

2. LBP

Cauda equina syndrome

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Assessment and management of cauda equina syndrome

Sue Greenhalgh Laura Finucane Chris Mercer James Selfe

PlumX Metrics DOI: <https://doi.org/10.1016/j.msksp.2018.06.002> |

Introduction

Cauda equina syndrome (CES) is a rare condition that affects the nerves in the spine supplying the bladder, bowel and sexual function. Identification and subsequent urgent action is required to avoid permanent damage to these essential organs. Delays in diagnosis can have devastating and life changing consequences for patients and result in high cost negligence claims.

Purpose

The purpose of this masterclass is to examine the current evidence and provide an evidence-based, clinically reasoned approach in the safe management of patients presenting with CES. It will include a focus on the importance of communication, documentation and a practical approach to safety netting those at risk.

Implications for practice

CES has significant implications for patients and clinicians alike. Timely, effective diagnosis and management of patients with CES results in a better outcome.

MSI system compared to exercise

Movement System Impairment-Based Classification Treatment Versus General Exercises for Chronic Low Back Pain: Randomized Controlled Trial

Daniel Camara Azevedo; Paulo Henrique Ferreira; Henrique de Oliveira Santos; Daniel Ribeiro Oliveira; Joao Victor Leite de Souza ...

Physical Therapy, Volume 98, Issue 1, 1 January 2018, Pages 28–39, <https://doi.org/10.1093/ptj/pzx094>

• Abstract

Background

Treatment for chronic low back pain (LBP) includes different forms of exercises, that to date have resulted in only small to moderate treatment effects. To enhance the treatment effects, different classification systems have been developed to classify people with LBP into more homogeneous subgroups leading to specific treatments for each subgroup.

Objective

The purpose of this study was to compare the efficacy of a treatment based on the Movement System Impairment (MSI) model with a treatment consisting of symptom-guided stretching and strengthening exercises in people with chronic LBP.

Design

The study was a 2-arm, prospectively registered, randomized controlled trial with a blinded assessor.

Setting

The study setting was a university physical therapy clinic in Brazil.

Patients

A total of 148 participants with chronic LBP participated in the study.

Interventions

Participants were randomly allocated to an 8-week treatment of either treatment based on the MSI-based classification system or symptom-guided stretching and strengthening exercises.

Measurements

Measures of pain intensity, disability, and global impression of recovery were obtained by a blinded assessor at baseline and at follow-up appointments at 2, 4, and 6 months after randomization.

Results

There were no significant between-group differences for the primary outcomes of pain intensity at 2 months (mean difference = 0.05, 95% CI = -0.90 to 0.80) and disability at 2 months (mean difference = 0.00, 95% CI = -1.55 to 1.56). There also were no statistically significant differences between treatment groups for any of the secondary outcome measures.

Limitations

Participants and physical therapists were not masked.

Conclusions

People with chronic LBP had similar improvements in pain, disability, and global impression of recovery with treatment consisting of symptom-guided stretching and strengthening exercises and treatment based on the MSI model.

7. PELVIC ORGANS/WOMAN'S HEALTH

Alcohol and infant cognition

Pediatrics July 2018 From the American Academy of Pediatrics

Drinking or Smoking While Breastfeeding and Later Cognition in Children

Louisa Gibson, Melanie Porter

Abstract

BACKGROUND AND OBJECTIVES: Although prenatal alcohol and nicotine exposure are associated with reduced cognition in children, associations between consumption of alcohol during lactation and cognition have not been examined. We aimed to examine whether drinking or smoking while breastfeeding lowers children's cognitive scores. We hypothesized that increased drinking or smoking would be associated with dose-dependent cognitive reductions.

METHODS: Data were sourced from Growing Up in Australia: The Longitudinal Study of Australian Children. Participants were 5107 Australian infants recruited in 2004 and assessed every 2 years. Multivariable linear regression analyses assessed relationships between drinking and smoking habits of breastfeeding mothers and children's Matrix Reasoning, Peabody Picture Vocabulary Test–Third Edition and Who Am I? scores at later waves.

RESULTS: Increased or riskier wave 1 maternal alcohol consumption was associated with reductions in Matrix Reasoning scores at age 6 to 7 years in children who had been breastfed ($B = -0.11$; $SE = 0.03$; 95% confidence interval: -0.18 to -0.04 ; $P = .01$). This relationship was not evident in infants who had never breastfed ($B = -0.02$; $SE = 0.10$; 95% confidence interval = -0.20 to 0.17 ; $P = .87$). Smoking during lactation was not associated with any outcome variable.

CONCLUSIONS: Exposing infants to alcohol through breastmilk may cause dose-dependent reductions in their cognitive abilities. This reduction was observed at age 6 to 7 years but was not sustained at age 10 to 11 years. Although the relationship is small, it may be clinically significant when mothers consume alcohol regularly or binge drink. Further analyses will assess relationships between alcohol consumption or tobacco smoking during lactation and academic, developmental, physical, and behavioral outcomes in children

Diastasis Recti in early post-partum**Relationship Between Interrectus Distance and Symptom Severity in Women With Diastasis Recti Abdominis in the Early Postpartum Period**

Nadia Keshwani Sunita Mathur Linda McLean
Physical Therapy, Volume 98, Issue 3, 1 March 2018, Pages 182–190, <https://doi.org/10.1093/ptj/pzx117>

Background

Diastasis recti abdominis (DrA) is associated with negative body image, musculoskeletal pain and dysfunction, and perhaps urogynecological complaints. The severity of DrA has traditionally been determined by measuring the interrectus distance (IRD); however, the relationship between IRD and symptoms in women with DrA is unclear.

Objective

The objective of the study was to investigate the relationship between IRD and symptom severity in women with DrA in the early postpartum period.

Design

This study used a cross-sectional design.

Methods

Thirty-two women with DrA were assessed at 3 weeks postpartum. The IRD was measured using ultrasound imaging. Symptom severity was assessed using the Multidimensional Body-Self Relations Questionnaire subscales (body image), visual analog scales (abdominal, low back, and pelvic pain intensity), the Modified Oswestry Index (disability due to low back pain), and the Pelvic Floor Distress Inventory and Pelvic Floor Impact Questionnaire (urogynecological dysfunction). Spearman correlation coefficients (ρ) between IRD and each outcome were calculated and tested using 1-tailed significance (adjusted $\alpha = .009$).

Results

The group median IRD was 2.97 cm (interquartile range = 1.65 cm), with the largest IRD in the sample being 7.97 cm. The IRD was significantly correlated with worst abdominal pain in the last 24 hours ($\rho = 0.45$, $P = .005$) and with overall body image ($\rho = -0.44$, $P = .006$) but not with the other outcomes.

Limitations

Women in the sample were primiparous, were in the early (3 weeks) postpartum period, had relatively low body mass indexes (mean = 25.0 kg/m²) considering that they had recently given birth, were all breast-feeding, and had a narrow age range (27–35 years old). These factors limited the generalizability of our results to all women with DrA.

Conclusions

This preliminary work suggests that, in the early postpartum period, IRD as a measure of DrA severity is meaningful for body image.

Sleep and metastatic breast CA

Breast Cancer Res Treat. 2018 Sep;171(2):443-448. doi: 10.1007/s10549-018-4831-x. Epub 2018 May 29.

Association between sleep disorders and the presence of breast cancer metastases in gynecological practices in Germany: a case-control study of 11,412 women.

Jacob L¹, Scholten PC², Kostev K³, Kalder M².

PURPOSE:

The goal of the present study was to analyze the impact of sleep disorders on the development of metastases in women with breast cancer followed in gynecological practices in Germany.

METHODS:

The study included women who were initially diagnosed with breast cancer in 262 gynecological practices in Germany between January 2000 and December 2015 (index date). Participants were followed for up to 5 years. Women diagnosed with breast cancer metastases within a period of 6 months and before the end of follow-up were matched (1:1) by age, index year, physician, type of hormonal therapy (tamoxifen or aromatase inhibitors) and follow-up time (in months) with women without metastases. Regression analyses were conducted to study the association between sleep disorders and the presence of metastases, and these regression analyses were adjusted for depression.

RESULTS:

A total of 11,412 women were included in the present study. The mean age was 59.8 years (SD 11.4 years) and most participants were between 61 and 70 years old (metastases group: 32.6%; no-metastases group: 32.3%). Sleep disorders were associated with a significant increase in the presence of breast cancer metastases in the overall population (odds ratio [OR] 1.31) and in the different age subgroups (ORs between 1.24 and 1.43).

CONCLUSION:

A positive association was found between sleep disorders and the presence of metastases in women diagnosed with breast cancer in gynecological practices in Germany.

Endometrial CA

Original Investigation**Association of Endometrial Cancer Risk With Postmenopausal Bleeding in Women** A Systematic Review and Meta-analysis

Megan A. Clarke, PhD, MHS¹; Beverly J. Long, MD²; Arena Del Mar Morillo, BA¹; et al Marc Arbyn, MD, MSc, PhD³; Jamie N. Bakkum-Gamez, MD²; Nicolas Wentzensen, MD, PhD, MS¹

Author Affiliations

JAMA Intern Med. Published online August 6, 2018. doi:10.1001/jamainternmed.2018.2820

Key Points

Question What is the prevalence of postmenopausal bleeding in women with endometrial cancer and the risk of endometrial cancer in women with postmenopausal bleeding?

Findings This systematic review and meta-analysis of 40 790 unique patients in 129 unique studies suggests that postmenopausal bleeding occurs in approximately 90% of women with endometrial cancer; however, only 9% of women with postmenopausal bleeding were diagnosed with endometrial cancer. These estimates varied by geographic region, hormone use, and calendar time.

Meaning These findings provide a foundation for evaluating early detection strategies for endometrial cancer and can support risk-informed decision making in clinical management of postmenopausal bleeding.

Abstract

Importance As the worldwide burden of endometrial cancer continues to rise, interest is growing in the evaluation of early detection and prevention strategies among women at increased risk. Focusing efforts on women with postmenopausal bleeding (PMB), a common symptom of endometrial cancer, may be a useful strategy; however, PMB is not specific for endometrial cancer and is often caused by benign conditions.

Objective To provide a reference of the prevalence of PMB in endometrial cancers and the risk of endometrial cancer in women with PMB.

Data Sources For this systematic review and meta-analysis, PubMed and Embase were searched for English-language studies published January 1, 1977, through January 31, 2017.

Study Selection Observational studies reporting the prevalence of PMB in women with endometrial cancer and the risk of endometrial cancer in women with PMB in unselected populations were selected.

Data Extraction and Synthesis Two independent reviewers evaluated study quality and risk of bias using items from the Newcastle-Ottawa Quality Assessment Scale and the Quality Assessment of Diagnostic Accuracy Studies tool. Studies that included highly selected populations, lacked detailed inclusion criteria, and/or included 25 or fewer women were excluded.

Main Outcomes and Measures The pooled prevalence of PMB in women with endometrial cancer and the risk of endometrial cancer in women with PMB.

Results A total of 129 unique studies, including 34 432 unique patients with PMB and 6358 with endometrial cancer (40 790 women), were analyzed. The pooled prevalence of PMB among women with endometrial cancer was 91% (95% CI, 87%-93%), irrespective of tumor stage. The pooled risk of endometrial cancer among women with PMB was 9% (95% CI, 8%-11%), with estimates varying by use of hormone therapy (range, 7% [95% CI, 6%-9%] to 12% [95% CI, 9%-15%]; $P < .001$ for heterogeneity) and geographic region (range, 5% [95% CI, 3%-11%] in North America to 13% [95% CI, 9%-19%] in Western Europe; $P = .09$ for heterogeneity).

Conclusions and Relevance Early detection strategies focused on women with PMB have the potential to capture as many as 90% of endometrial cancers; however, most women with PMB will not be diagnosed with endometrial cancer. These results can aid in the assessment of the potential clinical value of new early detection markers and clinical management strategies for endometrial cancer and will help to inform clinical and epidemiologic risk prediction models to support decision making.

Vit D and infertility

Prevalence of vitamin D deficiency in infertile women with polycystic ovarian syndrome and its association with metabolic syndrome – A prospective observational study

European Journal of Obstetrics & Gynecology and Reproductive Biology — Mogili KD, et al. | August 06, 2018

Infertile women with polycystic ovarian syndrome (PCOS) were examined for the prevalence of vitamin D deficiency. In addition, researchers explored the association of hypovitaminosis D with metabolic syndrome in women with PCOS. They performed a prospective observational study in a tertiary care, infertility centre from March 2016 to March 2017. Findings revealed a high prevalence of vitamin D deficiency in infertile PCOS women. Hypovitaminosis D and the metabolic syndrome were not seemed to be correlated in this population.

8. VISCERA

Fiber from fruit and vegetables reduces diverticulitis hospitalizations

European Journal of Nutrition pp 1–8|

High intake of dietary fibre from fruit and vegetables reduces the risk of hospitalisation for diverticular disease

- Mahmood W. Mahmood Mirna Abraham-Nordling

Backgrounds and aims

High intake of dietary fibres has been associated with a reduced risk of DD. However, reports on which type of dietary fibre intake that is most beneficial have been conflicting. The aim of this study was to investigate the association between different dietary fibres and hospitalisation due to diverticular disease (DD) of the colon.

Methods

This was a major cohort study. The Swedish Mammography Cohort and the Cohort of Swedish Men were linked to the Swedish Inpatient Register and the Causes of Death Register. Data on the intake of dietary fibre were collected through questionnaires. The effect of intake (in quartiles) of different types of dietary fibre on the incidence of hospitalisation due to DD was investigated using multivariable Cox regression. Estimates were adjusted according to age, BMI, physical activity, co-morbidity, intake of corticosteroids, smoking, alcohol intake and education level.

Results

Women with intake of fruit and vegetable fibres in the highest quartile (median 12.6 g/day) had a 30% decreased risk of hospitalisation compared to those with the lowest intake (4.1 g/day). Men within the highest quartile (10.3 g/day) had a 32% decreased risk compared to those with a low intake (2.9 g/day). High intake of fibres from cereals did not affect the risk.

Conclusion

A high intake of fruits and vegetables may reduce the risk of hospitalisation due to DD. Intake of cereals did not influence the risk.

10 A. CERVICAL SPINE**Exercise is effective in helping office workers neck pain****Workplace-Based Interventions for Neck Pain in Office Workers: Systematic Review and Meta-Analysis**

Xiaoqi Chen; Brooke K Coombes; Gisela Sjøgaard; Deokhoon Jun; Shaun O’Leary ...
Physical Therapy, Volume 98, Issue 1, 1 January 2018, Pages 40–62, <https://doi.org/10.1093/ptj/pzx101>

- Abstract

Background

At present, there is no consolidated evidence for workplace-based interventions for the prevention and reduction of neck pain in office workers.

Purpose

The purpose of this review was to investigate the effectiveness of workplace-based interventions for neck pain in office workers.

Data Sources

MEDLINE, PEDro, CINAHL, and CENTRAL were searched for trials published since inception and before May 31, 2016.

Study Selection

Randomized controlled trials (RCTs) were considered when they met the following criteria: population consisted of office workers, intervention(s) was performed at the workplace, outcome measures included neck and/or neck/shoulder pain intensity and incidence/prevalence, and comparator groups included no/other intervention.

Data Extraction

Data were extracted by 1 reviewer using predefined data fields and checked by a second reviewer. Risk of bias was assessed by 2 independent reviewers using the 2015 Cochrane Back and Neck Group guidelines. Evidence quality was evaluated using the Grading of Recommendations Assessment, Development, and Evaluation system.

Data Synthesis

Twenty-seven RCTs were included. There was moderate-quality evidence that neck/shoulder strengthening exercises and general fitness training were effective in reducing neck pain in office workers who were symptomatic, although the effect size was larger for strengthening exercises. Greater effects were observed with greater participation in exercise. Ergonomic interventions were supported by low-quality evidence.

Limitations

Data could not be obtained from some studies for meta-analysis and assessment of risk of bias. Reporting bias might have been present because only studies in the English language were included.

Conclusions

Workplace-based strengthening exercises were effective in reducing neck pain in office workers who were symptomatic, and the effect size was larger when the exercises were targeted to the neck/shoulder. Future RCTs of ergonomic interventions targeted at office workers who are symptomatic are required. More research on neck pain prevention is warranted.

13 B. TMJ/ORAL**Malocclusion and breast feeding****Association of breastfeeding and malocclusion in 5-year-old children: Multilevel approach**

Patrícia Corrêa-Faria Mauro Henrique Nogueira Guimarães de Abreu
Lidia Moraes Ribeiro Jordão
Maria do Carmo Matias Freire

Luciane Rezende Costa
First published: 08 August 2018

<https://doi.org/10.1111/ipd.12417>

Background

Breastfeeding plays an important role in child health, including the development of normal dental occlusion, but large epidemiological findings on the association breastfeeding-malocclusion are lacking.

Aim

To investigate the association between the proportion of breastfed children in the city level and the prevalence of malocclusion in the primary dentition at age 5.

Design

This cross-sectional analysis used data from national population surveys on oral health and on breastfeeding practices. Data refer to 5278 5-year-old children and 44 Brazilian towns. Information on malocclusion and individual sociodemographic characteristics were obtained from the 2010 Brazilian Oral Health Survey. Breastfeeding rates during the first year of life were extracted from the Breastfeeding Prevalence Survey in Brazilian Towns. Population sociodemographic data were analysed as confounder. Multilevel Poisson analyses were performed.

Results

Malocclusion prevalence was 63.3%. Towns exhibiting higher prevalence of breastfeeding among 9- to 12-month-olds presented lower prevalence of malocclusion among children at age 5 (PR 0.98; 95% CI 0.98-0.99).

Conclusions

Lower prevalence of malocclusion among 5-year-old children was associated with a higher proportion of children breastfed at ages 9 to 12 months at a city level, regardless of sociodemographic factors. These findings highlight the importance of encouraging breastfeeding during a child's first year.

Orofacial pain

Non-invasive brain stimulation in chronic orofacial pain: a systematic review

Authors Herrero Babiloni A, Guay S, Nixdorf DR, de Beaumont L, Lavigne G

DOI <https://doi.org/10.2147/JPR.S168705>

Background: Transcranial magnetic stimulation (TMS) and transcranial direct current stimulation (tDCS) are non-invasive brain stimulation techniques that are being explored as therapeutic alternatives for the management of various chronic pain conditions.

Objective: The primary objective of this systematic review is to assess the efficacy of TMS and tDCS in reducing clinical pain intensity in chronic orofacial pain (OFP) disorders. The secondary objectives are to describe adverse effects, duration of relief, and TMS/tDCS methodologies used in chronic OFP disorders.

Methods: A search was performed in MEDLINE, Embase, Web of Science, Scopus, and Google Scholar. Inclusion criteria were 1) population: adults diagnosed with chronic OFP including neuropathic and non-neuropathic disorders; 2) intervention: active TMS or tDCS stimulation regardless of the used protocol; 3) comparison: sham TMS or tDCS stimulation; and 4) outcome: primary outcome was patient reported pain intensity. Secondary outcomes were duration of pain relief, adverse effects, and methodological parameters. Risk of bias and quality of study reporting were also assessed.

Results: A total of 556 individual citations were identified by the search strategy, with 14 articles meeting selection criteria (TMS=11; tDCS=3). Data were obtained for a total of 228 patients. Included OFP disorders were trigeminal neuralgia, trigeminal neuropathy, burning mouth syndrome, atypical facial pain, and temporomandibular disorders. Significant pain reductions were obtained in both techniques. More number of sessions yielded to more durable effects. Overall, high risk of bias and poor study quality were found.

Conclusion: TMS and tDCS appear to be safe and promising alternatives to reduce pain intensity in different chronic OFP disorders. Additional research effort is needed to reduce bias, improve quality, and characterize optimal brain stimulation parameters to promote their efficacy.

13 C. AIRWAYS/SWALLOWING/SPEECH**Memory decline**

Age Ageing. 2018 Aug 2. doi: 10.1093/ageing/afy111.

The influence of childhood intelligence, social class, education and social mobility on memory and memory decline in late life.

Staff RT¹, Hogan MJ², Whalley LJ³.

In an observational longitudinal study of a sub-sample of the Aberdeen 1936 birth cohort, from age 62 to 77 years, we investigated childhood intelligence, social class, education, life-course social mobility, memory test performance and memory decline in late life. We examined 388 local residents who had attended school in Aberdeen in 1947 and measured Auditory-Verbal Learning Test (AVLT) at recruitment age about 64 years and up to five times until age about 77 years. Better performance at age about 64 on AVLT was predicted by early socioeconomic status (SES), social mobility and childhood intelligence. The trajectory of AVLT decline was steeper in those who had received less education.

This relationship was independent of childhood ability, sex, SES in childhood and social mobility. The protection of memory by education suggests that education supports resilience to age-related cognitive impairment. Upward social mobility does not enhance this effect, suggesting that resilience to age-related decline may be established in early life

Sleep importance in prevention of osteoporosis

Osteoporos Int. 2018 Aug;29(8):1689-1695. doi: 10.1007/s00198-018-4487-8. Epub 2018 Mar 25.

Sleep duration and the risk of osteoporosis among middle-aged and elderly adults: a dose-response meta-analysis.

Wang D^{1,2}, Ruan W³, Peng Y⁴, Li W⁵.

Author information

Abstract

It remains unclear how many hours of sleep are associated with the lowest risk of osteoporosis.

This meta-analysis was performed to assess the dose-response relationship between sleep duration and risk of osteoporosis. PubMed and Web of Science were searched from inception to December 3, 2017, supplemented by manual searches of the bibliographies of retrieved articles. Data were pooled using fixed- and random-effects models. Restricted cubic spline analysis with four knots was used to model the sleep duration and osteoporosis association. Four cross-sectional studies with eight records were eligible for inclusion in the meta-analysis. A U-shaped dose-response relationship was observed between sleep duration and risk of osteoporosis, with the lowest risk observed at a sleep duration category of 8-9 h per day. Compared with 8-h sleep duration per day, the pooled odds ratio for osteoporosis were 1.03 (95% CI 1.01-1.06) for each 1-h reduction among individuals with shorter sleep duration and 1.01 (95% CI 1.00-1.02) for each 1-h increment among individuals with longer sleep duration. Our dose-response meta-analysis shows a U-shaped relationship between sleep duration and risk of osteoporosis, with the lowest osteoporosis risk at about 8 h per day of sleep duration.

Both short and long sleep duration is associated with a significantly increased risk of osteoporosis in the middle-aged and elderly adults, appropriate sleep duration could help for delay or prevention of osteoporosis.

14. HEADACHES

Greater occipital nerve

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 & Piekartz Harry von 

Pages 237-248 | Published online: 31 Jul 2018 <https://doi.org/10.1080/10669817.2018.1480912>

ABSTRACT

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.

Level of Evidence: 3b.

21. ADHESIVE CAPSULITIS

Increased ROM with anesthesia

October 2018 Volume 37, Pages 64–68

Does muscle guarding play a role in range of motion loss in patients with frozen shoulder?

L. Hollmann M. Halaki S.J. Kamper M. Haber K.A. Ginn

PlumX Metrics

DOI: <https://doi.org/10.1016/j.msksp.2018.07.001>

Highlights

- In frozen shoulder patients large increases in range occurred following anaesthesia.
- Capsular contracture may not be contributing to restricted range in frozen shoulder.
- Muscle guarding contributes to restricted movement in some frozen shoulder patients.

Abstract

Study Design

Observational: cross-sectional study.

Background

Idiopathic frozen shoulder is a common cause of severe and prolonged disability characterised by spontaneous onset of pain with progressive shoulder movement restriction. Although spontaneous recovery can be expected the average length of symptoms is 30 months. Chronic inflammation and various patterns of fibrosis and contracture of capsuloligamentous structures around the glenohumeral joint are considered to be responsible for the signs and symptoms associated with frozen shoulder, however, the pathoanatomy of this debilitating condition is not fully understood.

Objectives

To investigate the feasibility of a muscle guarding component to movement restriction in patients with idiopathic frozen shoulder.

Methods

Passive shoulder abduction and external rotation range of motion (ROM) were measured in patients scheduled for capsular release surgery for frozen shoulder before and after the administration of general anaesthesia.

Results

Five patients with painful, global restriction of passive shoulder movement volunteered for this study. Passive abduction ROM increased following anaesthesia in all participants, with increases ranging from approximately 55°–110° of pre-anaesthetic ROM. Three of these participants also demonstrated substantial increases in passive external rotation ROM following anaesthesia ranging from approximately 15°–40° of pre-anaesthetic ROM.

Conclusion

This case series of five patients with frozen shoulder demonstrates that active muscle guarding, and not capsular contracture, may be a major contributing factor to movement restriction in some patients who exhibit the classical clinical features of idiopathic frozen shoulder. These findings highlight the need to reconsider our understanding of the pathoanatomy of frozen shoulder.

45 B. MANUAL THERAPY CERVICAL

Mulligan SNAGs helps neck pain

Original Research Paper

Immediate and short-term effects of mulligan concept positional sustained natural apophyseal glides on an athletic young-adult population classified with mechanical neck pain: an exploratory investigation

Dawn P. Andrews , Kari B. Odland-Wolf, James May, Russell Baker, Alan Nasypany  & Eric M. Dinkins

- <https://doi.org/10.1080/10669817.2018.1460965>

Objectives: Mechanical neck pain (MNP) is common in the athletic population. While symptoms may present at the cervical spine for patients complaining of MNP, thoracic spinal alignment or dysfunction may influence cervical positioning and overall cervical function. Clinicians often employ cervical high-velocity low-amplitude (HVLA) thrust manipulations to treat MNP, albeit with a small level of inherent risk. Mulligan Concept positional sustained natural apophyseal glides (SNAGs) directed at the cervicothoracic region are emerging to treat patients with cervical pain and dysfunction, as evidence supporting an interdependent relationship between the thoracic and cervical spine grows. The purpose of this a priori study was to evaluate outcome measures of patients classified with MNP treated with the Mulligan Concept Positional SNAGs.

Methods: Ten consecutive young-adult patients, ages ranging from 15 to 18 years (mean = 16.5 ± 1.78), classified with MNP were treated utilizing Mulligan Concept Positional SNAGs. The Numeric Rating Scale (NRS), Patient-Specific Functional Scale (PSFS), Neck Disability Index (NDI), Disablement in the Physically Active (DPAS), and Fear-Avoidance Based Questionnaire-Physical Activity (FABQPA) were collected for inclusion criteria and to identify patient-reported pain and dysfunction.

Results: Patients reported decreases in pain on the NRS [5.4 to .16, $p = .001$], increases in function on the PSFS [5.2 to 10, $p = .001$], and increases in cervical range of motion (CROM) [ext $p = .003$, flex $p = .009$, left rot $p = .001$, right rot $p = .002$] immediately post-treatment and between treatments.

Discussion: Positional SNAGs directed at the cervicothoracic region may address a variety of patient reported symptoms for MNP, and the number of treatment sessions needed for symptom resolution may be closer to a single session rather than multiple treatments. **Level of Evidence:** 4.

46 B. LOWER LIMB NEUROMOILIZATION**Femoral nerve motion**

October 2018 Volume 37, Pages 58–63

Femoral nerve excursion with knee and neck movements in supine, sitting and side-lying slump: An *in vivo* study using ultrasound imaging

Eva Sierra-Silvestre Francesca Bosello Josué Fernández-Carnero Marco J.M. Hoozemans,
Michel W. Coppieters
PlumX Metrics

DOI: <https://doi.org/10.1016/j.msksp.2018.06.007> |

Highlights

Longitudinal and transverse excursions of the femoral nerve can be measured reliably with ultrasound imaging.

- Although the femoral nerve terminates proximal to the knee, it slides 3.5 mm in the upper thigh with knee flexion.
- Neck flexion in Slump_{FEMORAL} is associated with excursion of the femoral nerve in a medial, but not longitudinal direction.

Background

Neurodynamic assessment and management are advocated for femoral nerve pathology. Contrary to neurodynamic techniques for other nerves, there is limited research that quantifies femoral nerve biomechanics.

Objectives

To quantify longitudinal and transverse excursion of the femoral nerve during knee and neck movements.

Design

Single-group, experimental study, with within-participant comparisons.

Methods

High-resolution ultrasound recordings of the femoral nerve were made in the proximal thigh/groin region in 30 asymptomatic participants. Scans were made during knee flexion in supine and a semi-seated position, and during neck flexion in side-lying slump (Slump_{FEMORAL}). Healthy participants were assessed to reveal normal nerve biomechanics, not influenced by pathology. Data were analysed with one-sample and paired t-tests. Reliability was assessed with intraclass correlation coefficients (ICC).

Results

Longitudinal and transverse excursion measurements were reliable ($ICC \geq 0.87$). With knee flexion, longitudinal femoral nerve excursion was significant and larger in supine than in sitting (supine (mean (SD)): 3.6 (2.0) mm; $p < 0.001$; sitting: 1.1 (1.6) mm; $p = 0.001$; comparison: $p = 0.001$). There was also excursion in a medial direction (supine: 1.4 (0.3) mm; $p < 0.001$; sitting: 0.7 (0.6) mm; $p < 0.001$) and anterior direction (supine: 0.2 (0.2) mm; $p < 0.001$; sitting: 0.1 (0.2) mm; $p = 0.06$). Neck flexion in Slump_{FEMORAL} did not result in longitudinal (0.0 (0.3) mm; $p = 0.55$) or anteroposterior (0.0 (0.1) mm; $p = 0.10$) excursion, but resulted in medial excursion (1.1 (0.5) mm; $p < 0.001$).

Conclusion

Although the femoral nerve terminates proximal to the knee, femoral nerve excursion in the proximal thigh occurred with knee flexion; Neck flexion in Slump_{FEMORAL} resulted in medial excursion.

48 A. STM

Instrument assisted STM and PNF increases hamstring ROM

Original Articles

Instrument-assisted soft tissue mobilization and proprioceptive neuromuscular facilitation techniques improve hamstring flexibility better than static stretching alone: a randomized clinical trial

Leanna J. Gunn , Jill Campbell Stewart , Brittany Morgan, Steven T. Metts, Justin M. Magnuson, Nicholas J. Iglowski, show all

- <https://doi.org/10.1080/10669817.2018.1475693>

ABSTRACT

Objectives: Tight hamstrings contribute to inefficiency of movement and increased risk for injury. Static stretching is the most common intervention for this problem, but the use of alternatives like instrument-assisted soft tissue mobilization (IASTM) and proprioceptive neuromuscular facilitation (PNF) is increasing among clinicians. This study examined two prospective studies with the common aim of demonstrating the effectiveness of IASTM or PNF over static stretching for improving hamstring tightness.

Methods: Nondisabled adults were recruited on a university campus. IASTM study: $N = 17$ (11 males and 6 females). PNF study: $N = 23$ (7 males and 16 females). Hip flexion range of motion was measured with a passive straight leg raise (for IASTM) or active straight leg raise (for PNF) before and after stretching. Participants performed a self-static stretch on one leg and received the alternative intervention on the contralateral leg. The two studies were analyzed separately for reliability indices and significant differences between interventions.

Results: Hip flexion measures showed good reliability in both studies (intraclass correlation coefficient = 0.97) with a minimal detectable change of <4.26. Both studies showed significant interactions between time and intervention ($p < 0.05$). Follow-up analyses revealed PNF and IASTM interventions resulted in greater increases in hip flexion range than static stretching.

Discussion: These findings demonstrate the effectiveness of PNF and IASTM techniques over static stretching for hamstring flexibility. These interventions provide more efficient alternatives for improving flexibility in the clinic, allowing greater progress in a shorter period of time than an equivalent static stretching program.

50 B. PNF**Rhythmic stabilization**

Original Research Paper

Is it possible to stabilize the trunk using rhythmic stabilization in the upper limb? A cross-sectional study of asymptomatic individuals

Valdeci Carlos Dionisio , Cyntia Rogean de Jesus Alves de Baptista, Adriana de Sales Rodrigues & Luciane Aparecida Pascucci Sande de Souza

- <https://doi.org/10.1080/10669817.2018.1467994>

Abstract

Objective: The study aim was to evaluate the immediate effect of rhythmic stabilization on local and distant muscles involved in a functional reach.

Method: Prospective, observational cross-sectional study. Eight right-handed and non-impaired individuals (4 females and 4 males) aged 18–24 years (21.5 ± 1.58 years) were evaluated. Bilateral electromyographic recording of the biceps brachii, triceps brachii, multifidus lumbar, and rectus abdominis muscles was performed during three different tasks. Task 1 involved functional reach, while Task 2 involved rhythmic stabilization followed by a functional reach. Task 3 was similar to Task 2, but with 3 repetitions before a functional reach.

Results: The results showed no difference between the tasks or sides. However, an interaction was observed between each side and muscles, with greater activation of the right multifidus lumbar muscle.

Conclusion: Rhythmic stabilization during the task of reaching promotes an increase of multifidus activity ipsilateral to its application. Thus, this particular technique of proprioceptive neuromuscular facilitation can be useful for improving stability of the trunk and can be used in clinical practice for this purpose. **Level of Evidence:** 5.

Instrument assisted STM and PNF increases hamstring ROM**Original Articles****Instrument-assisted soft tissue mobilization and proprioceptive neuromuscular facilitation techniques improve hamstring flexibility better than static stretching alone: a randomized clinical trial**

Leanna J. Gunn , Jill Campbell Stewart , Brittany Morgan, Steven T. Metts, Justin M. Magnuson, Nicholas J. Iglowski, show all

- <https://doi.org/10.1080/10669817.2018.1475693>

ABSTRACT

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52. EXERCISE**Exercise and the elderly**

ORIGINAL RESEARCH

Impact of aerobic exercise on muscle mass in patients with major depressive disorder: a randomized controlled trial

Authors Kerling A, Hartung D, Stubbs B, Kück M, Tegtbur U, Grams L, Weber-Spickschen TS, Kahl KG

kDOI <https://doi.org/10.2147/NDT.S167786>

Objective: Sarcopenia leads to physical function impairment and at least to increasing all-cause mortality. There are notes on reduced muscle mass in patients with major depressive disorder (MDD). Whether an exercise intervention counteracts low muscle mass in patients with MDD has not been studied so far. Therefore, our study aimed at examining effects of regular aerobic exercise training on muscle mass in patients with MDD.

Participants and methods: Thirty inpatients with MDD were included in the study, of which 20 received an additional supervised exercise program. Ten patients obtained treatment as usual. Muscle mass was measured using MRI before and 6 weeks after the training period (3 times per week for 45 minutes).

Results: We found a significant effect of the exercise intervention on the amount of muscle mass depending on age, body mass index, and the physical activity score ($P=0.042$).

Conclusion: Among other positive effects, regular exercise increases muscle mass in patients with MDD and, therefore, should be recommended as an additional treatment tool.

Age related strength differences**Age and sex related differences in shoulder abduction fatigue**

- John D. Collins and Leonard O'Sullivan
- *BMC Musculoskeletal Disorders* 2018 **19**:280

<https://doi.org/10.1186/s12891-018-2191-7>

Background

Injury prevalence data commonly indicate trends of higher rates of work-related musculoskeletal disorders in older workers over their younger counterparts, and for females more than males. The purpose of this study was to investigate age and sex-related differences in manifestations of shoulder muscle fatigue in a cohort of young and older working age males and females, in a single experiment design allowing for direct comparison of the fatigue effects between the target groups.

Methods

We report upper trapezius muscle fibre Conduction Velocity (CV) as an indicative measure of muscle fatigability, and isometric endurance time, at three levels of shoulder abduction lifting force set relative to participants' maximal strength.

Results

Upper trapezius conduction velocity was significantly different between the young and old groups ($p = 0.002$) as well as between males and females ($p = 0.016$). Shoulder abduction endurance time was affected by age ($P = 0.024$) but not sex ($p = 0.170$).

Conclusions

The study identified age-related improvement in muscle fatigue resistance and increased resistance for females over males, contrary to injury prevalence trends. The muscle fatigue effects are most likely explained by muscle fibre type composition. Experimental fatigue treatments of the upper trapezius were tested at exposures relative to the participants' strength. Absolute strength is higher when young and is generally higher for males. The findings of this study point towards age and sex-related differences in strength rather than in muscle fatigue resistance as a primary cause for the differences in the injury trends.

Resisted training decreases inflammatory markers

Exp Gerontol. 2018 Jul 30;111:188-196. doi: 10.1016/j.exger.2018.07.021.

Effect of resistance training on inflammatory markers of older adults: A meta-analysis.

Sardeli AV¹, Tomeleri CM², Cyrino ES³, Fernhall B⁴, Cavaglieri CR⁵, Chacon-Mikahil MPT⁵.

INTRODUCTION:

Low-grade inflammation is associated with several deleterious health outcomes and may aggravate sarcopenia and dynapenia during aging. A strategy to alleviate these conditions is resistance training (RT). Thus, the aim was to critically examine the effects of regular RT on inflammatory markers of older adults from previous studies.

METHODS:

The search was conducted on MEDLINE, July 2017. Only randomized controlled trials (RCTs) testing RT effects on C-reactive protein (CRP), tumor necrosis factor- α (TNF- α) and/or interleukin-6 (IL-6) of adults over 50 years-of-age were selected by two independent reviewers.

RESULTS:

The main meta-analyses showed RT reduced CRP in older adults (standard mean difference [SMD] = -0.61, 95%CI = -0.83; -0.31, $p < 0.001$), tended to reduce IL-6 (SMD = -0.19, 95%CI = -0.42; 0.02, $p = 0.07$) and did not change TNF- α . Further exploratory sub-group analyses showed a potential association of muscle mass for both CRP and TNF- α changes. Reductions in CRP and TNF- α only occurred in RCTs performing a higher number of exercises (>8), higher weekly frequency (3 times/week) and longer durations than 12 weeks.

CONCLUSIONS:

Anti-inflammatory effects of RT were significant only for CRP with a tendency for a decrease in IL-6 as well. The exploratory analyses suggested the reduction in inflammatory markers could be dependent on increases in muscle mass and higher volume of RT protocols. These potential mediators of RT anti-inflammatory effects should be addressed in future meta-analyses to clarify the effects of RT on inflammatory markers of older adults with very specific conditions and larger numbers of studies.

56. ATHLETICS**Strength in vertical jump****Association of Hip and Trunk Strength With Three-Dimensional Trunk, Hip, and Knee Kinematics During a Single-Leg Drop Vertical Jump**

Martinez, Adalberto F.; Lessi, Giovanna C.; Carvalho, Cristiano; Serrao, Fábio V.

The Journal of Strength & Conditioning Research: July 2018 - Volume 32 - Issue 7 - p 1902–1908

doi: 10.1519/JSC.0000000000002564

Original Research

Abstract

Author Information

Martinez, AF, Lessi, GC, Carvalho, C, and Serrao, FV.

Association of hip and trunk strength with three-dimensional trunk, hip, and knee kinematics during a single-leg drop vertical jump. *J Strength Cond Res* 32(7): 1902–1908, 2018—

Kinematic changes have been correlated with different lower-limb injuries. Movement is influenced by multiple factors and strength is one of the contributors that can influence it. Thus, the aim of this study was to evaluate the correlation among trunk and hip isometric strength with trunk and lower-limb kinematics during a single-leg drop vertical jump. Twenty-three healthy recreational female athletes aged between 18 and 35 years underwent isometric evaluation of hip abductor, hip extensor, and lateral trunk muscle strength and 3-dimensional trunk and lower-limb kinematics during a single-leg drop vertical jump. Pearson's correlation coefficients (r) were calculated to establish the association among hip and trunk strength and trunk, hip, and knee kinematics.

As result, no significant correlations were found between the peak and movement excursion values of kinematic and hip and trunk isometric strength data. The lack of correlation between isometric strength and kinematics in healthy female athletes indicates that intervention programs should not be focused solely on strength exercises to influence the movement pattern during single-landing activities.