

2. LBP

Flair ups and their impact

Musculoskelet Sci Pract. 2019 Jun 25;43:52-57. doi: 10.1016/j.msksp.2019.06.003

Impact of flare-ups on the lives of individuals with low back pain: A qualitative investigation.

Tan D¹, Hodges PW¹, Costa N¹, Ferreira M², Setchell J³.

OBJECTIVES:

Investigating flare-ups has become relevant to understanding and managing low back pain (LBP), particularly because there has been a shift in the conceptualization of LBP from acute or chronic to fluctuating or episodic. Available research mainly consists of quantitative studies, which are unable to fully explore the perspectives of individuals with LBP. This study aimed to address this gap by exploring the changes in individual's lives when they experience LBP flare-up.

DESIGN AND PARTICIPANTS:

A qualitative survey of 130 adult participants with LBP was conducted online, and data analyzed via thematic analysis.

RESULTS:

The themes from the analysis were: 1) sense of disablement, 2) changes in mood, 3) use of coping strategies, and 4) lack of understanding from other people. Participants described LBP flare-ups as having a negative impact on many areas of their lives, with a few even expressing suicidal ideations.

CONCLUSIONS:

Results suggest the importance of considering that LBP flare-ups impact individuals' lives in a complex manner including psychosocial and functional effects. Clinicians should consider this complexity in their interactions with, and management of, patients with LBP flare-ups. Additional education may be required to better equip clinicians for these numerous aspects.

Signs of spinal stenosis

Eur Spine J. 2019 Jul 16. doi: 10.1007/s00586-019-06048-4.

Systematic review of diagnostic accuracy of patient history, clinical findings, and physical tests in the diagnosis of lumbar spinal stenosis.

Cook CJ¹, Cook CE², Reiman MP³, Joshi AB⁴, Richardson W⁵, Garcia AN⁶.

PURPOSE:

To update evidence of diagnostic potential for identification of lumbar spinal stenosis (LSS) based on demographic and patient history, clinical findings, and physical tests, and report posttest probabilities associated with test findings.

METHODS:

An electronic search of PubMed, CINAHL and Embase was conducted combining terms related to low back pain, stenosis and diagnostic accuracy. Prospective or retrospective studies investigating diagnostic accuracy of LSS using patient history, clinical findings and/or physical tests were included. The risk of bias and applicability were assessed using the Quality Assessment of Diagnostic Accuracy Studies (QUADAS 2) tool. Diagnostic accuracy including sensitivities (SN), specificities (SP), likelihood ratios (+LR and -LR) and posttest probabilities (+PTP and -PTP) with 95% confidence intervals were summarized.

RESULTS:

Nine studies were included (pooled n = 36,228 participants) investigating 49 different index tests (30 demographic and patient history and 19 clinical findings/physical tests). Of the nine studies included, only two exhibited a low risk of bias and seven exhibited good applicability according to QUADAS 2. The demographic and patient history measures (self-reported history questionnaire, no pain when seated, numbness of perineal region) and the clinical findings/physical tests (two-stage treadmill test, symptoms after a March test and abnormal Romberg test) highly improved positive posttest probability by > 25% to diagnose LSS.

CONCLUSION:

Outside of one study that was able to completely rule out LSS with no functional neurological changes none of the stand-alone findings were strong enough to rule in or rule out LSS. These slides can be retrieved under Electronic Supplementary Material

3. DISC

Disc evaluation

European Spine Journal pp 1–9

Characterization of the microstructure of the intervertebral disc in patients with chronic low back pain by diffusion kurtosis imaging

- Li Li Zhiguo Zhou Kejia Cai

Purpose

Multivariate analysis of T2-weighted signal, diffusion ADC, and DKI parameters and tractography were used to differentiate chronic non-specific low back pain (CLBP) patients and asymptomatic controls (AC).

Methods

A total of 30 patients with CLBP and 23 AC underwent diffusion kurtosis imaging (DKI) of lumbar spine with a 3T MRI scanner to get the ADC values and seven parameters of DKI in the nucleus pulposus (NP) of the intervertebral disc. The tractography and the tract-related parameters as other parameters were also generated to indicate the intactness of annulus fibrosus (AF). T2-grades of the discs were also quantified based on an eight-grade degeneration grading system. ADC and T2-grades were compared with DKI parameters for the differentiation of CLBP and AC groups.

Results

There was no difference in the T2 grades, ADC value, and multiple parameters in DKI of NP between CLBP and AC groups ($P > 0.05$). The average FA values in NP in AC group were found significantly higher than in the CLBP group ($P < 0.05$). The scores for the intactness of AF of the intervertebral discs were significantly different in CLBP and AC groups, with 90% of sensitivity and 70% specificity ($P < 0.05$). Additionally, there were significant differences in the length and volume values of the AF in CLBP and AC groups ($P < 0.05$).

Conclusion

DKI is a good noninvasive method, and it might help to differentiate CLBP from AC. Particularly, the continuation of DKI tractography reflects the presence of annulus fibrosus fissures, an important character in the generation of the low back pain.

5. SPINAL SURGERY

Questions about RCT's

Health Qual Life Outcomes. 2019 Jul 22;17(1):127. doi: 10.1186/s12955-019-1196-8.

Rehabilitation interventions in randomized controlled trials for low back pain: proof of statistical significance often is not relevant.

Gianola S¹, Castellini G^{2,3}, Corbetta D^{4,5}, Moja L^{2,3}.

BACKGROUND:

An observed statistically significant difference between two interventions does not necessarily imply that this difference is clinically important for patients and clinicians. We aimed to assess if treatment effects of randomized controlled trials (RCTs) for low back pain (LBP) are statistically significant and clinically relevant, and if RCTs were powered to achieve clinically relevant differences on continuous outcomes.

METHODS:

We searched for all RCTs included in Cochrane Systematic Reviews focusing on the efficacy of rehabilitation interventions for LBP and published until April 2017. RCTs having sample size calculation and a planned minimal important difference were considered. In the primary analysis, we calculated the proportion of RCTs classified as "statistically significant and clinically relevant", "statistically significant but not clinically relevant", "not statistically significant but clinically relevant", and "not statistically significant and not clinically relevant". Then, we investigated how many times the mismatch between statistical significance and clinical relevance was due to inadequate power.

RESULTS:

From 20 eligible SRs including 101 RCTs, we identified 42 RCTs encompassing 81 intervention comparisons. Overall, 60% (25 RCTs) were statistically significant while only 36% (15 RCTs) were both statistically and clinically significant. Most trials (38%) did not discuss the clinical relevance of treatment effects when results did not reach statistical significance. Among trials with non-statistically significant findings, 60% did not reach the planned sample size, therefore being at risk to not detect an effect that is actually there (type II error).

CONCLUSION:

Only a minority of positive RCT findings was both statistically significant and clinically relevant. Scarce diligence or frank omissions of important tactic elements of RCTs, such as clinical relevance, and power, decrease the reliability of study findings to current practice.

Total disc replacement

Eur Spine J. 2019 Aug 9. doi: 10.1007/s00586-019-06100-3.

Total disc replacement for lumbar degenerative disc disease: single centre 20 years experience.

Formica C¹, Zanirato A², Divano S², Basso M², Cavagnaro L², Alessio Mazzola M², Vellone VG³, Mastrogiacomo M^{4,5}, Berjano P¹, Felli L², Formica M⁶.

PURPOSE:

To report clinical and radiographic outcomes, rate of complications and influence on spinal alignment on long-term follow-up (FU) of patients who underwent lumbar total disc arthroplasty (TDR), bringing some evidence to determine the profile of the most well-suited patients for TDR.

METHODS:

A retrospective review of patients underwent TDR for low back pain from degenerative disc disease (DDD) resistant to conservative treatment was performed. Demographic features, surgical data, clinical and radiographic outcomes, complications and spinopelvic parameters were evaluated.

RESULTS:

Thirty patients (32 TDR) were included with a mean FU of 164 ± 36.5 months. The clinical outcomes measured by visual analogue scale and Oswestry Disability Index showed a significant improvement between preoperative and 1-year FU ($p < 0.01$). No significant temporal variance has been identified between 1-year and long-term follow-up ($p > 0.05$). The surgical revision rate was 10%. The overall rate of complications was 20%. At final follow-up, the mobility of the prosthesis was preserved in 68.75% of the cases, and 73.3% of the patients were globally well aligned.

CONCLUSION:

The optimal surgical indication is crucial to achieve excellent clinical and radiological outcomes. According to the literature and to our experience, we underline the importance of a coronal deformity $< 15^\circ$ Cobb angle and a Roussouly type 1 or 2 as the profile of the most well-suited patient for TDR. Our long-term results confirm the existing evidence about efficacy and safety of TDR as a reliable option, in optimal surgery indication, to treat DDD. These slides can be retrieved under Electronic Supplementary Material.

Fasciotomy

BMC Musculoskelet Disord. 2019 Aug 9;20(1):369. doi: 10.1186/s12891-019-2751-5.

Reducing the extent of facetectomy may decrease morbidity in failed back surgery syndrome.

Li J^{1,2}, Zhang X², Xu W¹, Xi Z¹, Xie L^{3,4}.

BACKGROUND:

Percutaneous transforaminal endoscopic discectomy (PTED) is widely used for the treatment of lumbar disc herniation. Facetectomy in PTED is necessary for accessing the intraspinal region and for decompressing the exiting nerve roots in patients who suffer from hypertrophy of the facet joints. However, this may increase morbidity in failed back surgery syndrome (FBSS) and has not been clearly elucidated.

METHODS:

A three-dimensional lumbosacral model was reconstructed and validated. And corresponding models after PTED with one-quarter and one-half excisions of the superior articular process were reconstructed. The maximum shear stress on the annulus in L5, von Mises stress of the facet cartilage, maximum principle capsular strain and deformation of the lumbosacral model were calculated using finite element methods.

RESULTS:

Calculated results show no significant differences in the complete model and the model with one-quarter excision of the superior articular process, but all biomechanical indexes have been deteriorated under most of the loading conditions tested in the model with one-half excision of the superior articular process.

CONCLUSIONS:

Less facetectomy is better because it may reduce the risk of biomechanical deterioration and consequently, that of FBSS.

7. PELVIC ORGANS/WOMAN'S HEALTH

Hormone use and melanoma

Int J Cancer. 2019 Oct 1;145(7):1754-1767. doi: 10.1002/ijc.32150. Epub 2019 Feb 11.

Postmenopausal hormone use and cutaneous melanoma risk: A French prospective cohort study.

Cervenka I^{1,2}, Al Rahmoun M^{1,2}, Mahamat-Saleh Y^{1,2}, Savoye I^{1,2}, Boutron-Ruault MC^{1,2}, Fournier A^{1,2}, Kvaskoff M^{1,2}.

Abstract

Cutaneous melanoma has been suspected to be influenced by female hormones. Several studies reported a positive association between menopausal hormone therapy (MHT) use and melanoma risk; however, previous findings were conflicting.

We sought to explore the associations between MHT use and melanoma risk in a prospective cohort of women in France, where a particularly wide variety of MHT formulations are available. E3N is a prospective cohort of 98,995 French women aged 40-65 years in 1990. MHT use was assessed through biennial self-administered questionnaires. We used Cox proportional hazards regression models adjusted for age and skin cancer risk factors. Over 1990-2008, 444 melanoma cases were ascertained among 75,523 postmenopausal women. Ever use of MHT was associated with a higher melanoma risk (hazard ratio (HR) = 1.35, 95% confidence intervals (CI) = 1.07-1.71). The association was strongest among past users (HR = 1.55, CI = 1.17-2.07, homogeneity for past vs. recent use: $p = 0.11$), and users of MHT containing norepregnane derivatives (HR = 1.59, CI = 1.11-2.27), although with no heterogeneity across types of MHT ($p = 0.13$). Among MHT users, the association was similar across durations of use. However, a higher risk was observed when treatment onset occurred shortly after menopause (<6 months: HR = 1.55, CI = 1.16-2.07 vs. ≥ 2 years). Associations between MHT use and melanoma risk were similar after adjustment for UV exposure, although MHT users were more likely to report sunscreen use than nonusers.

Our data do not support a strong association between MHT use and melanoma risk. Further investigation is needed to explore potential effect modification by UV exposure on this relationship.

Vaginal delivery and the pelvic floor

Am J Obstet Gynecol. 2019 May 17. pii: S0002-9378(19)30668-4. doi: 10.1016/j.ajog.2019.05.010.

Breastfeeding and pelvic floor disorders one to two decades after vaginal delivery.

Lovejoy DA¹, Roem JL², Blomquist JL³, Pandya PR⁴, Handa VL⁴.

BACKGROUND: Postpartum recovery from pelvic floor trauma associated with vaginal delivery may be impaired by the transient hypoestrogenic state associated with breastfeeding.

OBJECTIVE: The aim of our study was to examine the association between exclusive breastfeeding and pelvic floor disorders 1-2 decades after the first vaginal delivery. We hypothesize that compared with women who did not breastfeed following vaginal delivery, women who breastfeed would have a higher proportion of pelvic floor disorders, and those women who practiced sustained exclusive/unsupplemented breastfeeding would have the highest proportion.

STUDY DESIGN: This is a secondary analysis of the Mothers' Outcomes After Delivery study, a prospective cohort study of pelvic floor disorders after childbirth. Participants were recruited 5-10 years after their first delivery and followed up annually for up to 9 years. This analysis focused on participants who experienced at least 1 vaginal delivery. Each participant completed a self-administered questionnaire regarding breastfeeding. Based on questionnaire responses, breastfeeding status was classified into 3 ordinal categories: unexposed (did not breastfeed or breastfed <1 week); limited exclusive breastfeeding (breastfed without supplementation for ≥ 1 week but <12 weeks); and sustained exclusive breastfeeding (unsupplemented breastfeeding ≥ 12 weeks). Our primary outcomes of interest were the proportions of stress urinary incontinence, anal incontinence, and pelvic organ prolapse. The outcomes of interest were defined using the Epidemiology of Prolapse and Incontinence Questionnaire and the Pelvic Organ Prolapse Quantification Examination at enrollment and annually for up to 9 years thereafter. Additionally, a subanalysis examined the relationship between breastfeeding and anal incontinence in an obstetric anal sphincter injury-specific population. Generalized estimating equations were utilized to determine the relationship between breastfeeding and the outcomes of interest.

RESULTS: Among 705 women, 189 (27%) were classified as unexposed, 145 (20%) were categorized as limited exclusive breastfeeding, and the remaining 371 women (53%) met our definition of sustained exclusive breastfeeding. Median follow-up was 5 years, contributing to a total of 3079 person-years. The proportion of each pelvic floor disorder, based on 3079 person-years of follow-up was: stress urinary incontinence (27%), pelvic organ prolapse (20%), or anal incontinence (25%). Using generalized estimating equations adjusting for race, education, parity, and body mass index, sustained exclusive breastfeeding was not significantly associated with stress urinary incontinence (adjusted odds ratio, 0.82, 95% confidence interval, 0.55-1.23), pelvic organ prolapse (adjusted odds ratio, 0.78, 95% confidence interval, 0.49-1.26), and anal incontinence (adjusted odds ratio, 0.67, 95% confidence interval, 0.44-1.00). Regarding our obstetric anal sphincter injury subanalysis, 123 women within our cohort experienced obstetric anal sphincter injuries at delivery. Anal incontinence was reported in 32% of these women. However, there was no observed relationship between breastfeeding and the development of anal incontinence during study follow-up in this population.

CONCLUSION:

Breastfeeding after vaginal childbirth was not associated with the development of stress urinary incontinence, pelvic organ prolapse, or anal incontinence 1-2 decades after the first vaginal delivery.

8. VISCERA

Decrease CR CA with alcohol use

Association between alcohol consumption and survival in colorectal cancer: A meta-analysis

Cancer Epidemiology, Biomarkers & Prevention — Kim Y, et al. | August 13, 2019

Via performing a meta-analysis of prospective cohort studies, researchers quantitatively assessed the link between alcohol consumption and colorectal cancer survival.

They included 12 studies with 32,846 patients with colorectal cancer. Outcomes revealed a lower risk of all-cause mortality in correlation with light and moderate pre-diagnostic alcohol consumption vs no alcohol consumption. However, there appeared to be no significant correlation between heavy pre-diagnostic alcohol consumption and colorectal cancer survival.

By type of alcohol, the investigators noted a lower risk of mortality, from all-causes and colorectal cancer, in correlation with wine consumption, but all-cause mortality was observed to be positively correlated with moderate liquor consumption.

Alcohol and FLD

Hepatology. 2019 Aug;70(2):511-521. doi: 10.1002/hep.30226. Epub 2018 Oct 2.

Effect of Alcohol Consumption on Survival in Nonalcoholic Fatty Liver Disease: A National Prospective Cohort Study.

Hajifathalian K¹, Torabi Sagvand B², McCullough AJ^{3,4,5}.

Abstract

Nonalcoholic fatty liver disease (NAFLD) comprises more than two thirds of patients with chronic liver disease in the United States.

The effect of alcohol consumption on survival in patients with NAFLD is not clear. We gathered data on National Health and Nutrition Examination Survey participants from 1988 to 2010, and linked them to the National Death Index for follow-up of their survival. We diagnosed NAFLD based on a previously validated biochemical model (Hepatic Steatosis Index). We built multivariate Cox proportional hazards models to evaluate the effect of alcohol consumption on survival of patients with NAFLD. After excluding participants with significant alcohol use, viral hepatitis, or increased transferrin saturation, 4,568 participants with NAFLD were included in the analysis. In a Cox model adjusted for age, sex, and smoking history, drinking 0.5-1.5 drinks per day decreased the risk of overall mortality by 41% (hazard ratio [HR] = 0.59, 95% confidence interval [CI] 0.40-0.85, P = 0.005) compared with not drinking. Drinking ≥ 1.5 drinks per day showed a trend toward harm (HR = 1.16, 95% CI 0.99-1.36, P = 0.119).

After further adjustment for race, physical activity, education level, diabetes, and fiber and polyunsaturated fatty acid intake, drinking 0.5-1.5 drinks per day continued to show a significant protective effect (HR = 0.64, 95% CI 0.42-0.97, P = 0.035), and drinking ≥ 1.5 drinks per day showed a significant harmful effect on mortality (HR = 1.45, 95% CI 1.01-2.10, P = 0.047). Among patients with NAFLD, modest alcohol consumption is associated with a significant decrease in all-cause mortality, whereas drinking ≥ 1.5 drinks per day is associated with an increase in mortality. These results help to inform the discussion of potential risks and benefits of alcohol use in patients with NAFLD.

Plant based diet

Plant-Based Diets Are Associated With a Lower Risk of Incident Cardiovascular Disease, Cardiovascular Disease Mortality, and All-Cause Mortality in a General Population of Middle-Aged Adults**Hyunju Kim Laura E. Caulfield Vanessa Garcia-Larsen Lyn M. Steffen Josef Coresh and Casey M. Rebholz****Originally published** 7 Aug 2019 <https://doi.org/10.1161/JAHA.119.012865>

Background

Previous studies have documented the cardiometabolic health benefits of plant-based diets; however, these studies were conducted in selected study populations that had narrow generalizability.

Methods and Results

We used data from a community-based cohort of middle-aged adults (n=12 168) in the ARIC (Atherosclerosis Risk in Communities) study who were followed up from 1987 through 2016. Participants' diet was classified using 4 diet indexes. In the overall plant-based diet index and provegetarian diet index, higher intakes of all or selected plant foods received higher scores; in the healthy plant-based diet index, higher intakes of only the healthy plant foods received higher scores; in the less healthy plant-based diet index, higher intakes of only the less healthy plant foods received higher scores. In all indexes, higher intakes of animal foods received lower scores. Results from Cox proportional hazards models showed that participants in the highest versus lowest quintile for adherence to overall plant-based diet index or provegetarian diet had a 16%, 31% to 32%, and 18% to 25% lower risk of cardiovascular disease, cardiovascular disease mortality, and all-cause mortality, respectively, after adjusting for important confounders (all $P<0.05$ for trend). Higher adherence to a healthy plant-based diet index was associated with a 19% and 11% lower risk of cardiovascular disease mortality and all-cause mortality, respectively, but not incident cardiovascular disease ($P<0.05$ for trend). No associations were observed between the less healthy plant-based diet index and the outcomes.

Conclusions

Diets higher in plant foods and lower in animal foods were associated with a lower risk of cardiovascular morbidity and mortality in a general population.

14. HEADACHES

Life impact of migraine's

Headache. 2019 Aug 12. doi: 10.1111/head.13613.

Life With Migraine: Effects on Relationships, Career, and Finances From the Chronic Migraine Epidemiology and Outcomes (CaMEO) Study.

Buse DC¹, Fanning KM², Reed ML², Murray S³, Dumas PK⁴, Adams AM⁵, Lipton RB^{1,6}.

OBJECTIVE:

To assess the effects of migraine on important life domains and compare differences between respondents with episodic and chronic migraine and between sexes.

BACKGROUND:

Migraine is associated with a substantial personal and societal burden and can also affect the interpersonal dynamics, psychological health and well-being, and financial stability of the entire family of the person with migraine.

METHODS:

The Chronic Migraine Epidemiology and Outcomes (CaMEO) Study is a prospective, longitudinal, Web-based survey study undertaken between September 2012 and November 2013 in a systematic U.S. sample of people meeting modified International Classification of Headache Disorders, 3rd edition migraine criteria: 19,891 respondents were invited to complete the Family Burden Module, which assessed the perceived impact of migraine on family relationships and life, career and finances, and overall health. Respondents were stratified by episodic migraine (<15 headache days/month) and chronic migraine (≥15 headache days/month) and sex for comparisons.

RESULTS:

A total of 13,064 respondents (episodic migraine: 11,944 [91.4%]; chronic migraine: 1120 [8.6%]) provided valid data. Approximately 16.8% of respondents not currently in a romantic relationship (n = 536 of 3189) and 17.8% of those in a relationship but not living together (n = 236 of 1323) indicated that headaches had contributed to relationship problems. Of those in a relationship and living together (n = 8154), 3.2% reported that they chose not to have children, delayed having children or had fewer children because of migraine (n = 260; episodic migraine: n = 193 of 7446 [2.6%]; chronic migraine: n = 67 of 708 [9.5%]; P < .001). Of individuals responding to career/finance items (n = 13,061/13,036), 32.7% indicated that headaches negatively affected ≥1 career area (n = 4271; episodic migraine: n = 3617 of 11,942 [30.3%]; chronic migraine: n = 654 of 1119 [58.4%]), and 32.1% endorsed worry about long-term financial security due to migraine (n = 4180; episodic migraine: n = 3539 of 11,920 [29.7%]; chronic migraine: n = 641 of 1116 [57.4%]).

CONCLUSIONS:

Migraine can negatively affect many important aspects of life including marital, parenting, romantic and family relationships, career/financial achievement and stability, and overall health. Reported burden was consistently greater among those with chronic migraine than among people with episodic migraine; however, few differences were seen between the sexes.

Lifestyle factors

Headache. 2019 Aug 2. doi: 10.1111/head.13610.

Health Behaviors and Social Determinants of Migraine in a Canadian Population-Based Sample of Adults Aged 45-85 Years: Findings From the CLSA.

Hammond NG¹, Stinchcombe A².

BACKGROUND:

Social determinants of health are well linked to adverse health outcomes, but less is known about how they relate to migraine. While much attention has been given to the role of modifiable lifestyle factors which may mitigate risk of migraine, the role of physical activity in headache management is not yet understood.

OBJECTIVES:

The purpose of this study was to explore the relationship between social determinants of health, health behaviors, and migraine prevalence in a sample of the Canadian population aged 45-85 years.

METHODS:

In this cross-sectional analysis of baseline data from the Canadian Longitudinal Study on Aging, respondents were between 45 and 85 years of age and migraine was self-report of physician diagnosis. Analyses were stratified by sex/gender ($n_{\text{women}} = 22,176$, $n_{\text{men}} = 21,549$).

RESULTS:

The weighted prevalence of migraine for men and women was 7.5% and 19.6%, respectively. There were relationships between social determinants of health and migraine for both men and women. Notably, higher perceived social status was associated with a 3% reduced odds of migraine among women (OR = 0.97, 95% CI: 0.95, 0.98, $P < .001$). Gay and bisexual men had 50% higher odds of migraine compared to heterosexual men (OR = 1.50, 95% CI: 1.13, 1.99, $P = .005$). Some forms of physical activity were associated with reduced odds of migraine for women: walking for 30 minutes but less than 1 hour (OR = 0.87, 95% CI: 0.78, 0.96, $P = .005$), light sports for less than 30 minutes (OR = 0.86, 95% CI: 0.73, 1.00, $P = .048$), and 1 hour but less than 2 hours (OR = 0.85, 95% CI: 0.74, 0.97, $P = .018$), strenuous sports for 30 minutes but less than 1 hour (OR = 0.79, 95% CI: 0.71, 0.89, $P < .001$), and 1 hour but less than 2 hours (OR = 0.82, 95% CI: 0.73, 0.92, $P = .001$). Men who engaged in daily walking as a form of leisure time physical activity had higher odds of migraine: walking less than 30 minutes (OR = 1.21, 95% CI: 1.01, 1.45, $P = .042$), 2 hours but less than 4 hours (OR = 1.42, 95% CI: 1.11, 1.80, $P = .005$), and 4 hours or more (OR = 1.65, 95% CI: 1.18, 2.31, $P = .004$).

CONCLUSIONS:

Social determinants of health are associated with migraine prevalence for both men and women. Physical activity is a modifiable lifestyle factor which merits further exploration as an intervention option for migraine headaches in aging samples, especially among older women. Greater odds of migraine among older men who walked for exercise may be explained by reverse causality.

HA's and neck pain

J Man Manip Ther. 2019 Sep;27(4):245-252. doi: 10.1080/10669817.2019.1572987. Epub 2019 Feb 4.

Self-reported sinus headaches are associated with neck pain and cervical musculoskeletal dysfunction: a preliminary observational case control study.

Petersen SM¹, Jull GA², Learman KE³.

Objectives: Headaches can be associated with rhinosinusitis and may present a diagnostic challenge because of symptomatic overlap with other recurring headaches. Neck pain has received extensive attention in migraine, tension-type and cervicogenic headache but not as a comorbid feature of headache in those with rhinosinusitis. This study investigated the occurrence of neck pain and cervical musculoskeletal dysfunction in individuals with self-reported sinus headaches (SRSH).

Methods: Participants with and without SRSH attended a single data collection session. Participants completed the Headache Impact Test (HIT)-6 and the Sino-Nasal Outcome Test (SNOT)-22. Cervical range of motion (ROM), segmental examination, muscle endurance and pressure-pain threshold (PPT) were measured .

Results: Participants included 31 with SRSH (77.4% female; age 43.7 (9.9) years) and 30 without headache. Average symptom duration was 89.7 (\pm 85.6) months. Mean SNOT-22 and HIT-6 scores were 36.2 (15.3) and 56.7 (7.1), respectively. In the SRSH group, 83.9% ($n = 26$) reported neck pain. There was a significant difference between groups for cervical sagittal (14.3° [5.3° , 23.3°], $p = 0.002$) and transverse plane ROM (21.5° [12.4° , 30.6°], $p < 0.001$), but no difference in frontal plane motion ($p = 0.017$). There were significant between groups difference in neck flexor endurance (19.5 s [10.1 s, 28.9 s], <0.001), segmental dysfunction O-C4 ($p < 0.001$) but not in PPT ($p = 0.04$).

Discussion: Neck pain and cervical musculoskeletal dysfunction are common among persons with SRSH and may be a comorbid feature or contributing factor to headaches attributed to rhinosinusitis. Further research is needed to understand these associations.

27. HIP**Greater trochanteric pain central sensitization**

Musculoskelet Sci Pract. 2019 May 18;43:6-11. doi: 10.1016/j.msksp.2019.05.006

Do features of central sensitisation exist in Greater Trochanteric Pain Syndrome (GTPS)? A case control study.

French HP¹, Jong CC², McCallan M³.

BACKGROUND:

Greater Trochanteric Pain Syndrome (GTPS), which is commonly due to Gluteal Tendinopathy, refers to pain over the lateral hip that can become persistent and disabling. Central nervous sensitisation has been implicated in upper limb tendinopathy, but no studies have investigated if it plays a role in GTPS.

OBJECTIVES:

To investigate if features of central sensitisation were present in people with GTPS.

METHODS:

Eighteen people with GTPS were matched with 18 healthy controls in this cross-sectional study. The VISA-G and Central Sensitisation Inventory (CSI) self-report questionnaires were completed and pressure pain detection thresholds (PPDTs) at local and remote sites were measured in all participants. Data were analysed for between-group differences using Mann-Whitney U tests. Correlation between CSI and PPDTs were assessed using Pearson correlation co-efficients.

RESULTS:

PPDT values were lower at local (symptomatic greater trochanter) and remote sites in the GTPS group, indicative of central sensitisation, resulting in statistically significant between-group differences. 44.4% of the GTPS group were classified as having symptoms of central sensitisation, based on the CSI.

CONCLUSION:

There is preliminary evidence of central sensitisation in people with GTPS. Results need to be validated using other objective quantitative sensory testing measures in larger samples.

30 A. HIP IMPINGEMENT**Squat exercise**

Clin Biomech (Bristol, Avon). 2019 Jul 18;69:141-147. doi: 10.1016/j.clinbiomech.2019.07.017.

Deep hip muscle activation during squatting in femoroacetabular impingement syndrome.

Diamond LE¹, van den Hoorn W², Bennell KL³, Wrigley TV³, Hinman RS³, O'Donnell J⁴, Hodges PW².

BACKGROUND:

Deep hip muscle retraining is a common objective of non-operative management for femoroacetabular impingement (FAI) syndrome. These muscles are considered to have an important role in hip joint stabilization, however, it is unclear whether their function is altered in the presence of hip pathology. This exploratory study aimed to investigate activation patterns of the hip muscles during two squatting tasks in individuals with and without FAI syndrome.

METHODS:

Fifteen individuals with FAI syndrome (symptoms, clinical examination and imaging) and 14 age- and sex-comparable healthy controls underwent testing. Intramuscular fine-wire and surface electrodes recorded electromyographic activity of selected deep and superficial hip muscles during the squatting tasks. Activation patterns from individual muscles were compared between-groups using a wavelet-based linear mixed effects model ($P < 0.05$).

FINDINGS:

There were no between-group differences for squat depth or speed during descent or ascent for either task. Participants with FAI syndrome exhibited patterns of activation that differed significantly to controls across all muscles ($P < 0.05$) when squatting using their preferred strategy. Unlike controls, participants with FAI syndrome exhibited a pattern of activation for obturator internus during descent that was similar in amplitude to ascent, despite the contrasting contraction type (i.e. eccentric vs concentric).

INTERPRETATION:

Individuals with FAI syndrome appear to implement a protective strategy as the hip descends towards the impingement position. Future studies should examine patients prospectively to establish whether these strategies are counterproductive for pathology and warrant rehabilitation.

34. PATELLA

PF pain and expectations

S Afr J Physiother. 2019 Jul 25;75(1):684. doi: 10.4102/sajp.v75i1.684. eCollection 2019.

Patients' perceptions of recovery following a 6-week exercise intervention for the treatment of patellofemoral pain: A mixed methods study.

Leibbrandt DC¹, Louw QA¹.

BACKGROUND:

Patellofemoral pain (PFP) is a common and complex condition. The diagnosis and causal mechanisms are not well understood and therefore the long-term prognosis tends to be poor. Exercise is currently the only evidence-based treatment strategy suggested to improve pain and function in the long term. However, no qualitative studies have been conducted to establish patients' perceptions of recovery in the long term following an exercise intervention.

OBJECTIVES:

To measure self-reported recovery on a 7-point Likert scale in 31 participants with PFP 6 months after a 6-week physiotherapy intervention. To explore the subjective accounts of patients who received a physiotherapy intervention for PFP, regarding their expectations and perceptions of recovery.

METHOD:

Semi-structured exit interviews were conducted electronically 6 months after intervention to ascertain the patients' perspectives on whether expectations of treatment were met, and factors that influenced their recovery experience.

RESULTS:

Quantitative analysis of self-reported recovery on a 7-point Likert scale showed that 48.4% of participants felt that they were 'recovered'. Qualitative analysis showed three main categories: expectations of treatment, perceptions of recovery and changes in functional abilities.

CONCLUSION:

Clinicians should address patients' expectations of treatment and include the patients in decision-making regarding their treatment. Long-term follow-up is essential to ensure that treatment effects have been maintained, and this should include information about patients' self-reported recovery.

CLINICAL IMPLICATIONS:

This study suggests that patients' expectations of treatment and perceptions of recovery from PFP may influence prognosis. Clinicians need to collaborate with patients and involve them in decision-making to achieve their goals. An individualised treatment approach is essential to adequately address patients' experiences, priorities and beliefs.

35. KNEE/TOTAL

Patella resurfacing helps

The outcome of total knee arthroplasty with and without patella resurfacing up to 17 years: A report from the Australian Orthopaedic Association National Joint Replacement Registry
Journal of Arthroplasty — Coory J, et al. | August 15, 2019

Data from the Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR) (1999-2017) was utilized for a study by the researchers in order to give long term outcomes for patellar resurfaced in comparison with when the patella is not resurfaced. In contrast with procedures where the patella was resurfaced, for all primary TKA, procedures where the patella was not resurfaced had a greater rate of revision.

Unresurfaced posterior stabilized (PS) knees had the greatest cumulative percent revision at 17 years, followed by minimally stabilized (MS) unresurfaced, PS resurfaced and MS resurfaced. Inlay patellar resurfacing had a greater rate of revision vs onlay patellar resurfacing. Thus, for both MS and PS knees, resurfacing the patella decreased the rate of revision. Moreover, MS knees with patellar resurfacing had the least rate of revision. In comparison with inlay patella designs, onlay patella designs were correlated with a lower revision rate

45 A. MANUAL THERAPY LUMBAR & GENERAL**Manual therapists' hands**

Musculoskelet Sci Pract. 2019 May 29;43:26-36. doi: 10.1016/j.msksp.2019.05.009.

Wrist and hand pain in orthopaedic physical therapists: A mixed-methods study.

Campo M¹, Hyland M², Sueki D³, Pappas E⁴.

BACKGROUND:

Orthopaedic physical therapists (PTs) who perform manual therapy are at high risk for wrist and hand pain. Studies that examine the magnitude, scope and causes of wrist and hand pain are needed so that prevention programs can be developed.

OBJECTIVES:

The objective of this study was to determine the magnitude, scope, and impact of wrist and hand pain in orthopaedic PTs and to identify potential strategies for prevention.

DESIGN:

This was a sequential, mixed methods study including quantitative and qualitative components.

METHODS:

The quantitative phase consisted of an online survey sent to members of the Academy of Orthopaedic Physical Therapy. The qualitative phase consisted of focus groups with Orthopaedic PTs who had wrist and hand pain.

RESULTS:

The survey included 962 PTs and the focus groups included 10 PTs. The one-year prevalence of wrist and hand pain was 75%. Increasing age, decreasing experience, female gender, performing more manual therapy and working more than 40 h per week were associated with an increased risk of moderate to severe wrist and hand pain. Soft-tissue mobilization was the most frequently cited causative factor. The most commonly mentioned strategy for prevention was altering body mechanics and technique. Focus group participants highlighted the importance of managing expectations for manual therapy by patients.

CONCLUSIONS:

Formal injury prevention programs for PT students and PTs are urgently needed. These programs should focus on improving body mechanics and technique, attention to workload, careful selection of manual techniques, and managing expectations for manual therapy.

LBP predictors – McKenzie

J Man Manip Ther. 2019 Sep;27(4):197-207. doi: 10.1080/10669817.2019.1597435. Epub 2019 Apr 4.

Do prognostic variables predict a set of outcomes for patients with chronic low back pain: a long-term follow-up secondary analysis of a randomized control trial.

Garcia AN¹, Costa LOP^{2,3}, Costa LDCM⁴, Hancock M⁵, Cook C⁶.

Objective: The objective was to explore for universal prognostic variables, or predictors, across three different outcome measures in patients with chronic low back pain (LBP). We hypothesized that selected prognostic variables would be 'universal' prognostic variables, regardless of the outcome measures used.

Methods: This study was a secondary analysis of data from a previous randomized controlled trial comparing the McKenzie treatment approach with placebo in patients with chronic LBP. Ten baseline prognostic variables were explored in predictive models for three outcomes: pain intensity, disability, and global perceived effect, at 6 and 12 months. Predictive models were created using backward stepwise logistic and linear multivariate regression analyses.

Results: Several predictors were present including age, expectancy of improvement, global perceived effect; however, we only identified baseline disability as a universal predictor of outcomes at 6 months. The second most represented universal predictor was baseline pain intensity for outcomes at 12 months.

Discussion: Only two predictors demonstrated an association with more than one outcome measure. High baseline disability predicts multidimensional outcome measures at 6 months in patients with chronic LBP while baseline pain intensity can best predict the outcome at 12 months. Nevertheless, other predictors seem to be unique to the outcome used. Level of evidence: 2c.

45 B. MANUAL THERAPY CERVICAL**McKenzie directional preference**

J Man Manip Ther. 2019 Sep;27(4):229-236. doi: 10.1080/10669817.2019.1568660. Epub 2019 Feb 4.

Directional preference constructs for patients' neck pain in the absence of centralization.**The immediate effects of cervical spine manipulation on pain and biochemical markers in females with acute non-specific mechanical neck pain: a randomized clinical trial.**

Lohman EB¹, Pacheco GR¹, Gharibvand L², Daher N², Devore K², Bains G², AlAmeri M¹, Berk LS^{2,3}.

Study Design: Randomized clinical trial with pre-test, post-test control group design.

Objectives: To examine the immediate effects of cervical spinal manipulation (CSM) on serum concentration of biochemical markers (oxytocin, neurotensin, orexin A, and cortisol).

Background: Several studies have found an association between spinal manipulation (SM) and pain perception. However, the mechanism by which SM modulates pain remains undefined.

Methods: Twenty-eight female subjects with non-specific mechanical neck pain were randomly assigned to one of two interventions (CSM versus sham CSM). Blood samples were drawn before and immediately after the respective interventions. Oxytocin, neurotensin, orexin A, and cortisol were measured from the blood and serum using the Milliplex Map Magnetic Bead Panel Immunoassay on the Luminex 200 Platform.

Results: In the CSM group, there were significant increases in pre- versus post-manipulation mean oxytocin (154.5 ± 60.1 vs. 185.1 ± 75.6 , $p = .012$); neurotensin (116.0 ± 26.5 vs. 136.4 ± 34.1 , $p < .001$); orexin A (52.2 ± 31.1 vs. 73.8 ± 38.8 , $p < .01$) serum concentration; but no significant differences in mean cortisol ($p = .052$) serum concentration. In the sham group, there were no significant differences in any of the biomarkers ($p > .05$).

Conclusion: The results of the current study suggest that the mechanical stimuli provided through a CSM may modify neuropeptide expression by immediately increasing the serum concentration of nociception-related biomarkers (oxytocin, neurotensin, orexin A, but not cortisol) in the blood of female subjects with non-specific mechanical neck pain.

45 D. MANUAL THERAPY EXTREMITIES**Mulligan and peripheral joints**

J Manipulative Physiol Ther. 2019 Jul 16. pii: S0161-4754(18)30270-7. doi: 10.1016/j.jmpt.2019.04.001.

Effectiveness of Mulligan's Mobilization With Movement Techniques on Range of Motion in Peripheral Joint Pathologies: A Systematic Review With Meta-analysis Between 2008 and 2018.

Stathopoulos N¹, Dimitriadis Z², Koumantakis GA².

OBJECTIVES:

The purpose of this study was to provide an updated systematic review and meta-analysis regarding the effectiveness of mobilization with movement (MWM) techniques on range of motion (ROM).

METHODS:

An electronic search strategy of the Physiotherapy Evidence Database, PubMed, Cochrane Library, Embase, Google Scholar, and CINAHL was performed between August 2008 and January 2018. Two independent reviewers selected the studies. Only randomized controlled trials were included. The methodology was independently assessed by 2 reviewers using the Physiotherapy Evidence Database scale. The Z indicator was considered for the assessment of statistical significance of ROM change, whereas for each meta-analysis referring to a specific joint pathology, the total mean difference (95% confidence interval) was compared against minimum detectable change values from relevant studies conducted in similar populations to assess clinical significance.

RESULTS:

Included were 18 studies with 753 participants in 10 separate meta-analyses for ROM. All studies were classified as high quality or medium quality. Peripheral joint MWM seems to produce better therapeutic results in comparison to sham, passive, other active, or no therapeutic approach, regarding improvement of joint ROM in specific peripheral joint pathologies, consistently in all movement directions for shoulder adhesive capsulitis (mean improvement 12.30°-26.09°, $P < .02$) and hip pain (mean improvement 4.50°-14.80°, $P < .0001$).

CONCLUSION:

Mobilization with movement produced a statistically and clinically significant ROM increase consistently in all movement directions for shoulder adhesive capsulitis and hip pain. However, for shoulder impingement, shoulder pain/dysfunction, hamstring tightness, knee osteoarthritis, and chronic ankle instability pathologies, a therapeutic benefit regarding ROM could not be clearly established. Owing to the small number of individual studies included within the separate groups of pathologies examined in our systematic review, methodologically rigorous studies with longer follow-up periods are warranted to better inform the evidence base on the effects of MWM on ROM.

46 B. LOWER LIMB NEUROMOBILIZATION**LBP and neural mob**

J Man Manip Ther. 2019 Sep;27(4):208-214. doi: 10.1080/10669817.2019.1580420. Epub 2019 Feb 26.

Pragmatic neural tissue management improves short-term pain and disability in patients with sciatica: a single-arm clinical trial.

Almeida RS^{1,2}, Machado E³, Yamato TP⁴, Santos De Melo L^{5,6}, Nogueira LAC^{2,7}.

Objectives: To evaluate the clinical effect of sciatic neural mobilization in combination with the treatment of surrounding structures for sciatica patients. Secondly, we were also interested in identifying possible baseline characteristics that may be associated with improvements in pain and disability for sciatica patients.

Methods: Twenty-eight patients with a clinical diagnosis of sciatica were treated with neural mobilization, joint mobilization and soft tissue techniques. Pain intensity and lumbar disability were assessed at baseline and after treatment using a Numerical Rating Scale (0-10) and the Oswestry Disability Index (0-100), respectively. The pre- and post-intervention data were compared. The research protocol was registered under the number NCT03663842.

Results: Participants attended an average of 16 (SD±5.6) treatment^[1] sessions over an average of 12 weeks. Decrease in pain scores (before median = 8, after median = 2; $p < 0.001$) and improvement in lumbar disability scores (before median = 33.3%, after median = 15.6%; $p < 0.001$) were observed. A multiple linear regression analysis showed that duration of pain and age of the patient predicted the disability improvement: $F(2, 24) = 4.084, p < 0.030, R^2 = 0.254$.

Discussion: Patients with sciatica may benefit from neural mobilization in combination with manual therapy for pain and lumbar disability. Longer pain duration and younger age had a negative influence on lumbar disability improvement.

50 A. MOTOR CONTROL**Motor control training in LBP**

Disabil Rehabil. 2019 Aug;41(17):2071-2079. doi: 10.1080/09638288.2018.1460627. Epub 2018 Apr 12.

Motor skill training in musculoskeletal pain: a case report in chronic low back pain.

Lanier VM^{1,2}, Lang CE^{1,3,4}, Van Dillen LR^{1,2}.

Purpose: Low back pain is a chronic condition that limits function. The chief reason individuals with low back pain seek care is difficulty performing functional activities. A novel approach to improving performance of painful and limited functional activities is motor skill training, defined as challenging practice of activities to learn or relearn a skill. The purpose of this report is to describe the design and application of a motor skill training intervention in a 26-year-old man with a 10-year history of low back pain.

Methods: A motor skill training intervention was implemented to modify the altered alignment and movement patterns he used during the performance of his painful and limited activities.

Results: The patient was seen for six visits in 12 weeks. The patient reported decreased pain and medication use, as well as improved function immediately, 3-, and 9-months post-intervention.

Conclusion: Individuals with low back pain report limitation in ability to perform everyday functions and demonstrate altered patterns of movement and alignment during these activities. This case report describes an innovative motor skill training intervention that directly addresses the performance of functional activities and the application of motor learning principles. Implications for rehabilitation Low back pain is a chronic condition that limits function. The chief reason individuals with chronic low back pain seek care is difficulty performing everyday functional activities. Motor skill training is a novel approach that directly addresses the performance of painful and limited functional activities through challenging practice to improve performance and decrease pain.

51. CFS/BET**Sensitivity to physical activity**

Clin J Pain. 2019 Aug;35(8):656-667. doi: 10.1097/AJP.0000000000000732.

Comparing Novel and Existing Measures of Sensitivity to Physical Activity Among People With Chronic Musculoskeletal Pain: The Importance of Tailoring Activity to Pain.

Woznowski-Vu A¹, Uddin Z¹, Flegg D¹, Aternali A¹, Wickens R¹, Sullivan MJL², Sweet SN³, Skou ST^{4,5}, Wideman TH¹.

OBJECTIVES:

Increasing pain during physical activity is an important, but often poorly assessed, barrier to engaging in activity-based rehabilitation among people with chronic musculoskeletal pain. Preliminary work has addressed this problem by developing new clinical measures of sensitivity to physical activity (SPA). Indices of SPA are generated by evaluating how pain changes in relation to brief physical tasks. Three strategies have been identified for structuring SPA-related physical tasks (self-paced, standardized, and tailored). This cross-sectional study aimed to comparatively estimate the extent of the 3 SPA tasks' evoked pain responses, predictive value of pain severity and pain interference, and their underlying psychological and sensory constructs, among 116 adults with chronic musculoskeletal pain.

MATERIALS AND METHODS:

Testing included questionnaires, quantitative sensory testing, and the 3 SPA measures (self-paced, standardized, and tailored). The primary analysis estimated the predictive value of each SPA measure for pain severity and pain interference. Correlational analyses were first conducted between all variables of interest to determine what variables will be included in the hierarchical regression analysis, which in turn was conducted for each outcome.

RESULTS:

Analyses revealed that the tailored SPA index was most effective at evoking activity-related pain, was uniquely associated with temporal summation of pain, and was a unique predictor of pain and pain-related interference, even when controlling for established psychological and sensory risk factors.

DISCUSSION:

This study further emphasizes SPA as an important and unique attribute of the pain experience and reveals the added value of using a tailored approach to assess SPA.

Upper back pain in women weakness of muscles

PLoS One. 2019 Jul 31;14(7):e0220452. doi: 10.1371/journal.pone.0220452. eCollection 2019.

Upper back pain in postmenopausal women and associated physical characteristics.

Spencer L¹, McKenna L¹, Fary R¹, Jacques A¹, Briffa K¹.

Abstract

The physical characteristics of postmenopausal women that are associated with upper back pain are not well-understood. The aim of this cross-sectional study was to identify the physical characteristics associated with presence and severity of upper back pain in healthy postmenopausal women.

Self-reported upper back pain presence (within the previous month) and severity (numerical rating scale) were examined against the physical characteristics: height; weight; body mass index; breast size; breast ptosis; upper back extensor muscle endurance (isometric chest raise test); head, shoulder and upper back posture (photogrammetry); thoracic extension mobility (photogrammetry); bone mineral density (dual-energy x-ray absorptiometry (DXA)); body composition (DXA); and thoracic kyphosis, thoracic osteoarthritis and thoracic vertebral fracture (all radiography). A multivariable logistic regression model, adjusted for age, was built using physical characteristics with a significant univariate association with upper back pain. Censored Tobit regression, adjusted for age, was used to examine each physical characteristic against upper back pain severity.

Postmenopausal women (n = 119) with a mean (SD) age of 61.4 (7.0) years participated in the study. After adjusting for age, the physical characteristics independently associated with upper back pain were: height (OR: 0.50, 95% CI: 0.31-0.79); and upper back extensor muscle endurance (OR: 0.46, 95% CI: 0.28-0.75). This model explained 31% of the variance in upper back pain (p<0.001). After adjusting for age, being taller and having better upper back extensor muscle endurance were associated with lower odds for upper back pain. After adjusting for age, differences in upper back pain severity were explained by upper back extensor muscle endurance (p = 0.001) and lean mass (p = 0.01).

Conclusion: As a modifiable physical characteristic of postmenopausal women with upper back pain, upper back extensor muscle endurance is worth considering clinically.

52. EXERCISE

Agonist and antagonistic

Eur J Appl Physiol. 2019 Aug 5. doi: 10.1007/s00421-019-04203-9.

Modulation of intracortical inhibition and excitation in agonist and antagonist muscles following acute strength training.

Mason J¹, Howatson G^{2,3}, Frazer AK¹, Pearce AJ⁴, Jaberzadeh S¹, Avela J⁵, Kidgell DJ⁶.

PURPOSE:

Transcranial magnetic stimulation (TMS) usually investigates the corticospinal responses of the agonist muscle to strength training, despite the role of the antagonist muscle in strength development. We examined the intracortical responses from an agonist and antagonist muscle following a single session of heavy-loaded strength training (dominant-arm only) to identify the early antagonistic responses to a single session that may accompany improvements in strength.

METHODS:

Corticospinal and motor cortical excitability and inhibition was collected from agonist and antagonist muscles prior to and following a single session of heavy-loaded wrist flexor training in 18 individuals. Training consisted of four sets 6-8 repetitions at 80% of 1-repetition maximum (1-RM). Recruitment curves for corticospinal excitability and inhibition of the right wrist flexor and wrist extensor muscles were constructed and assessed by examining the area under the recruitment curve. Intracortical measures were obtained using paired-pulse TMS.

RESULTS:

Following a single training session, increases in corticospinal excitability were observed in both the agonist and antagonist muscles. This was accompanied by decreases in corticospinal inhibition in both muscles. Intracortical inhibition was reduced and intracortical facilitation was increased for the agonist muscle only. Intracortical measures in the antagonist muscle remained unchanged after training.

CONCLUSIONS:

These findings indicate that the corticospinal responses to a single session of strength training are similar between agonist and antagonist muscles, but the intrinsic cortico-cortical circuitry of the antagonist remains unchanged. The corticospinal responses are likely due to increased involvement/co-activation of the antagonist muscle during training as the agonist muscle fatigues.

Shoulder girdle ex helps radial fx

Clin Rehabil. 2019 Jul 29;269215519866240. doi: 10.1177/0269215519866240

The effectiveness of adding a scapular exercise programme to physical therapy treatment in patients with distal radius fracture treated conservatively: a randomized controlled trial.

Gutiérrez-Espinoza H^{1,2}, Araya-Quintanilla F^{1,3}, Gutiérrez-Monclus R⁴, Cavero-Redondo F^{5,6}, Álvarez-Bueno C^{5,6}.

OBJECTIVE:

To determine the effectiveness of a scapular exercise programme in addition to a physical therapy treatment in patients with distal radius fracture.

DESIGN:

A single-blinded randomized controlled trial was conducted.

SETTING:

Clinical Hospital San Borja Arriaran, Santiago, Chile.

PARTICIPANTS:

A total of 102 patients above 60 years of age with extra-articular distal radius fracture were randomly divided into two groups.

INTERVENTIONS:

The control group ($n = 51$) received a six-week physical therapy treatment; the intervention group ($n = 51$) received the same treatment plus a scapular exercise programme.

OUTCOME MEASURES:

The two groups were assessed at baseline and after the six-week treatment. The arm function was assessed with the disabilities of the arm, shoulder and hand (DASH) questionnaire; secondary outcomes were measured by the patient-rated wrist evaluation (PRWE) questionnaire and visual analogue scale (VAS).

RESULTS:

A total of 102 patients, 51 in the control group (40 women; mean age of 65.3 ± 4.8 years) and 51 in the intervention group (42 women; mean age of 67.2 ± 5.4 years), were analysed. At the end of the treatment, the difference between groups for the DASH was 16.7 points ($P < 0.001$), 1.5 points ($P = 0.541$) for the PRWE, 0.2 cm ($P = 0.484$) for the VAS at rest, and 1.7 cm ($P < 0.001$) for the VAS at movement. All differences were in favour of the intervention group.

CONCLUSION:

In the short term, adding a scapular exercise programme provides a significant clinical benefit in arm function and pain relief with movement in patients above 60 years of age with extra-articular distal radius fracture treated conservatively.

53. CORE**LBP affects cervical stabilizers**

J Man Manip Ther. 2019 Sep;27(4):215-221. doi: 10.1080/10669817.2018.1560946. Epub 2018 Dec 24.

Abnormal performance of cervical stabilizer muscles in individuals with low back pain.

Thongprasert C¹, Kanlayanaphotporn R¹.

Objectives: To compare the performance of cervical stabilizer muscles using the craniocervical flexion test (CCFT) among individuals with subacute, chronic, and asymptomatic low back pain (LBP) conditions.

Methods: Individuals with subacute ($N = 23$) and chronic LBP ($N = 23$) with their age- and gender-matched controls ($N = 30$) participated in this study. All recruited participants were required to perform the CCFT. The activation score (AS) and the performance index (PI) were recorded by an assessor who was blinded to the group of participants.

Results: Approximately, 74% of subacute LBP participants and 60-65% of chronic LBP participants obtained abnormal AS and PI. AS was significantly lower in participants with subacute ($P = 0.0002$) and chronic LBP ($P = 0.0009$) than the control group. Likewise, the PI was significantly lower in participants with subacute ($P = 0.0002$) and chronic LBP ($P = 0.0036$) than the control group. Participants in the subacute LBP group showed significantly greater percentages of abnormal responses on the AS ($P < 0.0001$) and the PI ($P = 0.0001$) than the control.

Discussion: Abnormal performance of cervical stabilizer muscles using the CCFT was demonstrated in a high proportion of participants with LBP. The findings highlight the plausible association in muscle control between cervical and lumbar stabilizers. **Level of Evidence:** 2b.

61. FIBROMYALGIA

Factors to consider

Ann Phys Rehabil Med. 2019 Aug 3. pii: S1877-0657(19)30109-5. doi: 10.1016/j.rehab.2019.06.017.

Physical and psychological paths toward less severe fibromyalgia: A structural equation model.

Pulido-Martos M¹, Luque-Reca O², Segura-Jiménez V³, Álvarez-Gallardo IC³, Soriano-Maldonado A⁴, Acosta-Manzano P⁵, Gavilán-Carrera B⁵, McVeigh JG⁶, Geenen R⁷, Delgado-Fernández M⁵, Estévez-López F⁷.

OBJECTIVES:

Previous research suggested isolated associations of physical and psychological factors with fibromyalgia severity. Integration of physical and psychological, experienced and observed, modifiable factors associated with fibromyalgia severity in a single model will reveal therapeutic paths toward less severity of disease. We aimed to examine an encompassing model of determinants of fibromyalgia severity.

METHODS:

This observational, population-based cross-sectional study included 569 people with fibromyalgia. An integrative model of fibromyalgia severity was tested by using structural equation modelling. This model included 8 factors: resilience, catastrophizing, active lifestyle, declarative memory, subjective fitness, objective fitness, psychological distress, and physical fatigue.

RESULTS:

Two core paths were associated with reduced fibromyalgia severity: 1) a psychological path connecting resilience and low catastrophizing with low distress and 2) a physical path, connecting a more active lifestyle (directly and via high objective and subjective physical fitness) with low fatigue. Additional interconnecting paths especially suggested a connection from the psychological to physical path. Our model explained 83% of the fibromyalgia severity.

CONCLUSIONS:

The present model integrated the complexity of mutually influencing factors of fibromyalgia severity, which may help in better understanding the disease. It emphasised the importance of the following: 1) physical factors and psychological factors and their interconnections, 2) patients' experiences and clinical measurements, and 3) positive and negative signs such as physical fitness and distress. Future longitudinal and experimental research should aim at testing clinical implications implied by the model. For instance, to reduce fatigue, exercise should enhance not only objective fitness but also fitness-related perceptions. Reducing distress and fatigue seems crucial for lowering fibromyalgia severity.