

2. LBP

Ex and LBP

Am J Epidemiol. 2017 Oct 19. doi: 10.1093/aje/kwx337.

Exercise for the Prevention of Low Back Pain: Systematic Review and Meta-Analysis of Controlled Trials.

Shiri R, Coggon D, Falah-Hassani K.

Abstract

The aim of this systematic review and meta-analysis was to assess the effect of exercise in population-based interventions to prevent low back pain (LBP) and associated disability.

Comprehensive literature searches were conducted in multiple databases including PubMed, Embase, and Cochrane Library from their inception through June 2017. Thirteen randomized controlled trials and three non-randomized controlled trials qualified for meta-analyses. Exercise alone reduced the risk of LBP by 33% (risk ratio = 0.67, 95% CI: 0.53, 0.85, I² = 23%, 8 randomized controlled trials, n = 1,634) and exercise combined with education by 27% (risk ratio = 0.73, 95% CI: 0.59, 0.91, I² = 6%, 6 trials, n = 1,381). The severity of LBP and disability from LBP were also lower in exercise than control groups. Moreover, results were not changed by excluding the non-randomized controlled trials, or by adjustment for publication bias. Few trials assessed healthcare consultation or sick leave for LBP, and meta-analyses did not show statistically significant protective effects of exercise on those outcomes.

Exercise reduces the risk of LBP and associated disability, and a combination of strengthening with either stretching or aerobic exercises performed 2-3 times/week can reasonably be recommended for prevention of LBP in the general population.

Postural control

Eur Spine J. 2017 Oct 25. doi: 10.1007/s00586-017-5355-5

Effects of lumbosacral orthoses on postural control in individuals with or without non-specific low back pain.

Mi J¹, Ye J¹, Zhao X¹, Zhao J².

OBJECTIVE:

To investigate the effect of lumbosacral orthoses (LSOs) on postural control in individuals with or without non-specific low back pain (NSLBP).

METHODS:

Individuals with NSLBP (n = 28) and healthy controls (n = 28) were enrolled to assess the postural control with or without LSOs. Postural control was tested using the Balance Master[®] NeuroCom system by the modified clinical test of sensory interaction and balance.

RESULTS:

Relative to controls, patients with NSLBP had deficits in postural control with greater center of pressure (COP) sway velocity when standing on firm surface (with eyes open: p = 0.002; with eyes closed: p = 0.002) and standing on foam surface (with eyes open: p = 0.024; with eyes closed: p < 0.001). In the braced condition, the COP sway decreased in all subjects with or without NSLBP when standing on foam surface. There was no significant difference in the effect of LSOs on postural control between NSLBP group and healthy controls.

CONCLUSION:

Individuals with NSLBP have poorer postural control than controls. LSOs seem to improve postural control when standing on unstable surfaces in subjects with or without NSLBP. The effect of LSOs on postural control may not depend on the level of baseline.

Analysis

Clin J Pain. 2017 Oct;33(10):877-891. doi: 10.1097/AJP.0000000000000478.

Multidimensional Prognostic Modelling in People With Chronic Axial Low Back Pain.

Rabey M¹, Smith A, Beales D, Slater H, O'Sullivan P.

OBJECTIVES:

To derive prognostic models for people with chronic low back pain (CLBP) (n=294) based upon an extensive array of potentially prognostic multidimensional factors.

MATERIALS AND METHODS:

This study entered multidimensional data (demographics, pain characteristics, pain responses to movement, behaviors associated with pain, pain sensitivity, psychological, social, health, lifestyle) at baseline, and interventions undertaken, into prognostic models for pain intensity, disability, global rating of change and bothersomeness at 1-year.

RESULTS:

The prognostic model for higher pain intensity (explaining 23.2% of the variance) included higher baseline pain intensity and punishing spousal interactions, and lower years in education, while participating in exercise was prognostic of lower pain intensity. The model for higher disability (33.6% of the variance) included higher baseline disability, longer forward bending time, psychological principal component scores representing negative pain-related cognitions and punishing spousal interactions; while exercising was prognostic of lower disability. The odds of reporting global rating of change much/very much improved were increased by participating in exercise, having leg pain as well as CLBP and having greater chronic pain acceptance. The receiver operating characteristic area under the curve was 0.72 indicating acceptable discrimination. The odds of reporting very/extremely bothersome CLBP were increased by having higher baseline pain intensity, longer forward bending time and receiving injection(s); while higher age, more years in education and having leg pain decreased the odds (receiver operating characteristic area under the curve, 0.80; acceptable discrimination).

DISCUSSION:

The variance explained by prognostic models was similar to previous reports, despite an extensive array of multidimensional baseline variables. This highlights the inherent multidimensional complexity of CLBP.

Pain science

In the spine or in the brain? Recent advances in pain neuroscience applied in the intervention for low back pain

J. Nijs¹, J. Clark², A. Malfliet³, K. Ickmans⁴, L. Voogt⁵, S. Don⁶, H. den Bandt⁷, D. Goubert⁸, J. Kregel⁹, I. Coppieters¹⁰, W. Dankaerts¹¹

CER10772 2017 Vol.35, N°5 ,Suppl.107 - PI 0108, PF 0115

Abstract

Conservative, surgical and pharmacological strategies for chronic low back pain (CLBP) management offer at best modest effect sizes in reducing pain and related disability, indicating a need for improvement. Such improvement may be derived from applying contemporary pain neuroscience to the management of CLBP.

Current interventions for people with CLBP are often based entirely on a “biomedical” or “psychological” model without consideration of information concerning underlying pain mechanisms and contemporary pain neuroscience. Here we update readers with our current understanding of pain in people with CLBP, showing that CLBP is not limited to spinal impairments, but is also characterised by brain changes, including functional connectivity reorganisation in several brain regions and increased activation in brain regions of the so-called ‘pain matrix’ (or ‘pain connectome’). Indeed, in a subgroup of the CLBP population brain changes associated with the presence of central sensitisation are seen. Understanding the role of these brain changes in CLBP improves our understanding not only of pain symptoms, but also of prevalent CLBP associated comorbidities such as sleep disturbances and fear avoidance behaviour. Applying contemporary pain neuroscience to improve care for people with CLBP includes identifying relevant pain mechanisms to steer intervention, addressing sleep problems and optimising exercise and activity interventions.

This approach includes cognitively preparing patients for exercise therapy using (therapeutic) pain neuroscience education, followed by cognition-targeted functional exercise therapy.

PMID: [28967357](https://pubmed.ncbi.nlm.nih.gov/28967357/) [PubMed]

5. SURGERY

Use of amniotic fluid in discectomies

Clin Spine Surg. 2017 Nov;30(9):413-418. doi: 10.1097/BSD.0000000000000544.

Cryopreserved Amniotic Membrane Improves Clinical Outcomes Following Microdiscectomy.

Anderson DG¹, Popov V, Raines AL, O'Connell J.

STUDY DESIGN:

Prospective, randomized controlled trial.

OBJECTIVE:

To compare pain, physical/mental functional recovery and recurrent herniation for patients following lumbar microdiscectomy with and without the use of a cryopreserved amniotic tissue graft.

SUMMARY OF BACKGROUND DATA:

Although microdiscectomy procedures are routinely successful for patients with lumbar radiculopathy due to herniated disc disease, residual low back pain, and recurrent herniation remain unsolved clinical problems.

METHODS:

Following Investigated Review Board approval, 80 subjects were randomized in a 1:1 ratio to either receive cryopreserved amniotic (cAM) tissue or no tissue following elective lumbar microdiscectomy surgery. cAM grafts were applied to the annular defect at the conclusion of the procedure. Patients provided preoperative and postoperative clinical assessment data out to 24 months using the Oswestry Disability Index (ODI), Short Form-12 (SF-12) Health Survey, and Visual Analog Pain Scale for back and leg pain. Patients with symptomatic recurrent disc herniation were recorded.

RESULTS:

In total, 48 males and 32 females with an average age of 47.2 years were included. Mean ODI scores for subjects treated with cAM graft demonstrated statistically greater improvement at 6 weeks (14.49 vs. 21.82; P=0.05) and 24 months (6.62 vs. 14.40; P=0.02) compared with controls. Similarly, SF-12 Physical Component Scores demonstrated statistically greater gains in the cAM group at both the 6 weeks and 24 months. None of the subjects in the cAM graft group sustained a recurrent herniation at the same surgical level, whereas 3 patients in the control group sustained a recurrent herniation at the same surgical level, with 2 requiring fusion to manage persistent pain.

CONCLUSIONS:

The data demonstrate statistically superior clinical outcomes following lumbar microdiscectomy as measured by ODI and SF-12 (physical composite scale) and a lower rate of recurrent herniation with the use of a cAM tissue graft compared with traditional microdiscectomy.

6. PELVIC GIRDLE

Arthrodesis

European Spine Journal pp 1–11| Cite as

Distraction arthrodesis of the sacroiliac joint: 2-year results of a descriptive prospective multi-center cohort study in 171 patients

- Volker Fuchs [Email author](#) Benjamin Ruhl
-

Purpose

The aim of the given study was to evaluate the long-term outcomes of patients undergoing sacroiliac joint (SIJ) distraction arthrodesis to treat SIJ-related pain.

Methods

Descriptive prospective multi-center cohort study involving 20 hospitals in Germany. Between January 2011 and June 2012, 171 patients with chronic SIJ pain underwent indirect arthrodesis of the SIJ using a distraction implant. The patients were questioned prior to surgery, 6-weeks, and 3-, 6-, 12- and 24-months postoperatively. Overall patient satisfaction was surveyed along with pain medication intake, the Million Visual Analogue Scale (MVAS), Oswestry Disability Index (ODI), Short-form McGill Pain Questionnaire (SF-MPQ), 12-Item Short-Form Health Survey (SF-12), Visual Analogue Scale (VAS) and a pain drawing. Bony fusion of the SIJ was evaluated using X-ray and computed tomography (CT).

Results

A majority of patients (73%) reported to feel better or much better 24 months post-surgery, 49% of the patients reduced their pain medication intake. The MVAS dropped from 63 to 36%, the ODI improved from 51 to 33%, the SF-MPQ decreased from 50 to 31%, the SF-12 physical component summary rose from 22 to 41%, the mental component summary increased from 40 to 55%, and pain as measured by the VAS decreased from 74 to 37 points (all comparisons $p < 0.001$). In the follow-up CT scans 31% of the patients showed SIJ fusion.

Conclusions

SIJ distraction arthrodesis has shown satisfactory outcomes in patients with SIJ-related pain for all scores reported in the surveys, accompanied by increased functionality.

8. VISCERA

Probiotics and weight loss

Obes Rev. 2017 Oct 18. doi: 10.1111/obr.12626.

Effects of probiotics on body weight, body mass index, fat mass and fat percentage in subjects with overweight or obesity: a systematic review and meta-analysis of randomized controlled trials.

Borgeraas H¹, Johnson LK¹, Skattebu J², Hertel JK¹, Hjelmessaeth J^{1,3}.

A systematic review and meta-analysis of randomized controlled trials was conducted to examine the effects of probiotic supplementation on body weight, body mass index (BMI), fat mass and fat percentage in subjects with overweight (BMI 25-29.9 kg m⁻²) or obesity (BMI ≥30 kg m⁻²).

MEDLINE, EMBASE and the Cochrane Central Register of Controlled Trials were searched for studies published between 1946 and September 2016. A meta-analysis, using a random effects model, was performed to calculate the weighted mean difference between the intervention and control groups.

Of 800 studies identified through the literature search, 15 were finally included. The studies comprised a total of 957 subjects (63% women), with the mean BMI being 27.6 kg m⁻² and the duration of the interventions ranging from 3 to 12 weeks. Administration of probiotics resulted in a significantly larger reduction in body weight (weighted mean difference [95% confidence interval]; -0.60 [-1.19, -0.01] kg, I² = 49%), BMI (-0.27 [-0.45, -0.08] kg m⁻², I² = 57%) and fat percentage (-0.60 [-1.20, -0.01] %, I² = 19%), compared with placebo; however, the effect sizes were small.

The effect of probiotics on fat mass was non-significant (-0.42 [-1.08, 0.23] kg, I² = 84%).

Degenerative spondylitis

Spine (Phila Pa 1976). 2017 Nov 1;42(21):1643-1647. doi: 10.1097/BRS.0000000000002178.

Degenerative Spondylolisthesis Is Related to Multiparity and Hysterectomies in Older Women.

Cholewicki J¹, Lee AS, Popovich JM Jr, Mysliwiec LW, Winkelpleck MD, Flood JN, Pathak PK, Kaaikala KH, Reeves NP, Kothe R.

STUDY DESIGN:

A case-control study.

OBJECTIVE:

To determine whether parity and abdominal surgeries are associated with degenerative spondylolisthesis (DS).

SUMMARY OF BACKGROUND DATA:

DS is considered to be a major cause of low back pain (LBP) in the older population, with greater prevalence of DS among women. Because LBP and impaired abdominal muscle function are common during pregnancy and post-partum, parity-related abdominal muscle deficiency, resulting in poor spinal mechanics, could be a factor in the development of DS in women. Indeed a relationship between the number of pregnancies and DS was reported in one study.

METHODS:

A total of 322 women between the ages of 40 and 80 (149 with DS and 173 controls) filled out a questionnaire providing information about their demographics, the number of full-term pregnancies, the number and types of abdominal surgeries (including cesarean section and hysterectomies), and age at menopause among other items. A binary logistic regression was used as a multivariate model to identify the variables associated with DS.

RESULTS:

Along with age and body mass index as covariates, the number of full-term pregnancies and the hysterectomy were significant predictors of DS. Other abdominal surgeries, cesarean section, or the number of years postmenopause were not significant predictors of DS in this regression model after adjusting for all other significant variables.

CONCLUSION:

Each full-term pregnancy seems to be associated with the 22% increase in odds of developing DS. Hysterectomy nearly doubles the odds of DS as compared to women who did not have hysterectomy.

LEVEL OF EVIDENCE: 4. PMID: 28368984

Rice anti-inflammatory

Effects of supplementation with rice husk powder and rice bran on inflammatory factors in overweight and obese adults following an energy-restricted diet: A randomized controlled trial

European Journal of Nutrition | October 25, 2017

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Edrisi F, et al.

The authors compared the effects of supplementation with rice husk powder and rice bran on inflammatory factors in overweight and obese adults following an energy-restricted diet. In this randomized trial, they found positive effects of rice bran and rice husk powder supplementation on inflammatory markers, combined with an energy-restricted diet, among overweight and obese adults.

Methods

- The authors assigned 105 eligible individuals to 1 of the 3 energy-restricted diet groups receiving; rice bran (n = 35), rice husk powder (n = 35), and control group (n = 35) for 12 weeks.
- They measured demographic data, dietary intake, anthropometric indices and inflammatory factors (serum levels of IL-6 and hs-CRP) at baseline and at the end of the study.

Results

- In all groups, weight, BMI, and waist circumference reduced significantly after 12 weeks of study ($P < 0.01$ for all).
- However, between groups, pre- and post-measure differences were not significant.
- Furthermore, between participants in the rice bran or rice husk groups, serum levels of hs-CRP and IL-6 were not significantly different.
- Nonetheless, when compared to the control group, the reduction in serum levels of hs-CRP in rice husk (mean change = -0.14 ± 0.05 $\mu\text{g/ml}$) and rice bran (mean change = -0.13 ± 0.03 $\mu\text{g/ml}$) was significantly higher (mean change = -0.03 ± 0.02 $\mu\text{g/ml}$) ($P < 0.05$ for both groups).
- The authors found the same pattern when changes in IL-6 serum levels of participants in rice husk (mean change = -0.48 ± 0.11 pg/ml) and rice bran (mean change = -0.57 ± 0.13 pg/ml) groups were compared to the control group (mean change = -0.19 ± 0.07 pg/ml) ($P < 0.05$ for both groups).

Acid reflux

Am J Gastroenterol. 2017 Oct 10. doi: 10.1038/ajg.2017.288.

Determinants of the Association between Non-Cardiac Chest Pain and Reflux.

Herregods TVK¹, Bredenoord AJ¹, Oors JM¹, Bogte A², Smout AJPM¹.

OBJECTIVES:

Gastroesophageal reflux is considered to be the most common gastrointestinal cause of non-cardiac chest pain (NCCP). It remains unclear why some reflux episodes in the same patient cause chest pain while others do not. To understand more about the mechanisms by which reflux elicits chest pain, we aimed to identify factors which are important in triggering chest pain.

METHODS:

In this multicenter study, 120 patients with NCCP were analyzed using 24-h pH-impedance monitoring. In the patients with a positive association between reflux and chest pain, the characteristics of the reflux episodes which were followed by a chest pain episode were compared with chest pain-free reflux episodes.

RESULTS:

Using 24-h pH-impedance monitoring, 40% of the NCCP patients were identified as having reflux as a possible cause of their chest pain. Reflux episodes that were associated with chest pain had a higher proximal extent ($P=0.007$), a higher volume clearance time ($P=0.030$), a higher 15-minute acid burden ($P=0.041$), were more often acidic ($P=0.011$), had a lower nadir pH ($P=0.044$), and had a longer acid duration time ($P=0.027$) than reflux episodes which were not followed by chest pain. Patients who experienced typical reflux symptoms were more likely to have reflux as the cause of their chest pain (52 vs. 31.4%, $P=0.023$).

CONCLUSIONS:

The presence of a larger volume of acid refluxate for a longer period of time appears to be an important determinant of perceiving a reflux episode as chest pain. 24-h pH-impedance monitoring is an important tool in identifying gastroesophageal reflux as a potential cause of symptoms in patients with NCCP. Am J Gastroenterol advance online publication, 10 October 2017; doi:10.1038/ajg.2017.288.

CD and growth

Arch Dis Child. 2017 Nov;102(11):1037-1043. doi: 10.1136/archdischild-2016-312304. Epub 2017 Jun 13.

Early growth in children with coeliac disease: a cohort study.

Kahrs CR^{1,2}, Magnus MC^{3,4,5}, Stigum H³, Lundin KEA^{6,7}, Størdal K^{1,2}.

OBJECTIVES:

We aimed to study growth during the first 2 years of life in children later diagnosed with coeliac disease compared with children without, in a time with changing epidemiology and improved diagnostics.

DESIGN:

A prospective population-based pregnancy cohort study.

SETTING:

The nationwide Norwegian Mother and Child Cohort Study.

PATIENTS:

58 675 children born between 2000 and 2009 with prospectively collected growth data. Coeliac disease was identified through combined data from questionnaires and the Norwegian Patient Register.

MAIN OUTCOME MEASURES:

The differences in height and weight at age 0, 3, 6, 8, 12, 15-18 and 24 months using internally standardised age and gender-specific z-scores. Linear regression and mixed models were used.

RESULTS:

During a median follow-up of 8.6 years (range 4.6-14.2), 440 children (0.8%) were diagnosed with coeliac disease at a mean age of 4.4 years (range 1.5-8.5). Children with coeliac disease had significantly lower z-scores for height from 12 months (-0.09 standard deviation scores (SDS), 95% CI -0.18 to -0.01) and weight from 15 to 18 months of life (-0.09 SDS, 95% CI -0.18 to -0.01) compared with cohort controls. The longitudinal analysis from 0 to 24 months yielded a significant reduction in height z-score per year (-0.07 SDS, 95% CI -0.13 to -0.01) but not for weight among children with coeliac disease. Excluding children diagnosed before age 2 years gave similar results.

CONCLUSIONS:

This study indicates that growth retardation in children later diagnosed with coeliac disease commonly starts at 12 months of age, and precedes clinical symptoms that usually bring the suspicion of diagnosis.

13 B. TMJ/ORAL**Hyaluronic Acid**

J Periodontol. 2017 Sep 15:1-14. doi: 10.1902/jop.2017.170105.

Effect of Topically-Applied Hyaluronic-Acid on Pain and Palatal Epithelial Wound Healing: An Examiner-Blind, Randomized, Controlled Clinical Trial.

Yıldırım S¹, Özener HÖ¹, Doğan B¹, Kuru B².

BACKGROUND:

This study aimed to evaluate the effects of two different concentrations of topical hyaluronic-acid on post-operative patient discomfort and wound healing of palatal donor sites following free gingival graft (FGG) surgery.

METHODS:

Thirty-six patients requiring FGG were randomly assigned into three groups in an examiner-blind, randomized-controlled clinical trial. After harvesting palatal grafts, 0.2% and 0.8% hyaluronic-acid gels were used in the test-1 and -2 groups, respectively. Gels were applied on donor sites and protected with periodontal dressing in the test groups whereas the wound was covered only with periodontal dressing in the control group. On days 3-7-14 and 21, pain and burning sensation were recorded by using visual analog scale (VAS) as well as other parameters such as complete epithelization (CE) and color match on days 3-7-14-21-42.

RESULTS:

Test groups experienced less pain than the control group on days 3 and 7 ($P<0.001$ and $P<0.001$, respectively). The mean VAS score for burning sensation was higher in the control group on day 3 compared to the test-1 and -2 groups ($P=0.033$ and $P=0.020$, respectively). CE in all patients was achieved on day 21 in both test groups while it was achieved on day 42 in the control group. The test groups showed higher color match scores than the control group on days 21 ($P<0.001$ and $P<0.001$, respectively) and 42 ($P=0.004$ and $P=0.002$, respectively).

CONCLUSION:

Topical application of hyaluronic-acid exhibits positive impact on post-operative pain, burning sensation and accelerates palatal wound healing in terms of epithelization and color match.

13 C. AIRWAYS/SWALLOWING/SPEECH**Sleep disorders**

JAMA Neurol. 2017 Oct 1;74(10):1237-1245. doi: 10.1001/jamaneurol.2017.2180.

Association of Sleep-Disordered Breathing With Cognitive Function and Risk of Cognitive Impairment: A Systematic Review and Meta-analysis.

Leng Y¹, McEvoy CT^{1,2}, Allen IE³, Yaffe K^{1,4,5,6}.

IMPORTANCE:

Growing evidence suggests an association between sleep-disordered breathing (SDB) and cognitive decline in elderly persons. However, results from population-based studies have been conflicting, possibly owing to different methods to assess SDB or cognitive domains, making it difficult to draw conclusions on this association.

OBJECTIVE:

To provide a quantitative synthesis of population-based studies on the relationship between SDB and risk of cognitive impairment.

DATA SOURCES:

PubMed, EMBASE, and PsychINFO were systematically searched to identify peer-reviewed articles published in English before January 2017 that reported on the association between SDB and cognitive function.

STUDY SELECTION:

We included cross-sectional and prospective studies with at least 200 participants with a mean participant age of 40 years or older.

DATA EXTRACTION AND SYNTHESIS:

Data were extracted independently by 2 investigators. We extracted and pooled adjusted risk ratios from prospective studies and standard mean differences from cross-sectional studies, using random-effect models. This meta-analysis followed the PRISMA guidelines and also adhered to the MOOSE guidelines.

MAIN OUTCOMES AND MEASURES: Cognitive outcomes were based on standard tests or diagnosis of cognitive impairment. Sleep-disordered breathing was ascertained by apnea-hypopnea index or clinical diagnosis.

RESULTS:

We included 14 studies, 6 of which were prospective, covering a total of 4 288 419 men and women. Pooled analysis of the 6 prospective studies indicated that those with SDB were 26% (risk ratio, 1.26; 95% CI, 1.05-1.50) more likely to develop cognitive impairment, with no evidence of publication bias but significant heterogeneity between studies. After removing 1 study that introduced significant heterogeneity, the pooled risk ratio was 1.35 (95% CI, 1.11-1.65). Pooled analysis of the 7 cross-sectional studies suggested that those with SDB had slightly worse executive function (standard mean difference, -0.05; 95% CI, -0.09 to 0.00), with no evidence of heterogeneity or publication bias. Sleep-disordered breathing was not associated with global cognition or memory.

CONCLUSIONS AND RELEVANCE:

Sleep-disordered breathing is associated with an increased risk of cognitive impairment and a small worsening in executive function. Further studies are required to determine the mechanisms linking these common conditions and whether treatment of SDB might reduce risk of cognitive impairment.

15. VESTIBULAR

CG dizziness

Clinical Decision Making in the Management of Patients With Cervicogenic Dizziness: A Case Series

Authors: Francis C. Jung, PT, DPT, OCS, FAAOMPT^{1,4,6}, Sherin Mathew, PT, DPT², Andrew E. Littmann, PT, PhD³, Cameron W. MacDonald, PT, DPT, OCS, GCS, FAAOMPT^{3,5}

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**0 **Issue:**0 **Pages:**1–42 **DOI:**10.2519/jospt.2017.7425

Study Design

Case series.

Background

Although growing recognition of cervicogenic dizziness (CGD) is emerging, there is still no “gold standard” for the diagnosis of CGD. The purpose of this case series is to describe the clinical decision making utilized in the management of seven patients presenting with CGD.

Case Descriptions

Patients presenting with neck pain and accompanying subjective symptoms including dizziness, unsteadiness, lightheadedness, and visual disturbance were selected. Clinical evidence of a temporal relationship between neck pain and dizziness with or without sensorimotor disturbances was sought. Clinical decision making followed a four-step process informed by the current available best evidence. Outcome measures included the numeric rating scale (NRS) of dizziness and neck pain, the Dizziness Handicap Inventory (DHI), Patient Specific Functional Scale (PSFS), and Global Rating of Change (GROC).

Outcomes

Seven patients (Mean age, 57 years; range, 31-86 years; 7 female) completed physical therapist management with an average 13 sessions (range, 8-30) over a mean of seven weeks. Clinically meaningful improvements were observed in the NRS of dizziness (Mean difference: 5.7; 95% CI: 4.0, 7.5), neck pain (Mean difference: 5.4; 95% CI: 3.8, 7.1), and the DHI (Mean difference: 32.6; 95% CI: 12.9, 52.2) at discontinuation. Patients also demonstrated overall satisfaction via the PSFS (Mean difference: 9) and GROC (Mean value: +6).

Discussion

This case series describes the physical therapist decision making, management, and outcomes in patients with CGD. Further investigation is warranted to develop a valid clinical decision making guideline to inform management of patients with CGD.

Level of Evidence

Diagnosis, Therapy, Level 4. *J Orthop Sports Phys Ther*, Epub 9 Oct 2017.
*doi:*10.2519/jospt.2017.7425

19. GLENOHUMERAL/SHOULDER**Shoulder pain and central sensitization**

Scand J Med Sci Sports. 2017 Oct 4. doi: 10.1111/sms.12982.

Sensory processing and central pain modulation in patients with chronic shoulder pain: A case-control study.

Kuppens K^{1,2,3}, Hans G⁴, Roussel N¹, Struyf F¹, Franssen E⁵, Cras P⁶, Van Wilgen CP^{2,3,7}, Nijs J^{2,3,8}.

Chronicity and recurrence in musculoskeletal shoulder pain are highly prevalent and can possibly be attributed to the concept of central sensitization.

Available studies suggest a role for central sensitization in explaining chronic shoulder pain, but so far a comprehensive quantitative sensory testing (QST) protocol has not been used. The aim of this study was to gain knowledge on sensory processing and central pain modulatory mechanisms in patients suffering from chronic shoulder pain using such a QST protocol. Fifty study participants, including chronic shoulder pain patients and healthy controls, underwent a standardized, comprehensive psychophysical testing procedure. A static adapted QST protocol (including pressure algometry, vibration and mechanical detection) was applied. Thereafter, all subjects underwent dynamic measures of temporal summation and conditioned pain modulation. Questionnaires assessing psychosocial factors were completed by each subject. No significant differences ($P \geq .05$) were found between patients and controls based on pressure algometry, vibration detection, mechanical detection, temporal summation, and conditioned pain modulation. Moderate positive correlations ($r = .5$) were found between pressure pain thresholds (PPTs) and the amount of sports participation. Weak-to-moderate negative correlations ($r = -.3$ à $-.5$) were found between PPTs and psychosocial factors such as pain catastrophizing.

Based on these findings, we can conclude that central sensitization is no characteristic feature in chronic musculo-skeletal shoulder pain but can be present in individual cases.

20 A. ROTATOR CUFF**MRI post surgery**

Musculoskeletal Imaging Original Research

Predictive Factors of Retear in Patients With Repaired Rotator Cuff Tear on Shoulder MRIYun Kyung Shin¹, Kyung Nam Ryu¹, Ji Seon Park¹, Wook Jin² ... Show all**ABSTRACT :**

OBJECTIVE. This study aimed to find independent prognostic factors related to re-tear of the rotator cuff tendon in patients with repaired full-thickness supraspinatus tendon tear by evaluation of pre- and postoperative MR images.

MATERIALS AND METHODS. Shoulder MR images were retrospectively analyzed for 83 patients who had undergone arthroscopic or open rotator cuff repair with acromioplasty for full-thickness supraspinatus tendon tear from April 2014 to March 2015. On preoperative MR images, the type of rotator cuff tear, extent of retraction of torn tendon, anteroposterior (AP) dimension of torn tendon, signal intensity of tear edge, degree of fat infiltration in supraspinatus and infraspinatus muscles, and acromiohumeral interval (AHI) were assessed. Postoperative cuff integrity seen on MR images was classified into five categories according to the Sugaya classification system, and patients were categorized into re-tear or intact groups. Factors assessed on preoperative MR images were compared between the two groups.

RESULTS. The overall re-tear rate was 57.8%. Significant differences were observed between the re-tear and intact groups in terms of the mean values of the extent of tendon retraction (20.4 vs 11.7 mm), AP dimension of the tear (16.1 vs 11.4 mm), AHI (6.8 vs 8.7 mm), and degree of fat infiltration of the supraspinatus and infraspinatus muscles (for the supraspinatus muscle, 3, 30, and 15 patients in the re-tear group vs 5, 27, and three patients in the intact group had Goutallier grade 1, grade 2, and grades 3 and 4 infiltration, respectively; for the infraspinatus muscle, 27, 12, and 9 patients in the re-tear group vs 29, 5, and one patient in the intact group had Goutallier grade 1, grade 2, and grades 3 and 4 infiltration, respectively). Multivariable analysis revealed that AHI and degree of tendon retraction were independent predictive factors affecting re-tear of rotator cuff after repair.

CONCLUSION. The re-tear rate of repaired rotator cuff tendon was about 57.8%. Independent prognostic factors of re-tear were degree of tendon retraction and AHI on preoperative MR images.

Infraspinatus

J Sport Rehabil. 2017 Sep 27:1-21. doi: 10.1123/jsr.2017-0110.

Effects of Three Infraspinatus Muscle Strengthening Exercises on Isokinetic Peak Torque and Muscle Activity.

Yu IY¹, Lee DK², Kang MJ³, Oh J².

CONTEXT:

The infraspinatus muscle plays a particularly important role in producing primary external rotation (ER) torque and dynamic stability of the shoulder joint. Previous studies have reported that prone external rotation with horizontal abduction (PER), side-lying wiper exercise (SWE), and standing external rotation (STER) were effective exercises for strengthening the infraspinatus. However, we do not have enough knowledge about changes in muscle strength and dynamic muscle activity in each exercise under dynamic conditions.

OBJECTIVE:

To compare the ER muscle strength, muscle activity among exercise methods and between muscle contraction types during three different exercises.

DESIGN:

Repeated measures design in which ER muscle strength and muscle activities data were collected from subjects under 3 exercise conditions.

SETTING:

Outpatient clinic **PARTICIPANTS:** Fifteen healthy men with no shoulder, neck, or upper extremity pain were participated.

INTERVENTION:

The subjects performed three different exercises randomly in concentric and eccentric using a Biodex dynamometer at an angular velocity of 60°/s.

MAIN OUTCOME MEASURES:

Isokinetic ER peak torque (PT) data was collected and surface electromyography (EMG) was used to measure the activity of the infraspinatus and posterior deltoid muscles and infraspinatus to posterior deltoid muscle activity ratio.

RESULTS:

There was significant main effect for muscle contraction type in isokinetic ER PT ($p < 0.05$). The concentric PT was greater during PER ($p < 0.05$) and SWE ($p < 0.05$) compared to eccentric. The main effect for exercise was found in isokinetic ER PT and muscle activity ($p < 0.05$). The isokinetic ER PT and infraspinatus muscle activity were the largest increased during PER whereas, the lowest during STER in both concentric and eccentric ($p < 0.05$).

CONCLUSIONS:

Our results suggest that PER is an exercise for strengthening the infraspinatus muscle effectively.

27. HIP

Deg hip strength

Hip Abductor Muscle Volume and Strength Differences Between Women With Chronic Hip Joint Pain and Asymptomatic Controls

Authors: Matthew J. Mastenbrook, BS¹, Paul K. Commean, BEE², Travis J. Hillen, MD³, Gretchen B. Salsich, PT, PhD⁴, Gretchen A. Meyer, PhD^{1,5}, Michael J. Mueller, PT, PhD, FAPTA^{1,3}, John C. Clohisy, MD⁶, Marcie Harris-Hayes, DPT, MSCI^{1,6}

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**0 **Issue:**0 **Pages:**1–28 **DOI:**10.2519/jospt.2017.7380

Study Design

Secondary analysis, cross-sectional study.

Background

Chronic hip joint pain (CHJP) can lead to limitations in activity participation, but the musculoskeletal factors associated with the condition are relatively unknown. Understanding the factors associated with CHJP may help develop rehabilitation strategies to improve quality of life of individuals with long-term hip pain.

Objectives

To compare measures of hip abductor muscle volume and hip abductor muscle strength between women with CHJP and asymptomatic controls.

Methods

Thirty women, 15 with CHJP and 15 matched asymptomatic controls (18-40 years of age), participated in this study. Magnetic resonance imaging was used to determine the volume of the primary hip abductor muscles, consisting of gluteus medius (GMed), gluteus minimus (GMin), a small portion of gluteus maximus (GMax), and tensor fascia latae (TFL), within a defined region of interest. Break tests were performed using a handheld dynamometer to assess hip abductor strength. During the strength test, the participant was positioned in sidelying with the involved hip in 15° abduction. Independent-sample *t* tests were used to compare muscle volume and strength values between those with CHJP and asymptomatic controls.

Results

Compared to asymptomatic controls, women with CHJP demonstrated significantly increased gluteal muscle volume (228±40cm³ versus 199±29cm³; p=.032), but decreased hip abductor strength (74.6±16.8Nm versus 93.6±20.2Nm; p=.009). There were no significant differences in TFL muscle volume between the two groups (p=.640).

Conclusions

Women with CHJP appear to have larger gluteal muscles, but decreased hip abductor strength compared to asymptomatic controls. *J Orthop Sports Phys Ther*, Epub 9 Oct 2017.
*doi:*10.2519/jospt.2017.7380

28. REPLACEMENTS

Readmission

JAMA Surg. 2017 Oct 4:e173949. doi: 10.1001/jamasurg.2017.3949.

Factors Associated With 30-Day Readmission After Primary Total Hip Arthroplasty: Analysis of 514 455 Procedures in the UK National Health Service.

Ali AM^{1,2}, Loeffler MD³, Aylin P⁴, Bottle A⁴.

IMPORTANCE:

Thirty-day readmission to hospital after total hip arthroplasty (THA) has significant direct costs and is used as a marker of hospital performance. All-cause readmission is the only metric in current use, and risk factors for surgical readmission and those resulting in return to theater (RTT) are poorly understood.

OBJECTIVE:

To determine whether patient-related predictors of all-cause, surgical, and RTT readmission after THA differ and which predictors are most significant.

DESIGN, SETTING, AND PARTICIPANTS:

Analysis of all primary THAs recorded in the National Health Service (NHS) Hospital Episode Statistics database from 2006 to 2015. The effect of patient-related factors on 30-day readmission risk was evaluated by multilevel logistic regression analysis. The analysis comprised all acute NHS hospitals in England and all patients receiving primary THA.

MAIN OUTCOMES AND MEASURES: Thirty-day readmission rate for all-cause, surgical (defined using International Statistical Classification of Diseases and Related Health Problems, Tenth Revision primary admission diagnoses), and readmissions resulting in RTT.

RESULTS:

Across all hospitals, 514 455 procedures were recorded. Seventy-nine percent of patients were older than 60 years, 40.3% were men, and 59.7% were women. There were 30 489 all-cause readmissions (5.9%), 16 499 surgical readmissions (3.2%), and 4286 RTT readmissions (0.8%); 54.1% of readmissions were for surgical causes. Comorbidities with the highest odds ratios (ORs) of RTT included those likely to affect patient behavior: drug abuse (OR, 2.22; 95% CI, 1.34-3.67; $P = .002$), psychoses (OR, 1.83; 95% CI, 1.16-2.87; $P = .009$), dementia (OR, 1.57; 95% CI, 1.11-2.22; $P = .01$), and depression (OR, 1.52; 95% CI, 1.31-1.76; $P < .001$). Obesity had a strong independent association with RTT (OR, 1.46; 95% CI, 4.45-6.43; $P < .001$), with one of the highest population attributable fractions of the comorbidities (3.4%). Return to theater in the index episode was associated with a significantly increased risk of RTT readmission (OR, 5.35; 95% CI, 4.45-6.43; $P < .001$). Emergency readmission to the hospital in the preceding 12 months increased the risk of readmission significantly, with the association being most pronounced for all-cause readmission (for >2 emergency readmissions, OR, 2.33; 95% CI, 2.11-2.57; $P < .001$). Hip resurfacing was associated with a lower risk of RTT when compared with cemented implants (OR, 0.69; 95% CI, 0.54-0.88; $P = .002$) but for other types of readmission, implant type had no significant association with readmission risk. Increasing age and length of stay were strongly associated with all-cause readmission.

CONCLUSIONS AND RELEVANCE:

Many patient-related risk factors for surgical and RTT readmission differ from those for all-cause readmission despite the latter being the only measure in widespread use. Clinicians and policy makers should consider these alternative readmission metrics in strategies for risk reduction and cost savings.

32 A. KNEE/ACL

Postural tests

Measurement Properties of a Test Battery to Assess Postural Orientation During Functional Tasks in Patients Undergoing ACL Injury Rehabilitation

Authors: Jenny Nae, PT, MSc¹, Mark W. Creaby, PhD², Gustav Nilsson, PT, MSc¹, Kay M. Crossley, PT, PhD³, Eva Ageberg, PT, PhD¹

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**0 **Issue:**0 **Pages:**1–42 **DOI:**10.2519/jospt.2017.7270

Study Design

Cross-sectional study.

Background

Visual rating of postural orientation (PO) during functional tasks may be a valuable tool to track rehabilitation progress following anterior cruciate ligament (ACL) injury. A valid test battery assessing PO as a separate construct is lacking.

Objectives

To evaluate measurement properties of a test battery to assess PO in patients with ACL injury.

Methods

Content validity of functional tasks was assessed by expert focus group discussions. 51 patients (45% women) with ACL injury performed nine functional tasks of varying difficulty. Interpretability, internal consistency, inter-rater reliability and measurement error were assessed for segment-specific Postural Orientation Errors (POEs), within-task POEs and total POE score. POEs were scored on-video on an ordinal scale from 0 (no POEs) to 3 (major POEs).

Results

Stair descending, deep squat and crossover hop for distance were excluded in focus group discussions. POEs in some tasks were excluded due to floor effects. The mini squat and drop jump were excluded due to poor internal consistency ($\alpha \leq 0.184$). Inter-rater reliability for segment-specific POEs and within-task POEs were fair to almost perfect agreement ($k=0.429-0.875$), and almost perfect agreement for Total POE score (ICC 0.842) without systematic differences between raters. Smallest detectable change was 0.7 and 5 points for groups and individuals, respectively.

Conclusion

The final test battery (single-leg mini squat, stair descending, forward lunge, single-leg hop for distance) of four POEs (foot pronation, knee medial to foot position, hip joint POEs and trunk segment POEs), demonstrated good measurement properties in people with ACL injury. *J Orthop Sports Phys Ther*, Epub 15 Oct 2017. doi:10.2519/jospt.2017.7270

ACL return

Br J Sports Med. 2017 Sep 27. pii: bjsports-2016-097095. doi: 10.1136/bjsports-2016-097095.

Functional performance 6 months after ACL reconstruction can predict return to participation in the same preinjury activity level 12 and 24 months after surgery.

Nawasreh Z^{1,2}, Logerstedt D^{3,4}, Cummer K¹, Axe M^{5,6}, Risberg MA⁷, Snyder-Mackler L^{1,4,5}.

BACKGROUND:

Assessing athletes' readiness is a key component for successful outcomes after ACL reconstruction (ACLR).

OBJECTIVES:

To investigate whether return-to-activity criteria, individually or in combination, at 6 months after ACLR can predict return to participation in the same preinjury activity level at 12 and 24 months after ACLR.

METHODS:

Ninety-five level I/II participants completed return-to-activity criteria testing (isometric quadriceps index, single-legged hop tests, Knee Outcome Survey-Activities of Daily Living Scale (KOS-ADLS) and Global Rating Score (GRS)) at 6 months after ACLR. The PASS group was defined as scoring >90% on all criteria and the FAIL group as scoring <90% on any criteria. At 12 and 24 months after ACLR, participants were asked if they had returned to participate in the same preinjury activity level or not. All return-to-activity criteria, except quadriceps index, were entered into the logistic regression model.

RESULTS:

81% and 84.4% of the PASS group returned to participation in the same preinjury activity level, while only 44.2% and 46.4% of the FAIL group returned at 12 and 24 months, respectively, after ACLR. The 6-meter timed hop, single hop and triple hop limb symmetry indexes; GRS; and KOS-ADLS individually predicted the outcome of interest at 12 months after ACLR (range: R^2 : 0.12-0.22, $p < 0.024$). In combination, they explained 27% of the variance ($p = 0.035$). All hop tests, individually, predicted the outcome of interest at 24 months after ACLR (range: R^2 : 0.26-0.37; $p < 0.007$); in combination they explained 45% of the variance ($p < 0.001$).

CONCLUSION:

Return to participation in the same preinjury activity level at 12 and 24 months after ACLR was higher in those who passed the criteria compared with those who failed. Individual and combined return-to-activity criteria predicted the outcomes of interest, with the hop tests as consistent predictors at 12 and 24 months after ACLR.

34. PATELLA**Hip and knee strengthening****Hip and Knee Strengthening is More Effective Than Knee Strengthening Alone for Reducing Pain and Improving Activity in Individuals With Patellofemoral Pain: A Systematic Review With Meta-Analysis**

Authors: Lucas R. Nascimento, PT, PhD^{1,2}, Luci F. Teixeira-Salmela, PT, PhD¹, Ricardo B. Souza, PT¹, Renan A. Resende, PT, PhD¹

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**0 **Issue:**0 **Pages:**1–35 **DOI:**10.2519/jospt.2018.7365

Study Design

Systematic review with meta-analysis.

Background

The addition of hip strengthening to knee strengthening for persons with patellofemoral pain has the potential to optimize treatment effects. There is a need to systematically review and pool the current evidence in this area.

Objective

To examine the efficacy of hip strengthening, associated or not with knee strengthening, to increase strength, reduce pain, and improve activity in individuals with patellofemoral pain.

Methods

A systematic review of randomized or controlled trials was performed. Participants in the reviewed studies were individuals with patellofemoral pain and the experimental intervention was hip and/or knee strengthening. Outcome data related to muscle strength, pain, and activity were extracted from the eligible trials and combined using a meta-analysis approach.

Results

Fourteen trials involving 673 participants were included. Random effects meta-analyses revealed that hip and knee strengthening decreased pain (MD -3.3, 95% CI -5.6 to -1.1) and improved activity (SMD 1.4, 95% CI 0.03 to 2.8), compared to no training/placebo. In addition, hip and knee strengthening was superior to knee strengthening alone for decreasing pain (MD -1.5, 95% CI -2.3 to -0.8) and improving activity (SMD 0.7, 95% CI 0.2 to 1.3). Results were maintained beyond the intervention period. Meta-analyses showed no significant changes in strength for any of the interventions.

Conclusions

Hip and knee strengthening is effective and superior to knee strengthening alone for decreasing pain and improving activity in persons with patellofemoral pain, however these outcomes were achieved without a concurrent change in strength.

Level of Evidence

Therapy, Level 1a–. *J Orthop Sports Phys Ther*, Epub 15 Oct 2017. doi:10.2519/jospt.2018.7365

PF pain and gait retraining

J Sci Med Sport. 2017 Oct 2. pii: S1440-2440(17)31233-1. doi: 10.1016/j.jsams.2017.09.187.

Gait retraining versus foot orthoses for patellofemoral pain: a pilot randomised clinical trial.

Bonacci J¹, Hall M², Saunders N³, Vicenzino B⁴.

OBJECTIVES:

To determine the feasibility of a clinical trial that compares a 6-week, physiotherapist-guided gait retraining program with a foot orthoses intervention in runners with patellofemoral pain.

DESIGN:

Pilot randomised controlled trial.

METHODS:

Runners aged 18-40 years with clinically diagnosed patellofemoral pain were randomly allocated to either a 6-week gait retraining intervention of increasing cadence and use of a minimalist shoe or prefabricated foot orthoses. Outcomes at baseline and 12-weeks included recruitment, retention, adherence, adverse events, global improvement, anterior knee pain scale, worst and average pain on a 100mm visual analogue scale.

RESULTS:

Of the 16 randomised participants, two withdrew prior to commencing treatment due to non-trial related matters (n=1 from each group) and 14 completed the pilot trial. Minor calf muscle soreness was reported by 3 participants in the gait retraining group while no adverse events were reported in the foot orthoses group. There were no deviations from the treatment protocols. There was a large between-group difference favouring gait retraining at 12-weeks in the anterior knee pain scale and the worst pain in the past week, which was reflected in the number needed-to-treat of 2.

CONCLUSIONS:

This study supports the feasibility of a trial comparing gait retraining with foot orthoses and provides point estimates of effect that informs the design and planning of a larger clinical trial. It appears that a 6-week gait retraining program has a clinically meaningful effect on runners with patellofemoral pain when compared to an evidence-based treatment of foot orthoses.

41 A. ACHILLES TENDON AND CALF**Post loss of performance****Individuals Post-Achilles Tendon Rupture Exhibit Asymmetrical Knee and Ankle Kinetics and Loading Rates During a Drop Countermovement Jump**

Authors: Hayley C. Powell, PT, ATC¹, Karin Grävare Silbernagel, PT, PhD, ATC^{2,3}, Annelie Brorsson, PT, MSc², Roy Tranberg, CPO, PhD², Richard W. Willy, PT, PhD¹

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2017 **Volume:**0 **Issue:**0 **Pages:**1–37 **DOI:**10.2519/jospt.2018.7684

Study Design

Cross sectional, laboratory study.

Background

Asymmetrical knee loading has been reported in individuals post-Achilles tendon rupture during jogging and hopping. Yet, no studies have examined knee loads in individuals post-Achilles tendon rupture during high demand tasks, such as single limb landings.

Objectives

We sought to determine if individuals post-Achilles tendon rupture demonstrated asymmetrical knee loads and impact forces during drop countermovement jumps (Drop CMJ).

Methods

Achilles tendon length and single leg heel rise test for endurance were assessed in 34 individuals (31 male) 6.1±2.0 years post-Achilles tendon rupture. Movement patterns were assessed during a Drop CMJ. Data were analyzed via repeated measures analyses of variance, with comparisons between limbs and prior treatment history (surgery vs. non-surgery).

Results

An 8.6% longer Achilles tendon ($p=0.001$) was found in the involved limb. During the single leg heel rise test, the involved limb demonstrated 22.6% less endurance and 14.6% lower heel rise height (all $p<0.001$). During the landing phase of the Drop CMJ, the involved limb exhibited 39.6% greater loading rate ($p<0.001$), 116.8% greater eccentric knee power ($p=0.05$), but 21.6% lower eccentric ankle power ($p<0.001$). During the takeoff phase, the involved limb exhibited 12.1% lower jump height and 19.9% lower concentric ankle power (both $p<0.001$).

Conclusions

Elevated eccentric knee joint power and higher loading rates during a Drop CMJ in individuals long term post-Achilles tendon rupture may be a compensation pattern for reduced plantarflexor function. This movement pattern may place individuals who are post-Achilles tendon rupture at greater risk for knee injuries. *J Orthop Sports Phys Ther*, Epub 26 Oct 2017.

doi:10.2519/jospt.2018.7684

41 B. COMPARTMENT SYNDROME**Assessment system**

J Orthop Trauma. 2017 Nov;31(11):600-605. doi: 10.1097/BOT.0000000000000918.

OTA/AO Classification Is Highly Predictive of Acute Compartment Syndrome After Tibia Fracture: A Cohort of 2885 Fractures.

Beebe MJ¹, Auston DA, Quade JH, Serrano-Riera R, Shah AR, Watson DT, Sanders RW, Mir HR.

OBJECTIVE:

To determine the correlation between the OTA/AO classification of tibia fractures and the development of acute compartment syndrome (ACS).

DESIGN:

Retrospective review of prospectively collected database.

SETTING:

Single Level 1 academic trauma center.

PATIENTS:

All patients with a tibia fracture from 2006 to 2016 were reviewed for this study. Three thousand six hundred six fractures were initially identified. Skeletally mature patients with plate or intramedullary fixation managed from initial injury through definitive fixation at our institution were included, leaving 2885 fractures in 2778 patients.

METHODS:

After database and chart review, univariate analyses were conducted using independent t tests for continuous data and χ tests of independence for categorical data. A simultaneous multivariate binary logistic regression was developed to identify variables significantly associated with ACS.

RESULTS:

ACS occurred in 136 limbs (4.7%). The average age was 36.2 years versus 43.3 years in those without ($P < 0.001$). Men were 1.7 times more likely to progress to ACS than women ($P = 0.012$). Patients who underwent external fixation were 1.9 times more likely to develop ACS ($P = 0.003$). OTA/AO 43 injuries were at least 4.0 times less likely to foster ACS versus OTA/AO 41 or 42 injuries ($P < 0.007$). OTA/AO 41-C injuries were 5.5 times more likely to advance to ACS compared with OTA/AO 41-A ($P = 0.03$). There was a significantly higher rate of ACS in OTA/AO 42-B ($P = 0.005$) and OTA/AO 42-C ($P = 0.002$) fractures when compared with OTA/AO 42-A fractures. In the distal segment, fracture type did not predict the risk of ACS ($P > 0.15$). Group 1 fractures had a lower rate of ACS compared with group 2 ($P = 0.03$) and group 3 ($P = 0.003$) fractures in the middle segment only. Bilateral tibia fractures had a 2.7 times lower rate of ACS ($P = 0.04$). Open injury, multiple segment injury, fixation type, and concurrent pelvic or femoral fractures did not predict ACS.

CONCLUSIONS:

In this large cohort of tibia fractures, we found that the age, sex, and OTA/AO classification were highly predictive for the development of ACS.

44. RHUMATOID ARTHRITIS

Autoimmune disorders

Prevalence of co-existing autoimmune disease in rheumatoid arthritis: A cross-sectional study

Advances in Therapy | October 26, 2017

Simon TA, et al.

The goal of this study was to examine the prevalence of co-existing autoimmune disease in the case of rheumatoid arthritis (RA). It was illustrated that the patients with RA displayed more concurrent autoimmune diseases than patients with OA. Hence, the interrelationship between RA and other autoimmune diseases, and outcomes linked with the occurrence of multiple autoimmune diseases could exhibit a significant role in the disease comprehension, management, and treatment decisions.

Methods

- The design of this research was a cross-sectional study.
- It was conducted using a US administrative health-care claims database to screen for the prevalence of multiple autoimmune diseases in patients with RA and osteoarthritis (OA).
- Herein, each patient diagnosed with RA between January 1, 2006 and September 30, 2014 was age- and sex-matched with five patients having OA.
- A comparison was pursued of the prevalence of 37 pre-specified autoimmune diseases during the 24-month period before and after RA or OA diagnosis.

Results

- The authors analyzed 286,601 patients with RA and 992,838 matched patients (from 1,421,624 records) with OA.
- At least one and more than one autoimmune diseases were detected in 24.3% and 6.0% of patients with RA compared with 10.5% and 1.4% of patients with OA, respectively, during the baseline period.
- Highest prevalence rates for patients with RA appeared to be for systemic lupus erythematosus (3.8% versus 0.7% for OA) and psoriatic arthritis (3.2% versus 0.4%).
- The prevalence of ankylosing spondylitis (OR 8.0; 95% CI 7.6, 8.5) and psoriatic arthritis (OR 7.8; 95% CI 7.6, 8.1) displayed highest odds ratios (ORs) comparing RA with OA.

45 A. MANUAL THERAPY LUMBAR & GENERAL**Post-operative manipulation**

J Back Musculoskelet Rehabil. 2017 Sep 22;30(5):999-1004. doi: 10.3233/BMR-169546.

Manipulative rehabilitation applied soon after lumbar disc surgery improves late post-operative functional disability: A preliminary 2-year follow-up study.

Kim BJ¹, Kim T¹, Ahn J^{1,2}, Cho H², Kim D², Yoon B^{1,3}.

BACKGROUND:

Studies have shown late post-operative physical disability and residual pain in patients following lumbar disc surgery despite growing evidence of its beneficial effects. Therefore, rehabilitation is required to minimise the late post-operative complications.

OBJECTIVE:

To assess the feasibility of manipulative rehabilitation to improve late post-operative outcomes.

METHODS:

Twenty-one patients aged 25-65 years undergoing lumbar microdiscectomy were randomly assigned to the rehabilitation group (n= 14) or active control group (n= 7) by simple randomisation. Eight rehabilitation sessions were initiated 2-3 weeks after surgery. Thirty-minute sessions were conducted twice weekly for four weeks. Post-operative physical disability and pain were assessed at baseline and at the two-year follow-up.

RESULTS:

Post-operative physical disability improved more in patients who had undergone rehabilitation than in those who had received control care (63% vs. -23%, $P < 0.05$). Post-operative residual low back and leg pain were alleviated in the treatment group (26% and 57%, respectively), but intensified in the control group (-5% and -8%, respectively).

CONCLUSIONS:

This study demonstrated the potential of manipulative rehabilitation and importance of post-operative management after lumbar disc surgery. Definitive trials with larger sample sizes are required to confirm the feasibility and potential therapeutic effectiveness of this approach.

45 B. MANUAL THERAPY CERVICAL**Traction**

J Back Musculoskelet Rehabil. 2017 Sep 22;30(5):1053-1059. doi: 10.3233/BMR-169644.

The application of a pre-positioned upper cervical traction mobilization to patients with painful active cervical rotation impairment: A case series.

Creighton DS¹, Marsh D², Gruca M³, Walter M⁴.

BACKGROUND:

Cervical mobilization and manipulation have been shown to improve cervical range of motion and pain. Cervical rotatory thrust manipulation has been associated with adverse patient reaction and damage to the V3 segment of the vertebral artery (VA).

OBJECTIVE:

To document and describe the effects of an upper cervical (UC) traction based mobilization on participants with restricted and painful cervical rotation and to document if the mobilization changed blood flow velocity through the vertebral artery.

METHODS:

This case series examined the effects of a traction based spinal mobilization on two different groups of participants. Group I included 93 participants with restricted bilateral cervical rotation that was also painful at end range. Group II included 30 different participants whose VA blood flow velocity was examined during the same mobilization. Pre- and post-mobilization active cervical rotation, pain intensity levels, and VA blood flow velocity during mobilization was documented.

RESULTS:

Paired T-tests were used to determine statistical significance for changes in cervical rotation, and VA blood flow velocity during mobilization. Ninety-three participants in group I demonstrated an average increase of 16 degrees of cervical rotation. No participant demonstrated an increase in pain, and no participant in group II (N= 30) demonstrated a change in VA blood flow velocity.

CONCLUSIONS:

The application this UC traction based mobilization improved active cervical rotation, end range rotation pain response, did not cause pain during its application and did not alter blood flow through the VA during application.

48 A. STM**Friction massage**

Musculoskelet Sci Pract. 2017 Sep 14;32:92-97. doi: 10.1016/j.msksp.2017.09.005.

Cyriax's deep friction massage application parameters: Evidence from a cross-sectional study with physiotherapists.

Chaves P¹, Simões D², Paço M³, Pinho F⁴, Duarte JA⁵, Ribeiro F⁶.

BACKGROUND:

Deep friction massage is one of several physiotherapy interventions suggested for the management of tendinopathy.

OBJECTIVES:

To determine the prevalence of deep friction massage use in clinical practice, to characterize the application parameters used by physiotherapists, and to identify empirical model-based patterns of deep friction massage application in degenerative tendinopathy.

DESIGN:

observational, analytical, cross-sectional and national web-based survey.

METHODS:

478 physiotherapists were selected through snow-ball sampling method. The participants completed an online questionnaire about personal and professional characteristics as well as specific questions regarding the use of deep friction massage. Characterization of deep friction massage parameters used by physiotherapists were presented as counts and proportions. Latent class analysis was used to identify the empirical model-based patterns. Crude and adjusted odds ratios and 95% confidence intervals were computed.

RESULTS:

The use of deep friction massage was reported by 88.1% of the participants; tendinopathy was the clinical condition where it was most frequently used (84.9%) and, from these, 55.9% reported its use in degenerative tendinopathy. The "duration of application" parameters in chronic phase and "frequency of application" in acute and chronic phases are those that diverge most from those recommended by the author of deep friction massage.

CONCLUSION:

We found a high prevalence of deep friction massage use, namely in degenerative tendinopathy. Our results have shown that the application parameters are heterogeneous and diverse. This is reflected by the identification of two application patterns, although none is in complete agreement with Cyriax's description.

49. STRETCHING**Comparison**

J Phys Ther Sci. 2017 Sep; 29(9): 1518–1521. Published online 2017 Sep 15. doi: 10.1589/jpts.29.1518 PMID: PMC5599812

Comparison of immediate effects between two medical stretching techniques on Hamstrings flexibility

Thanda Aye,^{1,3,*} Tsugumi Kuramoto-Ahuja,^{1,2} Heonsoo Han,^{1,2} and Hitoshi Maruyama^{1,2}

[Purpose] The aim of this study was to compare immediate effects between new medical stretching (NMS) and conventional medical stretching (CMS) techniques on Hamstrings flexibility.

[Subjects and Methods] Thirteen healthy adult males, with finger floor distance (FFD) less than zero centimeter, without known musculoskeletal and neurological impairment in spine or lower extremities, were included. The subjects were randomly allocated to two groups. The subjects were instructed to perform NMS and CMS (hold for 30 seconds once, twice for each side of lower extremity) for both sides (total two minutes, only one session for one day). The interval between the two techniques was one week. FFD was measured with digital standing trunk flexion meter at the pre-intervention and post-intervention of both techniques.

[Results] The mean values of FFD improved at the post-interventions of both techniques. The tests of within subject effects indicated that the main effect of treatment was not significant but the main effect of time was significant and the interaction of treatment and time was also significant.

[Conclusion] The results of this study indicated that both medical stretching techniques were effective on Hamstrings flexibility immediately after the intervention and NMS technique was more effective on improving flexibility.

50 B. PNF**Cross training**

Eur J Appl Physiol. 2017 Nov;117(11):2335-2354. doi: 10.1007/s00421-017-3720-z. Epub 2017 Sep 21.

Cross-education of muscular strength following unilateral resistance training: a meta-analysis.

Manca A1, Dragone D1, Dvir Z2, Deriu F3.

PURPOSE:

Cross-education (CE) of strength is a well-known phenomenon whereby exercise of one limb can induce strength gains in the contralateral untrained limb. The only available meta-analyses on CE, which date back to a decade ago, estimated a modest 7.8% increase in contralateral strength following unilateral training. However, in recent years new evidences have outlined larger contralateral gains, which deserve to be systematically evaluated. Therefore, the aim of this meta-analysis was to appraise current data on CE and determine its overall magnitude of effect.

METHODS:

Five databases were searched from inception to December 2016. All randomized controlled trials focusing on unilateral resistance training were carefully checked by two reviewers who also assessed the eligibility of the identified trials and extracted data independently. The risk of bias was assessed using the Cochrane Risk-of-Bias tool.

RESULTS:

Thirty-one studies entered the meta-analysis. Data from 785 subjects were pooled and subgroup analyses by body region (upper/lower limb) and type of training (isometric/concentric/eccentric/isotonic-dynamic) were performed. The pooled estimate of CE was a significant 11.9% contralateral increase (95% CI 9.1-14.8; $p < 0.00001$; upper limb: +9.4%, $p < 0.00001$; lower limb: +16.4%, $p < 0.00001$). Significant CE effects were induced by isometric (8.2%; $p = 0.0003$), concentric (11.3%; $p < 0.00001$), eccentric (17.7%; $p = 0.003$) and isotonic-dynamic training (15.9%; $p < 0.00001$), although a high risk of bias was detected across the studies.

CONCLUSIONS:

Unilateral resistance training induces significant contraction type-dependent gains in the contralateral untrained limb. Methodological issues in the included studies are outlined to provide guidance for a reliable quantification of CE in future studies.

52. EXERCISE**Ex and LBP**

Am J Epidemiol. 2017 Oct 19. doi: 10.1093/aje/kwx337.

Exercise for the Prevention of Low Back Pain: Systematic Review and Meta-Analysis of Controlled Trials.

Shiri R, Coggon D, Falah-Hassani K.

Abstract

The aim of this systematic review and meta-analysis was to assess the effect of exercise in population-based interventions to prevent low back pain (LBP) and associated disability.

Comprehensive literature searches were conducted in multiple databases including PubMed, Embase, and Cochrane Library from their inception through June 2017. Thirteen randomized controlled trials and three non-randomized controlled trials qualified for meta-analyses. Exercise alone reduced the risk of LBP by 33% (risk ratio = 0.67, 95% CI: 0.53, 0.85, I² = 23%, 8 randomized controlled trials, n = 1,634) and exercise combined with education by 27% (risk ratio = 0.73, 95% CI: 0.59, 0.91, I² = 6%, 6 trials, n = 1,381). The severity of LBP and disability from LBP were also lower in exercise than control groups. Moreover, results were not changed by excluding the non-randomized controlled trials, or by adjustment for publication bias. Few trials assessed healthcare consultation or sick leave for LBP, and meta-analyses did not show statistically significant protective effects of exercise on those outcomes.

Exercise reduces the risk of LBP and associated disability, and a combination of strengthening with either stretching or aerobic exercises performed 2-3 times/week can reasonably be recommended for prevention of LBP in the general population.

Ex and dementia

BMJ Open. 2017 Oct 22;7(10):e014706. doi: 10.1136/bmjopen-2016-014706.

Leisure time physical activity and dementia risk: a dose-response meta-analysis of prospective studies.

Xu W¹, Wang HF², Wan Y², Tan CC², Yu JT², Tan L^{1,2}.

BACKGROUND:

There is considerable evidence of the favourable role of more physical activity (PA) in fighting against dementia. However, the shape of the dose-response relationship is still unclear.

OBJECTIVE:

To quantitatively investigate the relationship between dementia and PA.

DESIGN:

PubMed, EMBASE, Ovid and the Cochrane Library were searched for prospective studies published from 1 January 1995 to 15 October 2016. Two types of meta-analyses were performed with a focus on the dose-response relationship using two stage generalised least squares regression.

RESULTS:

The primary analysis exhibited a dose-response trend for all-cause dementia (ACD), Alzheimer's disease (AD) but not for vascular dementia (VD). In the dose-response analysis, either ACD ($p_{\text{trend}} < 0.005$; $p_{\text{non-linearity}} = 0.87$) or AD ($p_{\text{trend}} < 0.005$; $p_{\text{non-linearity}} = 0.10$) exhibited a linear relationship with leisure time PA (LTPA) over the observed range (0-2000 kcal/week or 0-45 metabolic equivalent of task hours per week (MET-h/week)). Specifically, for every 500 kcal or 10 MET-h increase per week, there was, on average, 10% and 13% decrease in the risk of ACD and AD, respectively.

CONCLUSIONS:

We have reported, for the first time, the dose-response relationship between LTPA and dementia, further supporting the international PA guideline from the standpoint of dementia prevention.

Inhibition and exercise

Eur J Neurosci. 2017 Sep 18. doi: 10.1111/ejn.13710.

Corticospinal responses following strength training: a systematic review and meta-analysis.

Kidgell DJ¹, Bonanno DR^{2,3}, Frazer AK¹, Howatson G^{4,5}, Pearce AJ⁶.

Strength training results in changes in skeletal muscle; however, changes in the central nervous system also occur. Over the last 15 years, non-invasive brain stimulation techniques, such as transcranial magnetic stimulation, have been used to study the neural adaptations to strength training.

This review explored the hypothesis that the neural adaptations to strength training may be due to changes in corticospinal excitability and inhibition and, such changes, contribute to the gain in strength following strength training. A systematic review, according to PRISMA guidelines, identified studies by database searching, hand-searching and citation tracking between January 1990 and the first week of February 2017. Methodological quality of included studies was determined using the Downs and Black quality index. Data were synthesised and interpreted from meta-analysis. Nineteen studies investigating the corticospinal responses following strength training were included. Meta-analysis found that strength training increased strength [standardised mean difference (SMD) 0.84, 95% CI 0.55 to 1.13], decreased short-interval intracortical inhibition (SMD -1.00, 95% CI -1.84 to -0.17) and decreased the cortical silent period (SMD -0.66, 95% CI -1.00 to -0.32). Strength training had no effect on motor threshold (SMD -0.12, 95% CI -0.49 to 0.25), but a borderline effect for increased corticospinal excitability (SMD 0.27, 95% CI 0.00 to 0.54). In untrained healthy participants, the corticospinal response to strength training is characterised by reduced intracortical inhibition and cortical silent period duration, rather than changes in corticospinal excitability.

These data demonstrate that strength training targets intracortical inhibitory networks within the primary motor cortex (M1) and corticospinal pathway, characterising an important neural adaptation to strength training.

54. POSTURE**Postural control and LBP**

Eur Spine J. 2017 Oct 25. doi: 10.1007/s00586-017-5355-5.

Effects of lumbosacral orthoses on postural control in individuals with or without non-specific low back pain.

Mi J¹, Ye J¹, Zhao X¹, Zhao J².

OBJECTIVE:

To investigate the effect of lumbosacral orthoses (LSOs) on postural control in individuals with or without non-specific low back pain (NSLBP).

METHODS:

Individuals with NSLBP (n = 28) and healthy controls (n = 28) were enrolled to assess the postural control with or without LSOs. Postural control was tested using the Balance Master[®] NeuroCom system by the modified clinical test of sensory interaction and balance.

RESULTS:

Relative to controls, patients with NSLBP had deficits in postural control with greater center of pressure (COP) sway velocity when standing on firm surface (with eyes open: p = 0.002; with eyes closed: p = 0.002) and standing on foam surface (with eyes open: p = 0.024; with eyes closed: p < 0.001). In the braced condition, the COP sway decreased in all subjects with or without NSLBP when standing on foam surface. There was no significant difference in the effect of LSOs on postural control between NSLBP group and healthy controls.

CONCLUSION:

Individuals with NSLBP have poorer postural control than controls. LSOs seem to improve postural control when standing on unstable surfaces in subjects with or without NSLBP. The effect of LSOs on postural control may not depend on the level of baseline.

58. RUNNING**Aging runners**

Med Sci Sports Exerc. 2017 Oct 9. doi: 10.1249/MSS.0000000000001452.

Biomechanical Implications of Training Volume and Intensity in Aging Runners.

Paquette MR¹, DeVita P, Williams DSB 3rd.

Running speed is slower in middle-aged compared to younger runners due to reduced ankle but not hip and knee kinetic output. Running-specific training helps attenuate age-related declines in measures of endurance, muscle strength and gait speed. Considering the adaptability of the human body in response to imposed stresses, maintaining training volume and intensity may play a role in modifying running biomechanics in middle-aged runners.

PURPOSE:

To compare running biomechanics between young and middle-aged runners when controlling for the confounding effects of training volume and intensity.

METHODS:

15 middle-aged runners, 15 young runners with similar training volume as the middle-aged group and, 15 young runners with similar preferred training paces (i.e. intensity) as the middle-aged runners participated in the study. Lower limb joint kinetics were calculated from kinematic and ground reaction force data during over-ground running at a submaximal speed and compared among groups.

RESULTS:

Middle-aged runners ran with similar peak ankle power compared to volume-matched younger runners although peak plantarflexor moment was 10.5% lower in the middle aged group ($p = 0.046$; Cohen's $d = 0.78$). Middle-aged runners ran with similar ankle plantarflexor moment and joint power compared to training pace-matched young runners. As expected, no age-related differences were observed in hip and knee kinetics when training volume or pace were matched between age groups. These results suggest that training pace may be more effective in attenuating age-related declines in plantarflexor kinetics in middle-aged runners.

CONCLUSION:

From these findings, we propose the hypothesis that both training volume and training pace may play a role in maintaining plantarflexor kinetics but that training pace may have a greater impact on ankle plantarflexor kinetics in middle-aged runners.

59. PAIN**Chronic pain reduces mortality**

Ann Rheum Dis. 2017 Nov;76(11):1815-1822. doi: 10.1136/annrheumdis-2017-211476. Epub 2017 Jul 21.

Persons with chronic widespread pain experience excess mortality: longitudinal results from UK Biobank and meta-analysis.

Macfarlane GJ^{1,2}, Barnish MS^{1,2}, Jones GT^{1,2}.

OBJECTIVE:

It is uncertain whether persons with chronic widespread pain (CWP) experience premature mortality. Using the largest study conducted, we determine whether such a relationship exists, estimate its magnitude and establish what factors mediate any relationship.

METHODS:

UK Biobank, a cohort study of 0.5 million people aged 40-69 years, recruited throughout Great Britain in 2006-2010. Participants reporting 'pain all over the body' for >3 months were compared with persons without chronic pain. Information on death (with cause) was available until mid-2015. We incorporated these results in a meta-analysis with other published reports to calculate a pooled estimate of excess risk.

RESULTS:

7130 participants reported CWP and they experienced excess mortality (mortality risk ratio 2.43, 95%CI 2.17 to 2.72). Specific causes of death in excess were cancer (1.73_{adjusted age and sex}, 95% CI 1.46 to 2.05), cardiovascular (3.24_{adjusted age and sex}, 95% CI 2.55 to 4.11), respiratory (5.66_{adjusted age and sex}, 95% CI 4.00 to 8.03) and other disease-related causes (4.04_{adjusted age and sex}, 95% CI 3.05 to 5.34). Excess risk was substantially reduced after adjustment for low levels of physical activity, high body mass index, poor quality diet and smoking. In meta-analysis, all studies showed significant excess all-cause (combined estimate 1.59 (95% CI 1.05 to 2.42)), cardiovascular and cancer mortality.

CONCLUSIONS:

Evidence is now clear that persons with CWP experience excess mortality. UK Biobank results considerably reduce uncertainty around the magnitude of excess risk and are consistent with the excess being explained by adverse lifestyle factors, which could be targeted in the management of such patients.

62 A. NUTRITION/VITAMINS**Carbohydrates and waist circumference**

J Nutr. 2017 Oct 25. pii: jn254078. doi: 10.3945/jn.117.254078.

Carbohydrate Taste Sensitivity Is Associated with Starch Intake and Waist Circumference in Adults.

Low JY¹, Lacy KE², McBride RL¹, Keast RS³.

Background: Recent studies have proposed that humans may perceive complex carbohydrates and that sensitivity to simple carbohydrates is independent of sensitivity to complex carbohydrates. Variation in oral complex carbohydrate sensitivity may influence food consumption

Objective: This study aimed to investigate the associations between oral complex carbohydrate sensitivity, anthropometry, and dietary intake in adults.

Methods: We assessed oral sensitivity to complex carbohydrates (maltodextrin and oligofructose) by measuring detection thresholds (DTs) and suprathreshold intensity perceptions (STs) for 34 participants, including 16 men (mean \pm SEM age : 26.2 \pm 0.4 y; range: 24-30 y) and 18 women (age: 29.4 \pm 2.1 y; range: 24-55 y). We also measured height, weight, and waist circumference (WC) and participants completed a 4-d food diary and a food-frequency questionnaire.

Results: Measurements of oral sensitivity to complex carbohydrates were significantly correlated with WC and dietary energy and starch intakes (DT: $r = -0.38$, $P < 0.05$; ST: $r = 0.36-0.48$, $P < 0.05$). When participants were grouped into tertiles, there were significant differences in WC and total energy or starch intakes for those who were more sensitive or experienced high intensity compared with those who were less sensitive or experienced low intensity. Being more sensitive or experiencing high intensity was associated with greater energy (7968-8954 kJ/d) and starch (29.1-29.8% of energy) intakes and a greater WC (88.2-91.4 cm) than was being less sensitive or experiencing low intensity (6693-7747 kJ/d, 20.9-22.2% of energy, and 75.5-80.5 cm, respectively).

Conclusion: Complex carbohydrate sensing is associated with WC and consumption of complex carbohydrates and energy in adults. This trial was registered at anzctr.org.au as ACTRN12616001356459.

Vit D helps heart patients

Herz. 2017 Oct 9. doi: 10.1007/s00059-017-4630-x

Vitamin D deficiency and functional response to CRT in heart failure patients.

Separham A¹, Pourafkari L^{1,2}, Kazemi B¹, Haghizadeh Y¹, Akbarzadeh F¹, Toufan M¹, Sate H¹, Nader ND³.

BACKGROUND:

Vitamin D deficiency has been associated with a poor outcome in patients with heart failure (HF). We examined the role of vitamin D in the response of HF patients to cardiac resynchronization therapy (CRT).

METHODS:

The study comprised 50 patients (30 men and 20 women) with HF undergoing CRT implantation who were prospectively enrolled. Response to CRT was defined as a combination of $\geq 15\%$ reduction in left ventricular end-systolic volume (LVESV) and $\geq 10\%$ improvement in the 6-Minute Walk Test within 6 months. Patients were grouped based on their levels of vitamin D prior to CRT implantation. Clinical and echocardiographic examinations were performed prior to and 6 months after the procedure.

RESULTS:

Of the patients, 11 (22%) failed to respond to CRT; two patients died within 6 months and an additional nine patients showed no improvement in the 6-Minute Walk Test and no reduction in their baseline LVESV. A comparison was made between 25 patients with sufficient levels of vitamin D and 25 patients with insufficient levels. Nine patients (36%) in the "insufficient" group and two patients (8%) in the "sufficient" group failed to respond to CRT implantation ($p = 0.037$).

CONCLUSION:

Adequate serum concentrations of vitamin D play a significant role in improving the functional status of patients with systolic HF following CRT implantation.

Mindfulness based system helps weight loss

Obes Rev. 2017 Oct 27. doi: 10.1111/obr.12623

Mindfulness-based interventions for weight loss: a systematic review and meta-analysis.

Carrière K¹, Khoury B^{2,3}, Günak MM⁴, Knäuper B¹.

BACKGROUND:

An increasing number of studies are investigating the efficacy of mindfulness-based interventions (MBIs) for weight loss and obesity-related eating behaviours. However, the results of past reviews are inconsistent.

OBJECTIVE:

To clarify these inconsistencies, we conducted a comprehensive effect-size analysis to evaluate the efficacy of MBIs on weight loss and eating behaviours.

DATA SOURCE:

Data sources were identified through a systematic review of studies published in journals or as dissertations in PsychINFO, PubMed, CINAHL, Web of Science, Medline and Scopus, ProQuest or OATD from the first available date to March 10, 2017.

REVIEW METHODS:

A total of 18 publications (19 studies, n = 1,160) were included.

RESULTS:

Mean weight loss for MBIs at post-treatment was 6.8 and 7.5 lb at follow-up. In pre-post comparisons, effect-size estimates suggest that MBIs are moderately effective for weight loss (n = 16; Hedge's g = .42; 95% CI [.26, .59], p < .000001) and largely effective in reducing obesity-related eating behaviours (n = 10; Hedge's g = .70; CI 95% [.36, 1.04], p < .00005). Larger effects on weight loss were found in studies that used a combination of informal and formal meditation practice (n = 6; Hedge's g = .55; CI 95% [.32, .77], p < .00001) compared with formal meditation practice alone (n = 4; Hedge's g = .46; CI [.10, .83], p < .05).

CONCLUSION:

Results suggest that MBIs are effective in reducing weight and improving obesity-related eating behaviours among individuals with overweight and obesity. Further research is needed to examine their efficacy for weight loss maintenance.

Sugar and Alzheimer's

Am J Clin Nutr. 2017 Oct 25. pii: ajcn162263. doi: 10.3945/ajcn.117.162263. \

A high-glycemic diet is associated with cerebral amyloid burden in cognitively normal older adults.

Taylor MK^{1,2}, Sullivan DK^{1,2}, Swerdlow RH², Vidoni ED², Morris JK², Mahnken JD^{3,2}, Burns JM⁴.

Background: Little is known about the relation between dietary intake and cerebral amyloid accumulation in aging.

Objective: We assessed the association of dietary glycemic measures with cerebral amyloid burden and cognitive performance in cognitively normal older adults.

Design: We performed cross-sectional analyses relating dietary glycemic measures [adherence to a high-glycemic-load diet (HGLDiet) pattern, intakes of sugar and carbohydrates, and glycemic load] with cerebral amyloid burden (measured by florbetapir F-18 positron emission tomography) and cognitive performance in 128 cognitively normal older adults who provided eligibility screening data for the University of Kansas's Alzheimer's Prevention through Exercise (APEX) Study. The study began in November 2013 and is currently ongoing.

Results: Amyloid was elevated in 26% (n = 33) of participants. HGLDiet pattern adherence (P = 0.01), sugar intake (P = 0.03), and carbohydrate intake (P = 0.05) were significantly higher in participants with elevated amyloid burden. The HGLDiet pattern was positively associated with amyloid burden both globally and in all regions of interest independently of age, sex, and education (all P ≤ 0.001). Individual dietary glycemic measures (sugar intake, carbohydrate intake, and glycemic load) were also positively associated with global amyloid load and nearly all regions of interest independently of age, sex, and educational level (P ≤ 0.05). Cognitive performance was associated only with daily sugar intake, with higher sugar consumption associated with poorer global cognitive performance (global composite measure and Mini-Mental State Examination) and performance on subtests of Digit Symbol, Trail Making Test B, and Block Design, controlling for age, sex, and education.

Conclusion: A high-glycemic diet was associated with greater cerebral amyloid burden, which suggests diet as a potential modifiable behavior for cerebral amyloid accumulation and subsequent Alzheimer disease risk.