

ABSTRACTS

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2. LBP

Breathing and exercise

J Phys Ther Sci. 2016 Jun;28(6):1738-42. doi: 10.1589/jpts.28.1738. Epub 2016 Jun 28.

Effect of exhalation exercise on trunk muscle activity and Oswestry disability index of patients with chronic low back pain.

Kang JI¹, Jeong DK¹, Choi H².

[Purpose] This study investigated the effect of exhalation exercises on trunk muscle activity and Oswestry Disability Index by inducing trunk muscle activity through increasing intra-abdominal pressure and activating muscles, contributing to spinal stability.

[Subjects and Methods] This intervention program included 20 male patients with chronic low back pain. A total of 10 subjects each were randomly assigned to an exhalation exercise group as the experimental group and a spinal stabilization exercise group as the control group. [

Results] There were significant differences in the activities of the rectus abdominis, transverse abdominis, external oblique abdominal, and erector spinae muscles as well as in the Oswestry Disability Index within the experimental group. There were meaningful differences in the activities of the rectus abdominis, external oblique abdominal, and erector spinae muscles and in the Oswestry Disability Index within the control group. In addition, there was a meaningful intergroup difference in transverse abdominis muscle activity alone and in the Oswestry Disability Index. [

Conclusion] The breathing exercise effectively increased muscle activity by training gross and fine motor muscles in the trunk. Moreover, it was verified as a very important element for strengthening body stability because it both released and prevented low back pain.

KEYWORDS:

Breathing exercise; Chronic low back pain; Trunk muscle activity

PMID: [27390406](#)

Mechanical factors

Spine (Phila Pa 1976). 2016 Jul 1;41(13):1089-95. doi: 10.1097/BRS.0000000000001451.

Do Work-Related Mechanical and Psychosocial Factors Contribute to the Social Gradient in Low Back Pain?: A 3-Year Follow-Up Study of the General Working Population in Norway.

Sterud T¹, Johannessen HA, Tynes T.

STUDY DESIGN:

A prospective cohort study.

OBJECTIVE:

The aim of the study was to investigate the extent to which work-related factors contribute to the social gradient in low back pain (LBP).

SUMMARY OF BACKGROUND DATA:

A social gradient in LBP is well established, but only a few studies have examined the extent to which exposure to mechanical and psychosocial work environment factors is a pathway for this gradient.

METHODS:

A randomly drawn cohort from the general population in Norway aged 18 to 66 years was followed up for 3 years (n=12,550, response rate at baseline=67%). Eligible respondents were in paid work during 2006 and 2009 (n=6819). Based on administrative register data respondents were coded into five educational levels (university/college ≥ 4 years was set as the reference group). Outcome of interest was self-reported moderate or severe LBP at follow-up adjusted for baseline LBP.

RESULTS:

In total, 11.2% (397 individuals) men and 14.5% (461 individual) women reported LBP at follow-up. There was a strong social gradient ranging from 16.4% (elementary) to 6.4% (university/college ≥ 4 years). The corresponding figures among women were 22.4% and 7.5%. Corrected for age, LBP at baseline and working hours, educational level was a significant predictor of LBP at follow-up (odds ratios 1.8-2.3 in men and 1.7-3.1 in women). Adjusting for mechanical factors reduced the gradient by 39% to 43% in men and 28% to 34% in women. Adjusting for psychosocial factors reduced the gradient by 5% to 12% in men and increased the gradient by 7% to 11% in women.

CONCLUSION:

Work-related mechanical factors contributed substantially to the social gradient in LBP among both men and women. The impact of psychosocial factors was modest among men and contributed to an increased gradient among women.

LEVEL OF EVIDENCE: 3. PMID: 27340766

PT pre-surgically

BMC Musculoskelet Disord. 2016 Jul 11;17(1):270. doi: 10.1186/s12891-016-1126-4.

PREPARE: Pre-surgery physiotherapy for patients with degenerative lumbar spine disorder: a randomized controlled trial protocol.

Lindbäck Y¹, Tropp H², Enthoven P¹, Abbott A^{1,3}, Öberg B⁴.

BACKGROUND:

Current guidelines for the management of patients with specific low back pain pathology suggest non-surgical intervention as first-line treatment, but there is insufficient evidence to make recommendations of the content in the non-surgical intervention. Opinions regarding the dose of non-surgical intervention that should be trialled prior to decision making about surgery intervention vary. The aim of the present study is to investigate if physiotherapy administered before surgery improves function, pain and health in patients with degenerative lumbar spine disorder scheduled for surgery. The patients are followed over two years. A secondary aim is to study what factors predict short and long term outcomes.

METHODS:

This study is a single blinded, 2-arm, randomized controlled trial with follow-up after the completion of pre-surgery intervention as well as 3, 12 and 24 months post-surgery. The study will recruit men and women, 25 to 80 years of age, scheduled for surgery due to; disc herniation, spinal stenosis, spondylolisthesis or degenerative disc disease. A total of 202 patients will be randomly allocated to a pre-surgery physiotherapy intervention or a waiting list group for 9 weeks. The waiting-list group will receive standardized information about surgery, post-surgical rehabilitation and advice to stay active. The pre-surgery physiotherapy group will receive physiotherapy 2 times per week, consisting of a stratified classification treatment, based on assessment findings. One of the following treatments will be selected; a) Specific exercises and mobilization, b) Motor control exercises or c) Traction. The pre-surgery physiotherapy group will also be prescribed a tailor-made general supervised exercise program. The physiotherapist will use a behavioral approach aimed at reducing patient fear avoidance and increasing activity levels. They will also receive standardized information about surgery, post-surgical rehabilitation and advice to stay active. Primary outcome measure is Oswestry Disability Index. Secondary outcome measures are the visual analogue scale for back and leg pain, pain drawing, health related quality of life, Hospital anxiety and depression scale, Fear avoidance beliefs questionnaire, Self-efficacy scale and Work Ability Index.

DISCUSSION:

The study findings will help improve the treatment of patients with degenerative lumbar spine disorder scheduled for surgery.

TRIAL REGISTRATION:

ClinicalTrials.gov reference: [NCT02454400](#) (Trial registration date: August 31st 2015) and has been registered on ClinicalTrials.gov, identifier: [NCT02454400](#).

KEYWORDS:

Function; Low back pain; Physiotherapy; Stratification; Surgery

PMID: [27400960](#)

3. DISC

Tomography

Spine (Phila Pa 1976). 2016 Jul 1;41(13):E770-7. doi: 10.1097/BRS.0000000000001463.

Optical Coherence Tomographic Elastography Reveals Mesoscale Shear Strain Inhomogeneities in the Annulus Fibrosus.

Han SK¹, Chen CW, Labus KM, Puttlitz CM, Chen Y, Hsieh AH.

STUDY DESIGN:

Basic science study using in vitro tissue testing and imaging to characterize local strains in annulus fibrosus (AF) tissue.

OBJECTIVE:

To characterize mesoscale strain inhomogeneities between lamellar and inter-/translamellar (ITL) matrix compartments during tissue shear loading.

SUMMARY OF BACKGROUND DATA:

The intervertebral disc is characterized by significant heterogeneities in tissue structure and plays a critical role in load distribution and force transmission in the spine. In particular, the AF possesses a lamellar architecture interdigitated by a complex network of extracellular matrix components that form a distinct ITL compartment. Currently, there is not a firm understanding of how the lamellar and ITL matrix coordinately support tissue loading.

METHODS:

AF tissue samples were prepared from frozen porcine lumbar spines and mounted onto custom fixtures of a materials testing system that incorporates optical coherence tomography (OCT) imaging to perform tissue elastography. Tissues were subjected to 20 and 40% nominal shear strain, and OCT images were captured and segmented to identify regions of interest corresponding to lamellar and ITL compartments. Images were analyzed using an optical flow algorithm to quantify local shear strains within each compartment.

RESULTS:

Using histology and OCT, we first verified our ability to visualize and discriminate the ITL matrix from the lamellar matrix in porcine AF tissues. Local AF strains in the ITL compartment (22.0 ± 13.8 , 31.1 ± 16.9 at 20% and 40% applied shear, respectively) were significantly higher than corresponding strains in the surrounding lamellar compartment (12.1 ± 5.6 , 15.3 ± 5.2) for all tissue samples ($P < 0.05$).

CONCLUSION:

Results from this study demonstrate that the lamellar and ITL compartments of the AF distribute strain unevenly during tissue loading. Specifically, shear strain is significantly higher in the ITL matrix, suggesting that these regions may be more susceptible to tissue damage and more mechanobiologically active.

LEVEL OF EVIDENCE:

N/A.

PMID:26849796

Mogul skiers MRI

Scand J Med Sci Sports. 2016 Jul 1. doi: 10.1111/sms.12710.

Back pain and MRI changes in the thoraco-lumbar spine of young elite Mogul skiers.

Thoreson O¹, Kovac P², Swärd A^{1,3}, Agnvall C³, Todd C^{1,4}, Baranto A¹.

Athletes have a higher prevalence of LBP and spinal abnormalities on Magnetic Resonance Imaging (MRI) compared to non-athletes.

The objective of this study was to investigate the amount of spinal MRI abnormalities and the lifetime prevalence of low back pain (LBP) in 16 young elite Mogul skiers compared to 28 non-athletes in the corresponding age in a cross-sectional design. LBP was assessed by a questionnaire consisting of a part regarding previous or present back pain, the Oswestry disability index, and the EuroQol questionnaire.

MRI examinations from Th5 to sacrum were conducted to evaluate spinal pathologies. The Mogul skiers had significantly more MRI abnormalities (like disc degeneration) in mean (7.25 vs 3.78, $P < 0.023$) compared to the controls. No significant difference was seen regarding the lifetime LBP prevalence between the groups (50% vs 42%, $P = 0.555$).

No correlation could be found between disc degeneration and back pain in this study. Young elite Mogul skiers, compared to an age-matched control group of non-athletes, have an increased risk of developing spinal abnormalities potentially due to the different high loads that they are subjected to in their sport. Future relationship between the MRI abnormalities and LBP cannot be verified by this study design.

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KEYWORDS:

Low back pain; Magnetic resonance imaging; athletes; cross-sectional studies; intervertebral disc displacement; physical loading; sports; young adult

PMID: [27367529](#)

6. PELVIC GIRDLE**Athletic groin injuries**

Sports Health. 2016 Jul;8(4):313-23. doi: 10.1177/1941738116653711. Epub 2016 Jun 14.

Groin Injuries (Athletic Pubalgia) and Return to Play.

Elattar O¹, Choi HR¹, Dills VD², Busconi B³.

CONTEXT:

Groin pain is a common entity in athletes involved in sports that require acute cutting, pivoting, or kicking such as soccer and ice hockey.

Athletic pubalgia is increasingly recognized as a common cause of chronic groin and adductor pain in athletes. It is considered an overuse injury predisposing to disruption of the rectus tendon insertion to the pubis and weakness of the posterior inguinal wall without a clinically detectable hernia. These patients often require surgical therapy after failure of nonoperative measures. A variety of surgical options have been used, and most patients improve and return to high-level competition.

EVIDENCE ACQUISITION:

PubMed databases were searched to identify relevant scientific and review articles from January 1920 to January 2015 using the search terms groin pain, sports hernia, athletic pubalgia, adductor strain, osteitis pubis, stress fractures, femoroacetabular impingement, and labral tears.

STUDY DESIGN:

Clinical review.

LEVEL OF EVIDENCE:

Level 4.

RESULTS AND CONCLUSION:

Athletic pubalgia is an overuse injury involving a weakness in the rectus abdominis insertion or posterior inguinal wall of the lower abdomen caused by acute or repetitive injury of the structure. A variety of surgical options have been reported with successful outcomes, with high rates of return to the sport in the majority of cases.

athletic pubalgia (AP); differential diagnosis; groin; hip; pain; return to sports; surgical treatment

PMID: 27302153

7. PELVIC ORGANS/WOMAN'S HEALTH

Menopause

Certain characteristics predispose women to different hot flash and night sweat patterns

UPMC, 07/14/2016

Most women will get hot flashes or night sweats at some point in life. However, when these symptoms occur and how long they last can vary dramatically among women. New findings show that women fit into four distinct groups when it comes to getting hot flashes and night sweats, with potential ramifications for therapy and prevention of future health conditions, according to the research led by the University of Pittsburgh Graduate School of Public Health. The epidemiological investigation followed hundreds of women for an average of 15 years and identified characteristics that predisposed them to certain trajectories for getting hot flashes and night sweats—collectively known as “vasomotor symptoms.” The findings were published in the journal *Menopause*. The researchers found that the women could be relatively equally divided into four distinct trajectories for vasomotor symptoms as they went through menopause transition, and that certain characteristics were more common in different categories:

- A consistently low chance of having symptoms throughout the menopause transition was more common in Chinese women.
- A consistently high chance of having symptoms throughout the transition was more common in black women, those with less education, those who reported drinking alcohol moderately or heavily, and those who reported symptoms of depression or anxiety.
- An early onset of symptoms in the decade before the final period with cessation thereafter was more common among women who were obese, had symptoms of depression or anxiety, were in poorer health than their peers and at an older age at menopause.
- A late onset of symptoms after the final period that gradually declined in the following decade was more common in women with a lower body mass index (ratio of weight to height), those who smoke and black women.

Hormonal fluctuations were correlated with vasomotor symptoms but were not perfectly consistent, indicating that they did not fully account for the symptoms. “It’s fascinating that we can distinguish these unique patterns and then pinpoint specific characteristics associated with each of these trajectories,” said co-author Maria M. Brooks, Ph.D., professor of epidemiology and associate professor of biostatistics at Pitt Public Health, and principal investigator of the coordinating center for SWAN. “When we see patterns like this, it indicates that there’s something going on beyond hot flashes and night sweats being a passing nuisance. Depending on which category a woman falls into, there may be important implications regarding her health.” In a different, recent study, Dr. Thurston found evidence that some of these trajectories were associated with risk factors for cardiovascular disease.

8. VISCERA

Postoperative MT

Randomised controlled pilot trial on feasibility, safety and effectiveness of osteopathic MANipulative treatment following major abdominal surgery (OMANT pilot trial)

Pascal Probst Elena Büchler Colette Doerr-Harim Phillip Knebel Bettina Thiel Alexis Ulrich
Markus K. Diener

DOI: <http://dx.doi.org/10.1016/j.ijosm.2016.03.002>

Abstract

Background

Postoperative complications are a major concern after gastrointestinal surgery. Resolving movement restrictions such as postoperative paralysis, osteopathic manipulative treatment (OMT) may be beneficial. The OMANT pilot study was the first prospective trial to investigate the feasibility, safety and potential benefits of OMT after gastrointestinal surgery.

Methods/Design

Twenty patients with elective bowel resection were randomised in two parallel groups. Patients in the intervention group received standard care with the addition of OMT on postoperative days 1–5.

Results

OMANT pilot was conducted between February and April 2015. Of 38 patients invited, only 2 (5.3%) were unwilling to participate in the trial. OMT was conducted successfully in 49 of 50 attempts (98%). OMT patients showed lower postoperative morbidity than control patients (comprehensive complication index 30.8 vs. 37.1). Pain during the postoperative course was decreased significantly by OMT.

Conclusions

Evaluation of OMT in a prospective clinical trial is feasible, and OMT is safe in postoperative patients. Since OMT is a pain-relieving and well tolerated treatment in surgical patients, it might be beneficial after gastrointestinal surgery, and its effectiveness should be evaluated in an affirmative RCT based on this pilot trial.

Gut microbial

Duodenal-Mucosal Bacteria Associated with Celiac Disease in Children

Gastroenterology; 2016 Jun 30; Epub Ahead of Print; A Caminero, HJ Galipeau, JL McCarville, et al

ABSTRACT

Celiac disease (CD) is an immune-mediated enteropathy triggered by the ingestion of cereal gluten proteins.

This disorder is associated with imbalances in the gut microbiota composition that could be involved in the pathogenesis of CD. The aim of this study was to characterize the composition and diversity of the cultivable duodenal mucosa-associated bacteria of CD patients and control children. Duodenal biopsy specimens from patients with active disease on a gluten-containing diet ($n = 32$), patients with nonactive disease after adherence to a gluten-free diet ($n = 17$), and controls ($n = 8$) were homogenized and plated on plate count agar, Wilkins-Chalgren agar, brain heart agar, or yeast, Casitone, and fatty acid agar. The isolates were identified by partial 16S rRNA gene sequencing. Renyi diversity profiles showed the highest diversity values for active CD patients, followed by nonactive CD patients and control individuals. Members of the phylum *Proteobacteria* were more abundant in patients with active CD than in the other child groups, while those of the phylum *Firmicutes* were less abundant. Members of the families *Enterobacteriaceae* and *Staphylococcaceae*, particularly the species *Klebsiella oxytoca*, *Staphylococcus epidermidis*, and *Staphylococcus pasteurii*, were more abundant in patients with active disease than in controls. In contrast, members of the family *Streptococcaceae* were less abundant in patients with active CD than in controls. Furthermore, isolates of the *Streptococcus anginosus* and *Streptococcus mutans* groups were more abundant in controls than in both CD patient groups, regardless of inflammatory status.

The findings indicated that the disease is associated with the overgrowth of possible pathobionts that exclude symbionts or commensals that are characteristic of the healthy small intestinal microbiota.

Life changes with IBS

Gastroenterol Nurs. 2016 May-Jun;39(3):195-203. doi: 10.1097/SGA.0000000000000211.

Critical Situations in Daily Life as Experienced by Patients With Inflammatory Bowel Disease.

Pihl Lesnovska K¹, Hollman Frisman G, Hjortswang H, Börjeson S.

Crohn disease and ulcerative colitis, collectively known as inflammatory bowel disease (IBD), are chronic and have a fluctuating clinical course that impacts daily life. Daily life with a chronic disease involves thinking and worrying about the limitations that chronic disease causes.

Knowledge about how patients who suffer from IBD manage critical incidents in daily life is lacking. The aim of the study was to describe how patients living with IBD experience critical incidents in daily life in relation to their disease and symptoms. Thirty adult patients were interviewed focusing on critical incidents in daily life. Data were analyzed using the critical incident technique.

The study comprised 224 critical incidents and was grouped into 21 subcategories and 5 categories: losing bowel control, having a body that smells, being unable to meet own and others' expectations, not being believed or seen, and experiencing frustration due to side effects and ineffective treatment.

These categories formed one main area describing the overall result "The bowels rule life." The uncertain nature of IBD created critical incidents in which the bowel ruled life, causing patients to avoid social interaction. It also placed considerable demands on the family and sometimes had a negative effect on the afflicted person's career.

PMID:[26870902](#)

IBS

Aliment Pharmacol Ther. 2016 Jul 11. doi: 10.1111/apt.13706

Randomised clinical trial: the efficacy of gut-directed hypnotherapy is similar to that of the low FODMAP diet for the treatment of irritable bowel syndrome.

Peters SL¹, Yao CK¹, Philpott H¹, Yelland GW¹, Muir JG¹, Gibson PR¹.

BACKGROUND:

A low fermentable oligosaccharides, disaccharides, monosaccharides and polyols (FODMAP) diet is effective in treating irritable bowel syndrome (IBS).

AIM:

To compare the effects of gut-directed hypnotherapy to the low FODMAP diet on gastrointestinal symptoms and psychological indices, and assess additive effects.

METHODS:

Irritable bowel syndrome patients were randomised (computer-generated list), to receive hypnotherapy, diet or a combination. Primary end-point: change in overall gastrointestinal symptoms across the three groups from baseline to week 6. Secondary end-points: changes in psychological indices, and the durability of effects over 6 months.

RESULTS:

Of 74 participants, 25 received hypnotherapy, 24 diet and 25 combination. There were no demographic differences at baseline across groups. Improvements in overall symptoms were observed from baseline to week 6 for hypnotherapy [mean difference (95% CI): -33 (-41 to -25)], diet [-30 (-42 to -19)] and combination [-36 (-45 to -27)] with no difference across groups ($P = 0.67$). This represented ≥ 20 mm improvement on visual analogue scale in 72%, 71% and 72%, respectively. This improvement relative to baseline symptoms was maintained 6 months post-treatment in 74%, 82% and 54%. Individual gastrointestinal symptoms similarly improved. Hypnotherapy resulted in superior improvements on psychological indices with mean change from baseline to 6 months in State Trait Personality Inventory trait anxiety of -4(95% CI -6 to -2) $P < 0.0001$; -1(-3 to 0.3) $P = \text{ns}$; and 0.3(-2 to 2) $P = \text{ns}$, and in trait depression of -3(-5 to -0.7) $P = 0.011$; -0.8(-2 to 0.2) $P = \text{ns}$; and 0.6(-2 to 3) $P = \text{ns}$, respectively. Groups improved similarly for QOL (all $p \leq 0.001$).

CONCLUSIONS:

Durable effects of gut-directed hypnotherapy are similar to those of the low FODMAP diet for relief of gastrointestinal symptoms. Hypnotherapy has superior efficacy to the diet on psychological indices. No additive effects were observed.

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PMID: [27397586](#)

Steroids and IBS

Aliment Pharmacol Ther. 2016 Jul 4. doi: 10.1111/apt.13700.

Steroid dependency and trends in prescribing for inflammatory bowel disease - a 20-year national population-based study.

Chhaya V¹, Saxena S², Cecil E², Subramanian V³, Curcin V⁴, Majeed A², Pollok RC¹.

BACKGROUND:

It is unclear whether adherence to prescribing standards has been achieved in inflammatory bowel disease (IBD).

AIM:

To determine how prescribing of 5-aminosalicylates (5-ASAs), steroids and thiopurines has changed in response to emerging evidence.

METHODS:

We examined trends in oral and topical therapies in 23 509 incident IBD cases (6997 with Crohn's disease and 16 512 with ulcerative colitis) using a nationally representative sample between 1990 and 2010. We created five eras according to the year of diagnosis: era 1 (1990-1993), era 2 (1994-1997), era 3 (1998-2001), era 4 (2002-2005) and era 5 (2006-2010). We calculated the proportion of patients treated with prolonged 5-ASAs (>12 months) and steroid dependency, defined as prolonged steroids (>3 months) or recurrent (restarting within 3 months) steroid exposure. We calculated the cumulative probability of receiving each medication using survival analysis.

RESULTS:

Half of the Crohn's disease patients were prescribed prolonged oral 5-ASAs during the study, although this decreased between era 3 and 5 from 61.8% to 56.4% (P = 0.002). Thiopurine use increased from 14.0% to 47.1% (P < 0.001) between era 1 and 5. This coincided with a decrease in steroid dependency from 36.5% to 26.8% (P < 0.001) between era 1 and 2 and era 4 and 5 respectively. In ulcerative colitis, 49% of patients were maintained on prolonged oral 5-ASAs. Despite increasing thiopurine use, repeated steroid exposure increased from 15.3% to 17.8% (P = 0.02) between era 1 and 2 and era 4 and 5 respectively.

CONCLUSIONS:

Prescribing in clinical practice insufficiently mirrors the evidence base. Physicians should direct management towards reducing steroid dependency and optimising 5-ASA use in patients with IBD.

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PMID: [27375210](#)

Delayed appendectomy

Dig Surg. 2016 Jul 6;34(1):25-29.

Impact of a Delayed Laparoscopic Appendectomy on the Risk of Complications in Acute Appendicitis: A Retrospective Study of 4,065 Patients.

Kim HK¹, Kim YS, Lee SH, Lee HH.

BACKGROUND:

Urgent surgery performed for appendicitis is hypothesized to avoid complications such as perforation or abscess. This study aimed to evaluate the effect of the timing of surgery on the complications of laparoscopic appendectomy.

METHODS:

A retrospective review of 4,065 patients who underwent a laparoscopic appendectomy was conducted. The demographic data, time of presentation, physical findings, diagnostic data and complications were recorded. The patients were divided into 4 groups (Group A, 0-6 h; Group B, 6-12 h; Group C, 12-18 h; Group D, over 18 h) based on the time elapsed from the evaluation at the emergency room to the appendectomy.

RESULTS:

Group A consisted of 2,084 (51.3%) patients, Group B consisted of 1,553 (38.2%) patients, Group C consisted of 388 (9.5%) patients and Group D consisted of 40 (1.8%) patients. A perforated appendicitis was observed in 560 (13.8%) patients. Postoperative complications developed in 293 (7.2%) patients. No significant differences in perforation and postoperative complications were observed between the 4 groups.

CONCLUSION:

The timing of surgery did not affect the incidence of complications or perforated appendicitis.

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PMID: [27380624](#)

10 A. CERVICAL SPINE**Myofascial pain syndrome**

Pain Med. 2016 Jun 20. pii: pnw114.

Prevalence of Myofascial Pain Syndrome in Chronic Non-Specific Neck Pain: A Population-Based Cross-Sectional Descriptive Study.

Cerezo-Téllez E¹, Torres-Lacomba M², Mayoral-Del Moral O³, Sánchez-Sánchez B², Dommerholt J⁴, Gutiérrez-Ortega C⁵.

BACKGROUND:

Chronic non-specific neck pain is a frequent complaint. It is a recognized medical and socioeconomic problem and a frequent cause of job absenteeism. In recent years, case reports about myofascial pain syndrome (MPS) are emerging among patients suffering from pain. MPS is a regional pain syndrome characterized by myofascial trigger points (MTrP) in palpable taut bands of skeletal muscle that refer pain to a distance, and that can cause distant motor and autonomic effects.

OBJECTIVE:

To assess the prevalence of active and latent MTrPs in subjects suffering from chronic non-specific neck pain.

DESIGN:

A population-based cross-sectional descriptive study was carried out from January 2012 to December 2014.

SETTING:

Three primary healthcare centers in Alcalá de Henares, Madrid (Spain).

SUBJECTS:

Two hundred and twenty-four participants diagnosed by their family doctor with chronic non-specific neck pain.

METHODS:

Participants were examined by a physical therapist to determine the presence of MPS. Pain descriptions from the subjects and pain body diagrams guided the physical examination. The subjects were not given any information concerning MPS or other muscle pain syndromes.

RESULTS:

All participants presented with MPS. MTrPs of the trapezius muscles were the most prevalent, in 93.75% of the participants. The most prevalent active MTrPs were located right (82.1%) and left (79%) in the nearly-horizontal fibers of the upper trapezius muscle. Furthermore, active MTrPs in the levator scapulae, multifidi, and splenius cervicis muscles reached a prevalence of 82.14%, 77.68%, and 62.5%, respectively.

CONCLUSIONS:

MPS is a common source of pain in subjects presenting chronic non-specific neck pain.

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KEYWORDS:

Myofascial Pain Syndromes; Myofascial Trigger Point; Neck Pain; Physical Therapy; Prevalence

PMID: [27330152](https://pubmed.ncbi.nlm.nih.gov/27330152/)

Exercise

Systematic Review

The influence of home exercise programs for patients with non-specific or specific neck pain: a systematic review of the literature

Journal of Manual & Manipulative Therapy Volume 24, Issue 2, 2016

DOI: 10.1179/2042618613Y.0000000047

Margaret Zronek^a, Holly Sanker^a, Jennifer Newcomb^a & Megan Donaldson^{a*}

Study design: Systematic review of randomized controlled trials (RCT).

Objectives: To examine the effects of a therapeutic home exercise program (HEP) for patients with neck pain (associated with whiplash, non-specific, or specific neck pain, with or without radiculopathy, or cervicogenic headache) on pain, function, and disability. Our secondary aim was to describe the design, dosage, and adherence of the prescribed HEPs.

Background: Neck pain is a leading cause of disability that affects 22–70% of the population. Different techniques have been found effective for the treatment of neck pain. However, there is conflicting evidence to support the role of a therapeutic HEP to reduce pain, disability, and improve function and quality of life (QOL).

Methods: A systematic review in accordance with the preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement for reporting systematic reviews. The full-text review utilized the Maastricht–Amsterdam assessment tool to assess quality among RCTs.

Results: A total of 1927 subjects included within seven full-text articles met our specific search strategy. It was found that HEPs with a focus on strength and endurance-training exercises, as well as self-mobilization, have a positive effect when used in combination with other conservative treatments or alone.

Conclusions: Home exercise programs that utilize either self-mobilizations within an augmented HEP to address specific spinal levels, or strengthening, and/or endurance exercise are effective at reducing neck pain, function, and disability and improving QOL. The benefit of HEPs in combination with other conservative interventions yields some benefit with a range of effect sizes.

12 A. WHIPLASH

Exercise helps

Satisfaction With the Outcome of Physical Therapist-Prescribed Exercise in Chronic Whiplash Associated Disorders: Secondary Analysis of a Randomized Clinical Trial

Authors: Clare L. Ardern, PT, PhD^{1,2,3}, Gunnel Peterson, PT, MSc¹, Maria Landén Ludvigsson, PT, MSc¹, Anneli Peolsson, PT, PhD¹

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2016 **Volume:**0 **Issue:**0 **Pages:**1–28 **DOI:**10.2519/jospt.2016.6136

Study Design

Secondary analysis of a randomized clinical trial.

Background

Patients' perceptions of benefits gained from treatment are important, yet satisfaction with the outcome of treatment for chronic whiplash associated disorders (WAD) has not been investigated.

Objectives

To investigate whether satisfaction with the outcome of treatment for chronic WAD changed over time, and whether there were group differences.

Methods

216 people with chronic WAD (66% women; mean age 40.4 years) participated in a 3-month program of physical therapist-led neck-specific exercises with or without a behavioral approach, or received a prescription of general physical activity. The main outcome was satisfaction with the outcome of treatment, assessed at baseline, and 3, 6, and 12 months later. Additional outcomes were enablement and expectation fulfillment.

Results

Satisfaction improved over time in the three groups (odds ratio, 95% CI = 1.15, 1.10-1.20, $P < 0.001$). There was a significant group by time interaction ($P < 0.001$), with increased odds of being satisfied in the groups receiving neck-specific exercises compared to general physical activity. Enablement increased after completion of the intervention in all groups ($P < 0.001$). People who received neck-specific exercises reported greater enablement and expectation fulfillment than people prescribed general physical activity ($P < 0.01$).

Conclusion

Exercise interventions for chronic WAD led to increased satisfaction for 12 months following treatment that was unrelated to the type of exercise intervention received.

Level of Evidence

Therapy, level 1b. *J Orthop Sports Phys Ther*, Epub 3 Jul 2016. doi:10.2519/jospt.2016.6136

Keyword: neck, physiotherapy, rehabilitation,

13. CRANIUM/TMJ

Malocclusion

Am J Orthod Dentofacial Orthop. 2016 Jul;150(1):58-63. doi: 10.1016/j.ajodo.2015.12.022.

Association between malocclusion and the contextual factors of quality of life and socioeconomic status.

Vedovello SA¹, Ambrosano GM², Pereira AC², Valdrighi HC³, Filho MV³, Meneghim Mde C².

INTRODUCTION:

The purpose of this study was to examine associations among malocclusion and the contextual factors of quality of life and socioeconomic status.

METHODS:

A cross-sectional study was conducted with a population-based sample of 1256 children from 7 to 10 years old. Malocclusion was assessed clinically; oral health-related quality of life (OHRQoL) was assessed using the Brazilian version of the child perceptions questionnaire; socioeconomic status was determined from data made available by the Research and Planning Institute of Piracicaba, São Paulo, Brazil. Initially, bivariate analyses were performed; after this, starting with variables with $P \leq 0.20$, multilevel multiple logistic regression models were estimated, in which the binomial distribution, function of the logistic connection, and criteria for remaining in the model at $P \leq 0.05$ were considered.

RESULTS:

Of the children, 82.1% had some type of malocclusion. Increased age associated with low socioeconomic status was the determinant for occlusal problems. The determination of low OHRQoL appears to be associated with the socioeconomic status in the individual factors, and increased overjet appears to be associated with factors at the contextual level.

CONCLUSIONS:

Socioeconomic status and age are risk factors for malocclusion. Of the malocclusions evaluated, increased overjet had the most negative influence on the OHRQoL.

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PMID:27364206

Management

J Headache Pain. 2016 Dec;17(1):61. doi: 10.1186/s10194-016-0653-6. Epub 2016 Jun 27.

Pain profiling of patients with temporomandibular joint arthralgia and osteoarthritis diagnosed with different imaging techniques.

Kothari SF^{1,2}, Baad-Hansen L^{3,4}, Hansen LB⁵, Bang N⁵, Sørensen LH⁶, Eskildsen HW⁶, Svensson P^{3,4,7}.

BACKGROUND:

Clinical differentiation between pain mechanisms of temporomandibular joint (TMJ) arthralgia and osteoarthritis (OA) is challenging. The aims were to compare somatosensory function at the TMJs and conditioned pain modulation (CPM) effects between TMJ arthralgia and OA patients diagnosed clinically and based on different imaging techniques and age- and gender-matched healthy controls (n = 41).

METHODS:

Patients (n = 58) underwent standard clinical examination and three different TMJ imaging modalities. After each examination, they were classified into arthralgia or OA based on the findings. TMJ region somatosensory testing was performed in all participants. Z-scores were calculated for patients based on healthy reference data. CPM was tested by comparing pressure pain thresholds (PPTs) at TMJ and thenar (control) before, during and after the application of painful and nonpainful cold stimuli. Data were analyzed using analyses of variance.

RESULTS:

Somatosensory abnormalities were commonly detected in both patient groups. Assessment of somatosensory function at the TMJ revealed that arthralgia patients were less sensitive to warmth, cold and tactile stimuli than OA patients ($P < 0.048$). OA patients showed pressure hyperalgesia compared with arthralgia patients ($P = 0.025$). There was a significant CPM effect at both test sites during painful cold application in all groups ($P < 0.001$). There was no significant difference in the relative CPM effect between groups except for clinically diagnosed arthralgia patients showing reduced CPM effect compared with controls ($P = 0.047$).

CONCLUSIONS:

Pain profiles including somatosensory function differed between TMJ arthralgia and OA patients although CPM effects were similar in patients and controls. Thus, different TMJ pain conditions may share common pain mechanisms but the present study for the first time also indicated that differential pain mechanisms could be involved.

KEYWORDS:

Conditioned pain modulation; Cone-beam computed tomography; Magnetic resonance imaging; Quantitative sensory testing; Somatosensory function; Temporomandibular joint arthralgia; Temporomandibular joint osteoarthritis; Ultrasonography

PMID: [27349657](#)

14. HEADACHES**Neck pain and HA management**

Eur Spine J. 2016 Jul;25(7):1971-99. doi: 10.1007/s00586-016-4376-9. Epub 2016 Feb 6.

Are non-invasive interventions effective for the management of headaches associated with neck pain? An update of the Bone and Joint Decade Task Force on Neck Pain and Its Associated Disorders by the Ontario Protocol for Traffic Injury Management (OPTIMA) Collaboration.

Varatharajan S^{1,2,3}, Ferguson B⁴, Chrobak K⁴, Shergill Y⁵, Côté P^{6,7,8}, Wong JJ^{1,2}, Yu H^{1,2}, Shearer HM^{1,2}, Southerst D^{1,9}, Sutton D^{1,2}, Randhawa K^{1,2,3}, Jacobs C^{1,10}, Abdulla S⁴, Woitzik E⁴, Marchand AA¹¹, van der Velde G^{12,13,14}, Carroll LJ¹⁵, Nordin M¹⁶, Ammendolia C^{17,14,18}, Mior S^{2,17}, Ameis A¹⁹, Stupar M¹, Taylor-Vaisey A¹.

PURPOSE:

To update findings of the 2000-2010 Bone and Joint Decade Task Force on Neck Pain and its Associated Disorders and evaluate the effectiveness of non-invasive and non-pharmacological interventions for the management of patients with headaches associated with neck pain (i.e., tension-type, cervicogenic, or whiplash-related headaches).

METHODS:

We searched five databases from 1990 to 2015 for randomized controlled trials (RCTs), cohort studies, and case-control studies comparing non-invasive interventions with other interventions, placebo/sham, or no interventions. Random pairs of independent reviewers critically appraised eligible studies using the Scottish Intercollegiate Guidelines Network criteria to determine scientific admissibility. Studies with a low risk of bias were synthesized following best evidence synthesis principles.

RESULTS:

We screened 17,236 citations, 15 studies were relevant, and 10 had a low risk of bias. The evidence suggests that episodic tension-type headaches should be managed with low load endurance craniocervical and cervicospinal exercises. Patients with chronic tension-type headaches may also benefit from low load endurance craniocervical and cervicospinal exercises; relaxation training with stress coping therapy; or multimodal care that includes spinal mobilization, craniocervical exercises, and postural correction. For cervicogenic headaches, low load endurance craniocervical and cervicospinal exercises; or manual therapy (manipulation with or without mobilization) to the cervical and thoracic spine may also be helpful.

CONCLUSIONS:

The management of headaches associated with neck pain should include exercise. Patients who suffer from chronic tension-type headaches may also benefit from relaxation training with stress coping therapy or multimodal care. Patients with cervicogenic headache may also benefit from a course of manual therapy.

KEYWORDS:

Cervicogenic headache; Headache attributed to whiplash injury; Non-invasive interventions; Systematic review; Tension-type headache

PMID: [26851953](#)

Demographics and disability

Headache. 2016 Jun 28. doi: 10.1111/head.12878.

A Comparison of the Chronic Migraine Epidemiology and Outcomes (CaMEO) Study and American Migraine Prevalence and Prevention (AMPP) Study: Demographics and Headache-Related Disability.

Lipton RB^{1,2}, Manack Adams A³, Buse DC^{1,2}, Fanning KM⁴, Reed ML⁴.

OBJECTIVE: To compare the methods and baseline characteristics of the American Migraine Prevalence and Prevention (AMPP) and Chronic Migraine Epidemiology and Outcomes (CaMEO) studies.

BACKGROUND: The AMPP and CaMEO studies are the largest longitudinal efforts designed to improve our understanding of episodic and chronic migraine in the United States. The studies have complementary strengths and weaknesses.

METHODS:

This analysis compares and contrasts the study methods and participation rates of the AMPP and CaMEO studies. We then compare and contrast baseline results in terms of demographic characteristics, headache features, and disability as measured by the Migraine Disability Assessment Scale (MIDAS) among people with episodic and chronic migraine.

RESULTS:

AMPP and CaMEO sampled from panels constructed to be representative of the US population. The AMPP Study collected data using a mailed questionnaire while CaMEO relied on a web survey methodology. Response rates were higher in AMPP (64.8%) than in CaMEO (16.5%). Both studies assessed headache features using the American Migraine Study/AMPP diagnostic module. Both identified persons with episodic (<15 headache days/month) and chronic migraine (≥15 headache days/month) based on the International Classification of Headache Disorders. AMPP collected data annually over 5 years, while CaMEO collected data quarterly over 15 months. Baseline demographic distribution was generally similar, indicating that each study was broadly representative of the US population. The proportion of persons with migraine who had chronic migraine was similar (AMPP, 6.6%; CaMEO, 8.8%). Respondents had similar median headache frequency (days/month) by sex for chronic migraine (AMPP: men = 21.7, women = 20.0; CaMEO: men = 20.0, women = 20.0) and episodic migraine (AMPP: men = 1.7, women = 2.0; CaMEO: men = 2.0, women = 3.0). Median MIDAS scores were substantially higher in both studies for chronic migraine (severe disability [Grade IV]; AMPP: men = 33.0, women = 45.0; CaMEO: men = 32.0, women = 38.0) than episodic migraine (little/mild disability [Grade I/II]; AMPP: men = 3.0, women = 6.0; CaMEO: men = 4.0, women = 7.0). Rates of moderate/severe disability (Grade III/IV) were substantially higher in both studies for chronic migraine (AMPP: men = 66.9%, women = 78.9%; CaMEO: men = 71.0%, women = 82.6%) than episodic migraine (AMPP: men = 23.0%, women = 31.8%; CaMEO: men = 26.7%, women = 37.9%). More women than men respondents in both studies experienced moderate/severe disability.

CONCLUSIONS:

AMPP and CaMEO are longitudinal cohort studies that used different methods, but yielded similar results for demographic features, headache frequency, and headache-related disability. Both studies found more severe headache-related disability in those with chronic versus episodic migraine

HA's and risk of stroke

Eur J Neurol. 2016 Jul 11. doi: 10.1111/ene.13060.

Are migraine and non-migrainous headache risk factors for stroke in the elderly? Findings from a 12-year cohort follow-up.

Norton J^{1,2}, Portet F^{1,2}, Gabelle A^{2,3,4}, Debette S^{5,6}, Ritchie K^{1,2,7}, Touchon J^{1,2,3}, Berr C^{1,2,3}.

BACKGROUND AND PURPOSE:

There is evidence that migraine is a risk factor for stroke but little is known about this association in elderly people. Furthermore, non-migrainous headache (NMH) has received little attention despite being the most frequently reported type of headache. Late-life migraine and NMH were examined as candidate risk factors for stroke in a community-dwelling elderly sample over a 12-year follow-up.

METHODS:

One thousand nine hundred and nineteen non-institutionalized subjects aged 65+, without dementia (Diagnostic and Statistical Manual of Mental Disorders, 4th edition, DSM-IV criteria) and with no stroke history at baseline, were drawn from the Three-City Montpellier cohort (recruitment 1999-2001) for longitudinal analysis. Ischaemic and haemorrhagic stroke was reported at baseline and at each of the five follow-ups, with cases validated by a panel of experts, according to ICD-10 criteria (International Classification of Diseases, 10th revision). Migraine and NMH were determined at baseline during a neurological interview and examination using 1988 International Headache Society criteria.

RESULTS:

A total of 110 (5.4%) cases of migraine and 179 (8.9%) cases of NMH were identified at baseline. During the median 8.8-year follow-up, incident stroke was observed in 1.9% of baseline migraineurs, 6.2% of NMH and 3.6% of those with no lifetime history of headache. Cox proportional hazard models indicated that migraine was not a risk factor for stroke; however, NMH sufferers were twice as likely to have a stroke (hazard ratio 2.00, 95% confidence interval 1.00-3.93, P = 0.049).

CONCLUSIONS:

This study is one of the first to suggest that late-life NMH rather than migraine could be an independent risk factor for stroke and a warning sign. The incidence of stroke in elderly migraineurs, seldom reported, is particularly low.

Daytime sleepiness

J Headache Pain. 2016 Dec;17(1):62. doi: 10.1186/s10194-016-0655-4. Epub 2016 Jul 1.

Excessive daytime sleepiness is associated with an exacerbation of migraine: A population-based study.

Kim J¹, Cho SJ², Kim WJ³, Yang KI⁴, Yun CH⁵, Chu MK⁶.

BACKGROUND:

Previous studies have shown that migraine and sleep disturbances are closely associated. Excessive daytime sleepiness (EDS) is a common symptom of various types of sleep disturbance. Findings from clinic-based studies suggest that a high percentage of migraineurs experience EDS. However, the prevalence and clinical impact of EDS among migraineurs at the population level have rarely been reported. The objective of this study was to investigate the prevalence and impact of EDS among migraineurs using a population-based sample in Korea.

METHODS:

We selected a stratified random sample of Koreans aged 19 to 69 years and evaluated them using a semi-structured interview designed to identify EDS, headache type, and the clinical characteristics of migraine. If the score on the Epworth Sleepiness Scale (ESS) was more than or equal to 11, the participant was classified as having EDS.

RESULTS:

Of the 2,695 participants that completed the interview, 143 (5.3 %) and 313 (11.6 %) were classified as having migraine and EDS, respectively. The prevalence of EDS was significantly higher in participants with migraine (19.6 %) and non-migraine headache (13.4 %) compared to non-headache controls (9.4 %). Migraineurs with EDS had higher scores on the Visual Analogue Scale (VAS) for headache intensity (6.9 ± 1.8 vs. 6.0 ± 1.9 , $p = 0.014$) and Headache Impact Test-6 (59.8 ± 10.2 vs. 52.5 ± 8.2 , $p < 0.001$) compared to migraineurs without EDS.

CONCLUSIONS:

Approximately 20 % of migraineurs had EDS in this population-based sample. Excessive daytime sleepiness was associated with an exacerbation of some migraine symptoms.

KEYWORDS:

Epidemiology; Excessive daytime sleepiness; Headache; Migraine; Sleep; Sleepiness

PMID: [27363413](https://pubmed.ncbi.nlm.nih.gov/27363413/)

17. SHOULDER GIRDLE**Scapula tapping and RC strength**

J Sports Med Phys Fitness. 2016 Jul 8.

Acute effects of scapular kinesiotaping on shoulder rotator strength, range of motion and acromiohumeral distance in asymptomatic overhead athletes.

Harput G¹, Guney H, Toprak U, Colakoglu F, Baltaci G.

BACKGROUND:

There is limited information in the literature that shows whether scapular taping has an effect on the acromiohumeral distance (AHD) and shoulder functions. The aim of this study was to investigate the acute effects of scapular kinesiotaping on shoulder internal rotation (IR) and external rotation (ER) strength, IR and ER range of motion (ROM) and AHD in asymptomatic overhead athletes.

METHODS:

Forty-one volleyball athletes [24 men, 17 women; (Mean±SD) age: 16.1±1.5 yrs, body mass: 66.5±9.6 kg, body height: 179.6±8.4 cm, body mass index: 20.5±2.3 kg/m², time participating in overhead sports activity: 6.2±1.4 h/wk, experience in sport: 4.1±2.4 years] were included in this study. Shoulder IR and ER ROM, total rotation ROM, AHD, shoulder isometric IR and ER strength and ER:IR strength ratio of the dominant side were tested before and after taping.

RESULTS:

Scapular taping increased the shoulder IR ($p<0.001$) and total ROM ($P<0.001$), AHD ($P<0.001$), shoulder IR ($P=0.002$) and ER ($P=0.006$) strength. ER ROM and ER:IR ratio did not change after taping ($P=0.26$, $P=0.98$, respectively).

CONCLUSIONS:

The results of this study suggest that scapular taping could be an effective method for enhancing the acromiohumeral distance, shoulder rotator strength and range of motion. Therefore, scapular taping could be recommended for not only in the asymptomatic athletes' shoulder exercise training but also in the prevention of subacromial impingement syndrome.

PMID: 27391411

19. GLENOHUMERAL/SHOULDER**Shoulder pain**

Clin Orthop Relat Res. 2016 Jun 29.

Clinician and Patient-reported Outcomes Are Associated With Psychological Factors in Patients With Chronic Shoulder Pain.

Wolfensberger A¹, Vuistiner P², Konzelmann M³, Plomb-Holmes C³, Léger B², Luthi F⁴.

BACKGROUND:

Validated clinician outcome scores are considered less associated with psychosocial factors than patient-reported outcome measurements (PROMs). This belief may lead to misconceptions if both instruments are related to similar factors.

QUESTIONS:

We asked: In patients with chronic shoulder pain, what biopsychosocial factors are associated (1) with PROMs, and (2) with clinician-rated outcome measurements?

METHODS:

All new patients between the ages of 18 and 65 with chronic shoulder pain from a unilateral shoulder injury admitted to a Swiss rehabilitation teaching hospital between May 2012 and January 2015 were screened for potential contributing biopsychosocial factors. During the study period, 314 patients were screened, and after applying prespecified criteria, 158 patients were evaluated. The median symptom duration was 9 months (interquartile range, 5.5-15 months), and 72% of the patients (114 patients) had rotator cuff tears, most of which were work injuries (59%, 93 patients) and were followed for a mean of 31.6 days (SD, 7.5 days). Exclusion criteria were concomitant injuries in another location, major or minor upper limb neuropathy, and inability to understand the validated available versions of PROMs. The PROMs were the DASH, the Brief Pain Inventory, and the Patient Global Impression of Change, before and after treatment (physiotherapy, cognitive therapy and vocational training). The Constant-Murley score was used as a clinician-rated outcome measurement. Statistical models were used to estimate associations between biopsychosocial factors and outcomes.

RESULTS:

Greater disability on the DASH was associated with psychological factors (Hospital Anxiety and Depression Scale, Pain Catastrophizing Scale combined coefficient, 0.64; 95% CI, 0.25-1.03; $p = 0.002$) and social factors (language, professional qualification combined coefficient, -6.15; 95% CI, -11.09 to -1.22; $p = 0.015$). Greater pain on the Brief Pain Inventory was associated with psychological factors (Hospital Anxiety and Depression Scale, Pain Catastrophizing Scale combined coefficient, 0.076; 95% CI, 0.021-0.13; $p = 0.006$). Poorer impression of change was associated with psychological factors (Hospital Anxiety and Depression Scale, Pain Catastrophizing Scale, Tampa Scale of Kinesiophobia coefficient, 0.93; 95% CI, 0.87-0.99; $p = 0.026$) and social factors (education, language, and professional qualification coefficient, 6.67; 95% CI, 2.77-16.10; $p < 0.001$). Worse clinician-rated outcome was associated only with psychological factors (Hospital Anxiety and Depression Scale (depression only), Pain Catastrophizing Scale, Tampa Scale of Kinesiophobia combined coefficient, -0.35; 95% CI, -0.58 to -0.12; $p = 0.003$).

CONCLUSIONS:

Depressive symptoms and catastrophizing appear to be key factors influencing PROMs and clinician-rated outcomes. This study suggests revisiting the Constant-Murley score.

20 A. ROTATOR CUFF**Eccentric exercise**

Knee Surg Sports Traumatol Arthrosc. 2016 Jun 28.

Eccentric versus conventional exercise therapy in patients with rotator cuff tendinopathy: a randomized, single blinded, clinical trial.

Dejaco B¹, Habets B², van Loon C³, van Grinsven S³, van Cingel R^{2,4}.

PURPOSE:

To investigate the effectiveness of isolated eccentric versus conventional exercise therapy in patients with rotator cuff tendinopathy.

METHODS:

Thirty-six patients with rotator cuff tendinopathy, diagnosed by an orthopaedic surgeon, were included and randomly allocated to an isolated eccentric exercise (EE) group (n = 20, mean age = 50.2 ± 10.8 years) or a conventional exercise (CG) group (n = 16, mean age = 48.6 ± 12.3 years). Both groups fulfilled a 12-week daily home-based exercise programme and received a total amount of nine treatment sessions. The Constant Murley score was used to evaluate both objective (e.g. range of motion and strength) and subjective measures (e.g. pain and activities of daily living). A visual analogue scale (VAS) was used to evaluate pain during daily activities. As secondary outcomes, shoulder range of motion and isometric abduction strength in 45° in the scapular plane were evaluated. All measurements were taken at baseline, at 6, 12 and 26 weeks.

RESULTS:

After 26 weeks, both groups showed a significant increase in the Constant Murley score and a significant decrease in VAS scores. No difference was found between the groups, for any of the evaluated outcome measures.

CONCLUSION:

A 12-week-isolated eccentric training programme of the rotator cuff is beneficial for shoulder function and pain after 26 weeks in patients with rotator cuff tendinopathy. However, it is no more beneficial than a conventional exercise programme for the rotator cuff and scapular muscles. Based on the results, clinicians should take into account that performing two eccentric exercises twice a day is as effective as performing six concentric/eccentric exercises once a day in patients with rotator cuff tendinopathy.

KEYWORDS:

Eccentric training; Exercise therapy; Resistance training; Rotator cuff tendinopathy, subacromial pain syndrome

PMID: [27351548](#)

Teres minor

J Shoulder Elbow Surg. 2016 Jun 30. pii: S1058-2746(16)30072-6. doi: 10.1016/j.jse.2016.04.016.

Hypertrophic teres minor restores shoulder strength and range of external rotation in posterosuperior rotator cuff tears.

Kikukawa K¹, Ide J², Terakawa Y³, Takada K⁴, Morita M⁴, Hashimoto K⁴, Mizuta H⁵.

BACKGROUND:

In posterosuperior rotator cuff tears (PS-RCT), the progression of infraspinatus (ISP) muscle atrophy seems to induce compensatory hypertrophy of the teres minor (TM) muscles. However, the effect of these changes on shoulder strength and range of external rotation (ER) remains unclear. This study determined the strength and range of ER in patients with PS-RCT with atrophic ISP and hypertrophic TM and compared this with patients with PS-RCT and normal or deficient TM.

METHODS:

We investigated 35 patients with PS-RCT and atrophic ISP. TM muscles were classified as hypertrophic (type A) in 17, normal (type B) in 10, or deficient (type C) in 8. The strength ratio of the affected shoulder to the healthy contralateral shoulder was calculated, and the active range of motion was measured for both shoulders.

RESULTS:

The strength ratios of ER in types A, B, and C were 60%, 33%, and 7% ($P < .01$) with the patient's arm at the side and were 60%, 35%, and 5% ($P < .001$) at 90° abduction, respectively. The average ranges of ER in types A, B, and C were 22.6°, 15.0°, and -12.5° ($P < .001$) with the patient's arm at the side and were 71.6°, 44.5°, and 21.9° at 90° abduction ($P < .01$), respectively. The differences between shoulder types in other measures of strength or ER range were not significant.

CONCLUSIONS:

In patients with PS-RCT and atrophic ISP, shoulders with compensatory hypertrophy of the TM had greater strength and range of ER than shoulders with normal or atrophic TM.

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KEYWORDS:

Hypertrophy; atrophy; compensatory; infraspinatus; rotator cuff tear; teres minor

PMID: [27374237](#)

21. ADHESIVE CAPSULITIS

Ann Phys Rehabil Med. 2016 Jun 23. pii: S1877-0657(16)30062-8. doi: 10.1016/j.rehab.2016.04.010.

High-intensity stretch treatment for severe postoperative adhesive capsulitis of the shoulder.

Wolin PM¹, Ingraffia-Welp A¹, Moreyra CE², Hutton WC³.

BACKGROUND:

Some patients with postoperative adhesive capsulitis reach a plateau in their recovery with a standard protocol of physical therapy (PT), which puts them at risk for further surgical intervention.

OBJECTIVES:

We aimed to evaluate therapy for postoperative adhesive capsulitis of the shoulder in 2 groups of patients: (1) those who used a high-intensity stretch (HIS) device after reaching a plateau in their recovery with a standard protocol of traditional PT (PT+HIS) and (2) those who showed no plateau in their recovery with a standard protocol of traditional PT alone (PT only).

METHODS:

We retrospectively reviewed the records for 60 patients (51 males; mean age 46.7±12.6years) with postoperative adhesive capsulitis who received treatment between March 2007 and May 2010. Forward elevation and combined internal/external rotation at the initial postoperative visit and final visit were measured. The measurements from group 2 patients were used as an observational benchmark.

RESULTS:

The PT+HIS (n=42) and PT-only (n=18) patients did not differ in total follow-up time. Initial elevation was worse for PT+HIS than PT-only patients (22.1° lower, P=0.02), but the final elevation was equivalent. Initial rotation was worse for PT+HIS than PT-only patients (16.6° lower, P=0.04), but the final rotation was higher for PT+HIS patients (10.6° higher, P=0.04). Gains in elevation and rotation were greater for the PT+HIS than PT-only patients (P=0.04 and P=0.01).

CONCLUSIONS:

Patients with postoperative adhesive capsulitis of the shoulder who are unable to reach their PT treatment goals with a standard protocol of PT may benefit from the addition of HIS to their treatment regimen. HIS could be a valuable adjunct to PT for treating postoperative adhesive capsulitis in appropriate patients.

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KEYWORDS:

Adhesive capsulitis; High intensity stretching; Physical therapy; Shoulder; Stretching

PMID: [27346630](#)

26. CARPAL TUNNEL SYNDROME**Metabolic syndrome and CT**

J Hand Surg Eur Vol. 2016 Jun 16. pii: 1753193416654447.

Effect of metabolic syndrome on the outcome of corticosteroid injection for carpal tunnel syndrome.

Roh YH¹, Lee BK¹, Baek JR¹, Park MH¹, Noh JH², Gong HS³, Baek GH³.

Diffuse peripheral nerve impairment is common in metabolic syndrome: in patients with metabolic syndrome and carpal tunnel syndrome this might affect the outcome of treatment by local corticosteroid injection.

A total of 55 consecutive patients with carpal tunnel syndrome and metabolic syndrome treated with corticosteroid injection (10 mg triamcinolone acetonide) were age and sex matched with 55 control patients without metabolic syndrome. Grip strength, perception of touch with Semmes-Weinstein monofilaments and Boston Carpal Tunnel Questionnaires were assessed at the baseline and at 6, 12 and 24 weeks follow-up. The two groups had similar pre-operative grip strength and Boston Carpal Tunnel Questionnaire scores. The Boston Carpal Tunnel Questionnaire symptom and function scores of the metabolic syndrome group were significantly greater than the control group at 12 and 24 weeks follow-up.

Except for significantly greater grip strength at the 12-week follow-up in the control group, there were no significant differences in grip strength between the groups. Semmes-Weinstein monofilament sensory index for the control group was significantly greater than that of the metabolic syndrome group throughout the 24-week follow-up. After 24 weeks, five patients (13%) in the control group and 13 patients (27%) in the metabolic syndrome group had had carpal tunnel surgery.

Patients with metabolic syndrome are at risk for poor functional outcome and failure of treatment after corticosteroid injection for carpal tunnel syndrome.

LEVEL OF EVIDENCE:

Treatment benefits III.

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KEYWORDS:

Carpal tunnel syndrome; corticosteroid injection; metabolic syndrome

PMID: [27313183](#)

31. KNEE**Hamstring tears**

Knee Surg Sports Traumatol Arthrosc. 2016 Jun 23.

Muscle injuries of the dominant or non-dominant leg in male football players at elite level.

Svensson K^{1,2}, Eckerman M³, Alricsson M^{4,5}, Magounakis T⁶, Werner S^{3,7}.

PURPOSE:

The aim was to study possible differences of muscle injuries regarding type, localization and the extent of injury between the dominant and non-dominant leg in elite male football players. Another aim was to study the injury incidence of muscle injuries of the lower extremity during match and training.

METHODS:

Data were consecutively collected between 2007 and 2013 in a prospective cohort study based on 54 football players from one team of the Swedish first league. The injury incidence was calculated for both match and training, injuries to the hip adductors, quadriceps, hamstrings and triceps surae were diagnosed and evaluated with ultrasonography, and their length, depth and width were measured to determine the extent of structural muscle injuries.

RESULTS:

Fifty-four players suffered totally 105 of the studied muscle injuries. Out of these 105 injuries, the dominant leg was affected in 53 % (n = 56) of the cases. A significantly greater extent of the injury was found in the dominant leg when compared with the non-dominant leg with regard to structural injuries of the hamstrings. No other significant differences were found.

CONCLUSIONS:

Structural hamstring muscle injuries were found to be of greater extent in the dominant leg when compared with the non-dominant leg. This new finding should be taken into consideration when allowing the football player to return to play after leg muscle injuries.

LEVEL OF EVIDENCE:

IV.

KEYWORDS:

Muscle tear; Soccer; Sonography; Strain; Ultrasound

PMID: [27338959](#)

Manipulation of stiff knee**Manipulation under anesthesia for post traumatic stiff knee-pearls, pitfalls and risk factors for failure**

Injury, 07/11/2016

Saini P, et al.

Abstract**Background**

Stiffness is common following fractures around knee. Manipulation under anesthesia (MUA) is the initial noninvasive procedure usually performed for such patients. Though MUA has been extensively evaluated for knee arthroplasty, there is paucity of literature regarding its benefits in trauma cases. The purpose of this study was to define the role of manipulation in post traumatic stiff knees.

Methods

Hospital inpatient and outpatient records from January 2010 to June 2014 were retrospectively reviewed to identify patients undergoing MUA at our institution. Patients with more than one year follow up and adequate data were included. Clinical and radiographic parameters were analyzed to assess outcomes, complications, effect of timing on flexion gain as well as identify risk factors associated with failure.

Results

Out of 45 patients undergoing manipulation, 41 patients with 48 knees (34 unilateral and 7 bilateral) met inclusion criteria. Thirty six manipulations were successful while 3 were abandoned due to tight tissues and 9 developed complications. Successful MUA resulted in immediate gain of 62.36° of flexion which decreased to 49.86° at 1 year. There was statistically significant loss of flexion of 12.5° over a year (p value 0.0013). Arc of motion improved from 48.5° to 106.1° at 1 year (p value <0.0001). Significant improvement was also seen in extension and fixed flexion deformity (p value <0.0001). No significant difference could be detected between early (<3 months) and late (>3 months) groups with respect to outcomes (p value 0.883) or complications (p value 0.3193). Failed group had significantly lower pre MUA flexion and pre MUA range of motion (p value 0.003). Univariate analysis showed that extensor mechanism ruptures during injury (p value <0.0001) and knees with Flexion <40° (p value 0.0022) or ROM <30° (p value 0.0002) were significantly associated with failures.

Conclusion

MUA is a suitable non invasive treatment option for post traumatic stiffness. There is no effect of timing on outcome and late manipulation also results in good outcome. Extensor mechanism rupture and pre manipulation ROM < 30° or flexion < 40° are associated with failure and such cases should be considered for alternative options for better outcome.

Single leg stance

Postural Stability During Single-Leg Stance: A Prospective Evaluation of Non-Contact Lower Extremity Injury Risk

Authors: Bart Dingenen, PT, PhD¹, Bart Malfait, PT, PhD², Stefaan Nijs, MD, PhD³, Koen H.E. Peers, MD, PhD⁴, Styn Vereecken, PT, MSc⁴, Sabine M.P. Verschueren, PT, PhD², Luc Janssens, Eng^{2,5}, Filip F. Staes, PT, PhD²

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2016 **Volume:0 Issue:0 Pages:1–32 DOI:**10.2519/jospt.2016.6278

Background

Postural stability deficits during single-leg stance have been reported in persons with anterior cruciate ligament (ACL) injury, ACL reconstruction, and chronic ankle instability. It remains unclear whether impaired postural stability is a consequence or cause of these injuries.

Objectives

To prospectively investigate whether postural stability deficits during single-leg stance predict non-contact lower extremity injuries.

Methods

Fifty injury-free female athletes performed a transition task from double-leg stance to single-leg stance with eyes closed. The center of pressure (COP) displacement during the first 3 seconds after the time to new stability point (TAT) was reached during single-leg stance (COP TAT) was the main outcome variable. Non-contact lower extremity injuries were recorded during a 1-year follow-up.

Results

Six participants sustained a non-contact ACL injury or ankle sprain. COP TAT was significantly increased in the injured ($P=0.030$) and non-injured leg ($P=0.009$) of the injured group compared to the respective matched leg of the non-injured group. The area under the receiving operating characteristic curve analysis (AUC) revealed significant discriminative accuracy between groups for COP TAT of the injured (AUC=0.814; $P=0.015$) and non-injured leg (AUC=0.897; $P=0.004$) of the injured group with the matched leg of the non-injured group.

Conclusion

Postural stability measurements during the single-leg stance phase of the double-leg stance to single-leg stance transition task may be suggestive of increased risk of non-contact lower extremity injury. *J Orthop Sports Phys Ther*, Epub 3 Jul 2016. doi:10.2519/jospt.2016.6278

Keyword: injury prevention, lower extremity, postural stability, screening

33. MENISCUS

Assessment of

Arthritis Care Res (Hoboken). 2016 Jul 7. doi: 10.1002/acr.22975.

The Value of History, Physical Examination, and Radiographic Findings in the Diagnosis of Symptomatic Meniscal Tear among Middle-Age Subjects with Knee Pain.

Katz JN^{1,2}, Smith SR¹, Yang HY¹, Martin SD¹, Wright J¹, Donnell-Fink LA¹, Losina E^{1,2,3}.

OBJECTIVE:

To evaluate the utility of clinical history, radiographic and physical exam findings in the diagnosis of symptomatic meniscal tear (SMT) in patients over age 45, in whom concomitant osteoarthritis is prevalent.

METHODS:

In a cross-sectional study of patients from two orthopedic surgeons' clinics we assessed clinical history, physical examination and radiographic findings in patients over 45 with knee pain. The orthopedic surgeons rated their confidence that subjects' symptoms were due to MT; we defined the diagnosis of SMT as at least 70% confidence. We used logistic regression to identify factors independently associated with diagnosis of SMT and we used the regression results to construct an index of the likelihood of SMT.

RESULTS:

In 174 participants, six findings were associated independently with the expert clinician having $\geq 70\%$ confidence that symptoms were due to MT: localized pain, ability to fully bend the knee, pain duration < 1 year, lack of varus alignment, lack of pes planus, and absence of joint space narrowing on radiographs. The index identified a low risk group with 3% likelihood of SMT.

CONCLUSION:

While clinicians traditionally rely upon mechanical symptoms in this diagnostic setting, our findings did not support the conclusion that mechanical symptoms were associated with the expert's confidence that symptoms were due to MT. An index that includes history of localized pain, full flexion, duration < 1 year, pes planus, varus alignment, and joint space narrowing can be used to stratify patients according to their risk of SMT and it identifies a subgroup with very low risk. This article is protected by copyright. All rights reserved.

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KEYWORDS:

knee osteoarthritis; meniscal tear

PMID: [27390312](#)

34. PATELLA**Prolonged sitting**

Pain During Prolonged Sitting Is a Common Problem in Persons With Patellofemoral Pain

Authors: Natalie J. Collins, PhD^{1,2}, Bill Vicenzino, PhD¹, Rianne A. van der Heijden, MD³, Marienke van Middelkoop, PhD³

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2016 **Volume:**0 **Issue:**0 **Pages:**1–19 **DOI:**10.2519/jospt.2016.6470

Study Design

Retrospective cohort.

Background

Although persons with PFP often report pain with prolonged sitting, little is known about the prevalence and characteristics of sitting pain.

Objectives

To describe the proportion of persons with patellofemoral pain (PFP) that experience problems with prolonged sitting and to determine patient characteristics associated with sitting pain.

Methods

458 participants with a diagnosis of PFP from 4 separate studies were included. Item 8 of the Anterior Knee Pain Scale (AKPS) was used to define the presence of problems with prolonged sitting with knee flexion based on 3 categories: (1) “no difficulty”; (2) “pain after exercise”; or (3) problem with prolonged sitting. Differences in demographic and clinical variables between categories were evaluated using Kruskal-Wallis tests ($p > 0.05$).

Results

249 (54.4%) of study participants reported problems with prolonged sitting, while 121 (26.4%) reported sitting pain after exercise. Compared to those with no difficulty sitting ($n=88$), participants classified as having problems with prolonged sitting were significantly younger ($p=0.038$); more likely to be female ($p=0.033$); had a lower BMI ($p=0.027$); reported higher pain severity ($p < 0.001$) and lower AKPS score ($p < 0.001$); and more frequently reported problems with squatting ($p < 0.001$).

Conclusion

Problems with prolonged sitting are evident in more than half of persons with PFP. Findings highlight the need to identify and adequately manage PFP associated with prolonged sitting. Further research should explore mechanisms of sitting pain and evaluate targeted interventions to reduce PFP with prolonged sitting.

Level of Evidence

Symptom prevalence study; Level 2b. *J Orthop Sports Phys Ther*, Epub 3 Jul 2016. doi:10.2519/jospt.2016.6470

Keyword: aggravating activities, knee pain, prevalence

37. OSTEOARTHRITIS/KNEE**Mechanoreceptors**

Knee Surg Sports Traumatol Arthrosc. 2016 Jun 23.

Lower numbers of mechanoreceptors in the posterior cruciate ligament and anterior capsule of the osteoarthritic knees.

Çabuk H¹, Kuşku Çabuk F², Tekin AÇ³, Dedeoğlu SS³, Çakar M³, Büyükkurt CD³.

PURPOSE:

Impaired proprioception accuracy of the knee has been proposed as a local factor in the onset and progression of knee osteoarthritis. Patients with decreased numbers of mechanoreceptors could be more likely to develop arthrosis due to a loss in proprioception of the joint. We aimed to identify and quantify the mechanoreceptors of the posterior cruciate ligament (PCL), the anterior capsule (AC) and the medial meniscocapsular junction (MCJ) in knee arthrosis.

METHODS:

PCLs, ACs and MCJs were harvested from 30 patients with Kellgren and Lawrence grades 3 and 4 osteoarthritis (OA), and ten knees taken from five cadavers without OA were used as a control group. PCL degeneration was evaluated with haematoxylin & eosin, and the types and numbers of mechanoreceptors were evaluated using S100 immunostaining.

RESULTS:

The patient ages in the OA and control groups (n.s.) did not differ. PCL degeneration was more severe in the gonarthrosis group than in the control group ($p = 0.04$). The numbers of Golgi corpuscles, Ruffini corpuscles, free nerve endings, total nerve endings and small vessels of the PCL were low in the OA group, as were the numbers of Golgi corpuscles, free nerve endings and total nerve endings of the AC. No significant correlation was found regarding the mechanoreceptors of the MCJ between the two groups.

CONCLUSION:

The numbers of mechanoreceptors in patients with OA were low in the PCLs and ACs. A loss in proprioception could be a local risk factor in OA. The proprioceptive impact of preserving PCL while performing total knee arthroplasty may not be exaggerated as its thought.

LEVEL OF EVIDENCE:

Prognostic study, Level I.

KEYWORDS:

Knee arthroplasty; Knee osteoarthritis; Ligament; Mechanoreceptors; Posterior cruciate; Proprioception

PMID:27338958

Hip strength deficits

Hip Strength Deficits in People With Symptomatic Knee Osteoarthritis: A Systematic Review With Meta-analysis

Authors: Margaret Deasy, PT, MPHTY¹, Edmund Leahy, PT, MPHTY^{1,2}, Adam Ivan Semciw, PhD³⁻⁶

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2016 **Volume:0 Issue:0 Pages:1–37 DOI:10.2519/jospt.2016.6618**

Study Design

Systematic review with meta-analysis.

Background

The optimum type of exercise interventions for people with knee osteoarthritis may be guided by a complete understanding of impairments associated with the condition. Our current understanding of hip strength deficits in this population is based on studies with conflicting findings and small samples. There is a need to systematically review and pool current evidence.

Objectives

To determine if hip strength deficits exist in people with symptomatic knee osteoarthritis.

Methods

Electronic databases (MEDLINE, CINAHL, EMBASE, COCHRANE, and Psycinfo) were searched through February 2016. Studies comparing hip strength in people diagnosed with symptomatic knee osteoarthritis to healthy control participants were included in the review. A meta-analysis with random effects was applied to relevant data from included studies and a modified GRADE approach was used to evaluate the quality of evidence for each pooled analysis.

Results

Five studies were included in the review. Meta-analysis revealed moderate quality evidence of weaker isometric and isokinetic hip abduction strength in people with knee osteoarthritis (moderate difference; 7% to 24% weaker); very low quality evidence of no difference in isometric hip adduction strength. There was very low to moderate quality evidence of weaker isokinetic hip strength in the remaining planes of motion (moderate to large differences; 14% to 54% weaker).

Conclusion

Significant hip strength deficits exist in people with knee osteoarthritis. Hip strength assessment should be considered in clinical practice and may assist with directing targeted management strategies.

Level of Evidence

Symptom prevalence, 1a. *J Orthop Sports Phys Ther*, Epub 3 Jul 2016.
doi:10.2519/jospt.2016.6618

Keyword: dynamometer, muscle strength, muscle weakness

42. PLANTAR SURFACE

Plantar heel pain and decreased foot function**Impaired Foot Plantar Flexor Muscle Performance in Individuals With Plantar Heel Pain and Association With Foot Orthosis Use**

Authors: Shane McClinton, DPT, OCS, FAAOMPT¹, Christopher Collazo, BS², Ebonie Vincent, DPM³, Vassilios Vardaxis, PhD^{1,2}

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2016 **Volume:**0 **Issue:**0 **Pages:**1–29 **DOI:**10.2519/jospt.2016.6482

Study Design

Controlled laboratory study.

Background

Plantar heel pain is one of the most common foot and ankle conditions seen in clinical practice and many individuals continue to have persisting or recurrent pain after treatment. Impaired foot plantar flexor muscle performance is a factor that may contribute to limited treatment success, but reliable methods to identify impairments in individuals with plantar heel pain are needed. In addition, foot orthoses are commonly used to treat this condition, but the implications of orthosis use on muscle performance have not been assessed.

Objectives

To assess ankle plantar flexor and toe flexor muscle performance of individuals with plantar heel pain using clinically-feasible measures and to examine the relationship between muscle performance and duration of foot orthosis use.

Methods

The rocker board plantar flexion test (RBPFT) and modified paper grip test for the great toe (mPGT_{GT}) and lesser toes (mPGT_{LT}) were used to assess foot plantar flexor muscle performance in 27 individuals with plantar heel pain and compared to 27 individuals without foot pain that were matched according to age, sex, and body mass. Pain ratings were obtained before and during testing, and self-reported duration of foot orthosis use was recorded.

Results

Compared to the control group, individuals with plantar heel pain demonstrated lower performance in the RBPFT ($P = 0.001$), the mPGT_{GT} ($P = 0.037$) and the mPGT_{LT} ($P = 0.022$). Longer duration of foot orthosis use was moderately correlated to lower performance on the RBPFT ($r = -0.52$, $P = 0.02$), the mPGT_{GT} ($r = -0.54$, $P = 0.01$), and the mPGT_{LT} ($r = -0.43$, $P = 0.03$).

Conclusion

Ankle plantar flexor and toe flexor muscle performance was impaired in individuals with plantar heel pain and associated with longer duration of self-reported foot orthosis use. *J Orthop Sports Phys Ther*, Epub 3 Jul 2016. doi:10.2519/jospt.2016.6482

Keyword: foot orthoses, orthotic device, paper grip test, plantar fasciitis, rocker board plantar flexion test, toe flexion

45 A. MANUAL THERAPY LUMBAR & GENERAL**CS therapy and LBP**

J Altern Complement Med. 2016 Jun 27.

Benefits of Craniosacral Therapy in Patients with Chronic Low Back Pain: A Randomized Controlled Trial.

Castro-Sánchez AM¹, Lara-Palomo IC¹, Matarán-Peñarrocha GA², Saavedra-Hernández M¹, Pérez-Mármol JM³, Aguilar-Ferrándiz ME^{3,4}.

OBJECTIVES:

To evaluate the effects of craniosacral therapy on disability, pain intensity, quality of life, and mobility in patients with low back pain.

DESIGN:

A single-blinded randomized controlled trial.

PATIENTS:

Sixty-four patients with chronic nonspecific low back pain (mean age \pm SD, 50 ± 12 years; 66% female) who were referred for physical therapy at a clinical unit of the Health Science School of the University of Almeria (Spain).

INTERVENTIONS:

Participants were randomly assigned to an experimental group (10 sessions of craniosacral therapy) or a control group (10 sessions of classic massage).

OUTCOME MEASURES:

Disability (Roland Morris Disability Questionnaire [RMQ, primary outcome] and Oswestry Disability Index), pain intensity (10-point numeric pain rating scale), kinesiophobia (Tampa Scale of Kinesiophobia), isometric endurance of trunk flexor muscles (McQuade test), lumbar mobility in flexion, hemoglobin oxygen saturation, systolic blood pressure, diastolic blood pressure, hemodynamic measures (cardiac index), and biochemical estimation of interstitial fluid. These outcomes were registered at baseline, after treatment, and 1-month follow-up.

RESULTS:

No statistically significant differences were seen between groups for the main outcome of the study, the RMQ ($p = 0.060$). However, patients receiving craniosacral therapy experienced greater improvement in pain intensity ($p \leq 0.008$), hemoglobin oxygen saturation ($p \leq 0.028$), and systolic blood pressure ($p \leq 0.029$) at immediate- and medium-term and serum potassium ($p = 0.023$) level and magnesium ($p = 0.012$) at short-term than those receiving classic massage.

CONCLUSIONS:

Ten sessions of craniosacral therapy resulted in a statistically greater improvement in pain intensity, hemoglobin oxygen saturation, systolic blood pressure, serum potassium, and magnesium level than did 10 sessions of classic massage in patients with low back pain.

PMID: 27347698

MT and Neuroscience

Physiother Theory Pract. 2016 Jul;32(5):408-14. doi: 10.1080/09593985.2016.1194663. Epub 2016 Jun 30.

Combining manual therapy with pain neuroscience education in the treatment of chronic low back pain: A narrative review of the literature.

Puentedura EJ¹, Flynn T².

Teaching people with chronic low back pain (CLBP) about the neurobiology and neurophysiology of their pain is referred to as pain neuroscience education (PNE).

There is growing evidence that when PNE is provided to patients with chronic musculoskeletal pain, it can result in decreased pain, pain catastrophization, disability, and improved physical performance. Because the aim of PNE is to shift the patient's focus from the tissues in the low back as the source of their pain to the brain's interpretation of inputs, many clinicians could mistakenly believe that PNE should be a "hands-off," education-only approach.

An argument can be made that by providing manual therapy or exercise to address local tissue pathology, the patient's focus could be brought back to the low back tissues as the source of their problem. In this narrative literature review, we present the case for a balanced approach that combines PNE with manual therapy and exercise by considering how manual therapy can also be incorporated for interventions with patients with CLBP.

We propose that as well as producing local mechanical effects, providing manual therapy within a PNE context can be seen as meeting or perhaps enhancing patient expectations, and also refreshing or sharpening body schema maps within the brain. Ideally, all of this should lead to better outcomes in patients with CLBP.

KEYWORDS:

Body schema; exercise; manual therapy; neuroscience; pain; patient expectations

PMID: 27362980

Lumbar traction pre-test

Original Article**Manual unloading of the lumbar spine: can it identify immediate responders to mechanical traction in a low back pain population? A study of reliability and criterion referenced predictive validity****DOI:** .1179/2042618614Y.0000000072

Journal of Manual & Manipulative Therapy

Volume 24, Issue 2, 2016

Brian T. Swanson^{a**}, Sean P. Riley^b, Mark P. Cote^b, Robin R. Leger^c, Isaac L. Moss^b & John Carlos, Jr^d

Background:: To date, no research has examined the reliability or predictive validity of manual unloading tests of the lumbar spine to identify potential responders to lumbar mechanical traction.

Purpose:: To determine: (1) the intra and inter-rater reliability of a manual unloading test of the lumbar spine and (2) the criterion referenced predictive validity for the manual unloading test.

Methods:: Ten volunteers with low back pain (LBP) underwent a manual unloading test to establish reliability. In a separate procedure, 30 consecutive patients with LBP (age 50.86 ± 11.51) were assessed for pain in their most provocative standing position (visual analog scale (VAS) 49.53 ± 25.52 mm). Patients were assessed with a manual unloading test in their most provocative position followed by a single application of intermittent mechanical traction. Post traction, pain in the provocative position was reassessed and utilized as the outcome criterion.

Results:: The test of unloading demonstrated substantial intra and inter-rater reliability $K=1.00$, $P=0.002$, $K=0.737$, $P=0.001$, respectively. There were statistically significant within group differences for pain response following traction for patients with a positive manual unloading test ($P<0.001$), while patients with a negative manual unloading test did not demonstrate a statistically significant change ($P>0.05$). There were significant between group differences for proportion of responders to traction based on manual unloading response ($P=0.031$), and manual unloading response demonstrated a moderate to strong relationship with traction response $\text{Phi}=0.443$, $P=0.015$.

Discussion and conclusion:: The manual unloading test appears to be a reliable test and has a moderate to strong correlation with pain relief that exceeds minimal clinically important difference (MCID) following traction supporting the validity of this test.

Post-surgical MT

Randomised controlled pilot trial on feasibility, safety and effectiveness of osteopathic MANipulative treatment following major abdominal surgery (OMANT pilot trial)

Pascal Probst Elena Büchler Colette Doerr-Harim Phillip Knebel Bettina Thiel Alexis Ulrich
Markus K. Diener

DOI: <http://dx.doi.org/10.1016/j.ijosm.2016.03.002>

Abstract**Background**

Postoperative complications are a major concern after gastrointestinal surgery. Resolving movement restrictions such as postoperative paralysis, osteopathic manipulative treatment (OMT) may be beneficial. The OMANT pilot study was the first prospective trial to investigate the feasibility, safety and potential benefits of OMT after gastrointestinal surgery.

Methods/Design

Twenty patients with elective bowel resection were randomised in two parallel groups. Patients in the intervention group received standard care with the addition of OMT on postoperative days 1–5.

Results

OMANT pilot was conducted between February and April 2015. Of 38 patients invited, only 2 (5.3%) were unwilling to participate in the trial. OMT was conducted successfully in 49 of 50 attempts (98%). OMT patients showed lower postoperative morbidity than control patients (comprehensive complication index 30.8 vs. 37.1). Pain during the postoperative course was decreased significantly by OMT.

Conclusions

Evaluation of OMT in a prospective clinical trial is feasible, and OMT is safe in postoperative patients. Since OMT is a pain-relieving and well tolerated treatment in surgical patients, it might be beneficial after gastrointestinal surgery, and its effectiveness should be evaluated in an affirmative RCT based on this pilot trial.

45 B. MANUAL THERAPY CERVICAL

TMJ and CT manip

Case Report

Cervicothoracic junction thrust manipulation in the multimodal management of a patient with temporomandibular disorder

DOI: 10.1179/2042618614Y.0000000080

Dhinu J. Jayaseelan^{a*} & Nancy S. Tow^b
pages 90-97

Temporomandibular disorder (TMD) is a common condition that can be difficult to manage in physical therapy.

A number of interventions, such as manual therapy, therapeutic exercise, and patient education have typically been used in some combination. However, the evidence regarding thrust manipulation of not only the local but also adjacent segments is sparse. Specifically, the use of cervicothoracic (CT) junction thrust manipulation has not previously been described in the management of individuals with TMD. In this case report, CT junction thrust manipulation, in addition to locally directed manual therapy, exercise, and postural education, was associated with immediate improvements in neck and jaw symptoms and function in a complex patient with TMD.

The patient was seen for seven visits over the course of 2 months and demonstrated clinically significant changes in the neck disability index (NDI), the numeric rating of pain scale (NPRS), and the global rating of change (GROC) scale.

The purpose of this report is to describe the successful physical therapy management of a patient with TMD utilizing manual therapy, including CT junction thrust manipulation, education, and exercise.

•

Tension HA and MT**Efficacy of manual therapy on frequency and intensity of pain, anxiety and depression in patients with tension-type headache. A randomized controlled clinical trial**

Gemma Victoria Espí-López, PhD, PTLaura López-Bueno, PhD, PT M. Teófila Vicente-Herrero, PhD MD Francisco Martínez Arnau, PT Lucas Monzani, PhD, MSc.

DOI: <http://dx.doi.org/10.1016/j.ijosm.2016.05.003>

Abstract**Introduction**

Tension-type headache (TTH) is a highly prevalent disorder with a significant socio-economic impact and psychological effects for TTH participants. The purpose of this study was to test the efficacy of three manual therapy TTH treatments with regard to the reduction of TTH-related anxiety and depression were also addressed.

Subjects and methods

A clinical trial was conducted on 84 participants suffering from tension-type headache forming 4 groups: the first group received suboccipital soft tissue treatment (ST); the second group was treated with articulatory techniques (AT); the third group underwent a combination of both techniques (ST and AT), while the fourth group was the control group. Treatment sessions were administered over four weeks, with post-treatment assessment, and follow-up at one month. We conducted Repeated measures Analysis of Covariance (RM-MANCOVA) to evaluate the effect of treatment on between and within-subject conditions and their interaction on reported depression and anxiety.

Results

While all treatments prove to be effective in reducing its associated psychological symptoms (depression, anxiety), their efficacy varied between treatments, TTH types and the elapsed time between measurements.

Conclusion

Overall, our findings suggest that treatments including articulatory techniques are more efficient than soft tissue techniques, or a combination of both, for the reduction of physiological symptoms in TTH participants and, as a secondary benefit, reduce anxiety and depression levels in these participants

Myofascial release helps

Am J Phys Med Rehabil. 2016 Jul;95(7):507-15. doi: 10.1097/PHM.0000000000000425.

Myofascial Release Therapy in the Treatment of Occupational Mechanical Neck Pain: A Randomized Parallel Group Study.

Rodríguez-Fuentes I¹, De Toro FJ, Rodríguez-Fuentes G, de Oliveira IM, Mejjide-Faílde R, Fuentes-Boquete IM.

OBJECTIVE:

As myofascial release therapy is currently under development, the objective of this study was to compare the effectiveness of myofascial release therapy with manual therapy for treating occupational mechanical neck pain.

DESIGN:

A randomized, single-blind parallel group study was developed. The sample (n = 59) was divided into GI, treated with manual therapy, and GII, treated with myofascial release therapy. Variables studied were intensity of neck pain, cervical disability, quality of life, craniovertebral angle, and ranges of cervical motion.

RESULTS:

At five sessions, clinical significance was observed in both groups for all the variables studied, except for flexion in GI. At this time point, an intergroup statistical difference was observed, which showed that GII had better craniovertebral angle (P = 0.014), flexion (P = 0.021), extension (P = 0.003), right side bending (P = 0.001), and right rotation (P = 0.031). A comparative analysis between therapies after intervention showed statistical differences indicating that GII had better craniovertebral angle (P = 0.000), right (P = 0.000) and left (P = 0.009) side bending, right (P = 0.024) and left (P = 0.046) rotations, and quality of life.

CONCLUSIONS:

The treatment of occupational mechanical neck pain by myofascial release therapy seems to be more effective than manual therapy for correcting the advanced position of the head, recovering range of motion in side bending and rotation, and improving quality of life.

PMID: [26745225](#)

Safety

Safety of cervical spine manipulation: are adverse events preventable and are manipulations being performed appropriately?

Emilio J. Puentedura¹ , Jessica March¹ , Joe Anders¹ , Amber Perez¹ , Merrill R. Landers¹ , Harvey W. Wallmann² , Joshua A. Cleland³

Background: Cervical spine manipulation (CSM) is a commonly utilized intervention, but its use remains controversial.

Purpose: To retrospectively analyze all available documented case reports in the literature describing patients who had experienced severe adverse events (AEs) after receiving CSM to determine if the CSM was used appropriately, and if these types of AEs could have been prevented using sound clinical reasoning on the part of the clinician.

Data sources: PubMed and the Cumulative Index to Nursing and Allied Health were systematically searched for case reports between 1950 and 2010 of AEs following CSM.

Study selection: Case reports were included if they were peer-reviewed; published between 1950 and 2010; case reports or case series; and had CSM as an intervention. Articles were excluded if the AE occurred without CSM (e.g. spontaneous); they were systematic or literature reviews.

Data extracted from each case report included: gender; age; who performed the CSM and why; presence of contraindications; the number of manipulation interventions performed; initial symptoms experienced after the CSM; and type of resultant AE. **Data synthesis:** Based on the information gathered, CSMs were categorized as appropriate or inappropriate, and AEs were categorized as preventable, unpreventable, or unknown. Chi-square analysis with an alpha level of 0.05 was used to determine if there was a difference in proportion between six categories: appropriate/preventable, appropriate/unpreventable, appropriate/unknown, inappropriate/preventable, inappropriate/unpreventable, and inappropriate/unknown.

Results: One hundred thirty four cases, reported in 93 case reports, were reviewed. There was no significant difference in proportions between appropriateness and preventability, $P=0.46$. Of the 134 cases, 60 (44.8%) were categorized as preventable, 14 (10.4%) were unpreventable and 60 (44.8%) were categorized as 'unknown'. CSM was performed appropriately in 80.6% of cases. Death resulted in 5.2% (n=57) of the cases, mostly caused by arterial dissection. **Limitations:** There may have been discrepancies between what was reported in the cases and what actually occurred, since physicians dealing with the effects of the AE, rather than the clinician performing the CSM, published many of the cases.

Conclusions: This review showed that, if all contraindications and red flags were ruled out, there was potential for a clinician to prevent 44.8% of AEs associated with CSM. Additionally, 10.4% of the events were unpreventable, suggesting some inherent risk associated with CSM even after a thorough exam and proper clinical reasoning. **Keywords:** Adverse events, Case reports, Cervical spine, Manipulation, Risk of harm, Safety

45 C. MANUAL THERAPY THORACIC**Pulmonary MT**

Int J Chron Obstruct Pulmon Dis. 2016 Jun 20;11:1353-7. doi: 10.2147/COPD.S107408. eCollection 2016.

Immediate effect of manual therapy on respiratory functions and inspiratory muscle strength in patients with COPD.

Yilmaz Yelvar GD¹, Çirak Y², Demir YP³, Dalkılıç M¹, Bozkurt B⁴.

OBJECTIVE:

The objective of this study was to investigate the immediate effect of manual therapy (MT) on respiratory functions and inspiratory muscle strength in patients with COPD.

PARTICIPANTS AND METHODS:

Thirty patients with severe COPD (eight females and 22 males; mean age 62.4±6.8 years) referred to pulmonary physiotherapy were included in this study. The patients participated in a single session of MT to measure the short-term effects. The lung function was measured using a portable spirometer. An electronic pressure transducer was used to measure respiratory muscle strength. Heart rate, breathing frequency, and oxygen saturation were measured with a pulse oximeter. For fatigue and dyspnea perception, the modified Borg rating of perceived exertion scale was used. All measurements were taken before and immediately after the first MT session. The ease-of-breathing visual analog scale was used for rating patients' symptoms subjectively during the MT session.

RESULTS:

There was a significant improvement in the forced expiratory volume in the first second, forced vital capacity, and vital capacity values ($P<0.05$). The maximal inspiratory pressure and maximal expiratory pressure values increased significantly after MT, compared to the pre-MT session ($P<0.05$). There was a significant decrease in heart rate, respiratory rate ($P<0.05$), and dyspnea and fatigue perception ($P<0.05$).

CONCLUSION:

A single MT session immediately improved pulmonary function, inspiratory muscle strength, and oxygen saturation and reduced dyspnea, fatigue, and heart and respiratory rates in patients with severe COPD. MT should be added to pulmonary rehabilitation treatment as a new alternative that is fast acting and motivating in patients with COPD.

KEYWORDS:

COPD; fatigue; inspiratory muscle strength; manual therapy; pulmonary function dyspnea

PMID: 27382271

Pulmonary MT**Original Research Paper****Medium term effects of including manual therapy in a pulmonary rehabilitation program for chronic obstructive pulmonary disease (COPD): a randomized controlled pilot trial.**

DOI: 10.1179/2042618614Y.0000000074

Journal of Manual & Manipulative Therapy

Volume 24, Issue 2, 2016

Roger Mark Engel^{a*}, Peter Gonski^b, Ken Beath^c & Subramanyam Vemulpad^d
pages 80-89

Study design: Randomized clinical trial.

Objective: To investigate the effect of including manual therapy (MT) in a pulmonary rehabilitation program for patients with chronic obstructive pulmonary disease (COPD).**Background:** The primary source of exercise limitation in people with COPD is dyspnea. The dyspnea is partly caused by changes in chest wall mechanics, with an increase in chest wall rigidity (CWR) contributing to a decrease in lung function. As MT is known to increase joint mobility, administering MT to people with COPD carries with it the potential to influence CWR and lung function.**Methods:** Thirty-three participants with COPD, aged between 55 and 70 years (mean=65.5±4 years), were randomly assigned to three groups: pulmonary rehabilitation (PR) only, soft tissue therapy (ST) and PR, and ST, spinal manipulative therapy (SM), and PR. Outcome measures including forced expiratory volume in the 1st second (FEV₁), forced vital capacity (FVC), 6-minute walking test (6MWT), St. George's respiratory questionnaire (SGRQ), and the hospital anxiety and depression (HAD) scale were recorded at 0, 8, 16, and 24 weeks.**Results:** There was a significant difference in FVC between the three groups at 24 weeks ($P=0.04$). For the ST+SM+PR group versus PR only the increase was 0.40 l (CI: 0.02, 0.79; $P=0.03$). No major or moderate adverse events (AE) were reported following the administration of 131 ST and 272 SM interventions.**Discussion:** The increase in FVC is a unique finding. Although the underlying mechanisms responsible for this outcome are not yet understood, the most likely explanation is the synergistic effect resulting from the combination of interventions. These results support the call for a larger clinical trial in the use of MT for COPD.

46 A. UPPER LIMB NEUROMOBILIZATION**Adding internal rotation****Original Article****Impact of shoulder internal rotation on ulnar nerve excursion and strain in embalmed cadavers. A pilot study**

DOI: 10.1179/2042618614Y.0000000093 Journal of Manual & Manipulative Therapy Volume 24, Issue 2, 2016

Mark Gugliotti^{a*}, Bennett Futterman^a, Thomas Ahrens^a, David Block^a, Lauren Brown^a, Micheal Dagro^a, James Falesto^a & Aliza Lyon^a pages 111-116

Design: Laboratory study, repeated-measures design.

Objective: To determine if the substitution of shoulder internal rotation for external rotation during the upper limb neurodynamic test (ULNT₃) evokes a comparable ulnar nerve excursion and strain in embalmed cadavers. Shoulder external rotation is a primary movement component of the ULNT₃. It has been suggested that shoulder internal rotation may provide a similar load to the nervous system. There are no data to either support or negate this claim.

Methods: Excursion and strain were measured in the ulnar nerve of six embalmed cadavers during the traditional ULNT₃ and an experimental maneuver using shoulder internal rotation.

Results: The total means±SD of excursion for the traditional and experimental maneuvers were 2.11±0.89 and 2.09±0.92 mm, respectively. The total means±SD of strain for the traditional and experimental maneuvers were 5.274±2.223 and 5.241±2.308%, respectively. A very strong correlation ($r=0.98$) was shown to exist between maneuvers and this relationship was determined to be significant ($P=0.001$).

Discussion: The results of this study provide evidence that there is no appreciable difference in excursion or strain when substituting shoulder internal rotation for external rotation during the ULNT₃. Patients who exhibit limitation of shoulder external rotation mobility may benefit from this substitution when presenting with signs of ulnar nerve pathodynamics. Further research involving patients will be needed to assess the validity of the experimental maneuver for clinical application.

47. STRETCHING/MUSCLES**Hamstring and stretching**

J Phys Ther Sci. 2016 Jun;28(6):1806-8. doi: 10.1589/jpts.28.1806. Epub 2016 Jun 28.

Immediate effect of stretching and ultrasound on hamstring flexibility and proprioception.

Cho SH¹, Kim SH¹.

[Purpose] This research explored the positive effects of self-myofascial release on hamstring muscular flexibility and proprioception and investigated the effectiveness of the stretch combined with therapeutic ultrasound.

[Subjects and Methods] This study included 30 healthy university students with no history of pain in the Achilles tendon or hamstring within the recent 6 months. Each participant completed two experiments. In the first experiment (MS), they completed self-myofascial stretching using a foam roller for 7 days. In the second experiment (MSU), the same participants performed the self-myofascial stretching after the 15-minute application of ultrasound. This study involved a pre- and post-test on hamstring muscle flexibility and hip joint proprioception.

[Results] The use of self-myofascial stretching in the MS experiment had a significant effect on hamstring muscle flexibility and hip joint proprioception. However, the addition of ultrasound in the MSU experiment had no additive effect.

[Conclusion] Self-myofascial stretching immediately increased hamstring muscle flexibility and improved hip joint proprioception, but the addition of pre-stretch ultrasound provided no further benefit.

KEYWORDS:

Flexibility; Self-myofascial release; Ultrasound

PMID: [27390420](https://pubmed.ncbi.nlm.nih.gov/27390420/)

48 A. STM**Graston and LBP**

J Phys Ther Sci. 2016 Jun;28(6):1852-5. doi: 10.1589/jpts.28.1852. Epub 2016 Jun 28.

The effect of Graston technique on the pain and range of motion in patients with chronic low back pain.

Lee JH¹, Lee DK², Oh JS³.

[Purpose] Clinicians have reported the effects of various instrument assisted soft tissue mobilization (IASTM) in patients. The purpose of this study was to investigate the effects of the Graston technique and general exercise on pain and range of motion (ROM) in patients with CLBP. **[Subjects and Methods]** 30 patients with CLBP participated in the study (Graston technique: 15;

CONTROL:

15). Before and after the 4-week intervention program, pain was assessed using a visual analog scale (VAS). Lumbar ROM was measured using a smartphone. The main effects and interaction were analyzed by two-way repeated ANOVA.

[Results] A significant time-by-group interaction was observed for the VAS and ROM. A post hoc paired t-test showed that pain decreased significantly post-intervention within the Graston group. The lumbar ROM significantly increased post-intervention in both groups.

[Conclusion] The Graston technique and general exercise resulted in pain relief and increased ROM. However, the Graston group showed significantly increased VAS and ROM more than control group. These findings suggest that the Graston technique can be useful as a pain decrease and ROM increase for patients with CLBP.

KEYWORDS:

Chronic low back pain; Graston technique; Range of motion

PMID: [27390432](https://pubmed.ncbi.nlm.nih.gov/27390432/)

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

Headache. 2016 Jul 13. doi: 10.1111/head.12857.

Role of Acupuncture in the Treatment or Prevention of Migraine, Tension-Type Headache, or Chronic Headache Disorders.

Coeytaux RR^{1,2}, Befus D³.

OBJECTIVE:

To summarize the current evidence that evaluates the effectiveness of acupuncture for the treatment or prevention of migraine, tension-type headache, and chronic headache disorders.

METHODS:

Findings from selected systematic reviews and meta-analyses are summarized.

RESULTS:

Recently published systematic reviews and meta-analyses demonstrate that acupuncture is associated with improved clinical outcomes compared to routine care only, medical management, and sham acupuncture 2 months after randomization. The evidence in support of acupuncture's comparative effectiveness at longer follow-up periods is mixed. Cost effectiveness analyses conducted in the United Kingdom and Germany suggest that acupuncture is a cost-effective treatment option in those countries. There are few or no cost-effectiveness studies of acupuncture in the United States.

DISCUSSION:

This brief review of the current, published evidence does not include a discussion of potential risks or adverse events associated with acupuncture. There is also the question of the extent to which placebo effects might contribute to acupuncture's clinical effectiveness. From a purely comparative effectiveness perspective, however, the evidence from clinical trials and meta-analyses makes a compelling case in support of a potentially important role for acupuncture as part of a treatment plan for patients with migraine, tension-type headache, and several different types of chronic headache disorders.

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Dry needling and LBP

The effect of dry needling on the radiating pain in subjects with discogenic low back pain: A randomized control trial

Journal of Research in Medical Sciences, 07/11/2016

Mahmoudzadeh A, et al.

The recent study aimed to correlate the impact of dry needling and a standard conservative approach on the pain and function in subjects with discogenic radiating low back pain. Both intervention strategies seem to significantly improve pain and disability immediately following intervention, where the improvement continued during two months after the last active intervention. Therefore, supplementary DN application may enhance the effect of the standard intervention considerably.

Methods

- A total of 58 participants were screened and randomized into control (Standard physical therapy, N = 29) and experimental group (Standard physical therapy & Dry needling, N = 29) with discogenic radicular low back pain.
- Moreover, radiating pain intensity and disability were measured using Visual Analogue Scale and Oswestry Disability indices at baseline, at the end of treatment and two months after the last intervention session.
- The changes in pain intensity and disability were studied using a 3×2 repeated measures analysis of variance considering time as the within–subject factor and group as the between–subject.

Results

- The results revealed that pain intensity and disability scores decreased significantly in both experimental and control groups (experimental group: VAS=37.24, ODI=28.48, control group: VAS=45.5, ODI=32.96), following the intervention.
- The change continued during the follow–up period (P<0.001 for all comparisons).
- Pain and disability improvement, despite, were more beneficial in experimental group, both in post intervention (experimental group: VAS=25.17, ODI=22.17, control group: VAS=42.4, ODI=30.27) (P=0.05 and P=0.03, respectively) and in follow–up measures (P=0.006 and P=0.002, respectively).

48 C. MUSCLES**Hamstring tears**

Knee Surg Sports Traumatol Arthrosc. 2016 Jun 23.

Muscle injuries of the dominant or non-dominant leg in male football players at elite level.

Svensson K^{1,2}, Eckerman M³, Alricsson M^{4,5}, Magounakis T⁶, Werner S^{3,7}.

PURPOSE:

The aim was to study possible differences of muscle injuries regarding type, localization and the extent of injury between the dominant and non-dominant leg in elite male football players. Another aim was to study the injury incidence of muscle injuries of the lower extremity during match and training.

METHODS:

Data were consecutively collected between 2007 and 2013 in a prospective cohort study based on 54 football players from one team of the Swedish first league. The injury incidence was calculated for both match and training, injuries to the hip adductors, quadriceps, hamstrings and triceps surae were diagnosed and evaluated with ultrasonography, and their length, depth and width were measured to determine the extent of structural muscle injuries.

RESULTS:

Fifty-four players suffered totally 105 of the studied muscle injuries. Out of these 105 injuries, the dominant leg was affected in 53 % (n = 56) of the cases. A significantly greater extent of the injury was found in the dominant leg when compared with the non-dominant leg with regard to structural injuries of the hamstrings. No other significant differences were found.

CONCLUSIONS:

Structural hamstring muscle injuries were found to be of greater extent in the dominant leg when compared with the non-dominant leg. This new finding should be taken into consideration when allowing the football player to return to play after leg muscle injuries.

LEVEL OF EVIDENCE:

IV.

KEYWORDS:

Muscle tear; Soccer; Sonography; Strain; Ultrasound

PMID: [27338959](#)

50 A. MOTOR CONTROL**Chronic pain and motor control impact**

Brain Stimul. 2016 Jul-Aug;9(4):488-500. doi: 10.1016/j.brs.2016.03.020. Epub 2016 Apr 4.

Is Motor Cortical Excitability Altered in People with Chronic Pain? A Systematic Review and Meta-Analysis.

Parker RS¹, Lewis GN², Rice DA³, McNair PJ².

BACKGROUND:

Chronic pain is characterised by maladaptive neuroplasticity in many systems, including the motor system. There is evidence that patients with chronic pain demonstrate altered corticospinal and intracortical excitability; however, findings are inconsistent and existing literature in this area has not been systematically reviewed.

OBJECTIVE:

To systematically review studies examining corticospinal and intracortical excitability using transcranial magnetic stimulation in people with chronic pain compared to healthy controls and to provide a meta-analysis of study outcomes.

METHODS:

Databases were searched for controlled studies evaluating corticospinal and intracortical excitability in chronic pain conditions. Outcome measure data were entered into separate meta-analyses and effect sizes calculated. A subgroup analysis based on the type of chronic pain population was also performed.

RESULTS:

Forty-three studies were included, encompassing a pooled total of 1009 people with chronic pain and 658 control participants. Significant effect sizes ($P < 0.05$) indicated that in chronic pain populations the duration of the silent period and the extent of short-interval intracortical inhibition were both reduced and short-interval intracortical facilitation was enhanced. The subgroup analysis revealed that only the neuropathic pain group exhibited significant effect sizes for these outcome measures. Effect sizes for the remaining outcome measures were not significant

CONCLUSIONS:

There is evidence of motor cortex disinhibition in chronic pain populations, suggestive of a disruption in GABA-mediated intracortical inhibition. Disinhibition was more pronounced in populations with neuropathic pain. These findings provide new insights into the relationship between chronic pain and motor cortex excitability, which may have meaningful implications for the future treatment of chronic pain conditions.

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KEYWORDS:

Chronic pain; Cortical excitability; Intracortical; Meta-analysis; Systematic review; Transcranial magnetic stimulation

PMID: 27133804

52. EXERCISE

Exercise helps OA

Arthritis Care Res (Hoboken). 2016 Jul 7. doi: 10.1002/acr.22969.

Outcome Expectations and Osteoarthritis: Perceived Benefits of Exercise Are Associated with Self-Efficacy and Depression.

Marszalek J¹, Price LL^{2,3}, Harvey WF¹, Driban JB¹, Wang C¹.

OBJECTIVE:

Outcome expectancy is recognized as a determinant of exercise engagement and adherence. However, little is known about which factors influence outcome expectations for exercise among people with knee osteoarthritis. This is the first study to examine the association of outcome expectations for exercise with demographic, physical and psychosocial outcomes in individuals with knee osteoarthritis.

METHODS:

We performed a cross-sectional analysis of the baseline data from a randomized trial of Tai Chi versus physical therapy in participants with symptomatic knee osteoarthritis. Knee pain was evaluated using the Western Ontario and McMaster Universities (WOMAC) Osteoarthritis Index. Outcome expectations for exercise, self-efficacy, depression, anxiety, stress, and social support were measured using standard instruments. Logistic regression models were utilized to determine associates of outcome expectations.

RESULTS:

There were 262 participants with a mean age of 59.8 years, BMI 32.1 kg/m², 69.1% female, 51.5% white, mean disease duration 8.6 years, and mean WOMAC knee pain and function scores of 260.8 and 906.8, respectively. Higher outcome expectations for exercise were associated with greater self-efficacy (odds ratio [OR] 1.25, 95% confidence interval [95% CI] 1.11-1.41; P=0.0004) as well as with less depressive symptoms (OR 0.84 for each 5-point increase, 95% CI 0.73-0.97; P=0.01). Outcome expectancy was not significantly associated with gender, race, education, pain, function, radiographic severity, social support, anxiety, or stress.

CONCLUSIONS:

Our results suggest significant associations between outcome expectations for exercise and self-efficacy and depression. Future studies should examine how these relationships longitudinally affect long-term clinical outcomes of exercise-based treatment for knee osteoarthritis. This article is protected by copyright. All rights reserved.

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KEYWORDS:

exercise; osteoarthritis; outcome expectations; self-efficacy

PMID: [27390257](https://pubmed.ncbi.nlm.nih.gov/27390257/)

53. CORE**Measuring core**

Spine (Phila Pa 1976). 2016 Jul 15;41(14):E844-50. doi: 10.1097/BRS.0000000000001403.

Developing a Reliable Core Stability Assessment Battery for Patients with Nonspecific Low Back Pain.

Ozcan Kahraman B¹, Salik Sengul Y, Kahraman T, Kalemci O.

STUDY DESIGN:

Test-retest design.

OBJECTIVE:

The objective was to examine the intrarater (test-retest) reliability of the core stability related tests and to develop a reliable core stability assessment battery.

SUMMARY OF BACKGROUND DATA:

Studies suggest that core stability exercises may improve function and decrease pain in patients with nonspecific low back pain (LBP). Reliable clinical tests are required to implement adequate rehabilitation and to evaluate results of these interventions.

METHODS:

The study had a test-retest design. Thirty-three different tests that might relate to core stability were identified with their mostly used protocols. Five different components of core stability including endurance, flexibility, strength, functional performance, and motor control were assessed in 38 patients with nonspecific LBP. The same testing procedure was performed again after 48 to 72 hours. Intraclass correlation coefficients (ICCs), standard error of measurement, and minimal detectable change were calculated to assess the intrarater reliability.

RESULTS:

The intrarater reliability of the tests ranged from little to very high (ICC=0.08-0.98). Partial curl-up (ICC=0.90), lateral bridge (ICC=0.95-0.96), trunk flexor endurance (ICC=0.97), sit and reach (ICC=0.98), single-legged hop (ICC=0.98-0.97), lateral step-down (ICC=0.93-0.92), eyes open right and left leg unilateral stance (ICC=0.97 and 0.91) tests had the highest intrarater reliability for each core stability component.

CONCLUSION:

The results indicated that the partial curl-up test (strength), side bridge and trunk flexor tests (endurance), sit-and-reach test (flexibility), single-legged hop, and lateral step-down (functional), unilateral stance test with eyes open (motor control) had very high intrarater reliability. A core stability assessment battery involving these tests can be used in patients with nonspecific LBP to assess all components of core stability.

LEVEL OF EVIDENCE:

3.

PMID: [26679886](https://pubmed.ncbi.nlm.nih.gov/26679886/)

Trunk activation during gait

Gait Posture. 2016 Jun 21;49:73-77. doi: 10.1016/j.gaitpost.2016.06.025.

Pain catastrophizing and trunk muscle activation during walking in patients with chronic low back pain.

Pakzad M¹, Fung J², Preuss R³.

It has been hypothesized that individuals with low back pain (LBP) will have higher trunk muscle activity during gait, in an attempt to limit spine motion, and that this "guarding strategy" may be influenced by the person's psychological response to pain.

This study investigated whether the amplitude of trunk muscle activation differs between persons with chronic LBP and healthy individuals during walking, and whether changes in muscle activation were related to pain catastrophizing. Thirty persons with chronic non-specific LBP, stratified into 2 groups of high (HLBP) and low (LLBP) pain catastrophizing, were contrasted with a control group of 15 healthy individuals during walking on a treadmill at a self-selected speed. Surface electromyographic (EMG) data were recorded from 10 trunk muscles. The effects of Group and gait Sub-phase on EMG activation amplitudes were assessed. The HLBP group exhibited higher activation of certain muscles throughout the gait cycle, and reduced variability of others at specific sub-phases of gait. A significant correlation was found between activation amplitude and pain catastrophizing in most muscles, when controlling for gait speed and pain intensity.

These data indicate that altered trunk muscle activation is present in some patients with LBP during walking, but does not represent a universal increase in activation for all muscles. This altered neuromotor control is, however, more strongly associated with pain catastrophizing than with pain intensity, and appears to represent a non-functional, maladaptive behavior, as it alters the normal, phasic pattern of activation in certain trunk muscles.

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KEYWORDS:

Chronic low back pain; Gait; Guarding strategy; Muscle activity; Psychological factors

PMID: [27388960](#)

56. ATHLETICS

Return to sports after rectus abdominus and adductor longus repair

Rehabilitation and Return to Sport Following Surgical Repair of the Rectus Abdominis and Adductor Longus in a Professional Basketball Player: A Case Report

Authors: Steven M. Short, PT, DPT, CSCS^{1,2}, Philip A. Anloague, PT, DHSc, OCS², Donald S. Strack, PT, DPT, ATC, OCS, FAAOMPT³

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2016 **Volume:**0 **Issue:**0 **Pages:**1–32 **DOI:**10.2519/jospt.2016.6352

Study Design

Case report.

Background

Acute traumatic avulsion of the rectus abdominis and adductor longus is rare. Chronic groin injuries, often falling under the athletic pubalgia spectrum, have been reported to be more common. There is limited evidence detailing the comprehensive rehabilitation and return to sport of an athlete following surgical or conservative treatment of avulsion injuries of the pubis or other sports related groin pathologies.

Case Description

A 29 year old male NBA player sustained a contact injury during a professional basketball game. This case report describes a unique clinical situation specific to professional sport, in which a surgical repair of an avulsed rectus abdominis and adductor longus was combined with a multimodal impairment and outcomes-based rehabilitation program.

Outcomes

The patient returned to in-season competition at five weeks post-operation. Objective measures were tracked throughout rehabilitation and compared to baseline assessments. Measures such as the Hip and Groin Outcome Scale (HAGOS) and Numeric Pain Rating Scale (NPRS) revealed progress beyond the minimal important difference.

Discussion

This case report details the clinical reasoning and evidence-informed interventions involved in the return to elite sport. Detailed programming and objective assessment may assist in achieving desired outcomes ahead of previously established timelines.

Level of Evidence

Therapy, level 4. *J Orthop Sports Phys Ther*, Epub 3 Jul 2016. doi:10.2519/jospt.2016.6352

Keyword: adductor, athletic pubalgia, groin, return to sport, tendon rupture

58. RUNNING**Running injuries and alignment**

Eur J Sport Sci. 2016 Jun 17:1-8.

Lower limb alignment characteristics are not associated with running injuries in runners: Prospective cohort study.

Hespanhol Junior LC¹, De Carvalho AC^{2,3}, Costa LO^{3,4}, Lopes AD³.

There is conflicting evidence on the association between lower limb alignment characteristics and the incidence of running-related injury (RRI).

Therefore, the primary aim of this study was to investigate the association between lower limb alignment characteristics and the incidence proportion of RRI in a convenience sample of recreational runners.

A total of 89 recreational runners were included in this prospective cohort study. These participants had been running for at least six months and were injury-free at baseline. Lower limb alignment measurements were conducted in order to calculate lower limb discrepancy, Q-angle, subtalar angle and plantar index. All participants also answered a baseline and biweekly online surveys about their running routine, history of RRI and newly developed RRI over a period of 12 weeks. The prevalence of previous RRI and the 12-week incidence proportion of new RRI were calculated. Logistic regression analysis was performed to estimate the association between lower limb length discrepancy, Q-angle, subtalar angle and plantar arch index with the incidence proportion of RRI. The prevalence of previous RRI was 55.1% (n = 49).

The 12-week incidence proportion of new RRI was 27.0% (n = 24). Muscle injuries and tendinopathies were the main types of RRI identified. The lower leg and the knee were the main anatomical regions affected.

We did not find significant associations between lower limb length discrepancy, Q-angle, subtalar angle and plantar arch index and injury occurrence.

KEYWORDS:

Injury & prevention; measurement; musculoskeletal

PMID: 27312709

Marathon runners and their tendons

BMC Musculoskelet Disord. 2016 Jul 11;17(1):272. doi: 10.1186/s12891-016-1121-9.

The influence of long distance running on sonographic joint and tendon pathology: results from a prospective study with marathon runners.

Proft F¹, Grunke M¹, Reindl C¹, Mueller F¹, Kriegmair M¹, Leipe J¹, Weinert P², Schulze-Koops H¹, Witt M³.

BACKGROUND:

The impact of physical exercise on joints and tendons is still a matter of debate. The aim of this study was to investigate with ultrasound the acute effects of extreme physical exercise on knee and ankle joints and their surrounding structures in trained athletes.

METHODS:

Participants of the Munich marathon were examined by arthrosonography before and after long distance running. Ultrasound assessment included grey scale and power Doppler examination of the knee and talocrural joints with surrounding tendons. Findings consistent with joint effusion, tendon and/or enthesal pathologies were documented. In addition to the ultrasound evaluation, information on training habits and past or present arthralgia or joint swelling was gathered.

RESULTS:

One Hundred Five runners completed both the pre- and post-exercise ultrasound assessments (baseline and follow-up), resulting in the sonographic evaluation of 420 knee and talocrural joints. At baseline, 105 knee (50) and 38 talocrural joints (18.1) showed effusions, compared to 100 knee (47.6) and 33 talocrural joints (15.7 %) at follow-up. The differences were not significant ($p > 0.05$ each). Effusion size did not correlate with the timepoint of ultrasound assessment and was independent of covariates such as gender, age or running distance. Hypervascularity of the patellar tendon was detected in 21 cases (10.0 %) at follow-up in contrast to one at baseline ($p < 0.001$). This observation was more frequent in male than in female participants ($p < 0.05$).

CONCLUSIONS:

Acute physical stress is significantly associated with hypervascularity of the patellar tendon. No significant changes of synovial effusion were detected in knee and talocrural joints.

KEYWORDS:

Ankle; Knee; Patellar tendon; Running; Ultrasound

PMID: [27400865](https://pubmed.ncbi.nlm.nih.gov/27400865/)

59. PAIN**Pain modulation**

Pain. 2016 Jul;157(7):1415-24. doi: 10.1097/j.pain.0000000000000532.

Differential pain modulation properties in central neuropathic pain after spinal cord injury.

Gruener H¹, Zeilig G, Laufer Y, Blumen N, Defrin R.

Abstract

It seems that central neuropathic pain (CNP) is associated with altered abilities to modulate pain; whereas dysfunction in descending pain inhibition is associated with the extent of chronic pain distribution, enhanced pain excitation is associated with the intensity of chronic pain.

We investigated the hypothesis that CNP is associated with decreased descending pain inhibition along with increased neuronal excitability and that both traits are associated with spinothalamic tract (STT) damage. Chronic spinal cord injury subjects with CNP (n = 27) and without CNP (n = 23) and healthy controls (n = 20) underwent the measurement of pain adaptation, conditioned pain modulation (CPM), tonic suprathreshold pain (TSP), and spatial summation of pain above injury level. Central neuropathic pain subjects also underwent at and below-lesion STT evaluation and completed the questionnaires.

Central neuropathic pain subjects showed decreased CPM and increased enhancement of TSP compared with controls. Among CNP subjects, the dysfunction of CPM and pain adaptation correlated positively with the number of painful body regions. The magnitude of TSP and spatial summation of pain correlated positively with CNP intensity. STT scores correlated with CNP intensity and with TSP, so that the more affected the STT below injury level, the greater the CNP and TSP magnitude.

It seems that CNP is associated with altered abilities to modulate pain, whereas dysfunction in descending pain inhibition is associated with the extent of chronic pain distribution and enhanced pain excitation is associated with the intensity of chronic pain. Thus, top-down processes may determine the spread of CNP, whereas bottom-up processes may determine CNP intensity. It also seems that the mechanisms of CNP may involve STT-induced hyperexcitability. Future, longitudinal studies may investigate the timeline of this scenario.

PMID: [26894913](#)

61. FIBROMYALGIA**Spinal changes in**

Arthritis Care Res (Hoboken). 2016 Jul 7. doi: 10.1002/acr.22967.

Prevalence of axial spondyloarthritis among patients suffering from Fibromyalgia - an MRI study with application of the ASAS classification criteria.

Ablin JN¹, Eshed I², Berman M¹, Aloush V¹, Wigler I¹, Caspi D¹, Likhter M¹, Wollman J¹, Paran D¹, Anouk M¹, Elkayam O¹.

Objective To evaluate the prevalence of sacroiliitis, the radiographic hallmark of inflammatory spondyloarthritis, among patients diagnosed with the fibromyalgia syndrome, using the current ASAS criteria and MR imaging.

Methods Patients suffering from FMS (ACR 1990 criteria) were interviewed regarding presence of SpA features and underwent HLA-B27 testing, CRP measurement and MRI examinations of the sacro-iliac joints. FMS severity was assessed by the FIQ and SF-36 questionnaires. SpA severity was assessed by the BASDAI.

Results Sacroiliitis was demonstrated among 8 (8.1%) of patients and ASAS criteria for diagnosis of axial SpA were met in 10 (10.2%) of patients. Imaging changes suggestive of inflammatory involvement (e.g. erosions and sub-chondreal sclerosis) were demonstrated in 15 (17%) and 22 (25%) of patients respectively. The diagnosis of axial SpA was positively correlated with increased CRP and with physical role limitation at recruitment.

Conclusion Imaging changes suggestive of axial SpA were common among patients presenting with a diagnosis of FMS. These findings suggest that FMS may mask an underlying axial SpA, a diagnosis with important therapeutic implications. Physicians involved in the management of FMS should remain vigilant to the possibility of underlying inflammatory disorders and actively search for such co-morbidities. This article is protected by copyright. All rights reserved.

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PMID: [27390225](#)

62 A. NUTRITION/VITAMINS**Coffee and cancer**

Eur J Nutr. 2016 Jul 7.

Coffee, tea and caffeine intake and the risk of non-melanoma skin cancer: a review of the literature and meta-analysis.

Caini S¹, Cattaruzza S², Bendinelli B³, Tosti G⁴, Masala G³, Gnagnarella P⁵, Assedi M³, Stanganelli I⁶, Palli D³, Gandini S⁵.

PURPOSE:

Laboratory studies suggested that caffeine and other nutrients contained in coffee and tea may protect against non-melanoma skin cancer (NMSC). However, epidemiological studies conducted so far have produced conflicting results.

METHODS:

We performed a literature review and meta-analysis of observational studies published until February 2016 that investigated the association between coffee and tea intake and NMSC risk. We calculated summary relative risk (SRR) and corresponding 95 % confidence intervals (95 % CI) by using random effects with maximum likelihood estimation.

RESULTS:

Overall, 37,627 NMSC cases from 13 papers were available for analysis. Intake of caffeinated coffee was inversely associated with NMSC risk (SRR for those in the highest vs. lowest category of intake: 0.82, 95 % CI 0.75-0.89, $I^2 = 48\%$), as well as intake of caffeine (SRR 0.86, 95 % CI 0.80-0.91, $I^2 = 48\%$). In subgroup analysis, these associations were limited to the basal cell cancer (BCC) histotype. There was no association between intake of decaffeinated coffee (SRR 1.01, 95 % CI 0.85-1.21, $I^2 = 0$) and tea (0.88, 95 % CI 0.72-1.07, $I^2 = 0\%$) and NMSC risk. There was no evidence of publication bias affecting the results. The available evidence was not sufficient to draw conclusions on the association between green tea intake and NMSC risk.

CONCLUSIONS:

Coffee intake appears to exert a moderate protective effect against BCC development, probably through the biological effect of caffeine. However, the observational nature of studies included, subject to bias and confounding, suggests taking with caution these results that should be verified in randomized clinical trials.

KEYWORDS:

Caffeine; Coffee; Meta-analysis; Non-melanoma skin cancer; Tea

PMID: 27388462

63. PHARMACOLOGY

Impact of Pot

Not blowing smoke: Research finds medical marijuana lowers prescription drug use

University of Georgia Research News, 07/08/2016

Medical marijuana is having a positive impact on the bottom line of Medicare's prescription drug benefit program in states that have legalized its use for medicinal purposes, according to University of Georgia researchers in a study published in the July issue of the journal *Health Affairs*. The savings, due to lower prescription drug use, were estimated to be \$165.2 million in 2013, a year when 17 states and the District of Columbia had implemented medical marijuana laws. The results suggest that if all states had implemented medical marijuana the overall savings to Medicare would have been around \$468 million.

Compared to Medicare Part D's 2013 budget of \$103 billion, those savings would have been 0.5 percent. But it's enough of a difference to show that, in states where it's legal, some people are turning to the drug as an alternative to prescription medications for ailments that range from pain to sleep disorders.