

7. PELVIC ORGANS/WOMAN'S HEALTH

Sexual violence

Sexual Violence Victimization of Youth and Health Risk Behaviors

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Introduction

This study assesses associations between past-12-month sexual violence victimization and recent health risk behaviors using a nationally representative sample of male and female high school students. It is hypothesized that sexual violence victimization will be associated with most of the negative health behaviors for both sexes.

Methods

Data from the 2017 National Youth Risk Behavior Survey, a school-based cross-sectional survey of students in Grades 9–12, were used to assess associations between sexual violence victimization and 29 health risk behaviors in sex-stratified logistic regression models. Effect modification was also examined through sex X sexual violence victimization interactions within unstratified models. All models controlled for race/ethnicity, grade, and sexual identity. Data were analyzed in 2018.

Results

Students who experienced sexual violence victimization were significantly more likely to report many health risk behaviors and experiences, such as substance use, injury, negative sexual health behaviors, feelings of sadness or hopelessness, suicidality, poor academic performance, and cognitive difficulties, and these associations were often stronger among male students (significant adjusted prevalence ratios ranged from 1.63 to 14.40 for male and 1.24 to 6.67 for female students).

Conclusions

Past-year sexual violence victimization was significantly related to various health risk behaviors, suggesting that efforts to prevent sexual violence may also be associated with decreases in poor health. Integrating violence, substance use, sexual, and other health risk prevention efforts is warranted.

Depressive symptoms

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Perinatal depressive symptoms often start in the prenatal rather than postpartum period: results from a longitudinal study

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Depressive symptoms during and after pregnancy confer risks for adverse outcomes in both the mother and child. Postpartum depression is traditionally diagnosed after birth of the child.

Perinatal depression is a serious, prevalent heterogeneous syndrome that can occur during the period from conception through several months after childbirth. Onset and course are not well understood. There is a paucity of longitudinal studies of the disorder that include the antenatal period in population-based samples. We used an Internet panel of pregnant women recruited in 2 cohorts; 858 ascertained in the first and 322 ascertained in the third trimesters of pregnancy. We recruited the second cohort in order to assure sufficient sample to examine depressive symptoms later in pregnancy and in the postpartum period. Assessments included standard psychometric measures, health history, and pregnancy experience. The Edinburgh Postnatal Depression Scale was used for the assessment of depressive symptoms. Nearly 10% of women entered the pregnancy with depressive symptoms. Prevalence was about the same at 4 weeks and 3 months postpartum. During pregnancy, prevalence increased to 16% in the third trimester. Among incident cases, 80% occurred during pregnancy, with 1/3 occurring in the first trimester. We describe predictors of incident depressive symptoms and covariates associated with time-to-onset which include health history (psychiatric and medical) and social support covariates.

The majority of incident depressive symptoms occur during pregnancy rather than afterward. This finding underscores the mandate for mental health screening early in pregnancy and throughout gestation. It will be important to find safe and effective interventions that prevent, mitigate, or delay the onset of depressive symptoms that can be implemented during pregnancy.

Prudential nerve**Estimate of the proportion of uncertain diagnoses of pudendal neuralgia in women with chronic pelvic-perineal pain: A systematic review with a descriptive data synthesis**

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<https://doi.org/10.1002/nau.24303>**Background**

There is a gap between pudendal neuralgia (PN) due to pudendal entrapment syndrome and PN without pudendal entrapment syndrome. The latter could have atypical symptoms.

Aim

Defining a rate of atypical PN from a clinical series of female patients with chronic pelvic-perineal pain.

Methods

The atypical PN was defined as a pain not meeting clinical criteria for pudendal entrapment syndrome. The effect size was the rate of atypical PN. Such a rate was expected to be found among patients screened for enrollment in clinical series on pudendal neuropathic pain. A systematic search was performed looking for clinical series on PN. Studies must report information on female patients, pelvic-perineal pain, at least a clinical criterion for diagnosing the pudendal neurogenic origin of pain, the proportion of patients with pain not meeting the clinical criterion/a for diagnosing the pudendal entrapment pain.

Results

From 2637 references, nine studies were included for qualitative analysis. Three of them were not suitable for data synthesis: one assessed the rate of PN after hip arthroscopy; second enrolled miscellaneous patients, a third investigated patients with gynecological diseases. Six studies involved patients with suspicion of pudendal entrapment symptoms (205 patients observed), allowing data synthesis. One of these series was judged as being of good quality. The overall rate of atypical PN is 0.013 (95% confidence interval, 0.008-0.021), I^2 0%. Further analysis suggests the risk of bias for all studies.

Conclusions

Atypical PN in females is low when clinical criteria for pudendal entrapment syndrome are applied.

Infant visceral manip with torticollis

Neural and visceral manipulation in infants with congenital muscular torticollis: a feasibility study

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[Purpose] As an alternative to manual stretching, the aim of this study was to investigate the feasibility of using neural/visceral manipulation as a safe and effective intervention to increase neck range of motion of infants with congenital muscular torticollis.

[Participants and Methods] Ten 4-month old infants with congenital muscular torticollis received eight sessions of neural/visceral manipulation administered for 30–50 minutes without observed pain. Specific palpation techniques addressed restricted tissue areas of neck, head, trunk and extremities. Neck rotation and lateral flexion were assessed by still photography and a computer program calculating ROM angles before, immediately following, and 4 months post intervention. Motor development and social competence were monitored over time using the Alberta Infant Motor Scale and Bayley-III Social Emotional Scale. [Results]

Results of analysis of variances revealed significant improvements in passive and active neck rotation and lateral flexion. Significant increases were also found on the Alberta Infant Motor Scale and Bayley-III Social-Emotional scale.

[Conclusion] Neural/visceral manipulation can be used safely in infants with congenital muscular torticollis to improve neck range of motion.

Key words: Visceral manipulation,

Problems with early menopause

Atherosclerosis

Early onset of menopause is associated with increased peripheral atherosclerotic plaque volume and progression

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<https://doi.org/10.1016/j.atherosclerosis.2020.01.023> Get rights and content

Highlights

- In our study, an earlier onset of menopause (MP) was associated not only with a higher atherosclerotic plaque volume but also accelerated atherosclerotic progression.
- Based on our results, risk stratification for postmenopausal women may be improved by simple, additional anamnestic questions evaluating the onset of MP.
- In females with an earlier onset of MP an adapted strategy to control risk factors more aggressively may be considered.
- Therefore, we suggest the onset of MP as a risk factor unique to women.

Abstract

Background and aims

Cardiovascular disease (CVD) is the leading cause of death in western countries. One risk factor unique to women is the menopausal status. The aim of this study was to analyse the influence of the onset of menopause (MP) on the extent and progression of atherosclerotic plaque volume (PV).

Methods

Postmenopausal women with at least one cardiovascular risk factor (CVRF) but without established CVD were included. Quantification of PV was performed in peripheral arteries using a three - dimensional (3D) ultrasound (US) technique. Follow-up examination to assess PV progression was performed after 19 (\pm 8) months.

Results

110 consecutive postmenopausal women (mean age 65.5) were included. Females with an earlier onset of MP (<45 years) had a significantly higher PV than those with an intermediate (45–52 years) or later onset of menopause (>52 years), irrespective of other CVRF (244 mm³ vs. 193 mm³ vs. 73 mm³, respectively, $p = 0.023$). In addition, women with an earlier onset of MP had a higher PV progression compared to women with an intermediate or late onset (40 mm³ vs. 35 mm³ vs. 8.5 mm³; $p = 0.002$, respectively). Moreover, these results were confirmed in multivariate regression, where only onset of MP (OR 0.88; 95% CI 0.81–0.96; $p = 0.004$) and age (OR 1.06; 95% CI 1.08–1.13; $p = 0.025$) were significant predictors for a higher atherosclerotic progression.

Conclusions

An earlier onset of MP was associated with an increase in atherosclerotic PV and accelerated progression, independent of other CVRF.

8. VISCERA

Selenium intake and telomere length

Association of dietary selenium intake with telomere length in middle-aged and older adults

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Highlights

- The first study to date on the relationship between dietary selenium intake and leukocyte telomere length among middle-aged and older adults in America.
- This study indicated that the increased dietary selenium intake was associated with longer telomere length.
- The linear association between dietary selenium intake and telomere length was more prominent among females and non-obese participants.

Summary

Background

Growing evidence suggested that lifestyle factors including dietary habits may influence the telomere length which is a reliable marker of biological aging and predictor for chronic diseases. However, the role of dietary selenium intake in telomere length maintenance is rarely examined.

Objective

We aimed to test the relationship between dietary selenium intake and telomere length among middle-aged and older adults in America.

Methods

A total of 3194 United States adults older than 45 years old were extracted from the National Health and Nutrition Examination Survey (NHANES) in 1999–2000 and 2001–2002. Leukocyte telomere length was measured using the quantitative real-time polymerase chain reaction (qPCR). Dietary selenium intake was assessed by a trained interviewer using 24-hour dietary recall method. Generalized linear models were performed to evaluate the association of dietary selenium intake with telomere length. The restricted cubic spline analysis was used to further explore the nonlinear dose-response relationship between dietary selenium intake and telomere length.

Results

After adjusting potential confounders, every 20 µg increase in dietary selenium intake was associated with 0.42% (95% CI: 0.02%, 0.82%) longer telomere length in all participants. In the subgroup analyses, dietary selenium intake was related to longer telomere length in females (Percentage change: 0.87%; 95% CI: 0.26%, 1.49%) and non-obese participants (Percentage change: 0.53%; 95% CI: 0.04%, 1.02%), but not in males (Percentage change: 0.04%; 95% CI: -0.49%, 0.57%) and obese participants (Percentage change: 0.21%; 95% CI: -0.47%, 0.91%). The restricted cubic spline analysis showed a linear association between dietary selenium intake and telomere length.

Conclusions

This study indicated that the increased dietary selenium intake was associated with longer telomere length among middle-aged and older adults in America. These findings require further corroboration from future prospective studies.

Pet ownership reduces CV risk

Pet ownership and cardiovascular health in the US general population

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Researchers investigated the potential link between pet ownership and lower cardiovascular disease risk in the US general population.

They identified cases of heart failure (HF), coronary artery disease (CAD), systemic hypertension (SH), diabetes mellitus (DM), and stroke from the 1999-2016 National Health and Nutrition Examination Survey (NHANES). There were 42,038 NHANES participants; of those, 10,905 (31%) were queried regarding pet ownership. Higher hemoglobin, lower LDL cholesterol, and a lower prevalence of DM, SH, and stroke were observed among pet owners.

Findings revealed an independent link of pet ownership (either cat or dog ownership) with a lower prevalence of SH—but not HF, CAD, DM, or stroke—compared with non-owners, after adjusting for potential confounders.

13 B. TMJ/ORAL**Periodontal disease and RA**

Seminars in Arthritis and Rheumatism

Is there a bidirectional association between rheumatoid arthritis and periodontitis? A systematic review and meta-analysis

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<https://doi.org/10.1016/j.semarthrit.2020.01.009>

Background

Several lines of evidence suggest a bi-directional association between Rheumatoid Arthritis (RA) and Periodontitis (PD). Our aim was to systematically appraise the evidence on the association between RA and PD in terms of clinical and laboratory outcomes.

Methods

An electronic search of several databases (PubMed, EMBASE, MEDLINE, LILACS, CINHL, Scopus, Web of Science, The Cochrane Library, OpenGrey and Google Scholar) was conducted up to March 2019 (PROSPERO CRD42018107817) by two independent reviewers. Observational studies included in the review were quality-appraised using the Newcastle-Ottawa Scale (NOS) tool. Random effects models were used for quantitative analyses.

Results

A total of 8 case-control studies were identified after the final search of 1491 titles. Following quality assessment, 2 studies were excluded due to the high risk of bias, while the remaining 6 were further analysed. Meta-analyses revealed no substantial effect of RA on the Probing Pocket Depth (PPD) and Clinical Attachment Level (CAL) of patients with PD when compared to controls but high degree of study heterogeneity was found. To the contrary, PD was associated with substantially worse RA disease activity as assessed by an increase in the DAS28 score of 0.74 (0.25–1.24, 95% CI, $p < 0.001$).

Conclusion

There is consistent evidence suggesting that PD is associated with worse RA clinical activity as assessed by DAS28 scores whereas, RA patients do not have worsened PD clinical outcomes.

13 D. SLEEP**Sleep apnea and lipids**

Clin Sleep Med 2020 Jan 31[

Association Between Obstructive Sleep Apnea and Lipid Metabolism During REM and NREM Sleep

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- PMID: 32003732 DOI: 10.5664/jcsm.8242

Background: Obstructive sleep apnea (OSA) is thought to be associated with dyslipidemia. However, differences concerning dyslipidemia during rapid eye movement (REM) and non-REM (NREM) sleep have yet to be determined.

Objectives: This study was designed to explore the association between lipid profiles and OSA during REM or NREM sleep.

Methods: This is a clinical cohort. A total of 2,619 participants with at least 30 min of REM sleep were included. Sleep variables and fasting lipid profiles [total cholesterol (TC), triglycerides (TG), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), apolipoprotein (apo)A-I, apoB, apoE, and lipoprotein(a) (Lp(a))] were obtained from each subject. Apnea-hypopnea indices (AHIs) in REM and NREM sleep (AHI_{REM} and AHI_{NREM} , respectively) were recorded. Linear regression analysis was used to assess the associations of AHI_{REM} and AHI_{NREM} with lipid profiles.

Results: When stratified by the AHI_{REM} severity of OSA, all demographics, clinical variables, and sleep parameters differed between the groups except for apoA-I. In fully adjusted multivariate linear regression models, AHI_{REM} was independently associated with increasing levels of TG, HDL-C, and apoE ($p = 0.04$, $p = 0.01$ and $p = 0.01$, respectively). AHI_{NREM} was independently associated with increasing levels of TC, TG, LDL and apoB, and lower level of HDL-C (all $p < 0.05$). In sensitivity analyses by only exploring associations in patients who had an $AHI_{NREM} < 5$ or $AHI_{REM} < 5$ times per hour in separate regression models, AHI_{REM} was not associated with all lipid profile in almost all adjusted models (all $p > 0.05$), while AHI_{NREM} was associated with elevated TC, LDL-C, and apoB ($p = 0.03$, $p = 0.01$ and $p = 0.01$, respectively).

Conclusion: AHI_{NREM} was independently associated with the greatest alterations in serum lipids, including TC, LDL-C, and apoB.

Weight loss and SA

J Clin Sleep Med 2020 Jan 31

Effectiveness of an Intensive Weight-Loss Program for Severe Obstructive Sleep Apnea Syndrome (OSA) in Patients Undergoing CPAP Treatment: A Randomized Controlled Trial

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Study objectives: To determine whether an intensive weight-loss program (IWLP) is effective for reducing weight, the severity of sleep apnea syndrome (OSA) and metabolic variables in patients with obesity and severe OSA undergoing continuous positive airway pressure treatment.

Methods: 42 patients were randomized to the control (CG, n=20) or the intervention group (IG, n=22), who followed a 12-month IWLP. The primary outcome was a reduction in the apnea-hypopnea index (AHI) as measured at 3 and 12 months by full polysomnography. Metabolic variables, blood pressure, body fat composition by bioimpedance, carotid intima media thickness and visceral fat by computed tomography scan were also assessed.

Results: Mean age was 49(6.7) years, body mass index 35(2.7) kg/m² and AHI 69(20) events/h. Weight reduction was higher for the IG than the CG at 3 and 12 months, -10.5 vs -2.3 kg (p<0.001), and -8.2 vs -0.1 kg (p<0.001), respectively, as was loss of visceral fat at 12 months. AHI decreased more in the IG at 3 months (-23.72 events/h vs -9 events/h) but the difference was not significant at 12 months, though 28% of patients from the IG had an AHI <30 events/h compared to none in the CG (p=0.046). At 12 months, the IG showed a reduction in C-reactive protein (p=0.013), glycated hemoglobin (p=0.031) and an increase in high density lipoprotein cholesterol (p=0.027).

Conclusions: An IWLP in patients with obesity and severe OSA is effective for reducing weight and OSA severity. It also results in an improvement in lipid profiles, glycemic control and inflammatory markers.

Sleep in elderly and risks

J Clin Sleep Med 2020 Jan 31

Association of Sleep Trajectory in Adulthood With Risk of Hypertension and Its Related Risk Factors: The China Health and Nutrition Survey

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- PMID: 32003742 DOI: 10.5664/jcsm.8254

Objective: Few studies have examined association between sleep duration trajectories and hypertension. This study aims to examine association of sleep duration trajectories with risk of hypertension and its related factors.

Methods: This study used weight longitudinal data for 7,397 adults who provided valid responses in questionnaire with regard to information of sleep and hypertension from the China Health and Nutrition Survey (2004-2011). Subgroup analyses were included 5,532 participants who measured hypertension-related factors using blood samples. Latent class trajectory analysis was used to identify different sleep duration trajectories. Multivariate cox regression models and General linear regression models were used to assess association of trajectories with hypertension and its related factors.

Results: Compared to stable sleep duration around 8 hours, the trajectory showing persist decrease as aging was significantly associated with increased risk of hypertension (HR:1.12, 95%CI: 1.01-1.24), while no significant association between trajectory showing increase to 9 hours as aging and risk of hypertension was observed (HR:1.05, 95%CI: 0.93-1.19). Further, uric acid levels, fasting glucose levels, TC levels and Apo-B levels were significantly higher in the trajectory showing persist decrease as aging than the other two trajectories (all P<0.05).

Conclusions: Decreasing sleep duration as aging is significantly associated with increased risk of hypertension and higher levels of its biomarkers throughout adulthood.

Posture and nasal resistance

J Clin Sleep Med 2020 Jan 31

Efficacy of a Novel Oral Appliance and the Role of Posture on Nasal Resistance in Obstructive Sleep Apnea

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- PMID: 32003735 DOI: 10.5664/jcsm.8244

Study objectives: High nasal resistance is associated with oral appliance (OA) treatment failure in OSA. A novel OA with an in-built oral airway has been shown to reduce pharyngeal pressure swings during sleep and may be efficacious in those with high nasal resistance. The role of posture and mandibular advancement on nasal resistance in OSA remains unclear. This study aimed to determine the: 1) effects of posture and mandibular advancement on nasal resistance in OSA and 2) efficacy of a new OA device including in patients with high nasal resistance.

Methods: 39 people with OSA (7 females, AHI (mean±SD)= 29±21 events/h) completed split-night polysomnography with and without OA (order randomized). Prior to sleep, participants were instrumented with a nasal mask, pneumotachograph, and a choanal pressure catheter for gold standard nasal resistance quantification seated, supine and lateral (with and without OA, order randomized).

Results: Awake nasal resistance increased from seated, to supine, to lateral posture (median [IQR]= 1.8 [1.4,2.7], 2.7 [1.7,3.5], 3.4 [1.9,4.6] cmH₂O/L/s, p<0.001). Corresponding measures of nasal resistance did not change with mandibular advancement (2.3 [1.4,3.5], 2.5 [1.8,3.6], 3.5 [1.9,4.8] cmH₂O/L/s, p=0.388). The median AHI reduced by 47% with OA therapy (29±21 vs. 18±15 events/h, p=0.002). Participants with high nasal resistance (>3 cmH₂O/L/s) had similar reductions in AHI versus those with normal nasal resistance (61 [-8,82] vs. 40 [-5,62]%, p=0.244).

Conclusions: Nasal resistance changes with posture in people with OSA. A novel oral appliance with an in-built oral airway reduces OSA severity in people with OSA, including in those with high nasal resistance.

Reduced exercise with OSA

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Exercise Capacity and Comorbidities in Patients With Obstructive Sleep Apnea

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Study objectives: There are few studies evaluating: 1. exercise capacity, as assessed by the six minutes walking distance test (6MWD) in large populations with obstructive sleep apnea (OSA); 2. correlations with patients' comorbidities.

Methods: Cluster analysis on data of 1228 patients. Severity of exercise limitation was defined on the basis of 6MWD.

Results: Sixty-one % showed exercise limitation (29.2 % and 31.9 % mild and severe exercise limitation, respectively). About 60 and 40 % of patients were included in cluster 1 (CL1) and 2 (CL2), respectively. CL1 included younger patients with high prevalence of apneas, desaturations, hypertension with better exercise tolerance. CL2 included older patients, all COPD, high prevalence of chronic respiratory failure (CRF), less apneas but severe mean desaturation, daytime hypoxemia, more severe exercise limitation and exercise induced desaturations. Only chronic respiratory failure (CRF) and COPD, significantly ($p < 0.001$) correlated with 6MWD $< 85\%$ predicted. 6MWD correlated positively with apnea-hypopnea index, oxygen desaturation index, nocturnal SpO₂, resting arterial oxygen tension, mean SpO₂ on exercise, and negatively with age, body-mass index, time spent during night with SpO₂ $< 90\%$, mean nocturnal desaturation, arterial carbon dioxide tension and number of comorbidities. Patients without had higher exercise capacity than those with severe comorbidities, ($p < 0.001$). Exercise limitation was significantly worse in OSA severity class I when compared to other classes ($p < 0.001$).

Conclusions: High rate of OSA patients suffer from exercise limitation. Older age, comorbidities as COPD and CRF, OSA severity class I, severe mean nocturnal desaturation and daytime hypoxemia are associated with worse exercise tolerance.

Decrease in fascial expression in patients with OSA

J Clin Sleep Med 2020 Jan 31

Performance of Facial Expression Classification Tasks in Patients With Obstructive Sleep Apnea-Hypopnea Syndrome (OSAS)

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- PMID: 32003740 DOI: 10.5664/jcsm.8256

Study objectives: People show a facial recognition speed advantage, termed positive classification advantage (PCA), when judging whether a facial expression is happy compared to angry or sad. This study investigated emotional face recognition by patients with obstructive sleep apnea-hypopnea syndrome (OSAS) with impaired neurocognition.

Methods: Thirty-four patients with OSAS and 26 healthy control patients who underwent 1 night of polysomnographic evaluation before recruitment were asked to complete an emotion recognition task. Accuracy rates and reaction times were recorded and analyzed using repeated-measures analysis of variance.

Results: When participants were asked to classify positive (happy) versus negative (sad) emotional expressions, the phenomenon of PCA disappeared. Importantly, however, compared with the control patients who showed PCA, patients with OSAS identified sad faces faster but were similar in happy face processing.

Conclusion: In accordance with previous studies that showed depressive emotion in patients with OSAS, our results indicate that patients with OSAS show negative bias in facial expression recognition, which might lead to decline in ability of social communication.

Pain and sleep

Factors Associated With Sleep Quality in Patients With Chronic Widespread Pain Attending Multidisciplinary Treatment

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PMID: 31999892 DOI: 10.1111/papr.12873

Purpose: (i) To investigate the prevalence of poor sleep quality and (ii) to explore the associations between clinical, cognitive and emotional factors and quality of sleep in patients with chronic widespread pain (CWP) attending multidisciplinary treatment.

Method: Baseline data were used from 163 CWP patients referred for multidisciplinary treatment. Linear regression models were used to assess the relationship of clinical (pain, fatigue, pain interference and disability), emotional (anxiety, depression and psychological distress) and cognitive factors (catastrophizing, acceptance, self-efficacy, kinesiophobia and illness beliefs) with sleep quality, as measured with the Pittsburgh Sleep Quality Index (PSQI).

Results: Poor sleep quality was found in 92% of the patients. The multivariable model showed that a higher level of fatigue ($b = 1.77$, $SE = 0.62$, $\beta = 0.21$, $t = 2.87$, $p < 0.01$), psychological distress ($b = 0.02$, $SE = 0.01$, $\beta = 0.27$, $t = 3.50$, $p < 0.01$) and more concerns about the illness ($b = 0.46$, $SE = 0.18$, $\beta = 0.20$, $t = 2.57$, $p = 0.01$) were independently associated with poorer quality of sleep. The overall linear regression model explains 27.9% of sleep quality.

Conclusions: The high prevalence of poor sleep quality in patients with CWP referred for multidisciplinary treatment emphasizes the need to target sleep during treatment. Further research is needed to disentangle the cause-effect relationship between fatigue, psychological distress and concerns about the illness and poor sleep (this abstract has been published before see 1).

19. GLENOHUMERAL/SHOULDER**LE exercise helps shoulder pain****ORIGINAL RESEARCH LOWER EXTREMITY AEROBIC EXERCISE AS A TREATMENT FOR SHOULDER PAIN**

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Background: Shoulder girdle pain is a common disabling complaint with a high lifetime prevalence. Interventions aimed at decreasing shoulder pain without stressing shoulder girdle structures have the potential to improve participation in multimodal shoulder rehabilitation programs.

Hypothesis/Purpose: The aim of this study was to determine the acute effects of moderate intensity lower extremity exercise on mechanically induced shoulder pain in individuals without shoulder injury. It was hypothesized that participants would exhibit less shoulder pain, as indicated by increased pain thresholds, following lower extremity exercise. **Study Design:** Repeated measures study.

Methods: Thirty (30) healthy participants were recruited to participate in this study. Pain pressure algometry was used to mechanically induce shoulder pain over the infraspinatus muscle belly. This was performed on the dominant shoulder before and immediately after performing 10 minutes of moderate intensity lower extremity exercise using a recumbent exercise machine. Heart rate and rate of perceived exertion were measured following exercise. Repeated measures ANOVA was used to compare pain pressure threshold scores between the baseline and post-exercise time points. Significance was set at $p \leq 0.05$ a priori. Effect size (ES) was calculated using Glass's Δ .

Results: Moderate intensity lower extremity aerobic exercise led to significantly ($F=8.471$, $p=0.003$) decreased evoked shoulder pain in healthy adults with moderate effect sizes (0.30-0.43).

Conclusions: Lower extremity aerobic exercise significantly decreased pain of the infraspinatus in this sample of young healthy participants. Utilization of lower extremity exercise may be of benefit for younger patients to decreased acute shoulder pain.

Level of Evidence: 2b: individual cohort study

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32 A. KNEE/ACL

Return to sports before 9 months has 7x greater risk

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Young Athletes Who Return to Sport Before 9 Months After Anterior Cruciate Ligament Reconstruction Have a Rate of New Injury 7 Times That of Those Who Delay Return

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- PMID: 32005095 DOI: 10.2519/jospt.2020.9071

Objective: To investigate the association between sustaining a second anterior cruciate ligament (ACL) injury and (1) time to return to sport, (2) symmetrical muscle function, and (3) symmetrical quadriceps strength at the time of return to sport in young athletes after primary ACL reconstruction.

Design: Prospective cohort study.

Methods: Patient demographics and results from 5 tests of muscle function (2 strength tests and 3 hop tests) were extracted from a rehabilitation registry. A questionnaire was sent to athletes (15-30 years old) who were involved in knee-strenuous sport before the injury and had undergone primary ACL reconstruction to determine time of return to knee-strenuous sport (preinjury Tegner Activity Scale score of 6 or greater). We used the Cox proportional hazard regression model to analyze time to event.

Results: One hundred fifty-nine (32% of the initial sample) athletes (mean \pm SD age, 21.5 \pm 4.4 years; 64% female) were included. Athletes with a higher preinjury Tegner Activity Scale score had a higher rate of second ACL injury (hazard ratio = 2.1; 95% confidence interval: 1.2, 3.6; $P < .01$). Athletes who returned to knee-strenuous sport before 9 months after reconstruction had a higher rate of second ACL injury (hazard ratio = 6.7; 95% confidence interval: 2.6, 16.7; $P < .001$). There was no association between symmetrical muscle function or quadriceps strength and second ACL injury.

Conclusion: Returning to knee-strenuous sport before 9 months after ACL reconstruction was associated with an approximately 7-fold increased rate of sustaining a second ACL injury. Achieving symmetrical muscle function or quadriceps strength was not associated with new ACL injury in young athletes. *J Orthop Sports Phys Ther* 2020;50(2):83-90. doi:10.2519/jospt.2020.9071.

34. PATELLA

Lumbar manip helps PF pain

The Immediate Effect of Lumbopelvic Manipulation on EMG of Vasti and Gluteus Medius in Athletes With Patellofemoral Pain Syndrome: A Randomized Controlled Trial

Alireza Motealleh¹, Elham Gheysari¹, Esmaeil Shokri¹, Sobhan Sobhani²

- PMID: 26995778 DOI: 10.1016/j.math.2016.02.002

Abstract

Objective: To evaluate the immediate effect of lumbopelvic manipulation on EMG activity of vastus medialis, vastus lateralis and gluteus medius as well as pain and functional performance of athletes with patellofemoral pain syndrome.

Design: Randomized placebo-controlled trial.

Methods: Twenty eight athletes with patellofemoral pain syndrome were randomly assigned to two groups. One group received a lumbopelvic manipulation at the side of the involved knee while the other group received a sham manipulation. EMG activity of the vasti and gluteus medius were recorded before and after manipulation while performing a rocking on heel task. The functional abilities were evaluated using two tests: step-down and single-leg hop. Additionally, the pain intensity during the functional tests was assessed using a visual analog scale.

Results: The onset and amplitude of EMG activity from vastus medialis and gluteus medius were, respectively, earlier and higher in the manipulation group compared to the sham group. There were no significant differences, however, between two groups in EMG onset of vastus lateralis. While the scores of one-leg hop test were similar for both groups, significant improvement was observed in step-down test and pain intensity in the manipulation group compared to the sham group.

Conclusions: Lumbopelvic manipulation might improve patellofemoral pain and functional level in athletes with patellofemoral pain syndrome. These effects could be due to the changes observed in EMG activity of gluteus medius and vasti muscles. Therefore, the lumbopelvic manipulation might be considered in the rehabilitation protocol of the athletes with patellofemoral pain syndrome.

35. KNEE/TOTAL**Risk of****Survival and risk factor analysis of medial open wedge high tibial osteotomy for unicompartment knee osteoarthritis**

Arthroscopy — Jin C, et al. | February 03, 2020

In order to find out the survival rates and to examine the factors that influence survival rate after primary treatment with medial open wedge high tibial osteotomy (MOWHTO) for medial unicompartmental knee osteoarthritis, researchers conducted a retrospective study including a total of 339 knees after a minimum of 5 years' follow-up (mean age was 56 years, and mean follow-up duration was 9.6 years).

Before and after surgery, clinical assessment using Knee Society Score and Western Ontario and McMaster Universities Osteoarthritis Index score and radiographic evaluation, including mechanical axis, were performed. For young and active individuals, MOWHTO appears to be a good treatment choice with medial knee osteoarthritis and varus alignment, with acceptable survival rates and satisfactory outcomes.

The results indicated that age ≥ 65 years, grade 4 cartilage damage in the medial compartment, grade ≥ 2 cartilage damage in lateral compartment, and under-correction of HKA angle seem to be significant risk factors correlated with failure.

40. ANKLE SPRAINS AND INSTABILITY

Mid-foot mobilization

Effects of midfoot joint mobilization on ankle-foot morphology and function following acute ankle sprain. A crossover clinical trial

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DOI: <https://doi.org/10.1016/j.msksp.2020.102130>

Highlights

- A trial was performed assessing midfoot joint mobilization after ankle sprain vs. sham.
- Midfoot joint mobilizations yielded greater pain reduction and perceived improvement.
- Midfoot joint mobilizations are recommended with exercises following ankle sprain.

Abstract

Background

Midfoot joint impairment is likely following lateral ankle sprain (LAS) that may benefit from mobilization.

Objective

To investigate the effects of midfoot joint mobilizations and a one-week home exercise program (HEP) compared to a sham intervention and HEP on pain, patient-reported outcomes (PROs), ankle-foot joint mobility, and neuromotor function in young adults with recent LAS.

Methods

All participants were instructed in a stretching, strengthening, and balance HEP and were randomized *a priori* to receive midfoot joint mobilizations (forefoot supination, cuboid glide and plantar 1st tarsometatarsal) or a sham laying-of-hands. Changes in pain, physical, psychological, and functional PROs, foot morphology, joint mobility, pain-to-palpation, neuromotor function, and dynamic balance were assessed pre-to-post treatment and one-week following. Participants crossed-over following a one-week washout to receive the alternate treatment and were assessed pre-to-post treatment and one-week following. ANOVAs, *t*-tests, proportions, and 95% confidence intervals (CI) were calculated to assess changes in outcomes. Cohen's *d* and 95% CI compared treatment effects at each time-point.

Results

Midfoot joint mobilization had greater effects ($p < .05$) in reducing pain 1-week post ($d = 0.8$), and increasing Single Assessment Numeric Evaluation (immediate: $d = 0.6$) and Global Rating of Change (immediate: $d = 0.6$) compared to a sham treatment and HEP.

Conclusion

Midfoot joint mobilizations and HEP yielded greater pain reduction and perceived improvement compared to sham and is recommended in a comprehensive rehabilitation program following LAS.

45 A. MANUAL THERAPY LUMBAR & GENERAL

Lumbar manip helps Patella Femoral pain

The Immediate Effect of Lumbopelvic Manipulation on EMG of Vasti and Gluteus Medius in Athletes With Patellofemoral Pain Syndrome: A Randomized Controlled Trial

Alireza Motealleh¹, Elham Gheysari¹, Esmaeil Shokri¹, Sobhan Sobhani²

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Objective: To evaluate the immediate effect of lumbopelvic manipulation on EMG activity of vastus medialis, vastus lateralis and gluteus medius as well as pain and functional performance of athletes with patellofemoral pain syndrome.

Design: Randomized placebo-controlled trial.

Methods: Twenty eight athletes with patellofemoral pain syndrome were randomly assigned to two groups. One group received a lumbopelvic manipulation at the side of the involved knee while the other group received a sham manipulation. EMG activity of the vasti and gluteus medius were recorded before and after manipulation while performing a rocking on heel task. The functional abilities were evaluated using two tests: step-down and single-leg hop. Additionally, the pain intensity during the functional tests was assessed using a visual analog scale.

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Conclusions: Lumbopelvic manipulation might improve patellofemoral pain and functional level in athletes with patellofemoral pain syndrome. These effects could be due to the changes observed in EMG activity of gluteus medius and vasti muscles. Therefore, the lumbopelvic manipulation might be considered in the rehabilitation protocol of the athletes with patellofemoral pain syndrome.

56. ATHLETICS**Hamstring tears rehab**

J Orthop Sports Phys Ther , 1-35 2019 Jun 28

Pain-Free Versus Pain-Threshold Rehabilitation Following Acute Hamstring Strain Injury: A Randomized Controlled Trial

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PMID: 31253060 DOI: 10.2519/jospt.2019.8895

Study design: Randomized controlled trial.

Background: Conventional guidelines recommend hamstring strain injury (HSI) rehabilitation should only be performed and progressed in complete absence of pain, despite lack of comparison to alternative approaches.

Objectives: The primary aim of this study was to compare the number of days from acute HSI to return to play (RTP) clearance following a standardised rehabilitation protocol performed within either pain-free or pain-threshold limits. The secondary aims were to compare isometric knee flexor strength, biceps femoris long head (BF_{lh}) fascicle length, fear of movement and re-injury during a six-month follow-up between pain-free and pain-threshold groups.

Methods: Forty-three men with acute HSIs were randomly allocated to either a pain-free (n=22) or pain-threshold (n=21) rehabilitation group. Days from HSI to RTP clearance, isometric knee flexor strength, BF_{lh} fascicle length, fear of movement and re-injuries within six-month follow-up were reported.

Results: The median time from HSI to RTP clearance was 15 days (95% CI = 13 to 17) in the pain-free group and 17 days (95% CI = 11 to 24) in the pain-threshold group, which was not significantly different (p = 0.37). Recovery of isometric knee flexor strength at 90/90 degrees of hip/knee flexion was greater in the pain-threshold group at RTP clearance by 15% (95% CI = 1 to 28) and by 15% (95% CI = 1 to 29) at two-month follow-up. BF_{lh} fascicles were 0.91cm (95% CI = 0.34 to 1.48) longer at two-month follow-up in the pain-threshold group. Two re-injuries occurred in both the pain-free and pain-threshold group during six-month follow-up.

Conclusion: Pain-threshold rehabilitation did not accelerate RTP clearance but did result in greater recovery of isometric knee flexor strength and better maintenance of BF_{lh} fascicle length improvements compared to pain-free rehabilitation. *J Orthop Sports Phys Ther*, Epub 28 Jun 2019. doi:10.2519/jospt.2019.8895.