

2. LBP

Neurophysiological education and TE

Arch Phys Med Rehabil. 2018 Feb;99(2):338-347. doi: 10.1016/j.apmr.2017.10.016. Epub 2017 Nov 11.

Pain Neurophysiology Education and Therapeutic Exercise for Patients With Chronic Low Back Pain: A Single-Blind Randomized Controlled Trial.

Bodes Pardo G¹, Lluch Girbés E², Roussel NA³, Gallego Izquierdo T⁴, Jiménez Penick V¹, Pecos Martín D⁴.

OBJECTIVE:

To assess the effect of a pain neurophysiology education (PNE) program plus therapeutic exercise (TE) for patients with chronic low back pain (CLBP).

DESIGN:

Single-blind randomized controlled trial.

SETTING:

Private clinic and university.

PARTICIPANTS:

Patients with CLBP for ≥ 6 months (N=56).

INTERVENTIONS:

Participants were randomized to receive either a TE program consisting of motor control, stretching, and aerobic exercises (n=28) or the same TE program in addition to a PNE program (n=28), conducted in two 30- to 50-minute sessions in groups of 4 to 6 participants.

MAIN OUTCOMES MEASURES:

The primary outcome was pain intensity rated on the numerical pain rating scale which was completed immediately after treatment and at 1- and 3-month follow-up. Secondary outcome measures were pressure pain threshold, finger-to-floor distance, Roland-Morris Disability Questionnaire, Pain Catastrophizing Scale, Tampa Scale for Kinesiophobia, and Patient Global Impression of Change.

RESULTS:

At 3-month follow-up, a large change in pain intensity (numerical pain rating scale: -2.2; -2.93 to -1.28; $P < .001$; $d = 1.37$) was observed for the PNE plus TE group, and a moderate effect size was observed for the secondary outcome measures.

CONCLUSIONS:

Combining PNE with TE resulted in significantly better results for participants with CLBP, with a large effect size, compared with TE alone.

Importance of psychological factors

J Phys Ther Sci. 2018 Jan; 30(1): 127–131. PMID: PMC5788791

Comparison of pain, disorder, back performance, and psychological factors in patients with low back pain and radicular pain

Seunghwan Kim, PT, MS,¹ Jung Hyun Kim, PT, PhD,² You Lim Kim, PT, PhD,¹ and Suk Min Lee, PT, PhD^{1,*}

[Purpose] This study investigated the relationship between pain intensity, lumbar disability, and psychological factors in patients with low back pain.

[Subjects and Methods] A total of 166 outpatients (116 female, 50 male) with chronic low back pain presenting for physical therapy participated in this study. Patients were divided into two groups: those with low back pain alone and those with both low back pain and radicular pain. Pain intensity and lumbar disability were measured using a visual analogue scale and the Roland-Morris Disability Questionnaire. Psychological factors, such as self-efficiency, fear avoidance, and depression were measured using the Chronic Pain Self-efficacy Scale, Fear-Avoidance Beliefs Questionnaire, and Beck Depression Index, respectively.

[Results] Patients with low back pain with radicular pain had greater pain and lumbar disability and lower psychological factors compared with patients with chronic low back pain alone.

[Conclusion] Our findings indicate the presence of low back pain with radicular pain is more related to pain, LBP disability index, Back performance, Self-efficiency (Pain, Function, Symptom), Fear-avoidance (body, work) and depression factors than low back pain. Considering the relationships between in pain, LBP disability index, Back performance, Self-efficiency (Pain, Function, Symptom), Fear-avoidance (body, work) and depression factors in patients with low back pain, therapeutic intervention for not only pain and dysfunction, but also psychological factors is needed.

Keywords: Radicular pain, Lumbar disability, Psychological factors

7. PELVIC ORGANS/WOMAN'S HEALTH

Post-partum incontinence

Prevalence and predictors of double incontinence 1 year after first delivery

International Urogynecology Journal — | March 05, 2018

Johannessen HH, et al.

Researchers here investigated the prevalence and predictors of postpartum double incontinence (DI) [the combination of Urinary (UI) and anal incontinence (AI)] and UI alone 1 year after first delivery. They observed that 1 year after first delivery, nearly 50% women report incontinence symptoms. One of the main predictors of postpartum continence status was continence status during pregnancy. They noticed an increased risk of postpartum UI with the mode of delivery. However, obstetric anal sphincter injuries increased the risk of postpartum DI.

Fertility

Hum Reprod. 2018 Jan 5. doi: 10.1093/humrep/dex375.

Fertility outcomes in women experiencing severe complications after surgery for colorectal endometriosis.

Ferrier C¹, Roman H², Alzahrani Y¹, d'Argent EM¹, Bendifallah S^{1,3}, Marty N², Perez M⁴, Rubod C⁴, Collinet P⁴, Daraï E^{1,3,5}, Ballester M^{1,3,5}.

STUDY QUESTION: What are the fertility outcomes in women wishing to conceive after experiencing a severe complication from surgical removal of colorectal endometriosis?

SUMMARY ANSWER: The pregnancy rate (PR) among women who wished to conceive after a severe complication of surgery for colorectal endometriosis was 41.2% (spontaneously for 80%, after ART procedure for 20%).

WHAT IS KNOWN ALREADY: While the long-term benefit of surgery on pain and quality of life is well documented for women with colorectal endometriosis, it exposes women to the risk of severe complications. However, little is known about fertility outcomes in women experiencing such severe postoperative complications.

STUDY DESIGN, SIZE, DURATION: This retrospective cohort study included women who experienced a severe complication after surgery for colorectal endometriosis between January 2004 and June 2014, and who wished to conceive. A total of 53 patients met the inclusion criteria. The fertility outcome was available for 48 women, who were therefore included in the analysis. The median follow-up was 5 years.

PARTICIPANTS/MATERIALS, SETTING, METHODS: All the women underwent complete removal of colorectal endometriosis. Postoperative severe complications were defined as grades III-IV of the Clavien-Dindo classification. Fertility outcomes, PR and cumulative pregnancy rate (CPR), were estimated.

MAIN RESULTS AND THE ROLE OF CHANCE: Most women experienced a grade IIIb complication (83.3%). Of 48 women, 20 became pregnant (overall PR: 41.2%); spontaneously for 16 (80%) and after ART procedure for 4 (20%). The median interval between surgery and first pregnancy was 3 years. The live birth rate was 14/48 (29.2%). The 5-year CPR was 46%. A lower CPR was found for women who experienced anastomotic leakage (with or without rectovaginal fistula) ($P = 0.02$) or deep pelvic abscess (with or without anastomotic leakage) ($P = 0.04$).

WIDER IMPLICATIONS OF THE FINDINGS: The PR for our population was slightly lower to that observed in the literature for women who experience such surgery without consideration for the occurrence of complications. However, 'severe complications' covers a range of conditions which are likely to have a very different impacts on fertility. Even if the PR and CPR appear satisfactory, septic complications can negatively impact fertility outcomes. Rapid ART may be a good option for these patients.

STUDY FUNDING/COMPETING INTEREST(S): No funding was required for the current study. Pr H. Roman reported personal fees from Plasma Surgical Inc. (Roswell, GA, USA) for participating in a symposium and a masterclass, in which he presented his experience in the use of PlasmaJet®. None of the other authors declared any conflict of interest.

8. VISCERA

Urgency

Clin Gastroenterol Hepatol. 2018 Feb 20. pii: S1542-3565(18)30165-4. doi: 10.1016/j.cgh.2018.02.020.

Risk Factors for Fecal Urgency Among Individuals With and Without Diarrhea, Based on Data from the National Health and Nutrition Examination Survey.

Rangan V¹, Mitsuhashi S¹, Singh P¹, Ballou S¹, Hirsch W¹, Sommers T¹, Nee J¹, Iturrino J¹, Lembo A².

BACKGROUND & AIMS:

Fecal urgency is a common symptom among patients with gastrointestinal disorders, but can also occur in healthy individuals with normal bowel habits. There have been few studies of fecal urgency in the general population. We performed a cross-sectional analysis of data from the National Health and Nutrition Examination Survey (NHANES) to analyze the prevalence of and risk factors for this symptom.

METHODS:

We analyzed data from 4,676 persons who completed the Bowel Health Questionnaire from the NHANES, from 2009 through 2010. The NHANES sampled a nationally representative group of adults in the United States and provides information on demographics, medical comorbidities, and dietary habits of survey participants. The Bowel Health Questionnaire provided additional information about bowel symptoms such as urgency, incontinence, constipation, and diarrhea. We identified individuals with fecal urgency and calculated differences in fecal urgency among subgroups using χ^2 analysis. We used logistic regression to identify factors associated with urgency.

RESULTS:

In our study population, the prevalence of fecal urgency was 3.3%; 29.5% of individuals with fecal urgency had diarrhea. The prevalence of fecal urgency was significantly higher in individuals who had diarrhea (14.8%) than in individuals without diarrhea (3.1%). Older age, female sex, poverty, urinary urge incontinence, diarrhea, and increased stool frequency were all associated with fecal urgency on multivariable analysis. Decreased fiber intake and increased carbohydrate intake were associated with urgency among individuals with diarrhea.

CONCLUSIONS:

In an analysis of data from 4676 individuals who completed a Bowel Health Questionnaire from the NHANES, we found a significantly higher proportion of individuals with diarrhea to have fecal urgency. However, most individuals with fecal urgency do not have diarrhea. Factors associated with fecal urgency vary among individuals with and without diarrhea.

Intestinal inflammation and PD

Short communication**Fecal markers of intestinal inflammation and intestinal permeability are elevated in Parkinson's disease**

Andreas Schwartz^aJörg Spiegel^bUlrich Dillmann^bDavid Grundmann^cJan Bürmann^bKlaus Faßbender^bKarl-Herbert Schäfer^{c1}Marcus M. Unger^{b1}

<https://doi.org/10.1016/j.parkreldis.2018.02.022> Get rights and content

Highlights

- The study investigated fecal markers in Parkinson's disease (PD).
- Calprotectin (a fecal marker of intestinal inflammation) is elevated in PD.
- Fecal markers of increased intestinal permeability are elevated in PD as well.

Background/Objective

Intestinal inflammation and increased intestinal permeability (both possibly fueled by dysbiosis) have been suggested to be implicated in the multifactorial pathogenesis of Parkinson's disease (PD). The objective of the current study was to investigate whether fecal markers of inflammation and impaired intestinal barrier function corroborate this pathogenic aspect of PD.

Methods

In a case-control study, we quantitatively analyzed established fecal markers of intestinal inflammation (calprotectin and lactoferrin) and fecal markers of intestinal permeability (alpha-1-antitrypsin and zonulin) in PD patients (n = 34) and controls (n = 28, group-matched for age) by enzyme-linked immunosorbent assay. The study design controlled for potential confounding factors.

Results

Calprotectin, a fecal marker of intestinal inflammation, and two fecal markers of increased intestinal permeability (alpha-1-antitrypsin and zonulin) were significantly elevated in PD patients compared to age-matched controls. Lactoferrin, as a second fecal marker of intestinal inflammation, showed a non-significant trend towards elevated concentrations in PD patients. None of the four fecal markers correlated with disease severity, PD subtype, dopaminergic therapy, or presence of constipation.

Conclusions

Fecal markers reflecting intestinal inflammation and increased intestinal permeability have been primarily investigated in inflammatory bowel disease so far. Our data indicate that calprotectin, alpha-1-antitrypsin and zonulin could be useful non-invasive markers in PD as well. Even though these markers are not disease-specific, they corroborate the hypothesis of an intestinal inflammation as contributing factor in the pathogenesis of PD. Further investigations are needed to determine whether calprotectin, alpha-1-antitrypsin and zonulin can be used to define PD subgroups and to monitor the effect of interventions in PD.

13 B. TMJ/ORAL

Breast feeding and oral contion

Limited evidence suggests that a history of suboptimal breastfeeding may increase the risk of developing anterior open bite, posterior crossbite, and class II canine relationship

The Journal of Evidence Based Dental Practice — | March 01, 2018

Flores-Mir C

Herein, an exploration was conducted of the specific malocclusion traits that could be related to breastfeeding practices. Findings demonstrated that children who breastfed more adequately did not present with the same risk for developing malocclusion traits as those who did not. In case of young children with a history of suboptimal breastfeeding, an increased risk of developing anterior open bite, posterior crossbite, and class II canine relationship was discovered.

13 C. AIRWAYS/SWALLOWING/SPEECH**Sleep spindle study in sleep apnea**

Eur J Paediatr Neurol. 2018 Feb 9. pii: S1090-3798(17)31729-4. doi: 10.1016/j.ejpn.2018.02.003.

Sleep spindle activity in children with obstructive sleep apnea as a marker of neurocognitive performance: A pilot study.

Brockmann PE¹, Damiani F², Pincheira E³, Daiber F⁴, Ruiz S⁵, Aboitiz F⁴, Ferri R⁶, Bruni O⁷.

STUDY OBJECTIVES:

To assess spindle activity as possible markers for neurocognitive consequences in children with mild obstructive sleep apnea.

METHODS:

Children aged 6-11 years diagnosed with mild OSA (i.e., an apnea hypopnea index <5.0) were recruited and compared with age and gender-matched healthy controls. Polysomnographic recordings were analyzed for sleep microstructure and spindle activity. All children completed also an intelligence test battery (i.e., the Wechsler intelligence test for children, 4th version).

RESULTS:

Nineteen children with OSA (13 boys, mean age 7.1 ± 1.4 y), and 14 controls (7 boys, mean age 8.1 ± 1.9 y) were included. Mean IQ was 110 ± 12 for the complete sample, in children with OSA 111 ± 13 , and in controls 108 ± 12 ($p = 0.602$). Controls showed a higher spindle index in N2 stage than children with OSA: 143.0 ± 42.5 vs 89.5 ± 56.9 , respectively ($p = 0.003$). Spindle index in NREM was strongly and significantly correlated with Verbal Comprehension Index (VCI), Working Memory Index (WMI), Processing Speed Index (PSI), and total IQ in children with OSA.

CONCLUSIONS:

Children with mild OSA demonstrate a different pattern of sleep spindle activity that seems to be linked with neurocognitive performance, especially concerning memory. Sleep spindle activity seems to be involved with mechanisms related with neurocognitive consequences in children with OSA.

Sleep processing and arousal

J Behav Ther Exp Psychiatry. 2018 Feb 21;60:13-21. doi: 10.1016/j.jbtep.2018.02.005.

Pre-sleep arousal can be associated with efficient processing of sleep-related information.

Takano K¹, Poel LV², Raes F².

BACKGROUND AND OBJECTIVES:

Cognitive bias to sleep-related information is thought to be a core feature of sleep disturbances. The bias may enhance pre-sleep arousal, such as excessive worry about sleeplessness, which prevents people from initiating normal sleep onset. The present study focused on (a) attention bias toward sleep-related stimuli and (b) difficulty in updating working memory for sleep-related stimuli as two possible mechanisms underlying pre-sleep cognitive arousal.

METHOD:

Participants (n = 61, a community sample) completed a dot-probe task (with sleep-related and matched control word stimuli) and a 1-back and 2-back task (with sleep-related and non-sleep-related pictorial stimuli).

RESULTS:

For the dot-probe task, the results showed no significant association between pre-sleep cognitive arousal and sleep-related attention bias. However, the results of the 2-back task suggest that pre-sleep arousal is associated with decreased interference by sleep-related stimuli in maintaining non-sleep-related information. That is, individuals with higher levels of pre-sleep arousal are more efficient at processing sleep-related materials.

LIMITATIONS:

The non-clinical nature of the sample may limit the clinical implications of the findings.

CONCLUSIONS:

Although the current results cannot be explained by the extant cognitive theories of insomnia, we offer an alternative explanation based on the idea of worry as mental habit: mental processes that occur frequently (e.g., repetitive thoughts about sleep) require less cognitive resource. Therefore, sleep-related information may be processed easily without consuming much cognitive effort.

Sleep duration and atherosclerosis

Epidemiol Community Health. 2018 Feb 15. pii: jech-2017-209464. doi: 10.1136/jech-2017-209464.

Association between short sleep duration and carotid atherosclerosis modified by age in a Chinese community population.

Chen S¹, Yang Y², Cheng GL², Jia J², Fan FF², Li JP², Huo Y², Zhang Y², Chen DF¹.

BACKGROUND AND AIM:

Short sleep duration is a risk factor of cardiovascular disorder; however, the association between short sleep duration and carotid atherosclerosis has not been completely characterised. The aim of this study is to investigate the association between short sleep duration and carotid atherosclerosis.

METHODS:

We used the cross-sectional data collected between May 2014 and July 2014, which were based on a cardiovascular disease cohort study including 3798 participants aged 40 years and older who are residents of Beijing, China. We used logistic regression models to examine the associations between sleep duration and carotid atherosclerosis.

RESULTS:

After the adjustment of covariates, short sleep duration (less than 5 hours per night) was found to be associated with carotid atherosclerosis, and it also elevated the risk of, in both terms, the increment of prevalence (OR=1.31, P<0.05) and the quantity of carotid plaques (OR=1.28, P<0.05). When age was also taken into consideration, the largest association, in both terms of prevalence (OR=3.46, P<0.01) and the number of carotid plaques (OR=4.23, P<0.01), was found in subjects over the age of 60 with short sleep duration.

CONCLUSION:

In conclusion, sleep duration less than 5 hours per night is associated with a higher risk of carotid atherosclerosis compared with subjects who sleeps for 5 or over 5 hours per night, and the association may be modified by age.

21. ADHESIVE CAPSULITIS

Pain Neuroscience

CASE REPORT

Use of Pain Neuroscience Education, Tactile Discrimination, and Graded Motor Imagery in an Individual With Frozen Shoulder

Authors: Eric E. Sawyer, PT, DPT^{1,2}, Amy W. McDevitt, PT, DPT^{1,3}, Adriaan Louw, PT, PhD⁴, Emilio J. Puentedura, PT, DPT, PhD⁵, Paul E. Mintken, PT, DPT^{1,6}

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**48 **Issue:**3 **Pages:**174–184 **DOI:**10.2519/jospt.2018.7716

Study Design

Case report.

Background

Aggressive physical therapy in the freezing stage of frozen shoulder may prolong the course of recovery. Central sensitization may play a role in the early stages of frozen shoulder. Pain neuroscience education, tactile discrimination, and graded motor imagery have been used in a number of conditions with central sensitization. The purpose of this case report was to describe the examination and treatment of a patient in the freezing stage of frozen shoulder using pain neuroscience education, tactile discrimination, and graded motor imagery.

Case Description

A 54-year-old woman with a diagnosis of frozen shoulder was referred by an orthopaedic surgeon following lack of progress after 4 weeks of intensive daily physical therapy. Pain at rest was 7/10, and her Shoulder Pain and Disability Index score was 64%. She had painful and limited active range of motion and elevated fear-avoidance beliefs. Tactile discrimination and limb laterality were impaired, with signs of central sensitization. A “top-down” approach using pain neuroscience education, tactile discrimination, and graded motor imagery was used for the first 6 weeks, followed by a “bottom-up” impairment-based approach.

Outcomes

The patient was seen for 20 sessions over 12 weeks. At discharge, her Shoulder Pain and Disability Index score was 22%, resting pain was 0/10, and fear-avoidance beliefs improved. Improvements in active range of motion, laterality, and tactile discrimination were also noted.

Discussion

Intensive physical therapy in the freezing stage of frozen shoulder may be detrimental to long-term outcomes. This case report suggests that a top-down approach may allow a quicker transition through the freezing stage of frozen shoulder.

Level of Evidence

Therapy, level 5. *J Orthop Sports Phys Ther* 2018;48(3):174–184. Epub 19 Dec 2017.
doi:10.2519/jospt.2018.7716

28. REPLACEMENTS**Associations**

Osteoarthritis Cartilage. 2018 Feb 20. pii: S1063-4584(18)31011-2. doi: 10.1016/j.joca.2018.02.895.

The association between ambulatory activity, body composition and hip or knee joint replacement due to osteoarthritis: a prospective cohort study.

Munugoda IP¹, Wills K², Cicuttini F³, Graves SE⁴, Lorimer M⁵, Jones G⁶, Callisaya ML⁷, Aitken D⁸.

OBJECTIVE:

To examine the association between ambulatory activity (AA), body composition measures and hip or knee joint replacement (JR) due to osteoarthritis.

DESIGN:

At baseline, 1082 community-dwelling older-adults aged 50 - 80 years were studied. AA was measured objectively using pedometer and body composition by dual-energy x-ray absorptiometry. The incidence of primary (first-time) JR was determined by data linkage to the Australian Orthopaedic Association National Joint Replacement Registry. Log binomial regression with generalized estimating equations were used to estimate the risk of JR associated with baseline AA and body composition measures, adjusting for age, sex, x-ray disease severity, and pain.

RESULTS:

Over 13 years of follow-up, 74 (6.8%) participants had a knee replacement (KR) and 50 (4.7%) a hip replacement (HR). AA was associated with a higher risk of KR (RR 1.09/1000 steps/day, 95% CI 1.01, 1.16) and a lower risk of HR (RR 0.90/1000 steps/day, 95% CI 0.81, 0.99). BMI (RR 1.07/kg/m², 95% CI 1.03, 1.12), total fat mass (RR 1.04/kg, 95% CI 1.02, 1.07), trunk fat mass (RR 1.04/kg, 95% CI 1.02, 1.07), and waist circumference (RR 1.03/cm, 95% CI 1.01, 1.05) were associated with a higher risk of KR. Body composition measures were not associated with HR.

CONCLUSIONS:

An objective measure of AA was associated with a small increased risk of KR and a small reduced risk of HR. Worse body composition profiles were associated with knee, but not hip replacement. Altogether this may suggest different causal pathways for each site with regard to habitual activity and obesity.

37. OSTEOARTHRITIS/KNEE

HA effectiveness assessed

Exploring determinants predicting response to intra-articular hyaluronic acid treatment in symptomatic knee osteoarthritis: 9-year follow-up data from the Osteoarthritis Initiative

Arthritis Research & Therapy — | March 02, 2018

Pelletier JP, et al.

Authors sought to determine the determinants associated with a better response to intra-articular hyaluronic acid (IAHA) treatment in knee osteoarthritis (OA) subjects. High levels of knee pain, younger age, and less severe structural damage were identified as reliable predictive determinants that could distinguish patients who could benefit best from IAHA treatment. In clinical practice, these could be implemented as a useful guide for physicians.

HA and mesenchymal injections

J Transl Med. 2016 Aug 26;14(1):246. doi: 10.1186/s12967-016-0998-2.

Intra-articular injection of two different doses of autologous bone marrow mesenchymal stem cells versus hyaluronic acid in the treatment of knee osteoarthritis: multicenter randomized controlled clinical trial (phase I/II).

Lamo-Espinosa JM¹, Mora G¹, Blanco JF^{2,3}, Granero-Moltó F^{1,3,4,5}, Nuñez-Córdoba JM^{5,6,7}, Sánchez-Echenique C¹, Bondía JM⁸, Aquerreta JD⁸, Andreu EJ^{3,4}, Ormilla E⁹, Villarón EM^{3,10,11}, Valentí-Azcárate A¹, Sánchez-Guijo F^{3,10,11}, Del Cañizo MC^{3,10,11}, Valentí-Nin JR¹, Prósper F^{12,13,14,15}.

BACKGROUND:

Mesenchymal stromal cells are a promising option to treat knee osteoarthritis. Their safety and usefulness must be confirmed and the optimal dose established. We tested increasing doses of bone marrow mesenchymal stromal cells (BM-MSCs) in combination with hyaluronic acid in a randomized clinical trial.

MATERIALS:

A phase I/II multicenter randomized clinical trial with active control was conducted. Thirty patients diagnosed with knee OA were randomly assigned to intraarticularly administered hyaluronic acid alone (control), or together with 10 × 10(6) or 100 × 10(6) cultured autologous BM-MSCs, and followed up for 12 months. Pain and function were assessed using VAS and WOMAC and by measuring the knee motion range. X-ray and magnetic resonance imaging analyses were performed to analyze joint damage.

RESULTS:

No adverse effects were reported after BM-MSC administration or during follow-up. BM-MSC-administered patients improved according to VAS during all follow-up evaluations and median value (IQR) for control, low-dose and high-dose groups change from 5 (3, 7), 7 (5, 8) and 6 (4, 8) to 4 (3, 5), 2 (1, 3) and 2 (0,4) respectively at 12 months (low-dose vs control group p = 0.005 and high-dose vs control group p < 0.009). BM-MSC-administered patients were also superior according to WOMAC, although improvement in control and low-dose patients could not be significantly sustained beyond 6 months. On the other hand, the BM-MSC high-dose group exhibited an improvement of 16.5 (12, 19) points at 12 months (p < 0.01). Consistent with WOMAC and VAS values, motion ranges remained unaltered in the control group but improved at 12 months with BM-MSCs. X-ray revealed a reduction of the knee joint space width in the control group that was not seen in BM-MSCs high-dose group. MRI (WORMS protocol) showed that joint damage decreased only in the BM-MSC high-dose group, albeit slightly.

CONCLUSIONS:

The single intraarticular injection of in vitro expanded autologous BM-MSCs together with HA is a safe and feasible procedure that results in a clinical and functional improvement of knee OA, especially when 100 × 10(6) cells are administered. These results pave the way for a future phase III clinical trial.

45 B. MANUAL THERAPY CERVICAL

Thrust vs. non-thrust

RESEARCH REPORT**Pragmatically Applied Cervical and Thoracic Nonthrust Manipulation Versus Thrust Manipulation for Patients With Mechanical Neck Pain: A Multicenter Randomized Clinical Trial**

Authors: David Griswold, PT, PhD¹, Ken Learman, PT, PhD¹, Morey J. Kolber, PT, PhD², Bryan O'Halloran, PT, OCS³, Joshua A. Cleland, PT, PhD⁴

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2018 **Volume:**48 **Issue:**3 **Pages:**137–145 **DOI:**10.2519/jospt.2018.7738

Study Design

Randomized clinical trial.

Background

The comparative effectiveness between nonthrust manipulation (NTM) and thrust manipulation (TM) for mechanical neck pain has been investigated, with inconsistent results.

Objective

To compare the clinical effectiveness of concordant cervical and thoracic NTM and TM for patients with mechanical neck pain.

Methods

The Neck Disability Index (NDI) was the primary outcome. Secondary outcomes included the Patient-Specific Functional Scale (PSFS), numeric pain-rating scale (NPRS), deep cervical flexion endurance (DCF), global rating of change (GROC), number of visits, and duration of care. The covariate was clinical equipoise for intervention. Outcomes were collected at baseline, visit 2, and discharge. Patients were randomly assigned to receive either NTM or TM directed at the cervical and thoracic spines. Techniques and dosages were selected pragmatically and applied to the most symptomatic level. Two-way mixed-model analyses of covariance were used to assess clinical outcomes at 3 time points. Analyses of covariance were used to assess between-group differences for the GROC, number of visits, and duration of care at discharge.

Results

One hundred three patients were included in the analyses (NTM, n = 55 and TM, n = 48). The between-group analyses revealed no differences in outcomes on the NDI ($P = .67$), PSFS ($P = .26$), NPRS ($P = .25$), DCF ($P = .98$), GROC ($P = .77$), number of visits ($P = .21$), and duration of care ($P = .61$) for patients with mechanical neck pain who received either NTM or TM.

Conclusion

NTM and TM produce equivalent outcomes for patients with mechanical neck pain. The trial was registered with [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT02619500) (NCT02619500).

Level of Evidence

Therapy, level 1b. *J Orthop Sports Phys Ther* 2018;48(3):137–145. Epub 6 Feb 2018.
doi:10.2519/jospt.2018.7738

51. CFS/BET**Standing and LBP**

Br J Sports Med. 2018 Feb;52(3):176-183. doi: 10.1136/bjsports-2016-096795. Epub 2016 Nov 24.

Associations of occupational standing with musculoskeletal symptoms: a systematic review with meta-analysis.

Coenen P¹, Willenberg L², Parry S¹, Shi JW³, Romero L⁴, Blackwood DM⁵, Maher CG⁶, Healy GN^{1,7,8}, Dunstan DW^{7,8,9,10,11,12,13}, Straker LM¹.

OBJECTIVE:

Given the high exposure to occupational standing in specific occupations, and recent initiatives to encourage intermittent standing among white-collar workers, a better understanding of the potential health consequences of occupational standing is required. We aimed to review and quantify the epidemiological evidence on associations of occupational standing with musculoskeletal symptoms.

DESIGN:

A systematic review was performed. Data from included articles were extracted and described, and meta-analyses conducted when data were sufficiently homogeneous.

DATA SOURCES:

Electronic databases were systematically searched.

ELIGIBILITY CRITERIA:

Peer-reviewed articles on occupational standing and musculoskeletal symptoms from epidemiological studies were identified.

RESULTS:

Of the 11 750 articles screened, 50 articles reporting 49 studies were included (45 cross-sectional and 5 longitudinal; n=88 158 participants) describing the associations of occupational standing with musculoskeletal symptoms, including low-back (39 articles), lower extremity (14 articles) and upper extremity (18 articles) symptoms. In the meta-analysis, 'substantial' (>4 hours/workday) occupational standing was associated with the occurrence of low-back symptoms (pooled OR (95% CI) 1.31 (1.10 to 1.56)). Evidence on lower and upper extremity symptoms was too heterogeneous for meta-analyses. The majority of included studies reported statistically significant detrimental associations of occupational standing with lower extremity, but not with upper extremity symptoms.

CONCLUSIONS:

The evidence suggests that substantial occupational standing is associated with the occurrence of low-back and (inconclusively) lower extremity symptoms, but there may not be such an association with upper extremity symptoms. However, these conclusions are tentative as only limited evidence was found from high-quality, longitudinal studies with fully adjusted models using objective measures of standing

59. PAIN**Nerve growth factor**

Pain. 2018 Mar;159(3):416-426. doi: 10.1097/j.pain.0000000000001108.

Nerve growth factor locally sensitizes nociceptors in human skin.

Obreja O^{1,2}, Rukwied R¹, Nagler L³, Schmidt M³, Schmelz M¹, Namer B^{1,3}.

Nerve growth factor (NGF) injected into the human skin causes local hyperalgesia to mechanical and electrical stimuli lasting for weeks.

Pig data suggested axonal sensitization of C-nociceptors as a contributing mechanism. Here, we recorded single C-nociceptors in 11 human subjects 3 weeks after intracutaneous injection of 1 µg NGF into the foot dorsum. For each identified unit, the receptive field was mapped and, whenever possible, we recorded 2 terminal branches of the same unit, 1 from the hyperalgesic NGF-site ("inside") and the other from the nonsensitized skin ("outside"). In the saline-treated control feet, mechano-insensitive nociceptors (CMi) were more abundant than at the NGF sites (36% vs 19%). Units with axonal properties of CMi fibres but displaying positive mechanical responses ("CMi-like") dominated at the NGF site (27% vs 6%). Moreover, axonal branches innervating the hyperalgesic skin displayed significantly lower electrical thresholds and less activity-dependent conduction velocity slowing when compared with "outside" or control skin. The "inside" branches also showed long-lasting after-discharges and less adaptation to repeated mechanical stimuli. NGF-induced long-term nociceptor hyperexcitability was maximum at the terminal branches directly treated with NGF.

The sensitization included sensory and axonal components affecting both activation thresholds and supra-threshold responses. Our data suggest that a combination of sensory sensitization and axonal hyperexcitability is underlying the localized hyperalgesia by facilitating action potential generation and conduction. Axonal changes were also found in the asymptomatic skin surrounding the NGF-treatment sites, thereby possibly reflecting "nociceptive priming."

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Therapeutic alliance

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The role of the therapeutic alliance on pain relief in musculoskeletal rehabilitation: A systematic review.

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The aim of this systematic review was to investigate the role of therapeutic alliance in pain relief in patients with musculoskeletal disorders treated by physiotherapy. Manual and database searches (Medline, Embase, ISI Web of Knowledge, CINAHL, PEDro, Lilacs, Cochrane Library, and PsycINFO) were performed with no restrictions of language and publication date.

We included prospective studies with samples of patients undergoing physiotherapy for musculoskeletal conditions, with one measure of therapeutic alliance and the outcome pain. Methodological quality was assessed by the Methodological Index for Nonrandomized Studies and the Cochrane tool for risk of bias. Six articles from four studies were included out of the 936 manuscripts identified. All studies used samples composed of patients with chronic low back pain. Two studies applied therapeutic alliance incentive measures during treatment and reported significant improvement in pain. The remaining studies, without alliance incentives, showed divergence regarding the relationship between the therapeutic alliance and pain. Methodological quality analysis determined low risk of bias of the studies.

A lack of studies on the therapeutic alliance regarding musculoskeletal physiotherapy was verified. Existing studies fail to provide evidence of a strong relationship between the therapeutic alliance and pain relief.

CBT helps

Psychological treatments for the management of postsurgical pain: a systematic review of randomized controlled trials

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Background: Inadequately managed pain is a risk factor for chronic postsurgical pain (CPSP), a growing public health challenge. Multidisciplinary pain-management programs with psychological approaches, including cognitive behavioral therapy (CBT), acceptance and commitment therapy (ACT), and mindfulness-based psychotherapy, have shown efficacy as treatments for chronic pain, and show promise as timely interventions in the pre/perioperative periods for the management of PSP. We reviewed the literature to identify randomized controlled trials evaluating the efficacy of these psychotherapy approaches on pain-related surgical outcomes.

Materials and methods: We searched Medline, Medline-In-Process, Embase and Embase Classic, and PsycInfo to identify studies meeting our search criteria. After title and abstract review, selected articles were rated for risk of bias.

Results: Six papers based on five trials (four back surgery, one cardiac surgery) met our inclusion criteria. Four papers employed CBT and two CBT-physiotherapy variant; no ACT or mindfulness-based studies were identified. Considerable heterogeneity was observed in the timing and delivery of psychological interventions and length of follow-up (1 week to 2–3 years). Whereas pain-intensity reporting varied widely, pain disability was reported using consistent methods across papers. The majority of papers (four of six) reported reduced pain intensity, and all relevant papers (five of five) found improvements in pain disability. General limitations included lack of large-scale data and difficulties with blinding.

Conclusion: This systematic review provides preliminary evidence that CBT-based psychological interventions reduce PSP intensity and disability. Future research should further clarify the efficacy and optimal delivery of CBT and newer psychological approaches to PSP.

62 A. NUTRITION/VITAMINS**Cranberry juice and inflammation**

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Chronic consumption of a low calorie, high polyphenol cranberry beverage attenuates inflammation and improves glucoregulation and HDL cholesterol in healthy overweight humans: a randomized controlled trial.

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PURPOSE:

We studied the health benefits of low calorie cranberry beverage consumption on glucoregulation, oxidative damage, inflammation, and lipid metabolism in overweight but otherwise healthy humans.

METHODS:

78 overweight or obese men and women (30-70 years; BMI 27-35 kg/m²) with abdominal adiposity (waist: hip >0.8 for women and >0.9 for men; waist: height ≥0.5) consumed 450 mL placebo or low calorie, high polyphenol cranberry extract beverage (CEB) daily for 8 week in a randomized, double-blind, placebo-controlled, parallel design trial. Blood and urine samples were collected after overnight fast at baseline and after 8 weeks of daily beverage consumption. Blood and urine samples were also collected during 3 oral glucose tolerance test (OGTT) challenges: (1) pre-intervention without the test beverages, (2) following a single dose of placebo or CEB at baseline (week 0), and (3) following a single dose of placebo or CEB at 8 week.

RESULTS:

Compared to placebo, a single CEB dose at baseline lowered endothelin-1 and elevated nitric oxide and the reduced:oxidized glutathione ratio ($P < 0.05$). Interferon- γ was elevated ($P < 0.05$) after a single CEB dose at baseline; however, after 8 week of CEB intervention, fasting C-reactive protein was lower ($P < 0.05$). CEB consumption for 8 week also reduced serum insulin and increased HDL cholesterol compared to placebo ($P < 0.05$).

CONCLUSIONS:

An acute dose of low calorie, high polyphenol cranberry beverage improved antioxidant status, while 8 week daily consumption reduced cardiovascular disease risk factors by improving glucoregulation, downregulating inflammatory biomarkers, and increasing HDL cholesterol.