidence, although weak, shows promise in this population. Further high-level studies evaluating the effects of VRT in patients with mTBI/concussion with vestibular and/or balance dysfunction are required.

16. CONCUSSIONS

Screen vestibular for concussions

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Article or abstract of original research, population of patients with concussion/mild traumatic brain injury (mTBI) with vestibular symptoms, interventions detailing VRT, measurement of outcomes pre-VRT/post-VRT. Study type was not specified.

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Following a double review of abstract and full-text articles, 10 studies met the inclusion criteria: randomised controlled trial (n=2), uncontrolled studies (n=3) and case studies (n=5). 4 studies evaluated VRT as a single intervention. 6 studies incorporated VRT in multimodal interventions (including manual therapy, strength training, occupational tasks, counselling or medication). 9 studies reported improvement in outcomes but level I evidence from only 1 study was found that demonstrated increased rates (OR 3.91; 95% CI 1.34 to 11.34; p=0.002) of medical clearance for return to sport within 8 weeks, when VRT (combined with cervical therapy) was compared with usual care. Heterogeneity in study type and outcomes precluded meta-analysis. Habituation and adaptation exercises were employed in 8 studies and balance exercises in 9 studies. Prescription and progression patterns lacked standardisation.

CONCLUSIONS:

Current evidence for optimal prescription and efficacy of VRT in patients with mTBI/concussion is limited. Available evidence, although weak, shows promise in this population. Further high-level studies evaluating the effects of VRT in patients with mTBI/concussion with vestibular and/or balance dysfunction are required.

19. GLENOHUMERAL/SHOULDER**Shoulder tests lack validity**

Br J Sports Med. 2017 Mar;51(6):511-518. doi: 10.1136/bjsports-2016-096558. Epub 2016 Dec 19.

Reliability of specific physical examination tests for the diagnosis of shoulder pathologies: a systematic review and meta-analysis.

Lange T¹, Matthijs O^{2,3}, Jain NB⁴, Schmitt J¹, Lützner J⁵, Kopkow C^{1,6}.
Author information

Abstract**BACKGROUND:**

Shoulder pain in the general population is common and to identify the aetiology of shoulder pain, history, motion and muscle testing, and physical examination tests are usually performed.

OBJECTIVE:

The aim of this systematic review was to summarise and evaluate intrarater and inter-rater reliability of physical examination tests in the diagnosis of shoulder pathologies.

METHODS:

A comprehensive systematic literature search was conducted using MEDLINE, EMBASE, Allied and Complementary Medicine Database (AMED) and Physiotherapy Evidence Database (PEDro) through 20 March 2015. Methodological quality was assessed using the Quality Appraisal of Reliability Studies (QAREL) tool by 2 independent reviewers.

RESULTS:

The search strategy revealed 3259 articles, of which 18 finally met the inclusion criteria. These studies evaluated the reliability of 62 test and test variations used for the specific physical examination tests for the diagnosis of shoulder pathologies. Methodological quality ranged from 2 to 7 positive criteria of the 11 items of the QAREL tool.

CONCLUSIONS:

This review identified a lack of high-quality studies evaluating inter-rater as well as intrarater reliability of specific physical examination tests for the diagnosis of shoulder pathologies. In addition, reliability measures differed between included studies hindering proper cross-study comparisons.

21. ADHESIVE CAPSULITIS**Stages of frozen shoulder not founded**

Physiotherapy. 2017 Mar;103(1):40-47. doi: 10.1016/j.physio.2016.05.009. Epub 2016 Jun 21.

Natural history of frozen shoulder: fact or fiction? A systematic review.

Wong CK¹, Levine WN², Deo K³, Kesting RS³, Mercer EA³, Schram GA³, Strang BL³.

Author information

Abstract

BACKGROUND:

In 1940s, it was proposed that frozen shoulder progresses through a self-limiting natural history of painful, stiff and recovery phases, leading to full recovery without treatment. However, clinical evidence of persistent limitations lasting for years contradicts this assumption.

OBJECTIVES:

To assess evidence for the natural history theory of frozen shoulder by examining: (1) progression through recovery phases, and (2) full resolution without treatment.

DATA SOURCES:

MEDLINE, PubMed, EBSCO CINAHL and PEDro database searches augmented by hand searching.

STUDY SELECTION:

Cohort or randomised controlled trials with no-treatment comparison groups including adults with frozen shoulder who received no treatment and reporting range of motion, pain or function for ≥ 6 months.

DATA EXTRACTION:

Reviewers assessed study eligibility and quality, and extracted data before reaching consensus. Limited early range-of-motion improvements and greater late improvements defined progression through recovery phases. Restoration of normal range of motion and previous function defined full resolution.

RESULTS:

Of 508 citations, 13 articles were reviewed and seven were included in this review. Low-quality evidence suggested that no treatment yielded some, but not complete, improvement in range of motion after 1 to 4 years of follow-up. No evidence supported the theory of progression through recovery phases to full resolution without treatment. On the contrary, moderate-quality evidence from three randomised controlled trials with longitudinal data demonstrated that most improvement occurred early, not late.

LIMITATIONS:

Low-quality evidence revealed the weakness of longstanding assumptions about frozen shoulder.

CONCLUSION:

Contradictory evidence and a lack of supporting evidence shows that the theory of recovery phases leading to complete resolution without treatment for frozen shoulder is unfounded.

22 A. IMPINGMENT**Acromial humeral distance****Does the acromiohumeral distance matter in chronic rotator cuff related shoulder pain?**

Santiago Navarro-Ledesma, Filip Struyf, PhD, Maria Teresa Labajos-Manzanares, PhD, Manuel Fernandez-Sanchez, PhD, Jose Miguel Morales-Asencio, PhD, Alejandro Luque-Suarez, PT, PhD

DOI: <http://dx.doi.org/10.1016/j.msksp.2017.02.011>

Highlights

- There was an absence of association between AHD and shoulder pain and function.
- A lack of correlation between AHD and active shoulder ROM-free of pain, was found.
- Other therapeutic possibilities rather than increasing AHD should be considered.

Abstract**Background/hypothesis**

The relation between acromiohumeral distance (AHD) and severity of pain, disability and range of movement (ROM) in patients with chronic rotator cuff related shoulder pain (RCRSP) has not been reported.

Objectives

The aim of this study was to investigate the level of association between AHD measured by ultrasonography and pain-disability and shoulder range of movement (ROM), in patients suffering from chronic RCRSP. As a secondary objective, the determination of the intrarater reliability of AHD at both 0 and 60 degrees of shoulder elevation was carried out.

Design

This was a cross-sectional study.

Method

A sample comprised of 97 patients with chronic RCRSP symptoms was recruited from three different primary care centres. Acromio-humeral distance (AHD) measured by ultrasonography at 0 and 60 degrees of shoulder elevation, shoulder pain-function (SPADI) and range of movement (ROM) were taken.

Results

There was no correlation between AHD at 0° (-0,215), and at 60° (-0,148), with SPADI. No correlations were found with AHD and shoulder ROM at both 0 and 60°. Intrarater reliability was excellent for AHD at 0 and 60°.

Conclusions

There was a small association between AHD and shoulder pain and function, as well as with shoulder ROM, in patients with chronic RCRSP. Hence, clinicians should consider other possibilities rather than focusing their therapies only in increasing AHD when patients with chronic RCRSP are treated.

24. ELBOW**No valid elbow tests**

Br J Sports Med. 2017 Mar 1. pii: bjsports-2016-096712. doi: 10.1136/bjsports-2016-096712.

Physical examination of the elbow, what is the evidence? A systematic literature review.

Zwerus EL¹, Somford MP², Maissan F³, Heisen J⁴, Eygendaal D⁵, van den Bekerom MP⁶.

Author information

Abstract

OBJECTIVE:

Primary to provide an overview of diagnostic accuracy for clinical tests for common elbow (sport) injuries, secondary accompanied by reproducible instructions to perform these tests.

DESIGN:

A systematic literature review according to the PRISMA statement.

DATA SOURCES:

A comprehensive literature search was performed in MEDLINE via PubMed and EMBASE.

ELIGIBILITY CRITERIA:

We included studies reporting diagnostic accuracy and a description on the performance for elbow tests, targeting the following conditions: distal biceps rupture, triceps rupture, posteromedial impingement, medial collateral ligament (MCL) insufficiency, posterolateral rotatory instability (PLRI), lateral epicondylitis and medial epicondylitis. After identifying the articles, the methodological quality was assessed using the QUADAS-2 checklist.

RESULTS:

Our primary literature search yielded 1144 hits. After assessment 10 articles were included: six for distal biceps rupture, one for MCL insufficiency, two for PLRI and one for lateral epicondylitis. No articles were selected for triceps rupture, posteromedial impingement and medial epicondylitis. Quality assessment showed high or unclear risk of bias in nine studies. We described 24 test procedures of which 14 tests contained data on diagnostic accuracy.

CONCLUSIONS:

Numerous clinical tests for the elbow were described in literature, seldom accompanied with data on diagnostic accuracy. None of the described tests can provide adequate certainty to rule in or rule out a disease based on sufficient diagnostic accuracy.

27. HIP**Hip pain tests in women**

J Womens Health (Larchmt). 2017 Mar 6. doi: 10.1089/jwh.2016.5889.

Demystifying the Clinical Diagnosis of Greater Trochanteric Pain Syndrome in Women.

Ganderton C¹, Semciw A^{1,2}, Cook J¹, Pizzari T¹.

Author information

Abstract

OBJECTIVE:

To evaluate the diagnostic accuracy of 10 clinical tests that can be used in the diagnosis of greater trochanteric pain syndrome (GTPS) in women, and to compare these clinical tests to magnetic resonance imaging (MRI) findings.

MATERIALS AND METHODS:

Twenty-eight participants with GTPS (49.5 ± 22.0 years) and 18 asymptomatic participants (mean age \pm standard deviation [SD], 52.5 ± 22.8 years) were included. A blinded physiotherapist performed 10 pain provocation tests potentially diagnostic for GTPS—palpation of the greater trochanter, resisted external derotation test, modified resisted external derotation test, standard and modified Ober's tests, Patrick's or FABER test, resisted hip abduction, single-leg stance test, and the resisted hip internal rotation test. A sample of 16 symptomatic and 17 asymptomatic women undertook a hip MRI scan. Gluteal tendons were evaluated and categorized as no pathology, mild tendinosis, moderate tendinosis/partial tear, or full-thickness tear.

RESULTS:

Clinical test analyses show high specificity, high positive predictive value, low to moderate sensitivity, and negative predictive value for most clinical tests. All symptomatic and 88% of asymptomatic participants had pathological gluteal tendon changes on MRI, from mild tendinosis to full-thickness tear.

CONCLUSIONS:

The study found the Patrick's or FABER test, palpation of the greater trochanter, resisted hip abduction, and the resisted external derotation test to have the highest diagnostic test accuracy for GTPS. Tendon pathology on MRI is seen in both symptomatic and asymptomatic women.

30 A. IMPINGEMENT**Impingement assessments**

Knee Surg Sports Traumatol Arthrosc. 2017 Mar 7. doi: 10.1007/s00167-017-4484-z.

Important clinical descriptors to include in the examination and assessment of patients with femoroacetabular impingement syndrome: an international and multi-disciplinary Delphi survey.

Reiman MP^{1,2,3}, Thorborg K^{4,5}, Covington K⁶, Cook CE⁶, Hölmich P^{4,7}.
Author information

Abstract**PURPOSE:**

Determine which examination findings are key clinical descriptors of femoroacetabular impingement syndrome (FAIS) through use of an international, multi-disciplinary expert panel.

METHODS:

A three-round Delphi survey utilizing an international, multi-disciplinary expert panel operationally defined from international publications and presentations was utilized.

RESULTS:

All six domains (subjective examination, patient-reported outcome measures, physical examination, special tests, physical performance measures, and diagnostic imaging) had at least one descriptor with 75% consensus agreement for diagnosis and assessment of FAIS. Diagnostic imaging was the domain with the highest level of agreement. Domains such as patient-reported outcome measures (PRO's) and physical examination were identified as non-diagnostic measures (rather as assessments of disease impact).

CONCLUSION:

Although it also had the greatest level of variability in description of examination domains, diagnostic imaging continues to be the preeminent diagnostic measure for FAIS. No single domain should be utilized as the sole diagnostic or assessment parameter for FAIS. While not all investigated domains provide diagnostic capability for FAIS, those that do not are able to serve purpose as a measure of disease impact (e.g., impairments and activity limitations). The clinical relevance of this Delphi survey is the understanding that a comprehensive assessment measuring both diagnostic capability and disease impact most accurately reflects the patient with FAIS

32 A. KNEE/ACL**Return to play**

Br J Sports Med. 2017 Feb 21. pii: bjsports-2016-096836. doi: 10.1136/bjsports-2016-096836.

Eighty-three per cent of elite athletes return to preinjury sport after anterior cruciate ligament reconstruction: a systematic review with meta-analysis of return to sport rates, graft rupture rates and performance outcomes.

Lai CC¹, Ardern CL^{2,3,4}, Feller JA⁵, Webster KE².

[Author information](#)

Abstract**OBJECTIVES:**

The primary objective was to calculate the rate of return to sport (RTS) following anterior cruciate ligament (ACL) reconstruction in elite athletes. Secondary objectives were to estimate the time taken to RTS, calculate rates of ACL graft rupture, evaluate postsurgical athletic performance and identify determinants of RTS.

DESIGN:

Pooled RTS and graft rupture rates were calculated using random effects proportion meta-analysis. Time to RTS, performance data and determinants of RTS were synthesised descriptively.

DATA SOURCES:

MEDLINE, EMBASE, AMED, CINAHL, AMI, PEDro, SPORTDiscus and The Cochrane Library were searched from inception to 19 January 2016. Hand searching of 10 sports medicine journals and reference checking were also performed.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES:

Studies were included if they reported the ratio of elite athletes who returned to their preinjury level of sport following ACL reconstruction. Twenty-four studies were included.

RESULTS:

The pooled RTS rate was 83% (95% CI 77% to 88%). The mean time to RTS ranged from 6 to 13 months. The pooled graft rupture rate was 5.2% (95% CI 2.8% to 8.3%). Six out of nine studies that included a noninjured control group found no significant deterioration in athletic performance following ACL reconstruction. Indicators of greater athletic skill or value to the team were associated with RTS.

SUMMARY AND CONCLUSIONS:

Eighty-three per cent of elite athletes returned to sport following ACL reconstruction, while 5.2% sustained a graft rupture. Most athletes who returned to sport performed comparably with matched, uninjured controls. This information may assist in guiding expectations of athletes and clinicians following ACL reconstruction.

Does perturbation rx help

Clin Orthop Relat Res. 2017 Feb 21. doi: 10.1007/s11999-017-5280-2.

Report of the Clinical and Functional Primary Outcomes in Men of the ACL-SPORTS Trial: Similar Outcomes in Men Receiving Secondary Prevention With and Without Perturbation Training 1 and 2 Years After ACL Reconstruction.

Arundale AJ¹, Cummer K^{2,3}, Capin JJ², Zarzycki R², Snyder-Mackler L^{2,4}.

Author information

Abstract

BACKGROUND: Athletes often are cleared to return to activities 6 months after anterior cruciate ligament (ACL) reconstruction; however, knee function measures continue to improve up to 2 years after surgery. Interventions beyond standard care may facilitate successful return to preinjury activities and improve functional outcomes. Perturbation training has been used in nonoperative ACL injury and preoperative ACL reconstruction rehabilitation, but has not been examined in postoperative ACL reconstruction rehabilitation, specifically return to sport rehabilitation.

QUESTIONS/PURPOSES: The purpose of this study was to determine whether there were differences at 1 and 2 years after ACL reconstruction between the male SAP (strengthening, agility, and secondary prevention) and SAP+PERT (SAP protocol with the addition of perturbation training) groups with respect to (1) quadriceps strength and single-legged hop limb symmetry; (2) patient-reported knee outcome scores; (3) the proportion who achieve self-reported normal knee function; and (4) the time from surgery to passing return to sport criteria.

METHODS: Forty men who had completed ACL reconstruction rehabilitation and met enrollment criteria (3-9 months after ACL reconstruction, > 80% quadriceps strength limb symmetry, no pain, full ROM, minimal effusion) were randomized into the SAP or SAP+PERT groups of the Anterior Cruciate Ligament-Specialised Post-Operative Return to Sports trial (ACL-SPORTS), a single-blind randomized clinical study of secondary prevention and return to sport. Quadriceps strength, single-legged hopping, the International Knee Documentation Committee (IKDC) 2000 subjective knee form, Knee Injury and Osteoarthritis Outcome Score (KOOS)-sports and recreation, and KOOS-quality-of-life subscales were collected 1 and 2 years after surgery by investigators blind to group. Athletes were categorized as having normal or abnormal knee function at each time point based on IKDC score, and the time until athletes passed strict return-to-sport criteria was also recorded. T-tests, chi square tests, and analyses of variance were used to identify differences between the treatment groups over time.

RESULTS: There were no differences between groups for quadriceps symmetry (1 year: SAP = 101% ± 14%, SAP+PERT = 101% ± 14%; 2 years: SAP = 103% ± 11%, SAP+PERT = 98% ± 14%; mean differences between groups at 1 year: 0.4 [-9.0 to 9.8], 2 years = 4.5 [-4.3 to 13.1]; mean difference between 1 and 2 years: SAP = -1.0 [-8.6 to 6.6], SAP+PERT = 3.0 [-4.3 to 10.3], p = 0.45) or single-legged hop test limb symmetry. There were no clinically meaningful differences for any patient-reported outcome measures. There was no difference in the proportion of athletes in each group who achieved normal knee function at 1 year (SAP 14 of 19, SAP+PERT 18 of 20, odds ratio 0.31 [0.5-19.0]; p = 0.18); however, the SAP+PERT group had fewer athletes with normal knee function at 2 years (SAP 17 of 17, SAP+PERT 14 of 19, p = 0.03). There were no differences between groups in the time to pass return to sport criteria (SAP = 325 ± 199 days, SAP+PERT = 233 ± 77 days; mean difference 92 [-9 to 192], p = 0.09).

CONCLUSIONS: This randomized trial found few differences between an ACL rehabilitation program consisting of strengthening, agility, and secondary prevention and one consisting of those elements as well as perturbation training. In the absence of clinically meaningful differences between groups in knee function and self-reported outcomes measures, the results indicate that perturbation training may not contribute additional benefit to the strengthening, agility, and secondary prevention base of the ACL-SPORTS training program.

37. OSTEOARTHRITIS/KNEE**Exercise and balance training helps**

Arch Phys Med Rehabil. 2017 Mar 6. pii: S0003-9993(17)30136-3. doi: 10.1016/j.apmr.2017.01.029.

Dynamic balance training improves physical function in individuals with knee osteoarthritis: a pilot randomized controlled trial.

Takacs J¹, Krowchuk NM¹, Garland SJ², Carpenter MG³, Hunt MA⁴.
Author information

Abstract

OBJECTIVE:

To examine the effect of a targeted balance training program on dynamic balance and self-reported physical function in people with medial tibiofemoral osteoarthritis (OA).

DESIGN:

A single-blind randomized controlled trial.

SETTING:

Exercise gymnasium and community dwellings.

PARTICIPANTS:

Forty individuals with medial compartment knee OA.

INTERVENTION:

Ten weeks of partially-supervised exercises targeting dynamic balance and strength performed four times per week, or no intervention (control group).

MAIN OUTCOME MEASURES:

Dynamic balance was measured using the Community Balance and Mobility Scale (CB&M), and self-reported physical function was measured using the Western Ontario and McMaster Universities Arthritis Index (WOMAC) physical function subscale. Secondary outcomes included knee pain, fear of movement, knee joint proprioception, and muscle strength.

RESULTS:

Forty individuals underwent baseline testing, with 36 participants completing follow-up testing. Adherence to exercise in the training group was high, with 82.2% of all home-based exercise sessions completed. No significant changes were observed in any outcome in the control group at follow-up. Significant improvements in self-reported pain, physical function, and fear of movement were observed in the training group when compared to the control group. No other within- or between-group differences were observed.

CONCLUSION:

A ten week dynamic balance training program for people with knee OA significantly improved self-reported knee pain, physical function, and fear of movement, though there was no change in dynamic balance as quantified by the CB&M. Further research is needed to investigate how exercise may result in improvement on objective measures of dynamic balance.

41 A. ACHILLES TENDON AND CALF**Calf strains**

Br J Sports Med. 2017 Mar 4. pii: bjsports-2016-097177. doi: 10.1136/bjsports-2016-097177.

Calf muscle strain injuries in sport: a systematic review of risk factors for injury.

Green B^{1,2}, Pizzari T^{3,2}.

[Author information](#)

Abstract

OBJECTIVE: To systematically review the literature to identify risk factors for calf strain injury, and to direct future research into calf muscle injuries.

DESIGN: Systematic review **DATA SOURCES:** Database searches conducted for Medline, CINAHL, EMBASE, AMED, AUSPORT, SportDiscus, PEDro and Cochrane Library. Manual reference checks, ahead of press searches, citation tracking. From inception to June 2016.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES: Studies evaluating and presenting data related to intrinsic or extrinsic risk factors for sustaining future calf injury.

RESULTS: Ten studies were obtained for review. Subjects across football, Australian football, rugby union, basketball and triathlon were reported on, representing 5397 athletes and 518 calf/lower leg muscle injuries. Best evidence synthesis highlights chronological age and previous history of calf strain are the strongest risk factors for future calf muscle injury. Previous lower limb injuries (hamstring, quadriceps, adductor, knee) show some limited evidence for an association. Numerous factors lack evidence of an association, including height, weight, gender and side dominance.

SUMMARY/CONCLUSION: Increasing age and previous calf strain injury are the most predictive of future calf injury. The overall paucity of evidence and the trend for studies of a high risk of bias show that further research needs to be undertaken.

42. PLANTAR SURFACE**Exercise and plantar fasciitis**

Phys Ther Sport. 2017 Mar;24:44-52. doi: 10.1016/j.ptsp.2016.08.008. Epub 2016 Aug 18.

Strength training for plantar fasciitis and the intrinsic foot musculature: A systematic review.

Huffer D¹, Hing W², Newton R³, Clair M⁴.

Author information

Abstract

The aim was to critically evaluate the literature investigating strength training interventions in the treatment of plantar fasciitis and improving intrinsic foot musculature strength. A search of PubMed, CINAHL, Web of Science, SPORTSDiscus, EBSCO Academic Search Complete and PEDRO using the search terms plantar fasciitis, strength, strengthening, resistance training, intrinsic flexor foot, resistance training. Seven articles met the eligibility criteria. Methodological quality was assessed using the modified Downs and Black checklist. All articles showed moderate to high quality, however external validity was low. A comparison of the interventions highlights significant differences in strength training approaches to treating plantar fasciitis and improving intrinsic strength. It was not possible to identify the extent to which strengthening interventions for intrinsic musculature may benefit symptomatic or at risk populations to plantar fasciitis. There is limited external validity that foot exercises, toe flexion against resistance and minimalist running shoes may contribute to improved intrinsic foot musculature function. Despite no plantar fascia thickness changes being observed through high-load plantar fascia resistance training there are indications that it may aid in a reduction of pain and improvements in function. Further research should use standardised outcome measures to assess intrinsic foot musculature strength and plantar fasciitis symptoms.

45 B. MANUAL THERAPY CERVICAL**C spine mobs.****The effects of neck mobilization in patients with chronic neck pain: A randomized controlled trial**

Muhammad Nazim Farooq, PhD Scholar, Mohammad A. Mohseni-Bandpei, PhD 

Correspondence information about the author PhD Mohammad A. Mohseni-Bandpei  Email the author PhD Mohammad A. Mohseni-Bandpei, Syed Amir Gilani, PhD (Ultrasound), PhD (MSK Ultrasound), Muhammad Ashfaq, PP-DPT, Qamar Mahmood, PP-DPT

DOI: <http://dx.doi.org/10.1016/j.jbmt.2017.03.007>

References

Abstract**Objective**

To determine the effect of mobilization and routine physiotherapy on pain, disability, neck range of motion (ROM) and neck muscle endurance (NME) in patients having chronic mechanical neck pain (NP).

Methods

Sixty eight patients with chronic mechanical NP were randomly allocated into two groups by using a computer generated random sequence table with 34 patients in the multi-modal mobilization group and 34 patients in the routine physiotherapy group. Baseline values for pain, disability, NME, and neck ROM were recorded using visual analogue scale (VAS), neck disability index (NDI), neck flexor muscle endurance test and universal goniometer respectively, before the treatment. Each patient received 10 treatment sessions over a period of four weeks and at the end of four weeks all the outcome measures were recorded again.

Results

A paired *t*-test revealed significant pre to post treatment differences for all outcome measures in both groups ($p \leq 0.001$ in all instances). An independent *t*-test revealed statistically significant differences for pain, disability, NME, and neck ROM in favor of the multi-modal mobilization group with a between group difference of 1.57 cm for VAS ($p < 0.001$), 11.74 points for NDI ($p = 0.001$), 18.45 s for NME ($p < 0.001$) and 6.06–8.24° for neck ROM ($p < 0.05$).

Conclusion

The results suggest that a combination of cervical mobilization with routine physiotherapy is more effective for reducing pain and disability and improving NME and neck ROM in patients with chronic mechanical NP compared to routine physiotherapy alone.

C vs T manip for neck pain

Eur J Phys Rehabil Med. 2017 Feb 17. doi: 10.23736/S1973-9087.17.04431-8.

Effect of cervical versus thoracic spinal manipulation on peripheral neural features and grip strength in subjects with chronic mechanical neck pain. A randomized controlled trial.

Bautista-Aguirre F^{1,2}, Oliva-Pascual-Vaca Á³, Heredia-Rizo AM⁴, Boscá-Gandía JJ², Ricard F², Rodríguez-Blanco C⁴.

Author information

Abstract

BACKGROUND: Cervical and thoracic spinal manipulative therapy has shown positive impact for relief of pain and improve function in non-specific mechanical neck pain. Several attempts have been made to compare their effectiveness although previous studies lacked a control group, assessed acute neck pain or combined thrust and nonthrust techniques.

AIM: To compare the immediate effects of cervical and thoracic spinal thrust manipulations on mechanosensitivity of upper limb nerve trunks and grip strength in patients with chronic non-specific mechanical neck pain.

DESIGN: Randomized, single-blinded, controlled clinical trial.

SETTING: Private physiotherapy clinical consultancy.

POPULATION: Eighty-eight subjects (32.09 ± 6.05 years; 72.7% females) suffering neck pain (grades I or II) of at least 12 weeks of duration.

METHODS: Participants were distributed into three groups: 1) cervical group (n=28); 2) thoracic group (n=30); and 3) control group (n=30). One treatment session consisting of applying a high-velocity low-amplitude spinal thrust technique over the lower cervical spine (C7) or the upper thoracic spine (T3) was performed, while the control group received a sham-manual contact. Measurements were taken at baseline and after intervention of the pressure pain threshold over the median, ulnar and radial nerves. Secondary measures included assessing free-pain grip strength with a hydraulic dynamometer.

RESULTS: No statistically significant differences were observed when comparing between-groups in any of the outcome measures ($p > 0.05$). Those who received thrust techniques, regardless of the manipulated area, reported an immediate increase in mechanosensitivity over the radial (both sides) and left ulnar nerve trunks ($p < 0.05$), and grip strength ($p < 0.001$). For those in the control group, right hand grip strength and pain perception over the radial nerve also improved ($p \leq 0.025$).

CONCLUSIONS: Low-cervical and upper-thoracic thrust manipulation is no more effective than placebo to induce immediate changes on mechanosensitivity of upper limb nerve trunks and grip strength in patients with chronic non-specific mechanical neck pain.

CLINICAL REHABILITATION IMPACT: A single treatment session using cervical or thoracic thrust techniques is not enough to achieve clinically relevant changes on neural mechanosensitivity and grip strength in chronic non-specific mechanical neck pain.

45 C. MANUAL THERAPY THORACIC

Manip and Axial elongation

J Phys Ther Sci. 2017 Feb;29(2):282-284. doi: 10.1589/jpts.29.282. Epub 2017 Feb 24.

Effects of manipulation of the thorax and intensity of the pressure biofeedback unit on the superficial cervical flexors muscle during craniocervical flexion exercise.

Yang JM¹, Cha HG², Kim MK³.

Author information

Abstract

[Purpose] This study examined the effects of manipulation of the thorax and the intensity of the pressure biofeedback unit on the superficial cervical flexors muscle during craniocervical flexion exercise.

[Subjects and Methods] Thirty three subjects participated in the experiment. Thirty three healthy people without any orthopedic history were also selected. The subjects could monitor the pressure applied to cervical vertebra 3 of the craniocervical junction by markings on the pressure biofeedback unit. Craniocervical flexion exercise was performed for 20 seconds per pressure, and two minutes of rest was allowed after exercise to reduce muscle fatigue.

[Results] Significant differences in the post-training gains in the sternocleidomastoid and scalene were observed between the thorax fixation group and thorax non-fixation group. The thorax fixation group showed that muscle activation of the sternocleidomastoid and scalene was increased when the pressure biofeedback unit intensity was 40 mmHg than when pressure biofeedback unit intensity was 20 mmHg and 30 mmHg in the post-hoc result. The thorax non-fixation group showed that muscle activation of the sternocleidomastoid and scalene was higher when the pressure biofeedback unit intensity was 40mmHg compared to that when the pressure biofeedback unit intensity was 20mmHg in the post-hoc result.

[Conclusion] Craniocervical flexion exercise is a clinically effective method that reduces the superficial neck flexor muscle activation.

46 A. UPPER LIMB NEUROMOBILIZATION**Scapula position****The influence of a depressed scapular alignment on upper limb neural tissue mechanosensitivity and local pressure pain sensitivity**

Patricia Martínez-Merineró Enrique Lluch^{1m} Tomas Gallezo-Izquierdo Daniel Pecos-Martín
Gustavo Plaza-Manzano² Susana Nuñez-Nagy Deborah Falla

DOI: <http://dx.doi.org/10.1016/j.msksp.2017.03.001>

Highlights

- A depressed scapular position is associated with lower PPT over cervical sites.
- A depressed scapular position is associated with greater upper limb neural tissue mechanosensitivity.
- The findings help to appreciate the potential development of neck-arm pain due to an abnormal scapular position.

Abstract**Background**

A depressed scapula alignment could lead to prolonged and repetitive stress or compression of the brachial plexus, resulting in sensitization of neural tissue. However, no study has investigated the influence of alignment of the scapulae on sensitization of upper limb neural tissue in otherwise asymptomatic people. In this case-control study, we investigate the influence of a depressed scapular alignment on mechanosensitivity of the upper limb peripheral nervous system as well as pressure pain thresholds (PPT).

Methods

Asymptomatic individuals with neutral vertical scapular alignment (n = 25) or depressed scapular alignment (n = 25) participated. We measured the upper limb neurodynamic test (ULNT1), including assessment of symptom response and elbow range of motion (ROM), and PPT measured over upper limb peripheral nerve trunks, the upper trapezius muscle and overlying cervical zygapophyseal joints.

Results

Subjects with a depressed scapula reported significantly greater pain intensity (t = 5.7, p < 0.0001) and reduced elbow extension ROM (t = -2.7, p < 0.01) during the ULNT1 compared to those with a normal scapular orientation. Regardless of the location tested, the group presenting with a depressed scapula had significantly lower PPT compared to those with a normal scapular orientation (PPT averaged across all sites: normal orientation: 3.3 ± 0.6 kg/cm², depressed scapula: 2.1 ± 0.5 kg/cm², p < 0.00001).

Conclusions

Despite being asymptomatic, people with a depressed scapula position have greater neck and upper limb neural tissue mechanosensitivity when compared to people with a normal scapula orientation. This study offers insight into the potential development of neck-arm pain due to a depressed scapular position.

46 B. LOWER LIMB NEUROMOILIZATION**Accuracy of neurological testing**

BMC Musculoskelet Disord. 2017 Feb 23;18(1):93. doi: 10.1186/s12891-016-1383-2.

Accuracy of clinical neurological examination in diagnosing lumbo-sacral radiculopathy: a systematic literature review.

Tawa N^{1,2}, Rhoda A³, Diener I³.

Author information

Abstract**BACKGROUND:**

Lumbar radiculopathy remains a clinical challenge among primary care clinicians in both assessment and diagnosis. This often leads to misdiagnosis and inappropriate treatment of patients resulting in poor health outcomes, exacerbating this already debilitating condition. This review evaluated 12 primary diagnostic accuracy studies that specifically assessed the performance of various individual and grouped clinical neurological tests in detecting nerve root impingement, as established in the current literature.

METHODS:

Eight electronic data bases were searched for relevant articles from inception until July 2016. All primary diagnostic studies which investigated the accuracy of clinical neurological test (s) in diagnosing lumbar radiculopathy among patients with low back and referred leg symptoms were screened for inclusion. Qualifying studies were retrieved and independently assessed for methodological quality using the 'Quality Assessment of Diagnostic tests Accuracy Studies' criteria.

RESULTS:

A total of 12 studies which investigated standard components of clinical neurological examination of (sensory, motor, tendon reflex and neuro-dynamics) of the lumbo-sacral spine were included. The mean inter-observer agreement on quality assessment by two independent reviewers was fair ($k = 0.3 - 0.7$). The diagnostic performance of sensory testing using MR imaging as a reference standard demonstrated a sensitivity (confidence interval 95%) 0.61 (0.47-0.73) and a specificity of 0.63 (0.38-0.84). Motor tests sensitivity was poor to moderate, ranging from 0.13 (0.04-0.31) to 0.61 (0.36-0.83). Generally, the diagnostic performance of reflex testing was notably good with specificity ranging from (confidence interval 95%) 0.60 (0.51-0.69) to 0.93 (0.87-0.97) and sensitivity ranging from 0.14 (0.09-0.21) to 0.67 (0.21-0.94). Femoral nerve stretch test had a high sensitivity of (confidence interval 95%) 1.00 (0.40-1.00) and specificity of 0.83 (0.52-0.98) while SLR test recorded a mean sensitivity of 0.84 (0.72-0.92) and specificity of 0.78 (0.67-0.87).

CONCLUSIONS:

There is a scarcity of studies on the diagnostic accuracy of clinical neurological examination testing. Furthermore there seem to be a disconnect among researchers regarding the diagnostic utility of lower limb neuro-dynamic tests which include the Straight Leg Raise and Femoral Nerve tests for sciatic and femoral nerve respectively. Whether these tests are able to detect the presence of disc herniation and subsequent nerve root compression or hyper-sensitivity of the sacral and femoral plexus due to mechanical irritation still remains debatable.

48 A. STM**Graston hamstring helps LBP**

J Phys Ther Sci. 2017 Feb;29(2):224-227. doi: 10.1589/jpts.29.224. Epub 2017 Feb 24.

Immediate effects of Graston Technique on hamstring muscle extensibility and pain intensity in patients with nonspecific low back pain.

Moon JH¹, Jung JH², Won YS³, Cho HY⁴.

Author information

Abstract

[Purpose] The purpose of this study was to analyze the effect of Graston Technique on hamstring extensibility and pain intensity in patients with nonspecific low back pain.

[Subjects and Methods] Twenty-four patients with nonspecific low back pain (27-46 years of age) enrolled in the study. All participants were randomly assigned to one of two groups: Graston technique group (n=12) and a static stretching group (n=12). The Graston Technique was used on the hamstring muscles of the experimental group, while the static stretching group performed static stretching. Hamstring extensibility was recorded using the sit and reach test, and a visual analog scale was used to measure pain intensity.

[Results] Both groups showed a significant improvement after intervention. In comparison to the static stretching group, the Graston technique group had significantly more improvement in hamstring extensibility.

[Conclusion] The Graston Technique is a simple and effective intervention in nonspecific low back pain patients to improve hamstring extensibility and lower pain intensity, and it would be beneficial in clinical practice.

Vojta system of pressure produces central changes

Neuroscience. 2017 Feb 14;348:11-22. doi: 10.1016/j.neuroscience.2017.02.005.

Modulation of the sensorimotor system by sustained manual pressure stimulation.

Hok P¹, Opavský J², Kutín M³, Tüdös Z⁴, Kaňovský P⁵, Hlušík P⁶.

Author information

Abstract

In Vojta physiotherapy, also known as reflex locomotion therapy, prolonged peripheral pressure stimulation induces complex generalized involuntary motor responses and modifies subsequent behavior, but its neurobiological basis remains unknown. We hypothesized that the stimulation would induce sensorimotor activation changes in functional magnetic resonance imaging (fMRI) during sequential finger opposition. Thirty healthy volunteers (mean age 24.2) underwent two randomized fMRI sessions involving manual pressure stimulation applied either at the right lateral heel according to Vojta, or at the right lateral ankle (control site). Participants were scanned before and after the stimulation when performing auditory-paced sequential finger opposition with their right hand. Despite an extensive activation decrease following both stimulation paradigms, the stimulation of the heel specifically led to an increase in task-related activation in the predominantly contralateral pontomedullary reticular formation and bilateral posterior cerebellar hemisphere and vermis. Our findings suggest that sustained pressure stimulation of the foot is associated with differential short-term changes in hand motor task-related activation depending on the stimulation. This is the first evidence for brainstem modulation after peripheral pressure stimulation, suggesting that the after-effects of reflex locomotion physiotherapy involve a modulation of the pontomedullary reticular formation.

48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE

Helps peripheral symptoms

J Orthop Sports Phys Ther. 2017 Mar 3:1-21. doi: 10.2519/jospt.2017.7055.

Complaints of Upper Extremity Numbness and Tingling Relieved With Dry Needling of the Teres Minor and Infraspinatus: A Case Report.

Lane E¹, Clewley D², Koppenhaver S³.
Author information

Abstract

Study Design Case report. **Background** Abnormal sensation, such as numbness or tingling, is traditionally thought to originate from neural compression. There is limited evidence to support reports of abnormal sensation arising from a trigger point.

Case Description The patient was a 60-year-old female with primary complaints of right shoulder pain and secondary complaints of neck pain and right upper extremity numbness. Cervical spine neurological examination was unremarkable, and manual examination did not reproduce the patient's arm numbness or tingling symptoms. Compression of a trigger point in infraspinatus and teres minor reproduced the patient's primary complaints of shoulder pain. The initial intervention included dry needling (DN), which reproduced her upper extremity numbness. Subsequent treatment included manual therapy and exercise.

Outcomes The patient was seen a total of three visits, including the evaluation. Dry needling was utilized in two of her three visits. At discharge, she reported complete resolution of pain and altered sensation. Additionally, her scores on the shortened form of the Disability of the Arm, Shoulder, and Hand, Numerical Pain Rating Score, and Global Rating of Change exceeded the minimal clinically important difference (MCID). These outcomes were maintained at 2- and 12-month follow-up phone calls.

Discussion This case report described the examination and use of dry needling in a case where the diagnosis was unclear. Clinicians may consider trigger point referral when examining patients with reports of abnormal sensation, especially when a more common cause cannot be identified. **Level of Evidence** Therapy, Level 4. J Orthop Sports Phys Ther, Epub 3 Mar 2017. doi:10.2519/jospt.2017.7055.

Infraspinatus TP's

J Altern Complement Med. 2017 Mar 7. doi: 10.1089/acm.2016.0306.

Referred Pain Patterns of the Infraspinatus Muscle Elicited by Deep Dry Needling and Manual Palpation.

Poveda-Pagán EJ¹, Lozano-Quijada C¹, Segura-Heras JV², Peral-Berna M³, Lumbreras B⁴.
Author information

Abstract**OBJECTIVES:**

To identify the most common referred pain (ReP) pattern of the infraspinatus myofascial trigger point (MTrP) and compare its coincidence with the original ReP pattern, to verify whether there are any significant differences by sex and types of technique and to determine the observed signs and symptoms evoked by deep dry needling (DDN) and manual palpation (MPal).

DESIGN:

A cohort study of patients randomized to two different examination methods (July and August 2016).

SETTINGS:

Students and staff recruited from Miguel Hernandez University (Southeast Spain).

PATIENTS:

One hundred thirty-three participants (70.7% women) with shoulder complaints were randomly assigned to either an MPal (n = 67) or DDN group (n = 66).

INTERVENTIONS:

The same physiotherapist carried out the techniques on all participants, and the same protocol was followed for both the DDN and MPal groups. The physiotherapist did not ask participants about their pain features or other relevant issues.

OUTCOME MEASURES:

Local twitch response (LTR) and ReP assessed through a visual analogue scale and features of ReP of the infraspinatus muscle.

RESULTS:

The areas with the highest percentage of ReP were the front (area 3; 27.1%) and back (area 11; 21.1%) of the arm, anterior (area 4; 36.1%) and posterior (area 12; 42.1%) shoulder, and infraspinatus muscle area. DDN proved to be significantly easier than MPal in evoking an LTR ($p \leq 0.001$). There were significant differences between sexes in zone 2 ($p = 0.041$) and no statistically significant differences were found by technique.

CONCLUSIONS:

The ReP pattern of the infraspinatus muscle coincides with the original pattern described by Travell and Simons, although the neck area should be questioned. The study found no significant differences in the ReP pattern by sex and when comparing MPal with DDN of MTrP of the infraspinatus muscle. DDN proved to be significantly easier than MPal in evoking an LTR.

TP and HA's

Clin J Pain. 2017 Mar;33(3):238-245. doi: 10.1097/AJP.0000000000000390.

Active Trigger Points in the Cervical Musculature Determine the Altered Activation of Superficial Neck and Extensor Muscles in Women With Migraine.

Florencio LL¹, Ferracini GN, Chaves TC, Palacios-Ceña M, Ordás-Bandera C, Speciali JG, Falla D, Grossi DB, Fernández-de-Las-Peñas C.

[Author information](#)

Abstract**OBJECTIVE:**

Previous studies have demonstrated the presence of active trigger points (TrPs) in women with migraine reproducing their headache attacks. No study has investigated whether these TrPs can alter cervical muscle function in migraine. Our objective was to analyze differences in the activation of superficial neck flexor and extensor muscles in women with migraine considering the presence of active TrPs in the splenius capitis (SC), the upper trapezius (UT), and the sternocleidomastoid (SCM) muscles.

METHODS:

Surface electromyography (EMG) was recorded from the superficial flexors (SCM and anterior scalene) and the extensor (SC, UT) muscles bilaterally as participants performed a staged task of cranio-cervical flexion (CCF; 5 contractions representing a progressive increase in CCF range of motion) in 70 women with migraine. They were stratified according to the presence or the absence of active TrPs in the SCM, the SC, or the UT musculature. A comparison of EMG normalized root mean square (RMS) values was conducted with a 2×5 analysis of covariance with the task level as the within-subject variable, group stratified by active TrPs as the between-subjects variable and the presence of neck pain as a covariable.

RESULTS:

All patients exhibited active TrPs in their cervical muscles, which reproduced their migraine. Women with migraine exhibiting active TrPs in the SCM ($P<0.01$), the UT ($P<0.05$), or the SC ($P<0.05$) muscles had lower normalized RMS values of their superficial neck flexors than those without active TrPs in the same muscles. In addition, individuals exhibiting active TrPs in the SC and the UT (both, $P<0.05$) muscles had higher normalized RMS values in the SC muscle than those without active TrPs in the same muscles.

CONCLUSIONS:

The presence of active TrPs in the cervical musculature determines an altered activation of superficial neck and extensor muscles during low-load, isometric CCF contractions in women with migraine.

Dry needling as good as cortisone in hip pain rx

J Orthop Sports Phys Ther. 2017 Mar 3;1-30. doi: 10.2519/jospt.2017.6994.

Dry Needling Versus Cortisone Injection in the Treatment of Greater Trochanteric Pain Syndrome: A Non-Inferiority Randomized Clinical Trial.

Brennan KL¹, Allen BC¹, Maldonado YM¹.
Author information

Abstract

Study Design Prospective, randomized, partially-blinded.

Background Greater trochanteric pain syndrome (GTPS) is the current terminology for what was once called greater trochanteric or sub-gluteal bursitis. Cortisone (corticosteroid) injections into the lateral hip is a traditionally accepted treatment for this condition. However, the effectiveness of injecting the bursa with steroids is increasingly being questioned, and an equally effective treatment with fewer adverse side-effects would be beneficial.

Objective To investigate whether administration of dry needling (DN) is non-inferior to cortisone injections in reducing lateral hip pain and improving function in patients with GTPS.

Methods Forty-three participants (50 hips observed), all with GTPS, were randomly assigned to a group receiving cortisone injections or DN. Treatments were administered over 6 weeks, and clinical outcomes were collected at 0, 1,3, and 6 weeks. The primary outcome measure was the numeric pain rating scale (0-10). The secondary outcome measure was the Patient Specific Function Scale (0-10). Medication intake for pain was collected as a tertiary outcome.

Results Baseline characteristics were similar in the groups. A non-inferiority test for repeated measures design on pain and averaged function scores at 6 weeks (with a non-inferiority margin of 1.5 for both outcomes), indicates non-inferiority of DN vs. cortisone injections (p-values of <0.01 for both). Medication usage (p-value=0.74) was not different between groups at the same time point.

Conclusions Cortisone injections for GTPS did not provide greater pain relief or reduction in functional limitations than DN. Our data suggest that DN is a non-inferior treatment alternative to cortisone injections in this patient population. Level of Evidence Therapy, level 1b. Registered December 2, 2015 at www.clinicaltrials.gov (NCT02639039) J Orthop Sports Phys Ther, Epub 3 Mar 2017. doi:10.2519/jospt.2017.6994.

48 C. MUSCLES**Core strength and reduced hamstring injuries**

Am J Sports Med. 2017 Mar 1:363546516687750. doi: 10.1177/0363546516687750.

Proximal Neuromuscular Control Protects Against Hamstring Injuries in Male Soccer Players.

Schuermans J¹, Danneels L¹, Van Tiggelen D¹, Palmans T¹, Witvrouw E¹.

Author information

Abstract**BACKGROUND:**

With their unremittingly high incidence rate and detrimental functional repercussions, hamstring injuries remain a substantial problem in male soccer. Proximal neuromuscular control ("core stability") is considered to be of key importance in primary and secondary hamstring injury prevention, although scientific evidence and insights on the exact nature of the core-hamstring association are nonexistent at present.

HYPOTHESIS:

The muscle activation pattern throughout the running cycle would not differ between participants based on injury occurrence during follow-up.

STUDY DESIGN:

Case-control study; Level of evidence, 3.

METHODS:

Sixty amateur soccer players participated in a multimuscle surface electromyography (sEMG) assessment during maximal acceleration to full-speed sprinting. Subsequently, hamstring injury occurrence was registered during a 1.5-season follow-up period. Hamstring, gluteal, and trunk muscle activity time series during the airborne and stance phases of acceleration were evaluated and statistically explored for a possible causal association with injury occurrence and absence from sport during follow-up.

RESULTS:

Players who did not experience a hamstring injury during follow-up had significantly higher amounts of gluteal muscle activity during the front swing phase ($P = .027$) and higher amounts of trunk muscle activity during the backswing phase of sprinting ($P = .042$). In particular, the risk of sustaining a hamstring injury during follow-up lowered by 20% and 6%, with a 10% increment in normalized muscle activity of the gluteus maximus during the front swing and the trunk muscles during the backswing, respectively ($P < .024$).

CONCLUSION:

Muscle activity of the core unit during explosive running appeared to be associated with hamstring injury occurrence in male soccer players. Higher amounts of gluteal and trunk muscle activity during the airborne phases of sprinting were associated with a lower risk of hamstring injuries during follow-up. Hence, the present results provide a basis for improved, evidence-based rehabilitation and prevention, particularly focusing on increasing neuromuscular control of the gluteal and trunk muscles during sport-specific activities (eg, sprint drills, agility drills).

Hamstring tear rehab

Med Sci Sports Exerc. 2017 Mar 8. doi: 10.1249/MSS.0000000000001241.

A Multifactorial, Criteria-based Progressive Algorithm for Hamstring Injury Treatment.

Mendiguchia J¹, Martinez-Ruiz E, Edouard P, Morin JB, Martinez-Martinez F, Idoate F, Mendez-Villanueva A.

Author information

Abstract**INTRODUCTION:**

Given the prevalence of hamstring injuries in football, a rehabilitation program that effectively promotes muscle tissue repair and functional recovery is paramount to minimize re-injury risk and optimize player performance and availability.

PURPOSE:

To assess the concurrent effectiveness of administering an individualized and multifactorial criteria-based algorithm (RA) on hamstring injury rehabilitation in comparison to employing a general rehabilitation protocol (RP).

METHODS:

Implementing a double-blind randomised controlled trial approach, two equal groups of 24 football players (48 total) completed either an RA group or a validated RP group five days following an acute hamstring injury.

RESULTS:

Within 6 months after return to sport, 6 hamstring re-injuries occurred in RP versus 1 in RA [relative risk = 6 (90% confidence interval: 1-35); clinical inference: very likely beneficial effect]. The average duration of return to sport was possibly quicker (ES=0.34±0.42) in RP (23.2±11.7 days) than in RA (25.5±7.8 days) (-13.8%, 90%CI: -34.0 to 3.4%; clinical inference: possibly small effect). At the time to return to sport, RA players showed substantially better 10-m time, maximal sprinting speed as well as greater mechanical variables related to speed (i.e., maximum theoretical speed and maximal horizontal power) than the RP.

CONCLUSIONS:

Although return to sport was slower, male football players who underwent an individualized, multifactorial, criteria-based algorithm with a performance- and primary risk factor-oriented training program from the early stages of the process markedly decreased the risk of re-injury compared to a general protocol where long length strength training exercises were prioritized.

52. EXERCISE**Axial elongation**

Am J Phys Med Rehabil. 2017 Feb 21. doi: 10.1097/PHM.0000000000000721.

The Effect of Different Exercise Programs on Size and Function of Deep Cervical Flexor Muscles in Patients with Chronic Nonspecific Neck Pain: A Systematic Review of Randomized Controlled Trials.

Amiri Arimi S¹, Mohseni Bandpei MA, Javanshir K, Rezasoltani A, Biglarian A.
Author information

Abstract**BACKGROUND:**

Neck pain is one of the major public health problems, which has a great impact on people's lives.

OBJECTIVES:

The purpose of this study was to systematically review published studies conducted on the effect of different exercise programs on activity, size, endurance, and strength of deep cervical flexor (DCF) muscles in patients with chronic neck pain.

METHODS:

The PubMed, Science Direct, OVID, Google scholar, Cochrane Library, and Physiotherapy Evidence Databases were searched to determine relevant articles published from 1990 to March 2016. The articles were qualitatively assessed based on the Physiotherapy Evidence Databases scale for randomized controlled trials studies.

RESULTS:

Nine articles were identified and evaluated in the final analysis. Four studies had moderate quality, and five studies had good quality. From those nine studies, eight studies gave support to the effectiveness of specific low-load exercise training on DCF muscles parameters, while one study reported no significant difference between this exercise and other cervical exercise programs.

CONCLUSION:

The results of reviewed studies are in favor of specific low-load craniocervical flexion exercise, which seems to be a highly effective exercise regimen compared to other types of exercises in improving DCF muscles impairments in patients with chronic neck pain.

53. CORE**A good core help with hamstring tear prevention**

Am J Sports Med. 2017 Mar 1:363546516687750. doi: 10.1177/0363546516687750.

Proximal Neuromuscular Control Protects Against Hamstring Injuries in Male Soccer Players.

Schuermans J¹, Danneels L¹, Van Tiggelen D¹, Palmans T¹, Witvrouw E¹.
Author information

Abstract**BACKGROUND:**

With their unremittingly high incidence rate and detrimental functional repercussions, hamstring injuries remain a substantial problem in male soccer. Proximal neuromuscular control ("core stability") is considered to be of key importance in primary and secondary hamstring injury prevention, although scientific evidence and insights on the exact nature of the core-hamstring association are nonexistent at present.

HYPOTHESIS:

The muscle activation pattern throughout the running cycle would not differ between participants based on injury occurrence during follow-up.

STUDY DESIGN:

Case-control study; Level of evidence, 3.

METHODS:

Sixty amateur soccer players participated in a multimuscle surface electromyography (sEMG) assessment during maximal acceleration to full-speed sprinting. Subsequently, hamstring injury occurrence was registered during a 1.5-season follow-up period. Hamstring, gluteal, and trunk muscle activity time series during the airborne and stance phases of acceleration were evaluated and statistically explored for a possible causal association with injury occurrence and absence from sport during follow-up.

RESULTS:

Players who did not experience a hamstring injury during follow-up had significantly higher amounts of gluteal muscle activity during the front swing phase ($P = .027$) and higher amounts of trunk muscle activity during the backswing phase of sprinting ($P = .042$). In particular, the risk of sustaining a hamstring injury during follow-up lowered by 20% and 6%, with a 10% increment in normalized muscle activity of the gluteus maximus during the front swing and the trunk muscles during the backswing, respectively ($P < .024$).

CONCLUSION:

Muscle activity of the core unit during explosive running appeared to be associated with hamstring injury occurrence in male soccer players. Higher amounts of gluteal and trunk muscle activity during the airborne phases of sprinting were associated with a lower risk of hamstring injuries during follow-up. Hence, the present results provide a basis for improved, evidence-based rehabilitation and prevention, particularly focusing on increasing neuromuscular control of the gluteal and trunk muscles during sport-specific activities (eg, sprint drills, agility drills).

56. ATHLETICS**Youth activity important**

Br J Sports Med. 2017 Mar 13. pii: bjsports-2016-096933. doi: 10.1136/bjsports-2016-096933.

Timing of the decline in physical activity in childhood and adolescence: Gateshead Millennium Cohort Study.

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Author information

Abstract**BACKGROUND AND AIM:**

There is a widely held and influential view that physical activity begins to decline at adolescence. This study aimed to identify the timing of changes in physical activity during childhood and adolescence.

METHODS:

Longitudinal cohort study (Gateshead Millennium Study) with 8 years of follow-up, from North-East England. Cohort members comprise a socioeconomically representative sample studied at ages 7, 9, 12 and 15 years; 545 individuals provided physical activity data at two or more time points. Habitual total volume of physical activity and moderate-to-vigorous intensity physical activity (MVPA) were quantified objectively using the Actigraph accelerometer over 5-7 days at the four time points. Linear mixed models identified the timing of changes in physical activity across the 8-year period, and trajectory analysis was used to identify subgroups with distinct patterns of age-related changes.

RESULTS:

Four trajectories of change in total volume of physical activity were identified representing 100% of all participants: all trajectories declined from age 7 years. There was no evidence that physical activity decline began at adolescence, or that adolescent declines in physical activity were substantially greater than the declines during childhood, or greater in girls than boys. One group (19% of boys) had relatively high MVPA which remained stable between ages 7 and 15 years.

CONCLUSIONS:

Future policy and research efforts to promote physical activity should begin well before adolescence, and should include both boys and girls.

59. PAIN**MRI's and chronic pain**

Clin J Pain. 2017 Apr;33(4):281-290. doi: 10.1097/AJP.0000000000000415.

Evaluation of Chronic Pain Using Magnetic Resonance (MR) Neuroimaging Approaches: What the Clinician Needs to Know.

Kumbhare DA¹, Elzibak AH, Noseworthy MD.
Author information

Abstract

OBJECTIVES:

Numerous neuroimaging techniques have been recently used to investigate central mechanisms involved in pain perception and to examine morphological and functional brain alterations associated with chronic pain. Compared to self-reporting approaches, objective imaging techniques are expected to potentially lead to better pain assessment and guide management. This comprehensive scoping review aims to identify recent magnetic resonance imaging (MRI) approaches that have been used to characterize the brain of chronic pain subjects, using structural, chemical and functional MRI techniques.

METHODS:

A systematic search and review of the literature was conducted and the resultant studies were critically examined for relevance.

RESULTS:

MRI neuroimaging of various chronic pain conditions were summarized. We classified the collected studies into: structural brain alterations, VBM (voxel based morphology) examination of structural changes, DTI, changes in brain chemistry, functional and blood flow brain alterations.

DISCUSSION:

From our clinical experience, we have noted that most clinicians are not aware of the capabilities of advanced MRI methods in assessing cortical manifestations of chronic pain. In addition, many clinicians are not aware of the cortical alterations present in individuals with chronic pain. This comprehensive scoping review thus sets out to first summarize MRI neuroimaging techniques that are available in the current literature to examine chronic pain. We then identify cortical MR approaches that have been able to reliably predict transition from acute to chronic pain. Finally, we summarize MRI neuroimaging techniques that have been used to track treatment response of individuals with chronic pain.

Neuropathic pain analysis

BMC Neurol. 2017 Mar 4;17(1):48. doi: 10.1186/s12883-017-0825-2.

Measurement properties of painDETECT: Rasch analysis of responses from community-dwelling adults with neuropathic pain.

Packham TL¹, Cappelleri JC², Sadosky A³, MacDermid JC^{4,5}, Brunner F⁶.
[Author information](#)

Abstract**BACKGROUND:**

painDETECT (PD-Q) is a self-reported assessment of pain qualities developed as a screening tool for pain of neuropathic origin. Rasch analysis is a strategy for examining the measurement characteristics of a scale using a form of item response theory. We conducted a Rasch analysis to consider if the scoring and measurement properties of PD-Q would support its use as an outcome measure.

METHODS:

Rasch analysis was conducted on PD-Q scores drawn from a cross-sectional study of the burden and costs of NeP. The analysis followed an iterative process based on recommendations in the literature, including examination of sequential scoring categories, unidimensionality, reliability and differential item function. Data from 624 persons with a diagnosis of painful diabetic polyneuropathy, small fibre neuropathy, and neuropathic pain associated with chronic low back pain, spinal cord injury, HIV-related pain, or chronic post-surgical pain was used for this analysis.

RESULTS:

PD-Q demonstrated fit to the Rasch model after adjustments of scoring categories for four items, and omission of the time course and radiating questions. The resulting seven-item scale of pain qualities demonstrated good reliability with a person-separation index of 0.79. No scoring bias (differential item functioning) was found for this version.

CONCLUSIONS:

Rasch modelling suggests the seven pain-qualities items from PD-Q may be used as an outcome measure. Further research is required to confirm validity and responsiveness in a clinical setting.

Pain science helps

Physiotherapy. 2017 Mar;103(1):98-105. doi: 10.1016/j.physio.2015.11.005. Epub 2016 Jan 25.

Psychologically informed physiotherapy for chronic pain: patient experiences of treatment and therapeutic process.

Wilson S¹, Chaloner N², Osborn M³, Gauntlett-Gilbert J³.
Author information

Abstract**OBJECTIVES:**

Psychologically informed physiotherapy is used widely with patients with chronic pain. This study aimed to investigate patients' beliefs about, and experiences of, this type of treatment, and helpful and unhelpful experiences.

DESIGN:

A qualitative study using Interpretative Phenomenological Analysis of semi-structured interviews.

PARTICIPANTS:

Participants (n=8) were recruited within a national specialist pain centre following a residential pain management programme including 2.25hours of physiotherapy each day. Participants were eligible for inclusion if they had achieved clinically reliable improvements in physical functioning during treatment. Interviews were conducted 3 months post-treatment.

RESULTS:

Participants reported differing experiences of physiotherapy interventions and differences in the therapeutic relationship, valuing a more individualised approach. The themes of 'working with the whole of me', 'more than just a professional', 'awareness' and 'working through challenges in the therapeutic relationship' emerged as central to behavioural change, together with promotion of perceptions of improved capability and physical capacity.

CONCLUSION:

Psychologically informed physiotherapy is an effective treatment for some patients with chronic pain. Participants experienced this approach as uniquely different from non-psychologically informed physiotherapy approaches due to its focus on working with the patient's whole experience. Therapeutic alliance and management of relationship ruptures may have more importance than previously appreciated in physiotherapy.