

2. LBP

Lumbopelvic kinematics

Within/between-session reliability and agreement of lumbopelvic kinematics in the sagittal plane during functional movement control tasks in healthy persons

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Highlights

- Lumbopelvic kinematics were recorded during 4 functional movement control tasks.
- Within/between session reliability and agreement was calculated for each task.
- 3 out of 4 functional tasks had ICCs between 0.69–0.96.
- The implications for clinical practice and research are made.

Abstract

A lack of adequate lumbopelvic movement control has been suggested as an underlying mechanism contributing to the development and persistence of low back pain and lower limb pathologies.

The purpose of this study was to assess the within and between session reliability (i.e. the ability to discriminate between subjects), and the agreement (i.e. whether scores are identical on repeated measures) of lumbopelvic kinematics in the sagittal plane during functional movement control tasks. Kinematics were measured with a portable inertial measurement unit system. Twenty healthy subjects (mean age = 22 (\pm 3.6) years, 15 females) performed four tasks on two occasions, five to seven days apart: standing bow (SB), lifting a box from the floor (LIFT), stance-to-sit-to-stance (SIT) and placing a box on an overhead shelf (OVERH). Participants were asked to keep the lumbar spine in a neutral lordosis during the tasks. The maximal deviations from the neutral starting position for the lumbar spine and hip were calculated. Intraclass correlations (ICCs), standard errors of measurement (SEM), minimal detectable changes and 95% limits of agreement were used to assess reliability and agreement. SB and LIFT were substantially reliable (ICC = 0.89–0.96), SIT was moderately to substantially reliable (ICC = 0.69–0.92) and OVERH was fairly to moderately reliable (ICC = 0.40–0.67). SEMs ranged between 1.1° and 3.1° for the lumbar spine and between 0.7° and 4.8° for the hip.

Based on the substantial reliability and acceptable agreement, SB and LIFT are most appropriate to quantify lumbopelvic movement control during functional tasks.

Biopsychosocial model in PT**Perceptions of physiotherapists towards the management of non-specific chronic low back pain from a biopsychosocial perspective: A qualitative study**

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Highlights

- Physiotherapists have good awareness of the multidimensional nature of back pain.
- Physiotherapists lacked confidence in addressing psychological factors.
- Physiotherapists lacked the time to address psychological factors effectively.
- Engaging back pain patients to self-manage required careful negotiation.
- Training is needed for physiotherapists to deliver a broader model of care.

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 categories 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 recognized 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.

Algorithm not better

Does a Diagnostic Classification Algorithm Help to Predict the Course of Low Back Pain? A Study of Danish Chiropractic Patients With 1-Year Follow-up

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Background

A diagnostic classification algorithm, “the Petersen classification,” consisting of 12 categories based on a standardized examination protocol, was developed for the primary purpose of identifying clinically homogeneous subgroups of individuals with low back pain (LBP).

Objectives

To investigate whether a diagnostic classification algorithm is associated with activity limitation and LBP intensity at follow-up assessments of 2 weeks, 3 months, and 1 year, and whether the algorithm improves outcome prediction when added to a set of known predictors.

Methods

This was a prospective observational study of 934 consecutive adult patients with new episodes of LBP who were visiting chiropractic practices in primary care and categorized according to the Petersen classification. Outcomes were disability and pain intensity measured with questionnaires at 2 weeks and 3 months, and 1-year trajectories of LBP based on weekly responses to text messages. Associations were analyzed with linear and logistic regression models. In a subgroup of patients, the numbers of visits to primary and secondary care were described.

Results


The Petersen classification was statistically significantly associated with all outcomes ($P < .001$) but explained very little of the variance ($R^2 = 0.00–0.05$). Patients in the nerve root involvement category had the most pain and activity limitation and the most visits to primary and secondary care. Patients in the myofascial pain category were the least affected.

Conclusion

The Petersen classification was not helpful in determining individual prognosis in patients with LBP receiving usual care in chiropractic practice. However, patients should be examined for potential nerve root involvement to improve prediction of likely outcomes.

Level of Evidence

Prognosis, level 1b. *J Orthop Sports Phys Ther* 2018;48(11):837–846. Epub 8 May 2018. doi:10.2519/jospt.2018.8083

Movement based systems not superior**Are movement-based classification systems more effective than therapeutic exercise or guideline based care in improving outcomes for patients with chronic low back pain? A systematic review**Sean P. Riley, Brian T. Swanson & Elizabeth Dyer 

- <https://doi.org/10.1080/10669817.2018.1532693>

Objectives: The purpose of this systematic review was to determine if movement-based classification (MBC) systems are more effective than therapeutic exercise or guideline-based care (GBC) in improving outcomes in patients with low back pain (LBP) based upon randomized clinical trials (RCT) with moderate to high methodological quality and low to moderate risk of bias.

Methods: The search strategy was developed by a librarian experienced in systematic review methodology and peer reviewed by a second research librarian. The following databases were searched from their inception to May 17, 2018: PubMed, Embase, Cochrane Central Register of Controlled Trials, ClinicalTrials.gov, and the WHO International Clinical Trials Registry Platform. The identified RCTs with a PEDro score of ≥ 6 were screened and assessed for risk of bias by two blinded individual reviewers using Covidence.

Results: Seven studies were identified that had moderate-to-high methodological quality. One of the studies was identified as having a high risk of bias. Of the six studies that remained, only one study reported finding a statistically significant difference at the immediate follow-up that was not clinically significant. There was no significance at 6 and 12 months.

Discussion: There is a paucity of moderate to high methodological quality RCTs with similar methodology that compare MBC to standard of care treatments for patients with LBP. Studies with moderate to high methodological quality that have a low risk of bias do not support MBCs as being superior to general exercise or GBC in the treatment of nonradicular LBP.

Level of Evidence: 1a

7. PELVIC ORGANS/WOMAN'S HEALTH

Low fat diet helps breast CA

Association of low-fat dietary pattern with breast cancer overall survival: A secondary analysis of the Women's Health Initiative randomized clinical trial

JAMA — Chlebowski RT, et al. | November 05, 2018

Researchers investigated whether there was an association between low-fat dietary pattern and breast cancer overall survival (breast cancer followed by death from any cause measured from cancer diagnosis) in this secondary analysis of the Women's Health Initiative randomized clinical trial that was conducted at 40 US clinical centers recruiting study participants from 1993 through 1998. In women who received a diagnosis of breast cancer during the dietary intervention period, an increased overall survival was noted in those in the dietary group. The increase was partially attributed to better survival from several causes of death.

Methods

- For this investigation, 48,835 postmenopausal women with no previous breast cancer and dietary fat intake of greater than 32% by food frequency questionnaire were randomized either to a dietary intervention group (40%; n = 19,541), aimed to reduce fat intake to 20% of energy and increase fruit, vegetable, and grain intake or a usual-diet comparison group (60%; n = 29,294).
- In subsequent dietary intervention activities, dietary group participants with incident breast cancers continued to partook.
- Breast cancer overall survival for incident breast cancers diagnosed during the 8.5-year (median) dietary intervention, examined in post hoc analyses after 11.5 years (median) postdiagnosis follow-up was the main outcome and measure analyzed.

Results

- According to the findings obtained, mean (SD) age at screening was 62.7 (6.7) years and age at diagnosis was 67.6 (6.9) years of 1764 women diagnosed with breast cancer during the dietary intervention period.
- Breast cancer overall survival was significantly greater for women in the dietary intervention group vs the usual-diet comparison group (10-year survival of 82% and 78%, respectively; hazard ratio [HR], 0.78; 95% CI, 0.65-0.94; $P=.01$) with 516 total deaths.
- Fewer deaths were documented from breast cancer (68 vs 120; HR, 0.86; 95% CI, 0.64-1.17), other cancers (36 vs 65; HR, 0.76; 95% CI, 0.50-1.17), and cardiovascular disease (27 vs 64; HR, 0.62; 95% CI, 0.39-0.99) in the dietary group.

Vaginal birth following C section

Archives of Gynecology and Obstetrics pp 1–6|

Labor progression of women attempting vaginal birth after previous cesarean delivery with or without epidural analgesia

- Netanella Miller

Purpose

Normal labor curves have not been assessed for women undergoing a trial of labor after cesarean delivery (TOLAC). This study examined labor patterns during TOLAC in relation to epidural analgesia use.

Methods

Retrospective cohort study of deliveries of women undergoing TOLAC at a single, academic, tertiary medical center. Length of first, second and third stages of labor was compared between 424 women undergoing TOLAC in the current labor with no previous vaginal delivery (VD) and 357 women with at least one previous VD and current TOLAC.

Results

Women in the TOLAC only group had significantly longer labors compared to women in the previous VD and TOLAC group. In both groups, women who underwent epidural analgesia had longer first and second stages of labor. In the TOLAC only group, more women who had epidural analgesia tended to deliver vaginally as compared to those who did not ($P = 0.09$). For women who delivered vaginally, the 95th percentile for the second stage duration with epidural was 3.40 h in the TOLAC only group and 2.3 h in the previous VD and TOLAC group. The 95th percentile for the second stage duration without epidural was 1.4 h in the TOLAC only group and 0.9 h in the previous VD and TOLAC group.

Conclusions

Operative intervention (instrumental delivery/cesarean delivery (CD)) might be considered for women attempting TOLAC after a 2-h duration of second stage without epidural and 3-h duration with epidural, with an hour less for women who also had previous VD.

Atrophy vaginitis

17 β -estradiol vaginal tablet versus conjugated equine estrogen vaginal cream to relieve menopausal atrophic vaginitis

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Menopause: November 2018 - Volume 25 - Issue 11 - p 1208–1213

doi: 10.1097/GME.0000000000001220

Objectives: The efficacy and safety of 25- μ g 17 β -estradiol vaginal tablets (Vagifem) were assessed and compared with 1.25-mg conjugated equine estrogen vaginal cream (Premarin Vaginal Cream) for the relief of menopausal-derived atrophic vaginitis, resulting from estrogen deficiency.

Design: In a multicenter, open-label, randomized, parallel-group study, 159 menopausal women were treated for 24 weeks with either vaginal tablets or vaginal cream. Efficacy was evaluated by relief of vaginal symptoms and concentrations of serum estradiol and follicle-stimulating hormone. Safety was monitored by the incidence of adverse events, evaluation of endometrial biopsies, and clinical laboratory results. Patients also assessed the acceptability of the study medications.

Results: Composite scores of vaginal symptoms (dryness, soreness, and irritation) demonstrated that both treatments provided equivalent relief of the symptoms of atrophic vaginitis. At weeks 2, 12, and 24, increases in serum estradiol concentrations and suppression of follicle-stimulating hormone were observed in significantly more patients who were using the vaginal cream than in those who were using the vaginal tablets ($p < 0.001$). Fewer patients who were using the vaginal tablets experienced endometrial proliferation or hyperplasia compared with patients who were using the vaginal cream. Significantly more patients who were using the vaginal tablets rated their medication favorably than did patients who were using the vaginal cream ($p \leq 0.001$). Patients who were receiving the vaginal tablets also had a lower incidence of patient withdrawal (10% versus 32%).

Conclusions: Treatment regimens with 25- μ g 17 β -estradiol vaginal tablets and with 1.25-mg conjugated equine estrogen vaginal cream were equivalent in relieving symptoms of atrophic vaginitis. The vaginal tablets demonstrated a localized effect without appreciable systemic estradiol increases or estrogenic side effects. Vaginal tablet therapy resulted in greater patient acceptance and lower withdrawal rates compared with vaginal cream therapy.

8. VISCERA

Organic foods reduce risk of CA

Association of Frequency of Organic Food Consumption With Cancer Risk Findings From the NutriNet-Santé Prospective Cohort Study

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al Benjamin Allès, PhD¹; Louise Seconda, MSc¹; Paule Latino-

Martel, PhD¹; Khaled Ezzedine, MD, PhD^{1,2}; Pilar Galan, MD, PhD¹; Serge Hercberg, MD,

PhD^{1,3}; Denis Lairon, PhD⁴; Emmanuelle Kesse-Guyot, PhD¹

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Key Points

Question What is the association between an organic food–based diet (ie, a diet less likely to contain pesticide residues) and cancer risk? **Findings** In a population-based cohort study of 68 946 French adults, a significant reduction in the risk of cancer was observed among high consumers of organic food. **Meaning** A higher frequency of organic food consumption was associated with a reduced risk of cancer; if the findings are confirmed, promoting organic food consumption in the general population could be a promising preventive strategy against cancer.

Importance Although organic foods are less likely to contain pesticide residues than conventional foods, few studies have examined the association of organic food consumption with cancer risk. **Objective** To prospectively investigate the association between organic food consumption and the risk of cancer in a large cohort of French adults.

Design, Setting, and Participants In this population-based prospective cohort study among French adult volunteers, data were included from participants with available information on organic food consumption frequency and dietary intake. For 16 products, participants reported their consumption frequency of labeled organic foods (never, occasionally, or most of the time). An organic food score was then computed (range, 0-32 points). The follow-up dates were May 10, 2009, to November 30, 2016.

Main Outcomes and Measures This study estimated the risk of cancer in association with the organic food score (modeled as quartiles) using Cox proportional hazards regression models adjusted for potential cancer risk factors.

Results Among 68 946 participants (78.0% female; mean [SD] age at baseline, 44.2 [14.5] years), 1340 first incident cancer cases were identified during follow-up, with the most prevalent being 459 breast cancers, 180 prostate cancers, 135 skin cancers, 99 colorectal cancers, 47 non-Hodgkin lymphomas, and 15 other lymphomas. High organic food scores were inversely associated with the overall risk of cancer (hazard ratio for quartile 4 vs quartile 1, 0.75; 95% CI, 0.63-0.88; *P* for trend = .001; absolute risk reduction, 0.6%; hazard ratio for a 5-point increase, 0.92; 95% CI, 0.88-0.96).

Conclusions and Relevance A higher frequency of organic food consumption was associated with a reduced risk of cancer. Although the study findings need to be confirmed, promoting organic food consumption in the general population could be a promising preventive strategy against cancer.

Early sexual active and increase hypertension

Early sexual experience and hypertension in US adults: results from the National Health and Nutrition Examination Survey 2001–2016Ngueta, Gerard^{a,b,c}; Ndjaboue, Ruth^{d,e}

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doi: 10.1097/HJH.0000000000001821

Objectives: We examined whether the early initiation of sexual activity is associated with hypertension in US adults, and whether the timing of first menstruation is meaningful in regard of this association. We also assessed the effect modification by ethnicity.

Methods: Using data from 2001 to 2016 National Health and Nutrition Examination Survey, we included 39 788 women. The association of age at the first sexual intercourse (FSI) and hypertension (SBP \geq 130 mmHg or DBP \geq 80 mmHg) was examined using multivariate logistic regression. Effect modification by ethnicity was assessed through a cross-product interaction term between age at FSI and ethnicity.

Results: Among women with FSI after their first menstruation, the odds of hypertension decrease by 20% [95% confidence interval (CI) -27 to -13%] in those who experienced FSI after 19 years of age, relative to those with FSI before 19 years of age. Ethnicity significantly modified the inverse association between age at FSI and hypertension (P value for interaction: 0.0003). Among non-Hispanic white, having FSI aged at least 19 years reduced the odds of hypertension by 34% (95% CI -41 to -27%). Turning to Latina women, the FSI before 19 years of age and before first menstruation resulted to a marked increase in the odds of hypertension [odds ratio = 1.38 (95% CI 1.15–1.65)]. In non-Hispanic black, the age at FSI was not linked to hypertension.

Conclusion: The FSI before 19 years of age is associated with hypertension during adulthood in US non-Hispanic white and Hispanic women, but not in non-Hispanic black.

Dementia and signs

Evaluation of the concurrent trajectories of cardiometabolic risk factors in the 14 years before dementia

JAMA — Wagner M, et al. | October 29, 2018

Researchers sought to model concurrently and assess the trajectories of cardiometabolic risk factors up to 14 years before a diagnosis in patients with dementia vs matched controls free of dementia. In this nested case-control study of 3,925 participants, body mass index (BMI) declined in prodromal dementia, possibly reflecting early preclinical changes. In the older age range, lower blood pressure (BP) before dementia could be both a result of and a contributing factor for the disease; higher blood glucose levels seem to be a risk factor for dementia in these patients.

Researchers suggest that for primary and secondary prevention of dementia in the older age range, elevated glycemia, low BP, and weight loss may be primary targets for managing cardiometabolic health.

Methods Researchers performed a case-control study nested within the Three-City study, a French population-based cohort of older persons (≥ 65 years); the study included 6 home visits with neuropsychological testing between 1999 and 2014.

- In September 2017, they performed data analysis.
- They evaluated a total of 785 incident dementia cases and 3,140 controls matched by sex, age, educational level, and cohort center at the time of diagnosis.
- Between 1999 and 2014, they performed repeated measurements of BMI and systolic (SBP) and diastolic (DBP) blood pressure, high-density lipoprotein (HDL-C) and low-density lipoprotein cholesterol (LDL-C), triglycerides, and glycemia levels.
- Based on systematic detection and validated diagnosis, they determined dementia incidence.

Results For this study, researchers included a total of 785 cases and 3,140 controls (2,530 [65%] women; mean [SD] age, 76 [5] years).

- A faster decline in BMI, slower increase of SBP and constantly lower DBP were evident among cases.
- For the most common profile, following were the mean values (95% CI) 14 years before diagnosis (–14 years) and at diagnosis (year 0): BMI, 26.1 (25.6-26.5) and 24.8 (24.5-25.1) for a case, and 25.7 (25.4-26.1) and 25.3 (25.0-25.5) for a control; for SBP, 135.2 (131.8-138.7) and 142.1 (140.3-143.9) mm Hg for a case, and 135.8 (132.9-138.6) and 144.9 (143.7-146.1) mm Hg for a control; for DBP, 76.5 (74.7-78.5) and 74.0 (73.1-74.9) mm Hg for a case, and 76.7 (75.1-78.3) and 75.0 (74.2-75.7) mm Hg for a control.
- In contrast, cases displayed higher glycemia (mean fasting glucose values [95% CI] at –14 years and year 0: 89.4 [86.9-92.1] and 96.4 [93.7-99.3] mg/dL for a case, and 87.1 [85.1-89.2] and 95.3 [93.5-97.1] mg/dL for a control), with a significant case-control difference from –1.6 to –14 years prior to diagnosis.

13 A. CRANIUM**Great occipital nerve sensitivity**

Original Research Paper

Increased mechanosensitivity of the greater occipital nerve in subjects with side-dominant head and neck pain – a diagnostic case-control study

Tibor M. Szikszay, Kerstin Luedtke & Pickartz Harry von 

- <https://doi.org/10.1080/10669817.2018.1480912>

Objectives: To investigate differences in pressure pain thresholds (PPTs) and longitudinal mechanosensitivity of the greater occipital nerve (GON) between patients with side-dominant head and neck pain (SDHNP) and healthy controls. Evaluation of neural sensitivity is not a standard procedure in the physical examination of headache patients but may influence treatment decisions.

Methods: Two blinded investigators evaluated PPTs on two different locations bilaterally over the GON as well as the occipitalis longissimus-slump (OLSS) in subjects with SDHNP ($n = 38$) and healthy controls ($n = 38$).

Results: Pressure pain sensitivity of the GON was lower at the occiput in patients compared to controls ($p = 0.001$). Differences in pressure sensitivity of the GON at the nuchal line, or between the dominant headache side and the non-dominant side were not found ($p > 0.05$). The OLSS showed significant higher pain intensity in SDHNP ($p < 0.001$). In comparison to the non-dominant side, the dominant side was significantly more sensitive ($p = 0.004$).

Discussion: Palpation of the GON at the occiput and the OLSS may be potentially relevant tests in SDHNP. One explanation for an increased bilateral sensitivity may be sensitization mechanisms. Future research should investigate the efficacy of neurodynamic techniques directed at the GON.

13 C. AIRWAYS/SWALLOWING/SPEECH**Depression and sleep****Journal Summaries in Internal Medicine****Functional connectivities in the brain that mediate the association between depressive problems and sleep quality**

JAMA — Cheng W, et al. | October 29, 2018

As depression is associated with poor sleep quality, researchers assessed which brain areas mediate the link between depressive symptoms and poor sleep quality to further understanding of the differences in brain connectivity in depression. On analyzing 1,017 participants in the Human Connectome Project, the lateral orbitofrontal cortex, dorsolateral prefrontal cortex, anterior and posterior cingulate cortices, insula, parahippocampal gyrus, hippocampus, amygdala, temporal cortex, and precuneus all have increased functional connectivity correlated with both sleep and Depressive Problems scores. These findings may have implications for better-directed treatments for depression and associated sleep problems.

Methods

- Data from participants in the Human Connectome Project were collected using the Adult Self-report of Depressive Problems portion of the Achenbach Adult Self-Report for Ages 18-59, a survey of self-reported sleep quality, and resting-state functional magnetic resonance imaging.
- In 8,718 participants from the UK Biobank, researchers performed cross-validation of the sleep findings.
- They assessed correlations between functional connectivity, scores on the Adult Self-Report of Depressive Problems, and sleep quality as main outcomes.

Results

- From the Human Connectome Project, researchers included a total of 1,017 participants (of whom 546 [53.7%] were female; age range, 22 to 35 years) drawn from a general population in the US.
- A positive correlation was noted between the Depressive Problems score and poor sleep quality ($r = 0.371$; $P < .001$).
- They identified a total of 162 functional connectivity links involving areas associated with sleep, such as the precuneus, anterior cingulate cortex, and the lateral orbitofrontal cortex; 39 of these links were noted to be associated with the Depressive Problems scores, as well.
- The lateral orbitofrontal cortex, dorsolateral prefrontal cortex, anterior and posterior cingulate cortices, insula, parahippocampal gyrus, hippocampus, amygdala, temporal cortex, and precuneus were the brain areas with increased functional connectivity associated with both sleep and Depressive Problems scores.
- These functional connectivities were identified to underlie the association of the Depressive Problems score with poor sleep quality in the mediation analysis ($\beta = 0.0139$; $P < .001$).

Habitual sleep**Habitual sleep quality, plasma metabolites and risk of coronary heart disease in post-menopausal women**

Tianyi Huang Oana A Zeleznik Elizabeth M Poole Clary B Clish Amy A DeikJustin M Scott Céline Vetter Eva S Schernhammer Robert Brunner Lauren Hale ... Show more
International Journal of Epidemiology, dyy234, <https://doi.org/10.1093/ije/dyy234>

Background

Epidemiologic studies suggest a strong link between poor habitual sleep quality and increased cardiovascular disease risk. However, the underlying mechanisms are not entirely clear. Metabolomic profiling may elucidate systemic differences associated with sleep quality that influence cardiometabolic health.

Methods

We explored cross-sectional associations between sleep quality and plasma metabolites in a nested case–control study of coronary heart disease (CHD) in the Women’s Health Initiative (WHI; $n = 1956$) and attempted to replicate the results in an independent sample from the Nurses’ Health Study II (NHSII; $n = 209$). A sleep-quality score (SQS) was derived from self-reported sleep problems asked in both populations. Plasma metabolomics were assayed using LC–MS with 347 known metabolites. General linear regression was used to identify individual metabolites associated with continuous SQS (false-discovery rate <0.05). Using least absolute shrinkage and selection operator (LASSO) algorithms, a metabolite score was created from replicated metabolites and evaluated with CHD risk in the WHI.

Results

After adjusting for age, race/ethnicity, body mass index (BMI) and smoking, we identified 69 metabolites associated with SQS in the WHI (59 were lipids). Of these, 16 were replicated in NHSII (15 were lipids), including 6 triglycerides (TAGs), 4 phosphatidylethanolamines (PEs), 3 phosphatidylcholines (PCs), 1 diglyceride (DAG), 1 lysophosphatidylcholine and N6-acetyl-L-lysine (a product of histone acetylation). These metabolites were consistently higher among women with poorer sleep quality. The LASSO selection resulted in a nine-metabolite score (TAGs 45: 1, 48: 1, 50: 4; DAG 32: 1; PEs 36: 4, 38: 5; PCs 30: 1, 40: 6; N6-acetyl-L-lysine), which was positively associated with CHD risk (odds ratio per SD increase in the score: 1.16; 95% confidence interval: 1.05, 1.28; $p = 0.0003$) in the WHI after adjustment for matching factors and conventional CHD risk factors.

Conclusions

Differences in lipid metabolites may be an important pathogenic pathway linking poor habitual sleep quality and CHD risk.

Sleep and exercise

Sports Medicine pp 1–19|

Effects of Evening Exercise on Sleep in Healthy Participants: A Systematic Review and Meta-Analysis

- Jan Stutz Remo Eiholzer Christina M. Spengler

Background

Current recommendations advise against exercising in the evening because of potential adverse effects on sleep.

Objectives

The aim of this systematic review was to investigate the extent to which evening exercise affects sleep and whether variables such as exercise intensity or duration modify the response.

Methods

A systematic search was performed in PubMed, Cochrane, EMBASE, PsycINFO, and CINAHL databases. Studies evaluating sleep after a single session of evening physical exercise compared to a no-exercise control in healthy adults were included. All analyses are based on random effect models.

Results

The search yielded 11,717 references, of which 23 were included. Compared to control, evening exercise significantly increased rapid eye movement latency (+ 7.7 min; $p = 0.032$) and slow-wave sleep (+ 1.3 percentage points [pp]; $p = 0.041$), while it decreased stage 1 sleep (− 0.9 pp; $p = 0.001$). Moderator analyses revealed that a higher temperature at bedtime was associated with lower sleep efficiency (SE) ($b = - 11.6$ pp; $p = 0.020$) and more wake after sleep onset (WASO; $b = + 37.6$ min; $p = 0.0495$). A higher level of physical stress (exercise intensity relative to baseline physical activity) was associated with lower SE (− 3.2 pp; $p = 0.036$) and more WASO (+ 21.9 min; $p = 0.044$). Compared to cycling, running was associated with less WASO (− 12.7 min; $p = 0.037$). All significant moderating effects disappeared after removal of one study.

Conclusion

Overall, the studies reviewed here do not support the hypothesis that evening exercise negatively affects sleep, in fact rather the opposite. However, sleep-onset latency, total sleep time, and SE might be impaired after vigorous exercise ending ≤ 1 h before bedtime.

22 B. INSTABILITY**Over 40 dislocations**

Archives of Orthopaedic and Trauma Surgery pp 1–7|

Glenoid and rotator interval dimension in patients older than 40 years after traumatic anterior shoulder dislocation

- Darius M Thiesen Marielle Ernst Jennifer Meyer Alexander S Spiro Jin Yamamura Till O Klatt

Introduction

The number of patients above 40 years suffering an anterior shoulder dislocation for the first time has recently increased. This study investigated the role of glenoid version, inclination and rotator interval dimension in patients older than 40 years with an anterior shoulder dislocation. We hypothesize that the rotator interval plays a more important role than the osseous alignment in older patients.

Materials and methods

Patients aged older than 40 years with a traumatic shoulder dislocation were compared with patients who had undergone magnetic resonance imaging (MRI) for a different reason. The MRIs of 61 dislocation group patients were compared with MRIs of 73 comparison group patients. Two shoulder surgeons measured glenoid version, inclination, height and width, rotator interval (RI) height, base (width) and area. The study and comparison group consisted of 61 patients with a mean age of 59 ± 9 years and 73 patients with a mean age of 57 ± 12 , respectively.

Results

The mean glenoid version of the dislocation group was $-4.9^\circ \pm 4.4^\circ$ (retroversion) and mean inclination was $9.8^\circ \pm 8^\circ$ (reclination). Mean rotator interval base, height and the rotator interval area was 46 ± 6 mm, 14 ± 5 mm and 33 ± 14 mm², respectively. The comparison group had a mean glenoid version of $-5.4^\circ \pm 5.4^\circ$ and a mean inclination of $10.8^\circ \pm 6.2^\circ$. The rotator interval base was 41 ± 6 mm, the height was 16 ± 4 mm and the area was 34 ± 11 mm². The between-group differences were statistically significant for rotator interval height and base ($p < 0.0001$). A significant difference was revealed for the height–width ratio of the glenoid ($p = 0.0001$).

Conclusions

In patients older than 40 years who have suffered anterior shoulder dislocation, the shape of the glenoid rather than its spatial position is of significance. A wide and high rotator interval promotes anterior shoulder dislocation in these patients.

32 A. KNEE/ACL**Wearable sensors****RESEARCH REPORT****Detection of Knee Power Deficits Following Anterior Cruciate Ligament Reconstruction Using Wearable Sensors**

Authors: Kristamarie A. Pratt, PhD, MEng^{1,2}, Susan M. Sigward, PT, PhD, ATC¹

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2018 **Volume:**48 **Issue:**11 **Pages:**895–902 **DOI:**10.2519/jospt.2018.7995

Background

Following anterior cruciate ligament reconstruction (ACLR), individuals present with significant knee power absorption deficits during deceleration of dynamic tasks. An inability to quantify these deficits clinically may underlie their persistence. Recent studies suggest that segment angular velocities measured with wearable inertial sensors have the potential to provide valuable information about knee power during a single-limb loading (SLL) task. However, the diagnostic accuracy of these measures and procedures needs to be established before translating this information to clinical practice.

Objective

To determine the diagnostic accuracy of using inertial-sensor thigh angular velocities to detect asymmetrical knee loading during a dynamic SLL task in individuals following ACLR.

Methods

In this controlled laboratory study, 21 individuals following ACLR performed 3 trials of SLL on each limb. Sagittal plane peak knee power absorption was calculated for each limb (reconstructed and nonsurgical) during deceleration. Between-limb ratios (reconstructed/nonsurgical limb) were calculated for knee power using marker-based motion analysis, and thigh angular velocity was extracted from inertial sensors. Sensitivity and specificity of thigh angular velocity ratios in diagnosing asymmetrical knee loading (knee power deficits greater than 15%) were determined using receiver operating characteristic curve analysis.

Results

Thigh angular velocity ratios detected asymmetrical knee loading when performing SLL with high sensitivity (81%) and specificity (100%).

Conclusion

These findings support the use of cost-effective wearable sensors to objectively quantify movement clinically in this population of individuals following ACLR. This study establishes procedures for the clinical quantification of dynamic knee loading deficits. *J Orthop Sports Phys Ther* 2018;48(11):895–902. Epub 11 Jul 2018. doi:10.2519/jospt.2018.7995

45 A. MANUAL THERAPY LUMBAR & GENERAL

McKenzie classification

An international survey of the comprehensiveness of the McKenzie classification system and the proportions of classifications and directional preferences in patients with spinal pain

Stephen May Richard Rosedale

DOI: <https://doi.org/10.1016/j.msksp.2018.06.006>

Highlights

- A worldwide survey of the use of the McKenzie classification system.
- Data were gathered from 54 experienced clinicians.
- Data were gathered on 750 patients.
- Derangement was most common (75%), with directional preference of extension in 82%.
- The next largest classification were OTHER (23%).

Abstract

Background

Classification of spinal pain has been a key goal identified in the research. However it is not clear if existing classification systems are comprehensive.

Objective

To examine the comprehensiveness and distribution of classifications within the McKenzie classification system (MDT), and the directional preference in consecutive patients with spine pain.

Study design

Prospective, observational study.

Methods

Clinicians with a Diploma in MDT provided data on patients that they had assessed, classified, managed, and then confirmed their classification at discharge. They provided data on the spinal area, the MDT classification, and the loading strategy used in management.

Results

Fifty-four clinicians from at least 15 different countries provided data on 750 patients: lumbar 64.8%, cervical 29.6%, thoracic 5.6%. The distribution of classifications was as follows: Derangement 75.4%, OTHER 22.8%, Dysfunction 1.7%, Postural syndrome 0.1%. In Derangements 82.5% had a directional preference for extension, 12.9% for lateral forces, and 4.6% for flexion. Those patients classified as one of the OTHER subgroups were given specific classifications.

Conclusion

Derangement was the most common classification and extension was by far the most common directional preference. A substantial proportion were classified as OTHER subgroups, for whom management is less straightforward.

Directional preference

Original Articles

Directional preference constructs for patients' low back pain in the absence of centralization

Richard Yarznbowicz & Minjing Tao

- <https://doi.org/10.1080/10669817.2018.1505329>

Objectives: A detailed description of how Directional Preference (DP) constructs are measured could accelerate research to practice translation and improve research findings for Mechanical Diagnosis and Therapy (MDT) stakeholders. A secondary analysis of a prospective, observational cohort study was conducted to understand (1) the type and prevalence of DP constructs at first examination and (2) the relationships between DP constructs and clinical outcomes at follow-up.

Methods: Data were collected and analyzed from 1485 consecutive patients who presented to outpatient, private practice clinics with primary complaints of non-specific low back pain (LBP); 400 patients met the inclusion criteria and completed first examination and follow-up data. Statistical analysis determined prevalence and the relationships between DP constructs at first examination and clinical outcomes at follow-up.

Results: The primary findings in this investigation were that (1) the most prevalent DP constructs at first examination were related to range of motion (ROM) and pain intensity (Patient Reported Improvement in ROM (74.8%), Increase in Spine ROM (29.5%), and Pain Intensity Change (17.3%)), (2) all groups improved and made clinically meaningful improvements in disability and pain intensity at follow-up, (3) no clinically significant differences in disability or pain intensity were found between the groups at follow-up, and (4) 26.5% and 6.5% of patients exhibited a relative increase in lumbar spine extension and flexion ROM, respectively, post repeated movement testing on the first examination.

Discussion: The findings in this study assist providers in making assessment and treatment decisions with their patients by offering insight regarding the most prevalent DP constructs typically found at the first examination and their subsequent association with outcome when Centralization (CEN) does not occur. Recommendations for researchers have been made to further explore the DP framework used in this study.

MD burnout

October 2018

Association Between Physician Burnout and Patient Safety, Professionalism, and Patient Satisfaction: A Systematic Review and Meta-analysis

Maria Panagioti, PhD¹; Keith Geraghty, PhD²; Judith Johnson, PhD³; et al; Anli Zhou, MD²; Efharis Panagopoulou, PhD⁴; Carolyn Chew-Graham, MD⁵; David Peters, MD⁶; Alexander Hodkinson, PhD²; Ruth Riley, PhD⁷; Aneez Esmail, MD, PhD²

JAMA Intern Med. 2018;178(10):1317-1330. doi:10.1001/jamainternmed.2018.3713

Question Is physician burnout associated with low-quality, unsafe patient care?

Findings This meta-analysis of 47 studies on 42 473 physicians found that burnout is associated with 2-fold increased odds for unsafe care, unprofessional behaviors, and low patient satisfaction. The depersonalization dimension of burnout had the strongest links with these outcomes; the association between unprofessionalism and burnout was particularly high across studies of early-career physicians.

Meaning Physician burnout is associated with suboptimal patient care and professional inefficiencies; health care organizations have a duty to jointly improve these core and complementary facets of their function.

45 B. MANUAL THERAPY CERVICAL**Side bending test for upper C spine rotation****Comparison of range of motion during the cervical flexion rotation versus the side-bending rotation test in individuals with and without hyperlaxity****Brian T. Swanson** , Austin B. Craven, Jeremy Jordan & Rhane Martin

- <https://doi.org/10.1080/10669817.2018.1527565>

Objective: The flexion rotation test (FRT) is used to determine C1-2 involvement in individuals with neck pain and headaches. Some individuals present with generalized joint hyperlaxity (GJH) which could influence the results of this test, which relies on a soft tissue locking mechanism. The purpose of this study was to examine the side-bend rotation test (SBRT), which utilizes osseous locking, compared to the FRT.

Methods: Thirty-eight healthy individuals (25 female, 26.03 years) were assessed for GJH via the Beighton Hypermobility Index (BHI). A blinded examiner performed the FRT and SBRT bilaterally, measuring ROM using a digital goniometer device.

Results: Statistically significant differences in ROM were present for the FRT based on negative (0-3) and positive (4-9) BHI score: (Right 46.4 ± 3.6 , 49.6 ± 4.8 , $p = .031$), (Left 45.5 ± 3.5 , 49.0 ± 5.2 , $p = .023$); no differences were observed for the SBRT (Right 37.6 ± 4.3 , 38.9 ± 3.4), (Left 37.7 ± 4.2 , 37.6 ± 3.4). When further stratifying the groups, a one-way ANOVA and post-hoc testing revealed significant differences of FRT range of motion between the BHI 7-9 group (52.4 ± 4.4 – 53.9 ± 3.4) compared to BHI 0-3 (45.4 ± 3.6 – 46.2 ± 3.5) and 4-6 groups (46.0 ± 3.7 – 46.4 ± 2.2), $p < .001$; there were no significant differences between the 0-3 and 4-6 groups. There were no between group differences for the SBRT, BHI 0-3 (37.5 ± 4.4 – 37.7 ± 4.3), BHI 7-9 (39.9 ± 3.7 – 39.2 ± 3.5).

Discussion: Individuals with GJH demonstrated significant differences in ROM for the FRT, but not the SBRT. The SBRT may be a useful alternative to the FRT for individuals with hyperlaxity. However, further research needs to be conducted to assess the diagnostic ability of this test in individuals with cervical pathology.

Arterial stiffness**Shear wave elastography of the cervical arteries: A novel approach to the assessment of cervical arterial wall stiffness. An investigation of psychometric properties and intra-rater reliability**

Lucy Thomas [Juanita Low](#) [Kalos Chan](#) [Gail Durbridge](#)

DOI: <https://doi.org/10.1016/j.msksp.2018.09.008>

Highlights

- Cervical arterial wall stiffness can be measured with shear wave elastography.
- Vertebral artery stiffness measures can be obtained in the upper cervical region.
- Stiffer vertebral than internal carotid walls may imply greater vulnerability to trauma.
- Psychometric properties of cervical artery elastography appear acceptable.

Background

Cervical arterial dissection, can occur spontaneously and is a rare but catastrophic adverse event associated with neck manipulation. Pathophysiology involves altered integrity of the arterial wall increasing its vulnerability to minor trauma. Those at risk are difficult to detect. Previous screening investigated blood flow but altered mechanical properties as stiffness of cervical arterial wall could provide a more valid indication of arterial integrity or even early dissection.

Objectives

To investigate suitability and intra-rater reliability of shear wave ultrasound elastography to measure mechanical properties of the cervical arterial wall. Suitability was assessed by ability to track arteries along their length and measurement accuracy.

Design

Observational and intra-rater reliability study.

Methods

Internal carotid (ICA) and vertebral arteries (VA) of healthy participants were examined with shear wave elastography. Shear wave velocity (m/s) indicative of wall stiffness was measured with the head in the neutral position: proximally (C3-4) and distally (C1-2) where injuries have been more commonly reported. Proximal measures were repeated to assess intra-rater reliability.

Results

Thirty healthy participants (13 female), mean age of 29 (± 12.8) years were imaged. Mean VA wall stiffness (3.4 m/s) was greater than ICA (2.3 m/s) ($p < 0.000$). Intra-rater reliability for ICA was ICC 0.81 (CI 0.52 to 0.92) and for VA ICC 0.76 (CI 0.38 to 0.9). Standard error of measurement was 0.16 for ICA and 0.34 for VA.

Conclusions

Shear wave ultrasound elastography appears a suitable and reliable method to measure cervical arterial wall stiffness, justifying further research into its use for screening arterial integrity.

Upper C spine rotation evaluation

Articles

The C0-C2 axial rotation test: normal values, intra- and inter-rater reliability and correlation with the flexion rotation test in normal subjects

Kiran Satpute, Sadaf Nalband & Toby Hall

- <https://doi.org/10.1080/10669817.2018.1533195>

Objectives: Impairment in upper cervical spine mobility is associated with cervicogenic headache severity and disability. Measures of such mobility include the flexion-rotation test (FRT), which requires full cervical flexion and may be influenced by lower cervical spine dysfunction. The C0-C2 axial rotation test also evaluates upper cervical mobility but normal values and reliability have not been reported. Our objective is to determine normal values, and intra-rater and inter-rater reliability of the C0-C2 axial rotation test.

Methods: Two therapists independently evaluated the FRT and C0-C2 axial rotation test with an iPhone compass application on 32 asymptomatic subjects with mean age 40.53 (SD 11.64) years on two occasions. Measurement procedures were standardized; and order of testing randomized.


Results: For the FRT and C0-C2 axial rotation test reliability was high ($ICC > 0.88$). For rater one, Mean range to the left during the FRT and C0-C2 axial rotation test was 45.0° (6.04) and 14.43° (2.94), respectively, while range to the right was 44.6° (6.57) and 15.44° (2.68). For the FRT and C0-C2 axial rotation test the standard error of measurement was at most 2° , while the minimum detectable change was at most 4° . A strong positive correlation exists between the FRT and C0-C2 axial rotation test ($r = 0.84$, $P < 0.01$).

Discussion: The range recorded during the C0-C2 axial rotation test and FRT have high levels of reliability when evaluated using an iPhone. The strong correlation between the FRT and C0-C2 axial rotation test indicate that both may be measuring similar constructs, but each test needs to be referenced to normal values.

48 A. STM

Dry needling vs STM

Dry needling versus trigger point compression of the upper trapezius: a randomized clinical trial with two-week and three-month follow-up

Maryam Ziaefar, Amir Massoud Arab, Zahra Mosallanezhad & Mohammad Reza Nourbakhsh 

- <https://doi.org/10.1080/10669817.2018.1530421>

Objectives: The purpose of this randomized controlled trial was to investigate the long-term clinical effect of dry needling with two-week and three-month follow up, on individuals with myofascial trigger points in the upper trapezius muscle.

Methods: A sample of convenience (33 individuals) with a trigger point in the upper trapezius muscle, participated in this study. The individuals were randomly assigned to two groups: trigger point compression ($N = 17$) or dry needling ($N = 16$). Pain intensity, neck disability, and disability of the arm, hand, and shoulder (DASH) were assessed before treatment, after treatment sessions, and at two-week and three-month follow ups.

Results: The result of repeated measures ANOVA showed significant group-measurement interaction effect for VAS ($p = .02$). No significant interaction was found for NPQ and DASH ($p > .05$). The main effect of measurements for VAS, NPQ, and DASH were statistically significant ($p < .0001$). The results showed a significant change in pain intensity, neck disability, and DASH after treatment sessions, after two weeks and three months when compared with before treatment scores in both groups. There was no significant difference in the tested variables after two-week or three-month as compared to after treatment sessions between the two groups. However, pain intensity after treatment sessions was significantly different between the two groups ($p = .02$).

Discussion: Dry needling and trigger point compression in individuals with myofascial trigger point in the upper trapezius muscle can lead to three-month improvement in pain intensity and disability.

52. EXERCISE

Prevalence of exercise in adults

Muscle-Strengthening Exercise Among 397,423 U.S. Adults: Prevalence, Correlates, and Associations With Health Conditions

Jason A. Bennie,

DOI: <https://doi.org/10.1016/j.amepre.2018.07.022>

Introduction

Although muscle-strengthening exercise has multiple independent health benefits, little is known about muscle-strengthening exercise participation and associations with adverse health conditions among U.S. adults.

Methods

In 2017, data were analyzed from the U.S. 2015 Behavioral Risk Factor Surveillance System. During telephone surveys, respondents reported how many times during the past week they engaged in muscle-strengthening exercise. Weighted weekly muscle-strengthening exercise frequencies were calculated for the total sample and across sociodemographic and lifestyle characteristics. A multivariable logistic regression assessed the odds of having self-reported adverse health conditions (e.g., diabetes, coronary heart disease) according to weekly muscle-strengthening exercise frequency.

Results

Data were available on 397,423 adults (aged 18–80 years). Overall, 30.2% (95% CI=29.9, 30.5) met the muscle-strengthening exercise recommendations (two or more times/week) and 57.8% (95% CI=57.5, 58.2) reported no muscle-strengthening exercise. Older age, insufficient aerobic activity, lower income, lower education, poorer self-rated health, being female, and being overweight/obese were significantly associated with lower odds of meeting the muscle-strengthening exercise recommendations independently of other characteristics. After adjusting for confounders (e.g., age, sex, income, smoking, aerobic activity), when compared with those who did none, muscle-strengthening exercise was associated with lower odds for several adverse health conditions, including prevalent diabetes, cancer (non-skin), poor self-rated health, and obesity.

Conclusions

Three in five U.S. adults do not engage in any muscle-strengthening exercise, despite an association for muscle-strengthening exercise with better health conditions. Future muscle-strengthening exercise promotion strategies should target older adults, females, those with low education/income, and those with a poor health status.

Compression garments

RESEARCH REPORT**Effect of Compression Garments on the Development of Delayed-Onset Muscle Soreness: A Multimodal Approach Using Contrast-Enhanced Ultrasound and Acoustic Radiation Force Impulse Elastography**

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2018 **Volume:**48 **Issue:**11 **Pages:**887–894 **DOI:**10.2519/jospt.2018.8038

Background

Delayed-onset muscle soreness (DOMS) is one of the most common reasons for impaired muscle performance in sports. However, little consensus exists regarding which treatments may be most effective, and the underlying mechanisms are poorly understood.

Objectives

To investigate the influence of compression garments on the development of DOMS, focusing on changes in muscle perfusion and muscle stiffness.

Methods

In this controlled laboratory study with repeated measures, muscle perfusion and stiffness, calf circumference, muscle soreness, passive ankle dorsiflexion, and creatine kinase levels were assessed in participants before (baseline) a DOMS-inducing eccentric calf exercise intervention and 60 hours later (follow-up). After DOMS induction, a sports compression garment (18–21 mmHg) was worn on 1 randomly selected calf until follow-up, while the contralateral calf served as an internal control. Muscle perfusion was assessed using contrast-enhanced ultrasound (peak enhancement and wash-in area under the curve), while muscle stiffness was assessed using acoustic radiation force impulse (shear-wave velocities). A magnetic resonance imaging scan of both lower legs was also performed during the follow-up testing session to characterize the extent of exercise-induced muscle damage. Comparisons were made between limbs and over time.

Results

Shear-wave velocity values of the medial gastrocnemius showed a significant interaction between time and treatment ($P = .006$), with the noncompressed muscle demonstrating lower muscle stiffness values at follow-up compared to baseline or to the compressed muscle. No significant differences in soleus muscle stiffness were noted between limbs or over time, as was the case for muscle perfusion metrics (peak enhancement and wash-in area under the curve) for the medial gastrocnemius and soleus muscles. Further, compression had no significant effect on passive ankle dorsiflexion, muscle soreness, calf circumference, or injury severity, per magnetic resonance imaging.

Conclusion

Continuous wearing of compression garments during the inflammation phase of DOMS may play an important role in regulating muscle stiffness; however, compression garments have no significant effects on intramuscular perfusion or other common clinical assessments. *J Orthop Sports Phys Ther* 2018;48(11):887–894. Epub 12 Jun 2018. doi:10.2519/jospt.2018.8038

54. POSTURE**Cervical posture and STM assessment****Reliability and validity of clinical tests to assess posture, pain location, and cervical spine mobility in adults with neck pain and its associated disorders: Part 4. A systematic review from the cervical assessment and diagnosis research evaluation (CADRE) collaboration**

N. Lemeunier E.B. Jeoun M. Suri K. Murnaghan P. Côté

DOI: <https://doi.org/10.1016/j.msksp.2018.09.013>

Highlights

- Few reliable and valid clinical tests to assess pain location and cervical spine mobility in adults with NAD exist.
- Evidence is preliminary at best, supported by phase I and II validity studies from the Sackett and Haynes classification (Sackett and Haynes, 2002).
- Clinicians must consider the preliminary nature of the evidence when recommending static soft tissue palpation for the localization of tender points in muscles, joint motion palpation when segmental stiffness and pain provocation are assessed in combination, visual inspection of posture with a digital caliper or goniometer, and active or passive range of motion tests using visual estimation (for cervical extension only) or devices (e.g., goniometer, inclinometer).
- There is no evidence that any of the clinical tests affects clinical outcomes related to NAD.

Purpose To determine the reliability and validity of clinical tests to assess posture, pain location, and cervical spine mobility in adults with grades I-IV neck pain and associated disorders (NAD).

Methods We systematically searched electronic databases to update the systematic review of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders. Eligible reliability and validity studies were critically appraised using modified versions of the QAREL and QUADAS-2 instruments, respectively. Evidence from low risk of bias studies were synthesized following best evidence synthesis principles.

Results We screened 14302 articles, critically appraised 46 studies, and found 32 low risk of bias articles (14 reliability and 18 validity studies). We found preliminary evidence of: 1) reliability of visual inspection, aided with devices (CROM and digital caliper) to assess head posture; 2) reliability and validity of soft tissue palpation to locate tender/trigger points in muscles; 3) reliability and validity of joint motion palpation to assess stiffness and pain provocation in combination; and 4) range of motion tests using visual estimation (in cervical extension only) or devices (digital caliper, goniometer, inclinometer) to assess cervical mobility.

Conclusions

We found little evidence to support the reliability and validity of clinical tests to assess head posture, pain location and cervical mobility in adults with NAD grades I-III. More advanced validity studies are needed to inform the clinical utility of tests used to evaluate patients with NAD.

56. ATHLETICS**Aerobic and cardiac function**

Sports Medicine pp 1–21|

Aerobic Training Protects Cardiac Function During Advancing Age: A Meta-Analysis of Four Decades of Controlled Studies

- Alexander J. Beaumont Fergal M. Grace Joanna C. Richards Amy K. Campbell
- Nicholas F. Sculthorpe

Background

In contrast to younger athletes, there is comparatively less literature examining cardiac structure and function in older athletes. However, a progressive accumulation of studies during the past four decades offers a body of literature worthy of systematic scrutiny.

Objectives

We conducted a systematic review, meta-analysis and meta-regression of controlled echocardiography studies comparing left ventricular (LV) structure and function in aerobically trained older athletes (> 45 years) with age-matched untrained controls, in addition to investigating the influence of chronological age.

Methods

Electronic databases were searched from inception to January 2018 before conducting a random-effects meta-analysis to calculate pooled differences in means, effect size and 95% confidence intervals (CIs). Study heterogeneity was reported using Cochran's Q and I^2 statistic.

Results

Overall, 32 studies (644 athletes; 582 controls) were included. Athletes had greater LV end-diastolic diameter (3.65 mm, 95% CI 2.66–4.64), interventricular septal thickness (1.23 mm, 95% CI 0.85–1.60), posterior wall thickness (1.20 mm, 95% CI 0.83–1.56), LV mass (72 g, 95% CI 46–98), LV mass index (28.17 g·m², 95% CI 19.84–36.49) and stroke volume (13.59 mL, 95% CI 7.20–19.98) (all $p < 0.01$). Athletes had superior global diastolic function [ratio of early (E) to late (A) mitral inflow velocity (E/A) 0.18, 95% CI 0.13–0.24, $p < 0.01$; ratio of early (e') to late (a') diastolic annular tissue velocity (e'/a') 0.23, 95% CI 0.06–0.40, $p = 0.01$], lower A (–8.20 cm·s⁻¹, 95% CI –11.90 to –4.51, $p < 0.01$) and a' (–0.72 cm·s⁻¹, 95% CI –1.31 to –0.12, $p = 0.02$), and more rapid e' (0.96 cm·s⁻¹, 95% CI 0.05–1.86, $p = 0.04$). Meta-regression for chronological age identified that athlete–control differences, in the main, are maintained during advancing age.

Conclusions

Athletic older men have larger cardiac dimensions and enjoy more favourable cardiac function than healthy, non-athletic counterparts. Notably, the athlete groups maintain these effects during chronological ageing.

59. PAIN

Cucumber extract helps knee OA

Effectiveness of *Cucumis sativus* extract versus glucosamine-chondroitin in the management of moderate osteoarthritis: a randomized controlled trial

Authors Nash RJ, Azantsa BKG, Sharp H, Shanmugham V

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DOI <https://doi.org/10.2147/CIA.S173227>

Purpose: Osteoarthritis (OA) is an age-related disease caused by the wear and tear of the joints. Presently, there is no known cure for OA, but its management involves the use of high doses of pain killers and antiinflammatory agents with different side and dependency effects. Alternative management strategies involve the use of high doses of glucosamine-chondroitin (GC). This study was carried out to evaluate the efficacy of Q-Actin™, an aqueous extract of *Cucumis sativus* (cucumber; CSE) against GC in the management of moderate knee OA.

Patients and methods: Overall, 122 patients (56 males and 66 females) aged between 40 and 75 years and diagnosed with moderate knee OA were included in this randomized double-blind, parallel-group clinical trial that took place in three different centers. The 180 day intervention involved two groups of 61 participants in each: the GC group, which received orally the generally prescribed dose of 1,350 mg of GC twice daily and the CSE group, which received orally 10 mg twice daily of CSE. The Western Ontario McMaster Universities Osteoarthritis Index (WOMAC), Visual Analog scale, and Lequesne's Functional Index were used to evaluate pain, stiffness, and physical function of knee OA in participants at baseline (Day 0) and on Days 30, 60, 90, 120, 150, and 180.

Results: In the CSE group, the WOMAC score was decreased by 22.44% and 70.29% on Days 30 and 180, respectively, compared to a 14.80% and 32.81% decrease in the GC group. Similar trends were observed for all the other pain scores. No adverse effect was reported during the trial period.

Conclusion: The use of 10 mg CSE, twice daily, was effective in reducing pain related to moderate knee OA and can be potentially used in the management of knee pain, stiffness, and physical functions related to OA.

65. NEUROLOGICAL CONDITIONS**MS and psoriasis**

American Journal of Clinical Dermatology pp 1–8|

Association of Multiple Sclerosis with Psoriasis: A Systematic Review and Meta-Analysis of Observational Studies

- Chia-Yu Liu

Background

Previous studies have reported the occurrence of psoriasis together with multiple sclerosis (MS). Although similar predisposing genes and pathomechanisms have been hypothesized, the relationship between the two remains obscure.

Objective

The aim of this systematic review and meta-analysis was to investigate the association between psoriasis and MS.

Methods

We searched MEDLINE, Embase, and CENTRAL in July 2018 for case-control, cross-sectional, or cohort studies that examined either the odds or risk of psoriasis in subjects with multiple sclerosis. The risk of bias of included studies was assessed using the Newcastle-Ottawa Scale. A random-effects model meta-analysis was used to calculate the odds ratio (OR) for case-control/cross-sectional studies and hazard ratio (HR) for cohort studies.

Results

We included 10 publications that reported a total of 11 studies (5 case-control, 4 cross-sectional and 2 cohort studies). The case-control and cross-sectional studies included 18,456 MS patients and 870,149 controls, while the two cohort studies involved 25,187 MS patients and 227,225 controls in total. Three studies were rated with a high risk of bias in comparability, non-response rate, and selection of controls. MS was associated with increased odds (OR 1.29; 95% confidence interval [CI] 1.14–1.45) and risk for psoriasis (HR 1.92; 95% CI 1.32–2.80).

Conclusion

Patients with MS display both increased prevalence and incidence of psoriasis.