

2. LBP

Biopsychosocial model

Musculoskelet Sci Pract. 2018 Dec;38:113-119. doi: 10.1016/j.msksp.2018.10.006. Epub 2018 Nov 1.

Perceptions of physiotherapists towards the management of non-specific chronic low back pain from a biopsychosocial perspective: A qualitative study.

Cowell I¹, O'Sullivan P², O'Sullivan K³, Poyton R⁴, McGregor A⁴, Murtagh G⁴.

BACKGROUND:

Physiotherapists have been urged to embrace a patient-oriented biopsychosocial (BPS) framework for the management of non-specific chronic low back pain (NSCLBP). However, recent evidence suggests that providing broader BPS interventions demonstrates small differences in pain or disability compared to usual care. Little is known about how to integrate a BPS model into physiotherapy practice and the challenges it presents.

OBJECTIVE:

To explore the perceptions of physiotherapists' in primary care in England adopting a BPS approach to managing NSCLBP patients.

METHOD:

Qualitative semi-structured interviews were conducted with ten physiotherapists working in primary care. A purposive sampling method was employed to seek the broadest perspectives. Thematic analysis was used to analyse the interview transcripts and capture the emergent themes.

RESULTS:

Three main themes emerged: (1) physiotherapists recognised the multi-dimensional nature of NSCLBP and the need to manage the condition from a BPS perspective, (2) addressing psychological factors was viewed as challenging due to a lack of training and guidance, (3) engaging patients to self-manage their NSCLBP was seen as a key objective.

CONCLUSION:

Although employing a BPS approach is recognised by physiotherapists in the management of NSCLBP, this study highlights the problems of implementing evidence based guidelines recommending that psychological factors be addressed but providing limited support for this. It also supports the need to allocate more time to explore these domains in distressed individuals. Engaging patients to self-manage was seen as a key objective, which was not a straightforward process, requiring careful negotiation.

Fear avoidance problems

BMC Musculoskelet Disord. 2018 Dec 3;19(1):431. doi: 10.1186/s12891-018-2351-9.

Fear avoidance beliefs as a predictor for long-term sick leave, disability and pain in patients with chronic low back pain.

Trinderup JS¹, Fisker A², Juhl CB^{3,4}, Petersen T⁵.

BACKGROUND:

Subgrouping patients with chronic low back pain is recommended prior to selecting treatment strategy, and fear avoidance beliefs is a commonly addressed psychological factor used to help this subgrouping. The results of the predictive value of fear avoidance beliefs in patients with chronic low back pain in prognostic studies are, however, not in concordance. Therefore, the objective of this study was to examine the association between fear avoidance beliefs at baseline and unsuccessful outcome on sick leave, disability and pain at 12-month follow-up in patients with entirely chronic low back pain.

METHODS:

A secondary analysis of data from a randomised controlled trial. Patients with chronic low back pain (n = 559) completed questionnaires at baseline and after 12 months. Multiple logistic regression analyses were conducted to examine the association between fear avoidance beliefs and the outcomes sick leave, disability and pain.

RESULTS:

Higher fear avoidance beliefs about work at baseline were found to be significantly associated with still being on sick leave (OR 1.11; 95% CI 1.02-1.20) and having no reduction in pain (OR 1.04; 95% CI 1.01-1.08) after 12 months and may be associated with having no reduction in disability (OR 1.03; 95% CI 1.00-1.06) after 12 months (lower limit of 95% CI close to 1.00). Fear avoidance beliefs about physical activity were not found to be associated with the three outcomes.

CONCLUSIONS:

High fear avoidance beliefs about work are associated with continuous sick leave after 1 year in patients with chronic low back pain. This finding might assist clinicians in choosing targeted treatment strategies in subgroups of working patients with chronic low back pain.

Kinesio tape and LBP

**Effectiveness of Kinesio Taping in Patients With Chronic Nonspecific Low Back Pain
A Systematic Review With Meta-analysis**

Luz Júnior, Maurício Antônio Da, PT, MSc*, †; Almeida, Matheus Oliveira De, PT, PhD*; Santos, Raiany Silva, PT †; Civile, Vinicius Tassoni, PT †, ‡; Costa, Leonardo Oliveira Pena, PT, PhD*

Spine: January 1, 2019 - Volume 44 - Issue 1 - p 68-78
doi: 10.1097/BRS.0000000000002756

Study Design. Systematic review.

Objective. To investigate the effects of Kinesio Taping (KT) in patients with nonspecific low back pain.

Summary of Background Data. KT is widely used in patients with low back pain.

Methods. We conducted searches on PubMed, EMBASE, PEDro, SciELO, and LILACS up to February 26, 2018. We included only randomized controlled trials (RCTs) in adults with chronic nonspecific low back pain that compared KT to no intervention or placebo as well as RCTs that compared KT combined with exercise against exercise alone. The methodological quality and statistical reporting of the eligible trials were measured by the 11-item PEDro scale. The quality of the evidence was assessed using the GRADE classification. We considered pain intensity and disability as the primary outcomes. Whenever possible, the data were pooled through meta-analysis.

Results. We identified 11 RCTs for this systematic review (pooled n = 743). Two clinical trials (pooled n = 100) compared KT to no intervention at the short-term follow-up. Four studies compared KT to placebo (pooled n = 287) at short-term follow-up and two trials (pooled n = 100) compared KT to placebo at intermediate-term follow-up. Five trials (pooled n = 296) compared KT combined with exercises or electrotherapy to exercises or spinal manipulation alone. No statistically significant difference was found for most comparisons.

Conclusion. Very low to moderate quality evidence shows that KT was no better than any other intervention for most the outcomes assessed in patients with chronic nonspecific low back pain. We found no evidence to support the use of KT in clinical practice for patients with chronic nonspecific low back pain.

Level of Evidence: 1

7. PELVIC ORGANS/WOMAN'S HEALTH

Longer lactation period improves prevention of Fatty liver disease

J Hepatol. 2019 Jan;70(1):126-132. doi: 10.1016/j.jhep.2018.09.013. Epub 2018 Nov 1.

Longer lactation duration is associated with decreased prevalence of non-alcoholic fatty liver disease in women.

Ajmera VH¹, Terrault NA², VanWagner LB³, Sarkar M², Lewis CE⁴, Carr JJ⁵, Gunderson EP⁶.

BACKGROUND & AIMS:

Lactation lowers blood glucose and triglycerides, and increases insulin sensitivity. We hypothesized that a longer duration of lactation would be associated with lower prevalence of non-alcoholic fatty liver disease (NAFLD), which is the leading cause of chronic liver disease in the United States.

METHODS:

Participants from the Coronary Artery Risk Development in Young Adults cohort study who delivered ≥ 1 child post-baseline (Y0: 1985-1986), and underwent CT quantification of hepatic steatosis 25 years following cohort entry (Y25: 2010-2011) were included (n = 844). The duration of lactation was summed for all post-baseline births, and NAFLD at Y25 was assessed by central review of CT images and defined by liver attenuation ≤ 40 Hounsfield Units after exclusion of other causes of hepatic steatosis. Unadjusted and multivariable logistic regression analyses were performed using an a priori set of confounding variables; age, race, education, and baseline body mass index.

RESULTS:

Of 844 women who delivered after baseline (48% black, 52% white, mean age 49 years at Y25 exam), 32% reported lactation duration of 0 to 1 month, 25% reported >1 to 6 months, 43% reported more than 6 months, while 54 (6%) had NAFLD. Longer lactation duration was inversely associated with NAFLD in unadjusted logistic regression. For women who reported >6 months lactation compared to those reporting 0-1 month, the odds ratio for NAFLD was 0.48 (95% CI 0.25-0.94; p = 0.03) and the association remained after adjustment for confounders (adjusted odds ratio 0.46; 95% CI 0.22-0.97; p = 0.04).

CONCLUSIONS:

A longer duration of lactation, particularly greater than 6 months, is associated with lower odds of NAFLD in mid-life and may represent a modifiable risk factor for NAFLD.

LAY SUMMARY:

A longer duration of breastfeeding has been associated with multiple potential health benefits for the mother including reduction in heart disease, diabetes and certain cancers. In this study we found that breastfeeding for longer than 6 months was associated with a lower risk of non-alcoholic fatty liver disease in mid-life.

Pelvic floor disorders

Association of delivery mode with pelvic floor disorders after childbirth

JAMA — Blomquist JL, et al. | December 20, 2018

In this cohort study of 1528 women, researchers described the incidence of pelvic floor disorders (eg, urinary incontinence), which affect approximately 25% of women in the US, after childbirth and identified maternal and obstetrical characteristics related to patterns of incidence 1 to 2 decades after delivery. Findings suggested an association of cesarean delivery with significantly lower hazard for stress urinary incontinence, overactive bladder, and pelvic organ prolapse vs spontaneous vaginal delivery. On the other hand, operative vaginal delivery was linked to the significantly higher hazard of anal incontinence and pelvic organ prolapse. An association was found between a larger genital hiatus and increased risk of pelvic organ prolapse regardless of the mode of delivery.

Methods

- For this cohort study, women were recruited from a community hospital 5 to 10 years after their first delivery and followed up annually for up to 9 years.
- Recruitment was based on delivery methods; delivery groups were matched for age and years after first delivery.
- Of the 4072 women who were eligible, 1528 were registered between October 2008 and December 2013.
- Through April 2017, annual follow-up continued.
- Participants were categorized as follows: cesarean birth (cesarean deliveries only), spontaneous vaginal birth (≥ 1 spontaneous vaginal delivery and no operative vaginal deliveries), or operative vaginal birth (≥ 1 operative vaginal delivery).
- Main outcomes and measures included stress urinary incontinence (SUI), overactive bladder (OAB), and anal incontinence (AI), defined using validated threshold scores from the Epidemiology of Prolapse and Incontinence Questionnaire, and pelvic organ prolapse (POP), measured using the Pelvic Organ Prolapse Quantification Examination.
- Using parametric methods, cumulative incidences by delivery group were estimated.
- Using semiparametric models, hazard ratios by exposure were estimated.

Results

- Of the 1528 women (778 in the cesarean birth group, 565 in the spontaneous vaginal birth group, and 185 in the operative vaginal birth group), the median age at first delivery was 30.6 years, 1092 women (72%) were multiparous at enrollment (2887 total deliveries), and the median age at registration was 38.3 years.
- There were 138 cases of SUI, 117 cases of OAB, 168 cases of AI, and 153 cases of POP during a median follow-up of 5.1 years (7804 person-visits).
- The 15-year cumulative incidences of pelvic floor disorders after first delivery were as follows: SUI, 34.3% (95% CI, 29.9%-38.6%); OAB, 21.8% (95% CI, 17.8%-25.7%); AI, 30.6% (95% CI, 26.4%-34.9%), and POP, 30.0% (95% CI, 25.1%-34.9%) for spontaneous vaginal delivery (reference).
- Cesarean delivery was correlated with significantly lower hazard of SUI (adjusted hazard ratio [aHR], 0.46 [95% CI, 0.32-0.67]), OAB (aHR, 0.51 [95% CI, 0.34-0.76]), and POP (aHR, 0.28 [95% CI, 0.19-0.42]) compared to spontaneous vaginal delivery.
- On the other hand, operative vaginal delivery was related to significantly higher hazard of AI (aHR, 1.75 [95% CI, 1.14-2.68]) and POP (aHR, 1.88 [95% CI, 1.28-2.78]).
- Hazard ratios for POP, stratifying by delivery mode, were 3.0 (95% CI, 1.7-5.3) for a genital hiatus of 3 cm and 9.0 (95% CI, 5.5-14.8) for a genital hiatus of more than or equal to 3.5 cm (95% CI, 5.5-14.8).

Alcohol use increase adult renal problems

Original Article

Maternal alcohol consumption during pregnancy and its association with offspring renal function at 30 years: Observation from a birth cohort study

SUMON K DAS, HAROLD D MCINTYRE, ROSA ALATI ABDULLAH AL MAMUN

SUMMARY AT A GLANCE

This manuscript describes that maternal alcohol exposure during early and late pregnancy is associated with development of mild CKD in their offspring at 30 years.

ABSTRACT:

Aim: Prenatal exposure to alcohol has adverse ramifications on foetal development resulting in developmental abnormalities and major congenital anomalies. Experimental studies have documented effects on kidney structure and function among offspring exposed to alcohol during foetal life; however, human evidence is scarce. Thus, the present study aimed to determine the development of CKD among a cohort of 30-year-old Australian offspring whose mothers reported consumption of alcohol during pregnancy.

Methods: The study sample comprised 1626 offspring of the Australia cohort study (MUSP) whose serum creatinine was assessed at 30 years of age and CKD was categorized from stage 1 to stage 5 based on their level of eGFR following the CKD-EPI definition.

Results: Seven percent (n = 111) of offspring had mild (stage 2) CKD at 30 years. The overall adjusted odds of CKD were 2.10 (95% CI 1.02 to 4.33) for offspring of moderate to heavy drinking mothers in late pregnancy, 1.59 (0.69 to 3.66) for early pregnancy and 1.23 (0.75 to 2.04) for pre-pregnancy. The association was higher for female offspring—2.84 (1.07 to 7.54) for late pregnancy and 2.94 (1.10 to 7.88) for early pregnancy. Higher but insignificant odds were found for male offspring at late pregnancy 1.51 (0.49 to 4.73) only.

Conclusion: Maternal alcohol exposure during early and late pregnancy is associated with development of mild CKD in their offspring at 30 years. This association is stronger for female than male offspring

8. VISCERA

Nut consumption not related to CA

Nut and peanut butter consumption and the risk of lung cancer and its subtypes: A prospective cohort study

Lung Cancer — Nieuwenhuis L, et al. | December 20, 2018

Using data from the Netherlands Cohort Study, which included 120,852 study participants aged 55-69 years, researchers examined the link between total nut, tree nut, peanut, and peanut butter intake and the risk of lung cancer and its subtypes. They evaluated responses to questionnaire items assessing dietary and lifestyle habits that were completed by study participants in 1986. After 20.3-year follow-up period, 3,720 subcohort members and 2,861 individuals with lung cancer were included in the multivariable case-cohort analyses.

Overall, the investigators found no significant association of total nut intake with total lung cancer risk among men or women. However, they did note a possible contribution of increased nut intake for preventing small cell carcinoma in men. They did not observe any significant links in men for the other subtypes or total lung cancer, in women, or for peanut butter intake

Dairy and CHD

Consumption of dairy product and its association with total and cause specific mortality - A population-based cohort study and meta-analysis

Clinical Nutrition — Mazidi M, et al. | December 20, 2018

Using data from the 1999-2010 National Health and Nutrition Examination Surveys (NHANES) study, researchers investigated if consumption of total dairy and dairy subgroups was correlated with total and cause-specific (coronary heart diseases [CHD], cerebrovascular, and cancer) mortality. The NHANES data set included 24,474 participants, among whom 3,520 deaths occurred during follow up. According to findings, higher total dairy consumption may be associated with lower total cerebrovascular mortality in US adults. Higher milk consumption, on the other hand, was noted to be linked to a higher risk of CHD.

Meat consumption and CR CA

Association between intake of red and processed meat and survival in patients with colorectal cancer in a pooled analysis

Clinical Gastroenterology and Hepatology — Carr PR, et al. | December 20, 2018

Using Cox proportional hazards regression models, researchers assessed the correlations of intake of red and processed meat before diagnosis with overall and colorectal cancer (CRC)-specific survival. Data were drawn from 7627 patients with stage I-IV CRC from 10 studies in the International Survival Analysis in Colorectal Cancer Consortium. Of the 7,627 CRC patients, 2338 died over a median follow-up period of 5.1 years, including 1576 from CRC.

Red and processed meat intake prior to CRC diagnosis was not related to shorter survival time after diagnosis in this large consortium of CRC patient cohorts, although a possible weak adverse association cannot be excluded.

Diet helps CD

Gastroenterology. 2018 Dec 11. pii: S0016-5085(18)35398-8. doi: 10.1053/j.gastro.2018.12.002.

Treatment of Active Crohn's Disease With an Ordinary Food-based Diet That Replicates Exclusive Enteral Nutrition.

Svolos V¹, Hansen R², Nichols B¹, Quince C³, Ijaz UZ⁴, Papadopoulou RT¹, Edwards CA¹, Watson D⁵, Alghamdi A⁵, Brejnrod A⁶, Ansalone C⁷, Duncan H², Gervais L², Tayler R², Salmond J⁸, Bolognini D⁹, Klopffleisch R¹⁰, Gaya DR¹¹, Milling S⁷, Russell RK², Gerasimidis K¹².

BACKGROUND & AIMS:

Exclusive enteral nutrition (EEN) is the only established dietary treatment for Crohn's disease (CD), but its acceptability is limited. There is a need for novel dietary treatments for CD.

METHODS:

We evaluated the effects of an individualized, food-based diet (CD-TREAT), with similar composition to EEN, on the gut microbiome, inflammation and clinical response in a rat model, healthy adults, and children with relapsing CD. Twenty-five healthy adults randomly received EEN or CD-TREAT for 7 days, followed by a 14-day washout period, followed by the alternate diet. Fecal microbiome and metabolome were assessed before and after each diet. HLA-B7 and HLA-B27 transgenic rats with gut inflammation received EEN, CD-TREAT, or standard chow for 4 weeks. Fecal, luminal and tissue microbiome, fecal metabolites and gut inflammation were assessed. Five children received CD-TREAT with clinical activity and fecal calprotectin evaluated after 8-week treatment.

RESULTS:

Among healthy adults, CD-TREAT was easier to comply with and more acceptable than EEN. CD-TREAT induced similar effects to EEN (EEN vs CD-TREAT) on fecal microbiome composition, metabolome, mean total sulfide (increase 133.0±80.5 vs 54.3±47.0 nmol/g), pH (increase 1.3±0.5 vs 0.9±0.6), the short-chain fatty acids (μmol/g) acetate (decrease 27.4±22.6 vs 21.6±20.4), propionate (decrease 5.7±7.8 vs 5.2±7.9), and butyrate (decrease 7.0±7.4 vs 10.2±8.5). In the rat model, CD-TREAT and EEN produced similar changes in bacterial load (decrease 0.3±0.3 log₁₀ 16S rRNA gene copies/g), short-chain fatty acids, microbiome, and ileitis severity (mean histopathology score reductions 1.25 for EEN (P=.015) and 1.0 for CD-TREAT (P=.044) vs chow). Among the children receiving CD-TREAT, 4 (80%) had a clinical response and 3 (60%) entered remission, with significant concurrent reductions in fecal calprotectin (mean decrease 918±555 mg/kg, (P=.002)).

CONCLUSION:

CD-TREAT replicates EEN changes in the microbiome, reduces gut inflammation, is well-tolerated and is potentially effective in patients with active CD

Dairy consumption and CV risk**Consumption Of Dairy Product And Its Association With Total And Cause Specific Mortality - A Population-Based Cohort Study And Meta-Analysis**

Moshen Mazidi Dimitri P. Mikhailidis Naveed Sattar George Howard Ian Graham Maciej Banach

DOI: <https://doi.org/10.1016/j.clnu.2018.12.015>

The intake of dairy products has been thought to be associated with an increased risk of coronary heart diseases (CHD) and total mortality due to its relatively high content of saturated fat. However, reports on this association particularly among US adults are conflicting and controversial. Therefore, we used data from the 1999-2010 National Health and Nutrition Examination Surveys (NHANES) study to examine whether consumption of total dairy and dairy subgroups was associated with total and cause specific (CHD, cerebrovascular and cancer) mortality. Further we carried out a systematic review and meta-analysis of prospective studies to check for consistency with the NHANES findings.

Methods

In the NHANES cohort vital status through December 31, 2011 was ascertained. Cox proportional hazard regression models were used to relate baseline dairy intake with all-cause and cause-specific mortality. For the systematic review PubMed, SCOPUS, Web of Science and Google Scholar databases were searched (up to December 2017). The DerSimonian-Laird method and generic inverse variance methods were used for quantitative data synthesis.

Results

In the NHANES data set of 24474 participants, 3520 deaths occurred during follow-up. In multivariate adjusted Cox models, total mortality risk was lower when comparing the top (Q4) with the lower (Q1) quartiles of total dairy (hazard ratio [HR] 0.98, 95% confidence interval [CI]: 0.95-0.99) and cheese (HR: 0.92, 95%CI: 0.87-0.97) consumption. Using a similar model, we have found a negative association between total dairy and milk consumption with risk of cerebrovascular mortality (HR: 0.96, 95%CI: 0.94-0.98, HR: 0.93, 95%CI: 0.91-0.96, respectively), while milk consumption was associated with increased CHD mortality (HR: 1.04, 95%CI: 1.02-1.06). The meta-analysis with 636,726 participants indicated a significant inverse association between fermented dairy products and total mortality (RR: 0.97, 95%CI: 0.96-0.99), while milk consumption was associated with higher CHD mortality (RR: 1.04, 95%CI: 1.01-1.05). These findings were robust in sensitivity analyses.

Conclusions

Among American adults, higher total dairy consumption was associated with lower total and cerebrovascular mortality, while higher milk consumption was associated with higher risk of CHD. These findings do not support dogmatic public health advice to reduce total dairy fat consumption, although the association between milk consumption and CHD mortality requires further study.

Visceral manipulation helps

Evidence-Based Complementary and Alternative Medicine
Volume 2018, Article ID 4929271, 9 pages
<https://doi.org/10.1155/2018/4929271>

Research Article

Effect of Osteopathic Visceral Manipulation on Pain, Cervical Range of Motion, and Upper Trapezius Muscle Activity in Patients with Chronic Nonspecific Neck Pain and Functional Dyspepsia: A Randomized, Double-Blind, Placebo-Controlled Pilot Study

Andréia Cristina de Oliveira Silva,¹ Daniela Aparecida Biasotto-Gonzalez,¹ Fábio Henrique Monteiro Oliveira,² Adriano Oliveira Andrade,² Cid André Fidelis de Paula Gomes,² Fernanda de Córdoba Lanza,¹ César Ferreira Amorim,³ and Fabiano Politti¹

Abstract

Previous studies have reported that visceral disturbances can lead to increased musculoskeletal tension and pain in structures innervated from the corresponding spinal level through viscerosomatic reflexes.

We designed a pilot randomised placebo-controlled study using placebo visceral manipulation as the control to evaluate the effect of osteopathic visceral manipulation (OVM) of the stomach and liver on pain, cervical mobility, and electromyographic activity of the upper trapezius (UT) muscle in individuals with nonspecific neck pain (NS-NP) and functional dyspepsia.

Twenty-eight NS-NP patients were randomly assigned into two groups: treated with OVM (OVMG; n = 14) and treated with placebo visceral manipulation (PVMG; n = 14). The effects were evaluated immediately and 7 days after treatment through pain, cervical range, and electromyographic activity of the UT muscle. Significant effects were confirmed immediately after treatment (OVMG and PVMG) for numeric rating scale scores ($p < 0.001$) and pain area ($p < 0.001$). Significant increases in EMG amplitude were identified immediately and 7 days after treatment for the OVMG ($p < 0.001$). No differences were identified between the OVMG and the PVMG for cervical range of motion ($p > 0.05$).

This study demonstrated that a single visceral mobilisation session for the stomach and liver reduces cervical pain and increases the amplitude of the EMG signal of the UT muscle immediately and 7 days after treatment in patients with nonspecific neck pain and functional dyspepsia.

9. THORACIC SPINE

Exercise for T spine pain

Musculoskelet Sci Pract. 2018 Nov 22;39:58-66. doi: 10.1016/j.msksp.2018.11.006

Management of thoracic spine pain and dysfunction: A survey of clinical practice in the UK.

Heneghan NR¹, Gormley S², Hallam C³, Rushton A⁴.

BACKGROUND:

The thoracic spine (TS) is relatively under-researched compared to the neck and low back. As the challenge of managing spinal pain persists, understanding current physiotherapy clinical practice for TS pain and dysfunction is necessary to inform future research in this area.

OBJECTIVE:

To investigate physiotherapy practice for managing thoracic spine pain and dysfunction (TSPD) in the UK, with a secondary focus on examining differences across settings and expertise.

DESIGN AND METHOD:

A cross sectional e-survey informed by existing evidence was designed. Comprising closed and open questions, the survey is reported in line with Checklist for Reporting Results of Internet E-Surveys. Eligible participants were UK-trained physiotherapists managing patients with TSPD, recruited for 9 weeks up to 8/2/16. Data analysis included descriptive analyses (closed questions) and thematic analysis (open questions).

RESULTS:

From the 485 respondents, fulfilling the required sample size, key findings included.

EXAMINATION:

Active motion testing, palpation and postural assessment was 'always' undertaken by >89% of respondents.

MANAGEMENT:

Active (exercises) and passive (e.g. mobilisations) techniques were used by >85% of respondents, with ~50% using manipulation, taping and acupuncture. Practice settings: Although broadly similar passive techniques were used more in private practice and sport. Expertise: Broadly similar patterns were seen for use of exercise across levels of expertise, although differences observed for electrotherapy and manipulation.

CONCLUSION:

Despite limited research exercise is widely used in all areas of practice and across all level of expertise. Further research is required to investigate exercise prescription for TSPD and implementation of evidence-based practice.

10 A. CERVICAL SPINE**Neck pain exercise helps**

Arch Phys Med Rehabil. 2018 Dec;99(12):2447-2456. doi: 10.1016/j.apmr.2018.06.008. Epub 2018 Jul 4.

The Effects of Neck-Specific Training Versus Prescribed Physical Activity on Pain and Disability in Patients With Cervical Radiculopathy: A Randomized Controlled Trial.

Dedering Å¹, Peolsson A², Cleland JA³, Halvorsen M⁴, Svensson MA⁵, Kierkegaard M⁴.

OBJECTIVE:

To compare the effects of a neck-specific training program to prescribed physical activity with both groups receiving a cognitive behavioral approach, on pain and disability in patients with cervical radiculopathy (CR).

DESIGN:

Parallel-group randomized clinical trial with follow-up at 3, 6, 12, and 24 months.

SETTING:

Recruitment and assessments of participants were performed at a university hospital. Interventions were performed in primary care setting at outpatient physiotherapy clinics.

PARTICIPANTS:

Patients (N=144) with CR were recruited to participate in this clinical trial.

INTERVENTIONS:

Patients were randomly assigned to 3 months of either of a neck-specific training program or prescribed physical activity.

MAIN OUTCOME MEASURES:

Primary outcomes included self-rated neck and arm pain as collected by the visual analog scale (VAS). Secondary outcomes were self-rated headache measured with the VAS, the Neck Disability Index, the EuroQol 5D, the Fear Avoidance Beliefs Questionnaire, and the Hospital Anxiety and Depression Scale. Assessments were performed at baseline and at 3-, 6-, 12-, and 24-month follow-up periods.

RESULTS:

Intention-to-treat and per-protocol analyses showed no significant interaction (group × time) or group effects. There were, however, significant time effects indicating improvement over time for both groups for all outcomes except for levels of depression.

CONCLUSIONS:

The study revealed that neck-specific training as well as prescribed physical activity both including additional cognitive behavioral approach decreased the pain in patients with CR, that is, participants improved regardless of the intervention received. There is a lack of consensus of how to best manage individuals with CR. However, our findings suggest that CR has a natural favorable long-term outcome when patients are prescribed neck-specific training and exercise in combination with a behavioral approach.

13 C. AIRWAYS/SWALLOWING/SPEECH**REM sleep and SA**

Sleep and Breathing pp 1–6|

Association between REM sleep and obstructive sleep apnea in obese and overweight adolescents

Orna Sever Eric J. Kezirian Emily Gillett ally L Davidson Ward Michael Khoo Iris A. Perez

Purpose

Overweight and obese children have demonstrated reduced rapid eye movement (REM) sleep, affecting energy balance regulation and predisposition to weight gain. Obstructive sleep apnea (OSA) is a known cause of decreased REM sleep. The purpose of this study is to examine the association between the percentage of REM sleep, BMI *z*-score, and OSA severity in overweight and obese adolescents.

Methods

We performed a cross-sectional study of 92 (43% female) overweight and obese adolescents (13–17 years old) who underwent overnight polysomnography (PSG) at Children’s Hospital Los Angeles between 2010 and 2017.

Results

The average Body Mass Index (BMI) *z*-score was 2.27 ± 0.47 , with 71% having BMI *z*-score ≥ 2 . REM% during PSG was 15.6 ± 6.8 , and obstructive apnea-hypopnea index was 17.1 ± 24.3 . The distribution across categories of OSA severity was 27% none (≤ 1.5 events/h), 24% mild (> 1.5 – 5 events/h), 8% moderate (> 5 – 10 events/h), and 41% severe (> 10 events/h). REM% was not associated with BMI *z*-score, either on univariate or multivariate regression with adjustment for age, gender, and apnea-hypopnea index (AHI). When subdivided into OSA categories, a 1-unit increase in BMI *z*-score was associated with a 5.96 ($p = 0.03$) increase in REM% in mild OSA and an 8.86 ($p = 0.02$) decrease in REM% in severe OSA. There was no association between BMI *z*-score and REM% in none and moderate OSA.

Conclusion

Among overweight and obese adolescents, BMI *z*-score was associated with decreased REM% in severe OSA and unexpectedly increased REM% in mild OSA, but there was no association in none or moderate OSA.

AF and SA

December 2018 Volume 154, Issue 6, Pages 1330–1339

Sleep Apnea Increases the Risk of New Hospitalized Atrial Fibrillation**A Historical Cohort Study**

Tetyana Kendzerska, MD, PhD Andrea S. Gershon, MD Clare Atzema, MD Paul Dorian, MD Iqwal Mangat, MD Gillian Hawker, MD Richard S. Leung, MD

DOI: <https://doi.org/10.1016/j.chest.2018.08.1075>

Objectives

This study examined the relationship between newly diagnosed OSA and incident hospitalized atrial fibrillation (AF) over the subsequent 10 years in a large arrhythmia-free cohort.

Methods

Adults referred between 1994 and 2010 to a large academic hospital with suspected OSA who were arrhythmia-free at the time of the first diagnostic sleep study were included. Clinical data were linked to provincial health administrative data to define outcome. Cox regressions were used to investigate the relationship between severity of OSA as measured by the apnea-hypopnea index (AHI) and degree of nocturnal hypoxemia, and incident hospitalized AF.

Results

In total, 8,256 subjects were included in this study. Their median age was 47 years, 62% were men; 28% had an AHI > 30 events per hour, and 6% spent > 30% of sleep time with oxygen saturation < 90%. Over a median follow-up of 10 years (interquartile range, 7-13 years), 173 participants (2.1%) were hospitalized with AF. Controlling for age, sex, alcohol consumption, smoking status, previous heart failure, COPD, and pulmonary embolism, nocturnal hypoxemia (but not AHI) was a significant predictor of incident AF: hazard ratio, 2.47 (95% CI, 1.64-3.71). After further controlling for BMI and hypertension, this association was attenuated but remained significant (hazard ratio, 1.77 [95% CI, 1.15-2.74]).

Conclusions

In a large arrhythmia-free clinical cohort with suspected OSA, nocturnal hypoxemia was independently associated with a 77% increased hazard of incident hospitalized AF. These findings further support a relationship between OSA, nocturnal hypoxemia, and new-onset AF, and they may be used to enhance AF prevention in patients with OSA and severe nocturnal hypoxemia.

Vertigo and sleep disorders

<http://dx.doi.org/10.5664/jcsm.7528>

Increased Risk of Benign Paroxysmal Positional Vertigo in Patients With Non-Apnea Sleep Disorders: A Nationwide, Population-Based Cohort Study

Cheng-Ping Shih, MD, PhD¹; Chih-Hung Wang, MD, PhD¹; Chi-Hsiang Chung, PhD^{2,3}; Hung-Che Lin, MD¹; Hsin-Chien Chen, MD, PhD¹; Jih-Chin Lee, MD, PhD¹; Wu-Chien Chien, PhD^{2,3,4}

Study Objectives

To investigate the association between non-apnea sleep disorders (NSD) and subsequent benign paroxysmal positional vertigo (BPPV) risk.

Methods

This retrospective cohort study was conducted using the Taiwan National Health Insurance Research Database from 2000 to 2013. We established an NSD group (n = 24,624) and an age-, sex- and index year-matched comparison group (n = 98,496). The primary outcome was the occurrence of BPPV. The incidence rates of BPPV in the two cohorts were compared with a 14-year follow-up. Cox proportional hazard regression analysis was used to evaluate the effects of NSD on BPPV risk.

Results

The incidence rate of BPPV was 43.33 per 100,000 person-years for the NSD cohort and 29.33 per 100,000 person-years for the comparison cohort. NSD significantly increased the risk of BPPV (adjusted hazard ratio [HR] = 2.487; 95% confidence interval = 1.996–3.099, $P < .001$). Subgroup analysis revealed that NSD increase the risk of development of BPPV by 2.357- to 3.658-fold in patients with hypertension, diabetes mellitus, chronic obstructive pulmonary disease, and hyperlipidemia. Furthermore, when comparing different types of NSD, chronic insomnia carries the highest risk of BPPV (adjusted HR = 3.563), followed by organic sleep disorders (adjusted HR = 2.763), sleep disturbance (adjusted HR = 2.506), and acute insomnia (adjusted HR = 2.237).

Conclusions

We demonstrate that NSD are associated with an increased risk of BPPV. Relative to other types of NSD, patients with chronic insomnia are at the highest risk for development of BPPV.

Insomnia and CV fitness

Sleep and Breathing pp 1–8|

Insomnia and cardiorespiratory fitness in a middle-aged population: the SCAPIS pilot study

Ding Zou Heini Wennman Örjan Ekblom Göran Bergström Mats Börjesson Jan Hedner

Background

The relationship between insomnia and cardiorespiratory fitness (CRF), a well-established risk factor for cardiovascular disease, has not been extensively studied. We aimed to assess the independent association between insomnia and CRF in a population-based cohort of subjects aged 50 to 64 years.

Methods

Subjects participating in the Swedish CARDioPulmonary bioImaging Study (SCAPIS) pilot cohort ($n = 603$, men 47.9%) underwent a submaximal cycle ergometer test for estimation of maximal oxygen consumption (VO_{2max}). Data on physical activity and sedentary time were collected via waist-worn accelerometers. An insomnia severity index score ≥ 10 was used to define insomnia.

Results

Insomnia was identified in 31.8% of the population. The VO_{2max} was significantly lower in insomnia subjects compared with the non-insomnia group (31.2 ± 6.3 vs. 32.4 ± 6.5 ml* kg⁻¹ *min⁻¹, $p = 0.028$). There was no difference in objectively assessed physical activity or time spent sedentary between the groups. In a multivariate generalized linear model adjusting for confounders, an independent association between insomnia status and lower VO_{2max} was found in men, but not in women ($\beta = -1.15$ [95% CI -2.23 – -0.06] and -0.09 [-1.09 – 0.92], $p = 0.038$ and 0.866 , respectively).

Conclusions

We found a modest, but significant, association between insomnia and lower CRF in middle-aged men, but not in women. Our results suggest that insomnia may link to cardiovascular disease via reduced CRF. Insomnia may require a specific focus in the context of health campaigns addressing CRF.

Sleep bruxism and SA**Poor sleep quality and prevalence of probable sleep bruxism in primary and mixed dentitions: A cross-sectional study**

Sleep and Breathing — Massignan C, et al. | December 20, 2018

In this school-based cross-sectional study, researchers determined the prevalence of probable sleep bruxism (SB) in the primary and mixed dentitions using non-instrumental approach, and assessed if there was a link between sleep quality and probable SB in different age ranges.

Participants were children aged 2–5 (primary dentition, n = 372) and 8–10 years old (mixed dentition, n = 563) enrolled in public schools at Florianopolis and their parents. By means of questionnaires, information on sleep characteristics, socioeconomic status, and presence of probable SB was obtained and evaluated. Evaluations for tooth wear were also performed by 7 trained examiners (Kappa > 0.7).

With probable SB as a dependent variable, unadjusted and adjusted Poisson regression was carried out. Findings revealed a higher (32.7%) prevalence of probable SB in mixed than in primary dentition (22.3%). In children aged 8–10 years, a link was observed between poor sleep quality and probable SB. In both dentitions, no associations were seen between probable SB and sex, socioeconomic, head of the household educational status, drooling, and tooth wear.

Disrupted sleep and low exercise capacity**Objectively Measured Disrupted Sleep Is Independently and Directly Associated With Low Exercise Capacity in Males: A Structural Equation Model**

Ren-Jing Huang, PhD¹; Shin-Da Lee, PhD^{2,3,4}; Ching-Hsiang Lai, PhD⁵; Shen-Wen Chang, RN⁶; Ai-Hui Chung, RN⁶; Chiung-Wei Chen, MD⁷; I-Ning Huang, MD⁷; Hua Ting, MD^{6,7,8}

Study Objectives

We investigated the interaction between objective sleep disturbance and obesity, sedentary lifestyle, and lung dysfunction and whether it is negatively associated with cardiorespiratory fitness.

Methods

In this community cohort study of 521 men (age 46.6 ± 7.5 years), measures of anthropometry, pulmonary function, overnight sleep polysomnography, and cardiopulmonary exercise testing were processed stepwise using structural equation modeling (SEM).

Results

A univariate correlation analysis was used to group the corresponding variables (in parentheses) into the following eligible latent variables for lower exercise capacity: obesity (body mass index, waist-to-hip ratio), irregular exercise, impaired lung function (predicted values of forced expiratory volume in the first second, forced vital capacity, maximal ventilatory volume, and lung diffusion capacity for carbon monoxide), disrupted sleep (total sleep time, percentage of slow-wave sleep, sleep efficiency), and sleep-disordered breathing (apnea-hypopnea index, lowest oxygen saturation, percentage of total period of oxygen saturation < 90%). Advanced SEM analyses produced a well-fitted final confirmatory model that obesity (direct strength $\beta_d = .366$, $P < .001$), irregular exercise ($\beta_d = .274$, $P < .001$), and impaired lung function ($\beta_d = .152$, $P < .001$), with their mutual interactions, as well as disrupted sleep ($\beta_d = .135$, $P = .001$) were independently and directly associated with low exercise capacity. By contrast, sleep-disordered breathing ($\beta_d = 0$, $P = .215$) was related to low exercise capacity indirectly through obesity into the mutual interaction cycle of obesity, irregular exercise, and impaired lung function. Sleep-disordered breathing was robustly and mutually correlated with obesity (mutual relationship index = $.534$, $P < .001$).

Conclusions

Objectively measured disrupted sleep is directly and independently associated with low exercise capacity; however, sleep-disordered breathing is indirectly mediated by obesity and mutual interactions among obesity, lung dysfunction, and sedentary lifestyle and is linked to low exercise capacity. Our findings indicate that individuals with limited exercise capacity without definite causes should undertake a sleep study, particularly in those describing symptoms of sleep-disordered breathing or insomnia.

Sleep and MS pain

Front Neurol. 2018 Nov 21;9:968. doi: 10.3389/fneur.2018.00968. eCollection 2018.

Association of Stress and Musculoskeletal Pain With Poor Sleep: Cross-Sectional Study Among 3,600 Hospital Workers.

Vinstrup J^{1,2}, Jakobsen MD¹, Calatayud J^{1,3}, Jay K⁴, Andersen LL^{1,2}.

Author information**Abstract**

Background: While acute stress and pain are part of our inherent survival mechanisms, persistent stress and pain can negatively impact health and well-being. This may also lead to poor sleep and thus a lack of recovery. This study investigated the influence of stress and musculoskeletal pain on sleep quality.

Methods: A total of 3,593 Danish hospital workers replied to a questionnaire about work and health. Pain intensity was evaluated using subjective values as an average of 9 body parts. Stress was assessed using the full version of Cohen's Perceived Stress scale. Sleep quality was rated using 3 questions on sleep characteristics. Associations between stress and pain (mutually adjusted predictors) and sleep (outcome) were modeled using binary logistic regression controlling for gender, age, education, BMI and smoking.

Results: The risk ratio of moderate stress (compared to no/low stress) on poor sleep was 1.27 (CI 1.26-1.29), whereas the risk ratio of high stress on poor sleep was 1.87 (CI 1.83-1.91). Similarly, for pain, the risk ratio of moderate pain (compared to no/low pain) on poor sleep was 1.18 (95% CI 1.16-1.19), whereas the risk ratio of a high pain score on poor sleep was 1.48 (95% CI 1.44-1.52).

Conclusion: This study demonstrates that both stress and musculoskeletal pain are associated with poor sleep among hospital workers. Hospital management should consider implementing strategies for preventing stress and musculoskeletal pain to improve the overall health and workability among hospital workers.

14. HEADACHES

Visual changes

Visual processing in migraineurs depends on the migraine cycle
Annals of Neurology — Luedtke K, et al. | December 18, 2018

Authors studied and compared 47 episodic (EM) and 39 chronic migraineurs (CM) (interictal) to 34 healthy controls (HC) to evaluate the changes of afterimage-duration in migraineurs and HC and also to represent changes in the excitatory/inhibitory equilibrium within the visual cortex throughout the migraine cycle. They observed shorter after-image duration interictally but a significantly longer in the ictal as compared to the interictal phase.

They suggested an altered excitatory/inhibitory equilibrium in migraineurs which wavered over the migraine cycle.

Alcohol and migraines

Alcoholic beverages as trigger factor and the effect on alcohol consumption behavior in patients with migraine

European Journal of Neurology — Onderwater GLJ, et al. | December 20, 2018

In this cross-sectional, web-based, questionnaire study, researchers evaluated self-reported alcohol consumption as a migraine attack trigger and examined the impact on alcohol consumption behavior in a large migraine cohort. Participants included 2197 patients with migraine from the well-defined Leiden University MIgraine Neuro-Analysis (LUMINA) study population. Alcoholic beverages, particularly red wine (77.8% of participants), are recognized by migraine patients as a trigger factor and have a significant effect on the behavior of alcohol consumption. It was noted that time of onset was rapid (<3 h) in one-third of patients and almost 90% had an onset <10 h independent of the type of beverage. The low consistency of provocation indicates that alcoholic drinks acting as a singular trigger is insufficient and might depend on a fluctuating trigger threshold.

15. VESTIBULAR**BPPV and sleep disorders**

<http://dx.doi.org/10.5664/jcsm.7528>

Increased Risk of Benign Paroxysmal Positional Vertigo in Patients With Non-Apnea Sleep Disorders: A Nationwide, Population-Based Cohort Study

Cheng-Ping Shih, MD, PhD¹; Chih-Hung Wang, MD, PhD¹; Chi-Hsiang Chung, PhD^{2,3}; Hung-Che Lin, MD¹; Hsin-Chien Chen, MD, PhD¹; Jih-Chin Lee, MD, PhD¹; Wu-Chien Chien, PhD^{2,3,4}

Study Objectives

To investigate the association between non-apnea sleep disorders (NSD) and subsequent benign paroxysmal positional vertigo (BPPV) risk.

Methods

This retrospective cohort study was conducted using the Taiwan National Health Insurance Research Database from 2000 to 2013. We established an NSD group (n = 24,624) and an age-, sex- and index year-matched comparison group (n = 98,496). The primary outcome was the occurrence of BPPV. The incidence rates of BPPV in the two cohorts were compared with a 14-year follow-up. Cox proportional hazard regression analysis was used to evaluate the effects of NSD on BPPV risk.

Results

The incidence rate of BPPV was 43.33 per 100,000 person-years for the NSD cohort and 29.33 per 100,000 person-years for the comparison cohort. NSD significantly increased the risk of BPPV (adjusted hazard ratio [HR] = 2.487; 95% confidence interval = 1.996–3.099, $P < .001$). Subgroup analysis revealed that NSD increase the risk of development of BPPV by 2.357- to 3.658-fold in patients with hypertension, diabetes mellitus, chronic obstructive pulmonary disease, and hyperlipidemia. Furthermore, when comparing different types of NSD, chronic insomnia carries the highest risk of BPPV (adjusted HR = 3.563), followed by organic sleep disorders (adjusted HR = 2.763), sleep disturbance (adjusted HR = 2.506), and acute insomnia (adjusted HR = 2.237).

Conclusions

We demonstrate that NSD are associated with an increased risk of BPPV. Relative to other types of NSD, patients with chronic insomnia are at the highest risk for development of BPPV.

16. CONCUSSIONS

Treatment of neck and Vestibular ocular systems

How often is neck and vestibulo-ocular physiotherapy treatment recommended in people with persistent post-concussion symptoms? A retrospective analysis

Karla van der Walt Amy Tyson Ewan Kennedy

DOI: <https://doi.org/10.1016/j.msksp.2018.12.004>

Highlights

- Physiotherapy treatment was often recommended for persistent post-concussion symptoms (PPCS).
- Neck treatment was received or recommended in over half of cases (54%).
- Vestibulo-ocular treatment was received or recommended in nearly three-quarters of cases (72%).
- These findings support routine neck and vestibulo-ocular system examination in people with PPCS.
-

Background Persistent post-concussion symptoms (PPCS) are complex, and typically involve multidisciplinary assessment and management. The neck and vestibulo-ocular systems are recognised as potential contributors to PPCS, yet it is not clear how often treatment for these systems is warranted.

Objectives To explore how often neck and vestibulo-ocular treatment is received or recommended in people with PPCS.

Design Retrospective chart review.

Method De-identified clinical service data for the calendar year of 2017 were extracted from a single concussion service provider in XX, XX. A summary of the individual assessments and treatments received were extracted and used to determine how often cases were considered to require physician or neuropsychological assessment; and how often cases received or were recommended neck and/or vestibulo-ocular physiotherapy treatment.

Results/findings

147 cases were included in this study. Physician assessment was considered required in 25 cases (17%), and neuropsychological assessment in 90 cases (61%). For physiotherapy, neck treatment was received or recommended in 80 cases (54%), and vestibulo-ocular treatment in 106 cases (72%). Notably, this included 59 cases (40%) where both neck and vestibulo-ocular treatment were received or recommended.

Conclusions

The high proportion of cases receiving or recommended neck and vestibulo-ocular treatment strongly suggests both these systems often contribute to PPCS, often in overlap. While based on retrospective data, these findings highlight the value of routine neck and vestibulo-ocular examination in the assessment and management of PPCS. Further prospective study would be beneficial to explore these proportions in more detail and in other regions.

20 A. ROTATOR CUFF

More painful than other shoulder surgeries

Rotator cuff repair is more painful than other arthroscopic shoulder procedures

Archives of Orthopaedic and Trauma Surgery — Calvo E, et al. | December 19, 2018

Authors studied 95 cases (51 underwent rotator cuff tear repair, 25 shoulder stabilization, and 19 subacromial decompression) to evaluate the impact of surgical procedure performed and other aspects on the intensity of acute postoperative pain following outpatient shoulder arthroscopy. They were prescribed with acetaminophen with ibuprofen for postoperative pain control and tramadol HCl as a rescue remedy and their pain intensity was measured at 2, 6, and 24 h postoperatively.

They observed higher pain intensity among those undergoing rotator cuff tear repair at 24 h compared to stabilization or subacromial decompression. They noted no relation between pain intensity and other variables like age, gender and surgery duration etc.

31. KNEE**Impact of crepitus**

Braz J Phys Ther. 2018 Nov 16. pii: S1413-3555(18)30240-5. doi: 10.1016/j.bjpt.2018.11.001.

What are the clinical implications of knee crepitus to individuals with knee osteoarthritis? An observational study with data from the Osteoarthritis Initiative.

Pazzinatto MF¹, de Oliveira Silva D¹, Faria NC², Simic M³, Ferreira PH³, Azevedo FM⁴, Pappas E³.

BACKGROUND:

Crepitus is a common clinical feature of knee osteoarthritis. However, the importance of crepitus in the overall clinical presentation of individuals with knee osteoarthritis is unknown.

OBJECTIVE(S):

(A) To compare function, pain and quality of life between individuals with knee osteoarthritis with and without crepitus; (B) to compare whether individuals with knee osteoarthritis in both knees, but crepitus in just one, differ in terms of function pain, and knee strength.

METHODS:

Setting: Observational study.

PARTICIPANTS:

(A) A total of 584 participants with crepitus who had the same Kellgren-Lawrence grade on both knees were matched for gender, body mass index and Kellgren-Lawrence grade to participants without crepitus on both knees. (B) 361 participants with crepitus in only one knee and with the same Kellgren-Lawrence grade classification on both knees were included.

MAIN OUTCOME MEASURE(S):

A - Self-reported function, pain, quality of life, 20-m walk test and chair-stand test. B -Knee extensor and flexor strength, self-reported function and pain.

RESULTS:

A - Individuals with crepitus had lower self-reported function, quality of life and higher pain compared to those without crepitus (3-11%; small effect=0.17-0.41, respectively). No difference was found in objective function between groups. B - Self-reported function was lower in the limb with crepitus compared to the limb without crepitus (15%; trivial effect=0.09). No difference was found in pain and knee strength between-groups.

CONCLUSION(S):

Individuals with knee osteoarthritis and knee crepitus have slightly lower self-reported physical function and knee-related quality of life (small or trivial effect). However, the presence of knee crepitus is not associated with objective function or knee strength.

32 A. KNEE/ACL**Landing mechanics**

Sports Biomech. 2018 Dec 10:1-17. doi: 10.1080/14763141.2018.1538385.

A novel standardised side hop test reliably evaluates landing mechanics for anterior cruciate ligament reconstructed persons and controls.

Markström JL¹, Schelin L², Häger CK¹.

We propose a novel one-leg standardised rebound side-hop test (SRSH) specifically designed for detailed analysis of landing mechanics.

Anterior cruciate ligament reconstructed persons (ACLR, n = 30) and healthy-knee controls (CTRL, n = 30) were tested for within-session and test-retest (CTRL only, n = 25) reliability and agreement. Trunk, hip and knee angles and moments in sagittal, frontal, and transversal planes during landing, including time to stabilisation (TTS), were evaluated using intra-class correlations (ICCs), average within-person standard deviations (S_w) and minimal differences. Excellent within-session reliability were found for angles in both groups (most ICCs > 0.90, $S_w \leq 5^\circ$), and excellent to good for moments (most ICCs > 0.80, $S_w \leq 0.34$ Nm/kg). Only knee internal rotation moment showed poor reliability (ICC < 0.4). Test-retest results were excellent to fair for all angles and moments (ICCs 0.47-0.91, $S_w < 5^\circ$ and ≤ 0.25 Nm/kg), except for peak trunk lateral bending angle and knee internal rotation moment. TTS showed excellent to fair within-session reliability but poor test-retest results.

These results, with a few exceptions, suggest promising potential of evaluating landing mechanics during the SRSH for ACLR and CTRL, and emphasise the importance of joint-specific movement control variables in standardised tasks.

Single leg hop

Orthop J Sports Med. 2018 Nov 26;6(11):2325967118810775. doi: 10.1177/2325967118810775. eCollection 2018 Nov.

Poor Performance on Single-Legged Hop Tests Associated With Development of Posttraumatic Knee Osteoarthritis After Anterior Cruciate Ligament Injury.

Wellsandt E^{1,2}, Axe MJ^{3,4}, Snyder-Mackler L^{1,4}.

BACKGROUND:

The risk for knee osteoarthritis (OA) is substantially increased after anterior cruciate ligament (ACL) injury. Tools are needed to identify characteristics of patients after ACL injury who are most at risk for posttraumatic OA.

PURPOSE:

To determine whether clinical measures of knee function after ACL injury are associated with the development of radiographic knee OA 5 years after injury.

STUDY DESIGN:

Cohort study; Level of evidence, 2.

METHODS:

A total of 76 athletes (mean age, 28.7 ± 11.3 years; 35.5% female) with ACL injury were included. Clinical measures of knee function (quadriceps strength, single-legged hop tests, patient-reported outcomes) were assessed after initial impairment resolution (baseline), after 10 additional preoperative or nonoperative rehabilitation sessions (posttraining), and 6 months after ACL reconstruction or nonoperative rehabilitation. Posterior-anterior bent-knee radiographs were completed at 5 years and graded in the medial compartment by use of the Kellgren-Lawrence system. Logistic regression models were used at each of the 3 time points to determine the ability of clinical measures to predict knee OA at 5 years.

RESULTS:

Of the 76 patients, 9 (11.8%) had knee OA at 5 years. After adjustment for ACL reconstruction compared with nonoperative management, ipsilateral second ACL injuries, and the presence of contralateral knee OA, clinical measures of knee function at posttraining (6-m timed hop, Knee Outcomes Survey-Activities of Daily Living Scale) explained the most variance in posttraumatic OA development at 5 years ($P = .006$; ΔR^2 , 27.5%). The 6-m hop test was the only significant posttraining predictor of OA at 5 years ($P = .023$; patients without OA, $96.6\% \pm 5.4\%$; patients with OA, $84.9\% \pm 14.1\%$). Similar significant group differences in hop scores and subjective knee function were present at baseline. No significant group differences in clinical measures existed at 6 months after ACL reconstruction or nonoperative rehabilitation.

CONCLUSION:

Poor performance in single-legged hop tests early after ACL injury but not after reconstruction or nonoperative rehabilitation is associated with the development of radiographic posttraumatic knee OA 5 years after injury. Clinical measures of knee function were most predictive of subsequent OA development following an extended period of rehabilitation early after ACL injury.

35. KNEE/TOTAL**Greater risk with valgus deformity**

Knee Surgery, Sports Traumatology, Arthroscopy pp 1–7|

Preoperative valgus deformity has twice the risk of failure as compared to varus deformity after total knee arthroplasty

Antonio Mazzotti Fabrizio Perna Davide Golinelli Irene Quattrini Susanna Stea Barbara Bordini Cesare Faldini

Purpose

The aim of this study was to assess whether preoperative valgus or varus deformity affected survivorship after total knee arthroplasty (TKA) and to quantify the risk factors for implant failure in a registry-based population.

Methods

The Emilia-Romagna Registry of Prosthetic Orthopedic Implants was examined regarding TKAs performed on patients with a preoperative diagnosis of valgus or varus deformity. Demographics, implant characteristic and survivorships were investigated and compared. A total of 2327 TKA procedures performed from 2000 to 2016 were included in the study. Six hundred and forty primary TKAs with a diagnosis of valgus deformity were evaluated with a median follow-up of 3.3 years; 1687 primary TKAs with a diagnosis of varus deformity were evaluated with a median follow-up of 2.5 years.

Results

Bi-compartmental, cemented posterior stabilised fixed-bearing implants were preferred. For both diagnoses, the implant survivorship rate was greater than 98% in the first year. However, the survival curve of the TKAs implanted for valgus deformity showed a greater slope in the first 3 years as compared to the survival curve of those implanted for varus deformity. Valgus deformity had a 2.1-fold higher risk for revision as compared with varus deformity. Infection was a major cause of implant failure in TKAs for varus deformity, 9/24 (37.5%), while its incidence was lower for valgus deformity, 1/21 (4.8%).

Conclusions

Preoperative valgus alignment showed a twofold risk of failure as compared to varus alignment after TKA. This should be considered in daily practice, and surgeons are called on to pay more attention when performing TKAs on such patients. Prospective randomised controlled trials are, therefore, necessary to better understand the role of preoperative coronal knee deformity in implant failure.

40. ANKLE SPRAINS AND INSTABILITY**Proprioceptive training**

Clin Rehabil. 2018 Dec;32(12):1581-1590. doi: 10.1177/0269215518788683. Epub 2018 Jul 12.

Effects of proprioceptive training on the incidence of ankle sprain in athletes: systematic review and meta-analysis.

de Vasconcelos GS¹, Cini A¹, Sbruzzi G¹, Lima CS¹.

OBJECTIVE::

To investigate how dynamic neuromuscular control, postural sway, joint position sense, and incidence of ankle sprain are influenced by balance training in athletes compared with the control group in randomized clinical trials.

DATA SOURCES::

The search strategy included MEDLINE, Physical Therapy Evidence Database, Cochrane Central Register of Controlled Trials, and Latin American and Caribbean Center on Health Sciences Information. Randomized controlled trials (RCTs) were published by June of 2018.

METHODS::

RCTs that evaluate the effectiveness of proprioception in these outcomes: dynamic neuromuscular control, postural sway, joint position, and the incidence of ankle sprains in athletes aged between 18 and 35 years. Two reviewers independently screened the searched records, extracted the data, and assessed risk of bias. The treatment effect sizes were pooled in a meta-analysis using the RevMan 5.2 software. Internal validity was assessed through topics suggested by Cochrane Collaborations.

RESULTS::

Of the 12 articles included (n = 1817), eight were in the meta-analysis (n = 1722). The balance training reduced the incidence of ankle sprains in 38% compared with the control group (RR: 0.62; 95% CI: 0.43-0.90). In relation to the dynamic neuromuscular control, the training showed increase in the distance of reach in the anterior (0.62 cm, 95% CI: 0.13-1.11), posterolateral (4.22 cm, 95% CI: 1.76-6.68), and posteromedial (3.65 cm, 95% CI: 1.03-6.26) through the Star Excursion Balance test. Furthermore, training seems to improve postural sway and joint position sense.

CONCLUSION::

Balance training reduces the incidence of ankle sprains and increases dynamic neuromuscular control, postural sway, and the joint position sense in athletes.

45 A. MANUAL THERAPY LUMBAR & GENERAL**Adding leg motion to management of radicular symptoms**

Arch Phys Med Rehabil. 2018 Dec 3. pii: S0003-9993(18)31509-0. doi: 10.1016/j.apmr.2018.11.004.

The effect of spinal mobilization with leg movement in patients with lumbar radiculopathy - A double blind randomized controlled trial.

Satpute K¹, Hall T², Bisen R³, Lokhande P⁴.

OBJECTIVES:

To evaluate the effect of spinal mobilization with leg movement (SMWLM) on low back and leg pain intensity, disability, pain centralization and patient satisfaction in subjects with lumbar radiculopathy.

DESIGN:

A double blind randomized controlled trial.

SETTING:

General Hospital PARTICIPANTS: Sixty adults (mean age 44 years) with sub-acute lumbar radiculopathy INTERVENTIONS: Subjects were randomly allocated to receive SMWLM, exercise and electrotherapy (n = 30) or exercise and electrotherapy alone (n = 30). All subjects received 6 sessions over 2 weeks.

MAIN OUTCOME MEASURES:

The primary outcomes were leg pain intensity and Oswestry disability index score. Secondary variables were low back pain intensity, global rating of change (GROC), straight leg raise (SLR) and lumbar range of motion (ROM). Variables were evaluated blind at base line, post intervention, and 3 and 6 months follow-up.

RESULTS:

Significant and clinically meaningful improvement occurred in all outcome variables. At 2 weeks the SMWLM group had significantly greater improvement than the control group in leg pain (MD 2.4, 95% CI 2.0 to 2.7) and disability (MD 3.9 (5.5 to 2.2)). Similarly at 6 months the SMWLM group had significantly greater improvement than the control group in leg pain (MD 4.4, 95% CI 4.0 to 4.8) and disability (MD 4.7 (6.3 to 3.1)). The SMWLM group also reported greater improvement in the GROC and in SLR ROM.

CONCLUSION:

In patients with lumbar radiculopathy, the addition of SMWLM provided significantly improved benefits in terms of leg and back pain, disability, SLR ROM and patient satisfaction in the short- and long-term.

45 C. MANUAL THERAPY THORACIC**Test to determine efficacy of thoracic manipulations**

Musculoskelet Sci Pract. 2018 Nov 28;39:80-90. doi: 10.1016/j.msksp.2018.11.013

Reliability and diagnostic accuracy of cervicothoracic differentiation testing and regional unloading for identifying improvement after thoracic manipulation in individuals with neck pain.

Swanson BT¹, Gans MB², Cullenberg A³, Cullenberg EK³, Cyr R⁴, Risigo L⁴.

Author information**Abstract****BACKGROUND & PURPOSE:**

The cervicothoracic differentiation test (CTDT), cervical and thoracic unloading are used clinically to guide treatment. This study sought to determine the reliability and diagnostic accuracy of these tests.

METHODS:

A prospective diagnostic accuracy study was performed at two outpatient clinics and one university research center. A convenience sample of 48 individuals with neck pain was recruited. Cervical and thoracic unloading tests and CTDT were performed with symptom relief considered a positive test. Pain was assessed using a visual analog pain scale (VAS) at rest and during provocative movements. The reference standard was pain relief following thoracic manipulation. Change in pain was used to identify improvement at the MCID (15 mm) and 50% improvement thresholds.

RESULTS:

All three tests demonstrated high levels of inter-rater reliability, $K = 0.90[0.77-1.00]$. Of 48 individuals who completed the study, 39 (81.3%) were improved \geq MCID; compared to 34 (70.8%) at the 50% threshold. As a single test, the CTDT yielded the strongest diagnostic utility (at MCID threshold) based on ROC curve: AUC 0.791 s.e. 0.078; with high specificity (0.89[51.75-99.72]); LR+ 6.23 [0.97-40]; LR- 0.35 [0.20-0.58]; and PPV 96.43. Unloading tests demonstrated high sensitivity, but poor specificity and likelihood ratios. Composite tests improved specificity, but with lower accuracy and minimal changes in ROC area compared to the CTDT in isolation.

CONCLUSIONS:

The CTDT is a specific test with significant diagnostic utility to identify individuals who will experience immediate pain relief following thoracic manipulation. The CTDT should be considered during the clinical decision making process when treating individuals with neck pain.

45 D. MANUAL THERAPY EXTREMITIES**Effectiveness for Carpal Tunnel Syndrome**

J Orthop Sports Phys Ther. 2018 Nov 30:1-27. doi: 10.2519/jospt.2019.8483.

Cost-Effectiveness Evaluation of Manual Physical Therapy Versus Surgery for Carpal Tunnel Syndrome: Evidence From a Randomized Clinical Trial.

Fernández-de-Las-Peñas C^{1,2}, Ortega-Santiago R^{1,2}, Díaz HF³, Salom-Moreno J^{1,2}, Cleland JA^{4,5}, Pareja JA⁶, Arias-Burúa JL^{1,2}.

STUDY DESIGN:

A randomized clinical trial.

BACKGROUND:

Carpal tunnel syndrome (CTS) results in substantial costs for the society and can be treated by either nonsurgical or surgical approaches.

OBJECTIVE:

To evaluate cost-effectiveness differences of manual physical therapy versus surgery in women with CTS.

METHODS:

One hundred and twenty women with clinical and electromyographic diagnosis of CTS were randomized through concealed allocation to either manual physical therapy or surgery. Interventions consisted of 3 sessions of manual physical therapy including desensitization manoeuvres of the central nervous system, or decompression/release of the carpal tunnel. Societal costs and health-related quality of life (estimated by the EuroQol-5D) over 1-year were used to generate incremental cost per quality-adjusted life year (QALY) ratios for each treatment.

RESULTS:

The analysis was possible for 118 (98%) patients. Incremental QALYs showed greater cost-effectiveness in favor of manual physical therapy (difference: 0.135, 95%CI 0.134-0.136). Manual therapy was significantly less costly (mean difference cost per patient: 2,576€; P<0.001) than surgery. Patients in the surgical group received a greater number of other treatments and made more visits to medical doctors than those receiving manual physical therapy (P=0.02). Absenteeism from paid labour was significantly higher in the surgery group (P<0.001). The major contributors to societal costs were the treatment protocol (surgery vs. manual therapy mean difference: 106,980€) and absenteeism from paid labour (surgery vs. manual physical therapy mean difference: 42,224€).

CONCLUSION:

Manual physical therapy including desensitization manoeuvres of the central nervous system has found to be equally effective but less costly, i.e., more cost-effective, than surgery for women with CTS. From a cost-benefit perspective the proposed manual physical therapy intervention of CTS can be considered.

LEVEL OF EVIDENCE:

Economic and decision analyses, level 1b. J Orthop Sports Phys Ther, Epub 30 Nov 2018. doi:10.2519/jospt.2019.8483

48 A. STM**Psoas volume and mortality**

J Orthop Trauma. 2019 Jan;33(1):e1-e7. doi: 10.1097/BOT.0000000000001331.

Decreased Lean Psoas Cross-Sectional Area Is Associated With Increased 1-Year All-Cause Mortality in Male Elderly Orthopaedic Trauma Patients.

Touban BM¹, Pavlesen S¹, Smoak JB¹, Sayegh MJ², Wang J³, Zhao J³, Anders MJ¹.

OBJECTIVES:

To investigate the association between lean psoas cross-sectional area (CSA) and 1-year all-cause mortality in elderly patients sustaining pelvic and long bone fractures.

DESIGN:

Retrospective cohort.

SETTING:

Level I trauma center.

PATIENTS:

Elderly trauma patients admitted from 2007 to 2014.

METHODS:

We reviewed demographic and clinical data, injury mechanism, fracture OTA/AO classification, and mortality. Axial computed tomography images were used to measure lean psoas CSA at the L3-L4 disk space. Cox proportional hazard regression analysis was used to estimate 1-year mortality association with psoas CSA in crude and adjusted for age, body mass index, Injury Severity Score, medical comorbidities, and discharge destination in total population and stratified by sex.

MAIN OUTCOME MEASUREMENT:

One-year all-cause mortality defined as death within 12 months from date of hospitalization.

RESULTS:

Five hundred fifty-eight patients (54% female, 46% male) were analyzed. The pelvis was most commonly fractured (37.81%). A statistically significant association was observed between decreased lean psoas CSA and 1-year mortality in total population {hazard ratio [HR] = 0.93 [95% confidence interval (CI) = 0.90-0.96], P < 0.0001}. Stratification by gender revealed a statistically significant mortality HR in male patients [HR = 0.89 (95% CI = 0.84-0.96), P = 0.002]. We did not find a statistically significant mortality HR in female patients [HR = 0.95 (95% CI = 0.89-1.01), P = 0.103].

CONCLUSIONS:

In this cohort of elderly orthopaedic trauma patients, decreased lean psoas CSA was associated with increased 1-year all-cause mortality in total population and males. Further investigation of the association of sarcopenia with mortality in the elderly is warranted.

48 B. TRIGGER POINTS NEEDLING**Indirect dry needling**

J Sport Rehabil. 2018 Nov 30:1-7. doi: 10.1123/jsr.2017-0207.

Comparison of Upper Trapezius and Infraspinatus Myofascial Trigger Point Therapy by Dry Needling in Overhead Athletes With Unilateral Shoulder Impingement Syndrome.

Kamali F, Sinaei E, Morovati M.

CONTEXT:

Chronic musculoskeletal disorders in the shoulder joint are often associated with myofascial trigger points (MTrPs), particularly in the upper trapezius (UT) muscle. Dry needling (DN) is a treatment of choice for myofascial pain syndrome. However, local lesions and severe postneedle soreness sometimes hamper the direct application of DN in the UT. Therefore, finding an alternative point of treatment seems useful in this regard.

OBJECTIVE:

To compare the efficacy of UT versus infraspinatus (ISP) DN on pain and disability of subjects with shoulder pain. The authors hypothesized that ISP DN could be as effective as the direct application of DN in UT MTrP.

DESIGN:

Single-blind randomized clinical trial.

SETTING:

Sports medicine physical therapy clinic.

PARTICIPANTS:

A total of 40 overhead athletes (age = 36 [16] y; 20 females and 20 males) with unilateral shoulder impingement syndrome were randomly assigned to the UT DN (n = 21) and ISP DN (n = 19) groups.

INTERVENTION:

An acupuncture needle was directly inserted into the trigger point of UT muscle in the UT DN group and of ISP muscle in the ISP DN group. DN was applied in 3 sessions (2-day interval between each sessions) for each group.

MAIN OUTCOME MEASURES:

Pain intensity (visual analog scale), pain pressure threshold, and disability in the arm, shoulder, and hand were assessed before and after the interventions.

RESULTS:

Pain and disability decreased significantly in both groups ($P < .001$) and pain pressure threshold increased significantly only in the ISP group ($P = .02$). However, none of the outcome measures showed a significant intergroup difference after treatments ($P > .05$).

CONCLUSIONS:

Application of DN for active MTrPs in the ISP can be as effective as direct DN of active MTrPs in the UT in improving pain and disability in athletes with shoulder pain, and may be preferred due to greater patient comfort in comparison with direct UT needling.

52. EXERCISE**LBP exercise long term**

Musculoskelet Sci Pract. 2018 Dec;38:77-82. doi: 10.1016/j.msksp.2018.09.002. Epub 2018 Sep 15.

Low back pain patients' perspectives on long-term adherence to home-based exercise programmes in physiotherapy.

Saner J¹, Bergman EM², de Bie RA³, Sieben JM⁴.

BACKGROUND:

Adherence to an exercise programme impacts the outcome of physiotherapy treatment in patients with non-specific low back pain.

OBJECTIVES:

The aim of this study was to explore the patients' perspectives on long term adherence to such exercise programmes.

DESIGN:

This qualitative study was embedded in a randomised controlled trial (RCT) which compared the effectiveness of two types of exercise programme on patients with nonspecific low back pain.

METHODS:

Answers from 44 participants to three open-ended questions were analysed using thematic analysis.

RESULTS/FINDINGS:

Patients' perceptions related to the following themes: 1) the role of knowledge in long-term exercise adherence; 2) strategies to support exercise adherence; 3) barriers to exercise adherence 4) the role of perceived effects of exercise.

CONCLUSIONS:

Adherence to long-term exercise is supported through knowledge of the exercises and correct performance. A self-initiated training strategy is the most successful in the perception of participants. Individually supervised physiotherapy treatment that includes coaching towards strategies for post-treatment long term exercise behaviour is recommended.

Exercise reduces risk of Diabetes

J Diabetes Investig. 2018 Dec 18. doi: 10.1111/jdi.12973.

Combined aerobic and resistance training, and incidence of diabetes: A retrospective cohort study in Japanese older women.

Sawada SS¹, Gando Y², Kawakami R¹, Blair SN³, Lee IM^{4,5}, Tamura Y⁶, Tsuda H⁷, Saito H⁷, Miyachi M².

AIMS/INTRODUCTION:

To investigate the relationship between combined aerobic and resistance training, and the incidence of type 2 diabetes mellitus.

MATERIALS AND METHODS:

The present study included 10,680 Japanese women. Participants enrolled between 2005 and 2010, and were followed up until 2014. The frequency of combined training was counted for the first 3 months, the 6th month and the 9th month. In 2014, women reported whether or not they had diabetes, as well as the year of developing diabetes. Hazard ratios and 95% confidence intervals (CI) for the incidence of type 2 diabetes were obtained using Cox proportional hazard models.

RESULTS:

The median duration of follow up was 5 years, with 166 women developing type 2 diabetes. Using the lowest frequency of training group (1st quartile) as the reference, the hazard ratios for the second through fourth quartiles was as follows: 0.95 (95% CI 0.64-1.41), 0.73 (95% CI 0.48-1.13) and 0.69 (95% CI 0.44-1.07), respectively (P for trend = 0.116). After adjustment for age, body mass index and thigh circumference, the hazard ratios were: 0.84 (95% CI 0.56-1.26), 0.69 (95% CI 0.45-1.06) and 0.61 (95% CI 0.39-0.95), respectively (P for trend = 0.040).

CONCLUSIONS:

A higher frequency of combined aerobic and resistance training is associated with a lower risk of developing type 2 diabetes in Japanese women.

Activity and mortality

ACCEPTED MANUSCRIPT

Potential Effects of Replacing Sedentary Time With Short Sedentary Bouts or Physical Activity on Mortality: A National Cohort Study

Keith M Diaz Andrea T Duran Natalie Colabianchi Suzanne E Judd Virginia J Howard Steven P Hooker

American Journal of Epidemiology, kwy271, <https://doi.org/10.1093/aje/kwy271>

Little is known concerning the type of activity that should be substituted for sedentary time and its potentially most hazardous form (prolonged sedentary bouts) to impart health benefit.

We used isothermal substitution techniques to examine whether 1) replacing total sedentary time with light- or moderate-intensity physical activity (LIPA, MVPA) and 2) replacing prolonged sedentary bouts with shorter sedentary bouts is associated with reductions in all-cause mortality risk. Participants ($n = 7,999$) from the REasons for Geographic and Racial Differences in Stroke (REGARDS) Study, a national cohort of US adults ≥ 45 years, were studied. Sedentary time was measured by accelerometry between 2009 and 2013. There was a beneficial association on mortality risk for replacing total sedentary time with both LIPA (per 30-minutes HR = 0.83; 95% CI: 0.80, 0.87) and MVPA (per 30-minutes HR = 0.65; 95% CI: 0.50, 0.85). Similarly, there was a beneficial association of replacing prolonged sedentary bout time with LIPA and MVPA, but not for replacement with shorter sedentary bouts (per 30-minutes HR = 1.00; 95% CI: 0.96, 1.03).

These findings suggest short sedentary bouts still carry mortality risk and are not a healthful alternative to prolonged sedentary bouts. Instead, physical activity of any intensity is needed to mitigate the mortality risks incurred by sedentary time.

59. PAIN**RA pain helped with exercise**

Arthritis Res Ther. 2018 Nov 26;20(1):262. doi: 10.1186/s13075-018-1758-x.

Long-term, health-enhancing physical activity is associated with reduction of pain but not pain sensitivity or improved exercise-induced hypoalgesia in persons with rheumatoid arthritis.

Löfgren M^{1,2}, Opava CH^{3,4}, Demmelmaier I³, Fridén C³, Lundberg IE^{4,5}, Nordgren B^{3,6}, Kosek E^{7,8,9}.

BACKGROUND:

We aimed to evaluate the 1-year and 2-year outcome of a health-enhancing physical activity (HEPA) support program on global pain, pressure pain sensitivity, and exercise-induced segmental and plurisegmental hypoalgesia (EIH) in persons with rheumatoid arthritis (RA).

METHODS:

Thirty participants (27 women and 3 men) were recruited from a larger intervention cohort that engaged in strength training and moderate-intensity aerobic activity. Assessments were performed before the HEPA intervention and at 1-year and 2-year follow-ups. Global pain was assessed on a visual analogue scale (0-100). Pressure pain thresholds (PPTs) and suprathreshold pressure pain at rest corresponding to 4/10 (medium pain) (SP4) and 7/10 (strong pain) (SP7) on Borg CR 10 scale were assessed by algometry. In a subsample (n = 21), segmental and plurisegmental EIH were assessed during standardized submaximal static contraction (30% of the individual maximum), by algometry, alternately at the contracting right M. quadriceps and the resting left M. deltoideus.

RESULTS:

Global pain decreased from before the intervention to 2-year follow-up (median 11 to median 6, P = 0.040). PPTs and SP4 pressure pain at rest did not change from before the intervention to 2-year follow-up, while SP7 decreased from mean 647 kPa to mean 560 kPa (P = 0.006). Segmental EIH during static muscle contraction increased from the assessment before the intervention (from mean 1.02 to mean 1.42, P = 0.001), as did plurisegmental EIH (from mean 0.87 to mean 1.41, P <0.001). There were no statistically significant changes in segmental or plurisegmental EIH from before the intervention to 2-year follow-up.

CONCLUSION:

Participation in a long-term HEPA support program was associated with reduced global pain, whereas pressure pain sensitivity at rest was not reduced and EIH did not change. Thus, our results do not favor the hypothesis that long-term HEPA reduces pain by improving descending pain inhibition in persons with RA.

60. COMPLEX REGIONAL PAIN**Guided motor imaging**

Physiother Theory Pract. 2018 Nov 30:1-13. doi: 10.1080/09593985.2018.1548047

The clinical application of pain neuroscience, graded motor imagery, and graded activity with complex regional pain syndrome-A case report.

Shepherd M PT, DPT, OCS, FAAOMPT^{1,2}, Louw A PT, PhD³, Podolak J PT, DPT⁴.

BACKGROUND:

Chronic Regional Pain Syndrome (CRPS) is a condition that physical therapists may encounter in an outpatient orthopedic setting. In physical therapy (PT) treatment of CRPS addresses pain and the changes observed in the brain through the use of graded motor imagery (GMI).

CASE DESCRIPTION:

A 57-year-old female presented to an outpatient PT clinic with CRPS type 1. Complicating psychosocial factors such as kinesiophobia and catastrophization were present. The patient engaged in a treatment plan including GMI: pain neuroscience education (PNE), laterality training, motor imagery, and mirror training. As symptoms improved, graded functional exposure and functional restoration occurred.

OUTCOMES:

The patient was seen for a total of 26 visits over a 9-month period. FAAM measures exceeded reported clinically important change that was sustained at two-year follow-up. Long term outcomes showed no functional deficits related to her foot or ankle and minimal to no catastrophizing and fear avoidance behaviors.

DISCUSSION:

This case report showcases the use of GMI with a patient with CRPS type 1 in an outpatient orthopedic clinic. Clinicians may consider the use of GMI to progress a patient toward maximal functional gains.

61. FIBROMYALGIA**Pain memory**

Int J Rheum Dis. 2018 Nov 5. doi: 10.1111/1756-185X.13415.

A longitudinal analysis of pain experience and recall in fibromyalgia.

Van Liew C^{1,2}, Standridge K², Leon G², Cronan TA¹.

AIM:

To evaluate pain experiences and memories in fibromyalgia (FM) patients over time.

METHOD:

Participants included 572 females who were members of a large health maintenance organization who had a diagnosis of FM syndrome (FMS) and met inclusion criteria for the study. Recruitment was for an intervention study that tested the effects of social support and education treatment arms, but there were no treatment effects. Reports of experiential pain (EP), historical peak pain (HPP), and historical valley pain (HVP) for FM were collected. Differences between HPP and EP and EP and HVP (bias) were calculated to determine whether HPP and HVP were distributed evenly around EP over time across participants. Models were performed to assess personal history and psychosocial factors that affect EP, HPP, HVP, and bias.

RESULTS:

There was systematic tendency for HPP to be significantly larger than EP relative to EP vs HVP. EP and HPP decreased significantly over time, but not HVP. There were significant predictors of EP, HPP, HVP, and bias, including depression, self-efficacy, and sleep quality, among others.

CONCLUSION:

The experiences and recollections of pain in FM appear to provide a unique means of understanding the maintenance of chronic pain-including factors that affect this process.

65. NEUROLOGICAL CONDITIONS

Limited childhood sun exposure increases risk of MS

Shedding light on the link between early life sun exposure and risk of multiple sclerosis: results from the EnvIMS Study

Sandra Magalhaes Maura Pugliatti Trond Riise Kjell-Morten Myhr Antonio CiampiKjetil Bjornevik Christina Wolfson

International Journal of Epidemiology, dyy269, <https://doi.org/10.1093/ije/dyy269>

Background

Lower levels of sun exposure in childhood have been suggested to be associated with increased risk of multiple sclerosis (MS). In this paper we extend previous work, using two novel analytical strategies.

Methods

Data collected in the Environmental risk factors In MS (EnvIMS) study, a case-control study with MS cases and population-based controls from Canada, Italy and Norway, were used. Participants reported on sun exposure behaviours for 5-year age intervals from birth; we focused on the first three age intervals (≤ 15 years). We compared two life course epidemiology conceptual models, the critical period and the accumulation model. We also used latent class analysis to estimate MS risk for different latent sun exposure behaviour groups.

Results

The analyses included 2251 cases and 4028 controls. The accumulation model was found to be the best model, which demonstrated a nearly 50% increased risk of MS comparing lowest reported summer sun exposure with highest [risk ratio (RR) = 1.47 (1.24, 1.74)]. The latent sun exposure behaviour group, characterized by low sun exposure during summer and winter and high sun protection use, had the highest risk of MS; a 76% increased risk as compared with the group with high sun exposure and low sun protection use [RR = 1.76 (1.27, 2.46)].

Conclusions

Our analyses provide novel insights into the link between sun exposure and MS. We demonstrate that more time indoors during childhood and early adolescence is linked with MS risk, and that sun protection behaviours in those who spend most time indoors may play a key role in increasing risk.