

2. LBP

Biopsychosocial model in LBP

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Multidisciplinary biopsychosocial rehabilitation for subacute low back pain.

Marin TJ¹, Van Eerd D, Irvin E, Couban R, Koes BW, Malmivaara A, van Tulder MW, Kamper SJ.**BACKGROUND:** Low back pain (LBP) is associated with enormous personal and societal burdens, especially when it reaches the chronic stage of the disorder (pain for a duration of more than three months). Indeed, individuals who reach the chronic stage tend to show a more persistent course, and they account for the majority of social and economic costs. As a result, there is increasing emphasis on the importance of intervening at the early stages of LBP. According to the biopsychosocial model, LBP is a condition best understood with reference to an interaction of physical, psychological, and social influences. This has led to the development of multidisciplinary biopsychosocial rehabilitation (MBR) programs that target factors from the different domains, administered by healthcare professionals from different backgrounds. This review is an update of a Cochrane Review on MBR for subacute LBP, which was published in 2003. It is part of a series of reviews on MBR for musculoskeletal pain published by the Cochrane Back and Neck Group and the Cochrane Musculoskeletal Group.**OBJECTIVES:** To examine the effectiveness of MBR for subacute LBP (pain for a duration of six to 12 weeks) among adults, with a focus on pain, back-specific disability, and work status.**SELECTION CRITERIA:** We included randomised controlled trials (RCTs) of adults with subacute LBP. We included studies that investigated a MBR program compared to any type of control intervention. We defined MBR as an intervention that included a physical component (e.g. pharmacological, physical therapy) in combination with either a psychological, social, or occupational component (or any combination of these). We also required involvement of healthcare professionals from at least two different clinical backgrounds with appropriate training to deliver the component for which they were responsible.**MAIN RESULTS:** We included a total of nine RCTs (981 participants) in this review. Five studies were conducted in Europe and four in North America. Sample sizes ranged from 33 to 351. The mean age across trials ranged between 32.0 and 43.7 years. All included studies were judged as having high risk of performance bias and high risk of detection bias due to lack of blinding, and four of the nine studies suffered from at least one additional source of possible bias. In MBR compared to usual care for subacute LBP, individuals receiving MBR had less pain (four studies with 336 participants; SMD -0.46, 95% CI -0.70 to -0.21, moderate-quality of evidence due to risk of bias) and less disability (three studies with 240 participants; SMD -0.44, 95% CI -0.87 to -0.01, low-quality of evidence due to risk of bias and inconsistency), as well as increased likelihood of return-to-work (three studies with 170 participants; OR 3.19, 95% CI 1.46 to 6.98, very low-quality of evidence due to serious risk of bias and imprecision) and fewer sick leave days (two studies with 210 participants; SMD -0.38 95% CI -0.66 to -0.10, low-quality of evidence due to risk of bias and imprecision) at 12-month follow-up. The effect sizes for pain and disability were low in terms of clinical meaningfulness, whereas effects for work-related outcomes were in the moderate range. However, when comparing MBR to other treatments (i.e. brief intervention with features from a light mobilization program and a graded activity program, functional restoration, brief clinical intervention including education and advice on exercise, and psychological counselling), we found no differences between the groups in terms of pain (two studies with 336 participants; SMD -0.14, 95% CI -0.36 to 0.07, low-quality evidence due to imprecision and risk of bias), functional disability (two studies with 345 participants; SMD -0.03, 95% CI -0.24 to 0.18, low-quality evidence due to imprecision and risk of bias), and time away from work (two studies with 158 participants; SMD -0.25 95% CI -0.98 to 0.47, very low-quality evidence due to serious imprecision, inconsistency and risk of bias). Return-to-work was not reported in any of the studies. Although we looked for adverse events in both comparisons, none of the included studies reported this outcome.**AUTHORS' CONCLUSIONS:** *On average, people with subacute LBP who receive MBR will do better than if they receive usual care, but it is not clear whether they do better than people who receive some other type of treatment. However, the available research provides mainly low to very low-quality evidence, thus additional high-quality trials are needed before we can describe the value of MBR for clinical practice.*

5. SPINAL SURGERY

Factor influencing post-operative results

The Spine Journal

Return to work after surgery for lumbar disc herniation, secondary analyses from a randomized controlled trial comparing supervised rehabilitation versus home exercises

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<https://doi.org/10.1016/j.spinee.2019.09.019>Get rights and content

Background Context Patients undergoing lumbar discectomy are typically referred for postoperative rehabilitation. However, evidence regarding effectiveness of postoperative rehabilitation to improve surgical outcome and hasten return to work is scarce with conflicting results in the published literature.

Purpose This study investigates the effect of postoperative rehabilitation on return to work, duration of sick leave and working ability after surgery for lumbar disc herniation.

Study design/setting Single center randomized controlled trial.

Patient sample Patients scheduled for primary discectomy due to lumbar disc herniation were included in the study.

Outcome Measures Self-reported measures included working ability, work status and job type defined by the International Standard Classification of Occupations. All outcomes including duration of sick leave were obtained from follow-up questionnaires at one and two years after surgery.

Methods

This is a secondary analysis from a randomized controlled trial comparing patients who were referred to rehabilitation at the municipal facility starting 4-6 weeks postoperative (REHAB) and patients sent home after surgery without any planned rehabilitation course (HOME). Linear regression was performed to identify baseline characteristics associated with duration of sick leave.

Results

One hundred forty-six patients were included and equally distributed between the groups. Follow-up rate was 78% after one and two years. Both groups had a similar postoperative sick leave period of approximately 9 weeks. After one year 79% had returned to work in the HOME-group versus 74% in the REHAB-group, which was not statistically significant. Working ability improved from baseline to one year in both groups and this improvement was sustained at two-year follow-up. Stepwise linear regression showed that preoperative duration of leg pain and working ability were associated with duration of postoperative sick leave.

Conclusions

Referral for unstandardized municipal rehabilitation does not affect duration of postoperative sick leave, return to work or working ability in patients recovering after surgery for lumbar disc herniation. Duration of preoperative leg pain and preoperative working ability was significantly associated with the duration of postoperative sick leave.

Discography has no side effects

Spine (Phila Pa 1976). 2019 Oct 1;44(19):E1161-E1168. doi: 10.1097/BRS.0000000000003085.

Low-Pressure Lumbar Provocation Discography According to Spine Intervention Society/International Association for the Study of Pain Standards Does Not Cause Acceleration of Disc Degeneration in Patients With Symptomatic Low Back Pain: A 7-Year Matched Cohort Study.

McCormick ZL¹, Lehman VT², Plastaras CT³, Walega DR⁴, Huddleston P 3rd⁵, Moussallem C⁵, Geske JR⁶, Verdoorn JT², Kennedy DJ⁷, Maus TP², Carr CM².

STUDY DESIGN:

Retrospective matched cohort study.

OBJECTIVE:

To determine if low-pressure lumbar provocation discography (PD) results in long-term accelerated disc degeneration, internal disc disruption, or disc herniation in patients with symptomatic low back pain (LBP).

SUMMARY OF BACKGROUND DATA:

Study of subjects without clinically-significant LBP suggests that high-pressure PD may accelerate disc degeneration.

METHODS:

Consecutive patients with symptomatic LBP who underwent magnetic resonance imaging (MRI), PD, and repeat MRI more than 7 years later, but did not undergo subsequent spinal fusion surgery, were included. Punctured discs were matched (1:2 to 1:4) to corresponding discs in a control cohort by age, BMI, Pfirrmann score (± 2), and presence of disc herniation; control cohort inclusion required MRIs for symptomatic LBP, separated by more than 7 years. The primary outcome of the study was a progression in Pfirrmann score category (I-II, III-IV, V). MRI disc-to-CSF T2 signal-intensity ratio, disc height, disc herniations, high intensity zones (HIZs), and Modic changes were assessed.

RESULTS:

Baseline and follow-up MRIs were available for 77 discs exposed to PD, and for 260 discs in the matched control cohort. There was no difference in the proportion of punctured discs that advanced in Pfirrmann score category in the PD group (17%, 95% CI 9-27%) compared with corresponding discs in the Control group (21%, 95% CI 17-27%), $P=0.3578$, or in non-punctured discs in the PD group (35%, 95% CI 21-51%) compared with corresponding discs in the Control group (34%, 95% CI 27-42%), $P=0.1169$. There were no differences in disc-to-CSF T2 signal-intensity ratio, presence of disc herniations, HIZs, or Modic changes following puncture in the PD versus matched cohort discs or in the non-punctured PD cohort discs versus corresponding control cohort discs ($P>0.05$).

CONCLUSION:

Patients with symptomatic LBP who underwent low-pressure PD, but who did not undergo a subsequent spinal fusion surgery, developed disc degeneration and new disc herniations at a similar rate to corresponding discs in matched control patients.

Psoas approach

Spine (Phila Pa 1976). 2019 Oct 1;44(19):E1122-E1129. doi: 10.1097/BRS.0000000000003071.

Complications Associated With Minimally Invasive Anterior to the Psoas (ATP) Fusion of the Lumbosacral Spine.

Tannoury T¹, Kempegowda H², Haddadi K², Tannoury C².

STUDY DESIGN:

Retrospective cohort study.

OBJECTIVES:

To analyze complications associated with minimally invasive anterolateral retroperitoneal antepsoas lumbosacral fusion (MIS-ATP).

SUMMARY OF BACKGROUND DATA:

MIS-ATP provides anterolateral access to the lumbar spine allowing for safe anterior lumbar interbody fusions between T12-S1. Anecdotally, many surgeons believe that ATP approach is not feasible at L5-S1 level, predisposing to catastrophic vascular injuries. This approach may help overcome limitations associated with conventional straight anterior lumbar interbody fusions, MIS lateral lumbar interbody fusion, and oblique lateral interbody fusion.

METHODS:

A detailed retrospective chart review of patients who had underwent MIS-ATP approach for lumbar fusion between T12-S1 was performed. Available electronic data from surgeries performed between January 2008 and March 2017 was carefully screened for surgical patients treated for spondylolisthesis, spondylosis, stenosis, sagittal, and/or coronal deformity. Detailed review of electronic medical records including operative notes, progress notes, discharge summaries, laboratory results, imaging reports, and clinic visit notes performed by a single independent reviewer not involved in patient care for documented complications. A complication is defined as any adverse event related to the index spine procedure for which patient required specific intervention or treatment.

RESULTS:

Nine hundred forty patients with a total of 2429 interbody fusion levels performed via MIS-ATP were identified during the study period. Sixty-seven patients (7.2%) sustained one or more complications during the perioperative period, of which 25.5% were surgical and 74.5% were medical. Overall, 78 (8.2%) surgical complications pertaining to the index procedure were noted during a postoperative period of 1 year from the date of surgery. No major vascular or direct visceral injuries were encountered.

CONCLUSIONS:

MIS-ATP approach provides a safe access to anterolateral interbody fusions between T12-S1. The ATP approach is performed by the spine surgeon, does not require neuromonitoring, and warrants minimal to no psoas muscle retraction resulting in significantly reduced postoperative thigh pain and rare neurologic injuries. Additionally, the direct and clear visualization of the retroperitoneal vasculature provided by the ATP approach minimizes the risk of inadvertent vascular injury.

Obesity and complications

Spine (Phila Pa 1976). 2019 Oct 1;44(19):1348-1355. doi: 10.1097/BRS.0000000000003084.

The Impact of Body Mass Index (BMI) on 30-day Outcomes Following Posterior Spinal Fusion in Neuromuscular Scoliosis.

Malik AT¹, Tamer R, Yu E, Kim J, Khan SN.

STUDY DESIGN:

Retrospective.

OBJECTIVE:

Assess the impact of varying severity of BMI on 30-day outcomes following posterior spinal fusions in neuromuscular scoliosis.

SUMMARY OF BACKGROUND DATA:

Obesity in the pediatric population is shown to be associated with adverse outcomes across varying specialties. The weight-outcome relationship in neuromuscular scoliosis has not been thoroughly investigated.

METHODS:

The 2012-2016 American College of Surgeons - National Surgical Quality Improvement (ACS-NSQIP) database was queried using Current Procedural Terminology codes 22800, 22802, and 22804 to identify patients undergoing posterior spinal fusion for neuromuscular scoliosis only. BMI was classified into four groups based on the Center for Disease Control (CDC) BMI-for-age percentile chart - Normal weight (BMI \geq 5th to $<$ 85th percentile), Underweight ($<$ 5th percentile), Overweight (\geq 85th to $<$ 95th percentile) and Obese (\geq 95th percentile). Multivariate regression models were built to understand the impact of varying BMI severity classes on 30-day outcomes.

RESULTS:

A total of 1291 patients underwent posterior spinal fusion for neuromuscular scoliosis. A total of 695 (53.8%) were normal weight, 286 (22.2%) were underweight, 145 (11.2%) were overweight, and 165 (12.8%) were obese. Obese patients versus normal weight patients were at a significantly higher risk of surgical site infections (OR 2.15; $P=0.035$), wound dehiscence (OR 1.58; $P=0.037$), urinary tract infections (OR 3.41; $P=0.010$), and 30-day readmissions (OR 1.94; $P=0.029$). Of note, overweight versus normal weight individuals had higher odds of cardiopulmonary complications (OR 8.82; $P=0.024$). No significant associations were seen for varying BMI and other 30-day outcomes.

CONCLUSIONS:

Obese neuromuscular patients undergoing PSF have higher odds of experiencing adverse outcomes, particularly surgical site infections, urinary tract infections, and readmissions. Providers should promote prevention strategies, such as dietary modification and/or early physical activity in these high-risk patients to minimize the risks of experiencing complications in the acute postoperative period.

Reoperation risk

Spine (Phila Pa 1976). 2019 Oct 1;44(19):1382-1389. doi: 10.1097/BRS.0000000000003065.

The Long-term Reoperation Rate Following Surgery for Lumbar Herniated Intervertebral Disc Disease: A Nationwide Sample Cohort Study With a 10-year Follow-up.

Kim CH^{1,2}, Chung CK^{1,2,3}, Choi Y⁴, Kim MJ⁴, Yim D⁴, Yang SH^{1,2}, Lee CH^{1,2}, Jung JM⁵, Hwang SH^{1,2}, Kim DH^{1,2}, Yoon JH^{1,2}, Park SB^{1,2,6}.

STUDY DESIGN:

A retrospective cohort study of a nationwide sample database.

OBJECTIVE:

The objective of the present study was to compare the long-term incidence of reoperation for lumbar herniated intervertebral disc disease (HIVD) after major surgical techniques (open discectomy, OD; laminectomy; percutaneous endoscopic lumbar discectomy, PELD; fusion).

SUMMARY OF BACKGROUND DATA:

HIVD is a major spinal affliction; if the disease is intractable, surgery is recommended. Considering both the aging of patients and the chronicity of lumbar degenerative disease, the effect of surgical treatment for the lumbar spine should be durable for as long as possible.

METHODS:

The National Health Insurance Service-National Sample Cohort (NHIS-NSC) of Republic of Korea was utilized to establish a cohort of adult patients (N=1856) who underwent first surgery for lumbar HIVD during 2005 to 2007. Patients were followed for 8 to 10 years. Considering death before reoperation as a competing event, reoperation hazards were compared among surgical techniques using the Fine and Gray regression model after adjustment for age, gender, Charlson comorbidity score, osteoporosis, diabetes, the severity of disability, insurance type, and hospital type.

RESULTS:

The overall cumulative incidences of reoperation were 4% at 1 year, 6% at 2 years, 8% at 3 years, 11% at 5 years, and 16% at 10 years. The cumulative incidences of reoperation were 16%, 14%, 16%, and 10% after OD, laminectomy, PELD, and fusion, respectively, at 10 years postoperation, with no difference among the surgical techniques. However, the distribution of reoperation types was significantly different according to the first surgical technique (P<0.01). OD was selected as the reoperation surgical technique in 80% of patients after OD and in 81% of patients after PELD.

CONCLUSION:

The probability of reoperation did not differ among OD, laminectomy, PELD, and fusion during the 10-year follow-up period. However, OD was the most commonly used technique in reoperation.

7. PELVIC ORGANS/WOMAN'S HEALTH

Pelvic floor training for incontinence

Effect of behavioral and pelvic floor muscle therapy combined with surgery vs surgery alone on incontinence symptoms among women with mixed urinary incontinence: The ESTEEM randomized clinical trial

JAMA — Sung VW, et al. |

September 20, 2019

Researchers investigated the efficacy of combining behavioral and pelvic floor muscle therapy with mid-urethral sling vs sling alone in annihilating mixed urinary incontinence symptoms. They conducted randomized clinical trial involving 480 women across 9 sites in the United States. The combined therapy group showed a decrease in incontinence symptoms (measured by the Urogenital Distress Inventory Long Form; range, 0-300 points; minimal clinically important difference, 35 points) by 128.2 points and the surgery alone group showed a decrease by 114.7 points.

This suggests that behavioral and pelvic floor muscle therapy combined with mid-urethral sling surgery vs surgery alone resulted in a small statistically significant difference in urinary incontinence symptoms at 12 months that did not meet the threshold for clinical importance.

Mammograms

J Am Coll Radiol. 2019 Sep 18. pii: S1546-1440(19)31034-8. doi: 10.1016/j.jacr.2019.08.033.

Risk-Based Screening Mammography for Women Aged <40: Outcomes From the National Mammography Database.

Lee CS¹, Ashih H², Sengupta D³, Sickles EA⁴, Zuley M⁵, Pisano E⁶.

OBJECTIVE:

There is insufficient large-scale evidence for screening mammography in women <40 years at elevated risk. This study compares risk-based screening of women aged 30 to 39 with risk factors versus women aged 40 to 49 without risk factors in the National Mammography Database (NMD).

METHODS:

This retrospective, HIPAA-compliant, institutional review board-exempt study analyzed data from 150 NMD mammography facilities in 31 states. Patients were stratified by 5-year age intervals, availability of prior mammograms, and specific risk factors for breast cancer: family history of breast cancer, personal history of breast cancer, and dense breasts. Four screening performance metrics were calculated for each age and risk group: recall rate (RR), cancer detection rate (CDR), and positive predictive values for biopsy recommended (PPV₂) and biopsy performed (PPV₃).

RESULTS:

Data from 5,986,131 screening mammograms performed between January 2008 and December 2015 in 2,647,315 women were evaluated. Overall, mean CDR was 3.69 of 1,000 (95% confidence interval: 3.64-3.74), RR was 9.89% (9.87%-9.92%), PPV₂ was 20.1% (19.9%-20.4%), and PPV₃ was 28.2% (27.0%-28.5%). Women aged 30 to 34 and 35 to 39 had similar CDR, RR, and PPVs, with the presence of the three evaluated risk factors associated with significantly higher CDR. Moreover, compared with a population currently recommended for screening mammography in the United States (aged 40-49 at average risk), incidence screening (at least one prior screening examination) of women aged 30 to 39 with the three evaluated risk factors has similar cancer detection rates and recall rates.

DISCUSSION:

Women with one or more of these three specific risk factors likely benefit from screening commencing at age 30 instead of age 40.

Work during pregnancy and adverse effects

American Journal of Obstetrics and Gynecology

Systematic Review

The impact of occupational activities during pregnancy on pregnancy outcomes: a systematic review and meta-analysis<https://doi.org/10.1016/j.ajog.2019.08.059>Get rights and content**Refers to**

Chenxi Cai, Ben Vandermeer, Rshmi Khurana, Kara Nerenberg, Robin Featherstone, Meghan Sebastiani, Margie H. Davenport

Abstract

Background

An increasing number of studies suggest that exposure to physically demanding work during pregnancy could be associated with increased risks of adverse pregnancy outcomes, but the results remain conflicted and inconclusive.

Objective

To examine the influence of occupational activities during pregnancy on maternal and fetal health outcomes.

Data sources

Five electronic databases and three gray literature sources were searched up to March 15, 2019.

Methods Of Study Selection

Studies of all designs (except case studies and reviews) were included, which contained information on the relevant population (women who engaged in paid work during pregnancy), occupational exposures (heavy lifting, prolonged standing, prolonged walking, prolonged bending, and heavy physical workload), comparator (no exposure to the listed physical work demands), and outcomes (preterm birth, low birth weight, small for gestational age, miscarriage, gestational hypertension, pre-eclampsia, gestational diabetes mellitus, stillbirth, and intrauterine growth restriction).

Tabulation, Integration, And Results

Eighty observational studies (N=853,149) were included. ‘Low’ to ‘very low’ certainty evidence revealed that lifting objects ≥ 11 kilograms (kg) was associated with an increased odds ratio (OR) of miscarriage (OR: 1.31, 95% CI: 1.08 to 1.58, $I^2=79\%$), and pre-eclampsia (OR: 1.35, 95% CI: 1.07 to 1.71, $I^2=0\%$). Lifting objects for a combined weight of >100 kg per day was associated with an increased odds of preterm delivery (OR: 1.31, 95% CI: 1.11 to 1.56, $I^2=0\%$) and having a low-birth-weight neonate (OR: 2.08, 95% CI: 1.06 to 4.11, $I^2=73\%$). Prolonged standing was associated with increased odds of preterm delivery (OR: 1.11, 95% CI: 1.02 to 1.22, $I^2=30\%$), and having a small-for-gestational-age neonate (OR: 1.17, 95% CI: 1.01 to 1.35, $I^2=41\%$). A heavy physical workload was associated with increased odds of preterm delivery (OR: 1.23, 95% CI: 1.07 to 1.41, $I^2=32\%$), and having a low-birth-weight neonate (OR: 1.79, 95% CI: 1.11 to 2.87, $I^2=87\%$). All other associations were not statistically significant. Dose-response analysis showed women standing more than 2.5 hours per day (versus no standing) had a 10% increase in the odds of having a preterm delivery.

Conclusion

Physically demanding work during pregnancy is associated with an increased risk of adverse pregnancy outcomes.

Forced initial sexual encounter and long term problems

JAMA Intern Med. 2019 Sep 16. doi: 10.1001/jamainternmed.2019.3500

Association Between Forced Sexual Initiation and Health Outcomes Among US Women.

Hawks L^{1,2}, Woolhandler S^{2,3}, Himmelstein DU^{2,3}, Bor DH^{1,2}, Gaffney A^{2,4}, McCormick D^{1,2}.

IMPORTANCE:

The #MeToo movement has highlighted how frequently women experience sexual violence. However, to date, no recent studies have assessed the prevalence of forced sex during girls' and women's first sexual encounter or its health consequences.

OBJECTIVE:

To estimate the prevalence of forced sexual initiation among US women and its association with subsequent reproductive, gynecologic, and general health outcomes.

DESIGN, SETTING, AND PARTICIPANTS:

A cross-sectional analysis of the 2011-2017 National Survey of Family Growth was conducted, including a population-based sample of 13 310 US women. The study was conducted from September 2011 to September 2017.

EXPOSURES:

Self-reported forced vs voluntary first sexual intercourse.

MAIN OUTCOMES AND MEASURES:

Prevalence of forced sexual initiation, age of woman and partner/assailant at first sexual encounter, and odds ratios (ORs) (adjusted for sociodemographic characteristics) for having an unwanted first pregnancy or abortion, development of painful pelvic conditions, and other reproductive and general health measures.

RESULTS:

A total of 13 310 women between the ages of 18 and 44 years were included in the study. After survey weights were applied, 6.5% (95% CI, 5.9%-7.1%) of respondents reported experiencing forced sexual initiation, equivalent to 3 351 733 women in this age group nationwide. Age at forced sexual initiation averaged 15.6 (95% CI, 15.3-16.0) years vs 17.4 (95% CI, 17.3-17.5) years for voluntary sexual initiation ($P < .001$). The mean age of the partner/assailant at first sexual encounter was 6 years older for women with forced vs voluntary sexual initiation (27.0; 95% CI, 24.8-29.2 years vs 21.0; 95% CI, 20.6-21.3 years). Compared with women with voluntary sexual initiation, women with forced sexual initiation were more likely to experience an unwanted first pregnancy (30.1% vs 18.9%; adjusted OR [aOR], 1.9; 95% CI, 1.5-2.4) or an abortion (24.1% vs 17.3%; aOR, 1.5; 95% CI, 1.2-2.0), endometriosis (10.4% vs 6.5%; aOR, 1.6; 95% CI, 1.1-2.3), pelvic inflammatory disease (8.1% vs 3.4%; aOR, 2.2; 95% CI, 1.5-3.4), and problems with ovulation or menstruation (27.0% vs 17.1%; aOR, 1.8; 95% CI, 1.4-2.3). Survivors of forced sexual initiation more frequently reported illicit drug use (2.6% vs 0.7%; aOR, 3.6; 95% CI, 1.8-7.0), fair or poor health (15.5% vs 7.5%; aOR, 2.0; 95% CI, 1.5-2.7), and difficulty completing tasks owing to a physical or mental health condition (9.0% vs 3.2%; aOR, 2.8; 95% CI, 2.0-3.9).

CONCLUSIONS AND RELEVANCE:

Forced sexual initiation in women appears to be common and associated with multiple adverse reproductive and general health outcomes. These findings highlight the possible need for public health measures and sociocultural changes to prevent sexual violence, particularly forced sexual initiation.

Preeclampsia and autism link

J Child Psychol Psychiatry. 2019 Sep 17. doi: 10.1111/jcpp.13127.

Association between preeclampsia and autism spectrum disorder: a population-based study.

Maher GM^{1,2}, O'Keeffe GW^{1,3}, Dalman C^{4,5}, Kearney PM², McCarthy FP¹, Kenny LC⁶, Khashan AS^{1,2}.

BACKGROUND:

The environmental contribution of autism spectrum disorder (ASD) is approximately 17%-50%, highlighting the importance of investigating factors potentially contributing to the likelihood of its development, and of gaining a greater understanding of the pathogenesis surrounding ASD. The objective of this study was to examine the association between preeclampsia and ASD using a population-based cohort study.

METHODS:

All singleton live births in Sweden from 1982 to 2010 were included, using data from Swedish National Registers. Exposures of interest included: (a) preeclampsia (classified according to ICD-8, ICD-9 and ICD-10) and (b) preeclampsia and small for gestational age (SGA) combined, used as a proxy for preeclampsia with placental dysfunction. ASD status was based on ICD-9 and ICD-10. The cohort consisted of 2,842,230 children, with 54,071 cases of ASD. Follow-up began from the child's first birthday, and data were censored at first diagnosis of ASD, death, migration or end of study period (31st December 2016). We conducted multivariate Cox proportional hazards regression analysis, adjusting for several perinatal and sociodemographic factors, selected a priori. We further controlled for shared genetic and familial confounding using sibling-matched analysis.

RESULTS:

In the adjusted Cox proportional hazards regression analysis, preeclampsia was associated with a 25% increase in the likelihood of ASD (Hazard Ratio (HR): 1.25, 95% CI: 1.19, 1.30) compared with those unexposed to preeclampsia, while in the sibling-matched analysis the HR was 1.17 (95% CI: 1.06, 1.28). The HR for preeclampsia and SGA combined was 1.66 (95% CI: 1.49, 1.85) in the adjusted Cox model and 1.95 (95% CI: 1.53, 2.48) in the sibling-matched analysis.

CONCLUSIONS:

Exposure to preeclampsia or preeclampsia/SGA (i.e. SGA baby exposed to preeclampsia) was associated with ASD. The stronger association with preeclampsia/SGA than preeclampsia alone suggests that placental pathology may be a mechanism for the increased likelihood of ASD.

Anemia impact on infant

JAMA Psychiatry. 2019 Sep 18;1-12. doi: 10.1001/jamapsychiatry.2019.2309

Association of Prenatal Maternal Anemia With Neurodevelopmental Disorders.

Wieggersma AM¹, Dalman C^{1,2}, Lee BK^{3,4}, Karlsson H⁵, Gardner RM¹.

IMPORTANCE:

Given the critical role that iron plays in neurodevelopment, an association between prenatal iron deficiency and later risk of neurodevelopmental disorders, such as autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), and intellectual disability (ID), is plausible.

OBJECTIVE:

To test the a priori hypothesis that anemia diagnosed in mothers during pregnancy is associated with an increased risk of ASD, ADHD, and ID in offspring and that the magnitude of the risk varies with regard to the timing of anemia in pregnancy.

DESIGN, SETTING, AND PARTICIPANTS:

This cohort study used health and population register data from the Stockholm Youth Cohort to evaluate 532 232 nonadoptive children born from January 1, 1987, to December 31, 2010, in Sweden, with follow-up in health registers until December 31, 2016. Data analysis was performed from January 15, 2018, to June 20, 2018.

EXPOSURES:

Registered diagnoses of anemia during pregnancy. Gestational timing of the first recorded anemia diagnosis (≤ 30 weeks or >30 weeks) was considered to assess potential critical windows of development.

MAIN OUTCOMES AND MEASURES:

Registered diagnoses of ASD, ADHD, or ID or co-occurring combinations of these disorders.

RESULTS:

The cohort included 532 232 individuals (272 884 [51.3%] male) between 6 and 29 years of age at the end of follow-up (mean [SD] age, 17.6 [7.1] years) and their 299 768 mothers. The prevalence of ASD, ADHD, and ID was higher among children born to mothers diagnosed with anemia within the first 30 weeks of pregnancy (4.9% ASD, 9.3% ADHD, and 3.1% ID) compared with mothers with anemia diagnosed later in pregnancy (3.8% ASD, 7.2% ADHD, and 1.1% ID) or mothers not diagnosed with anemia (3.5% ASD, 7.1% ADHD, and 1.3% ID). Anemia diagnosed during the first 30 weeks of pregnancy but not later was associated with increased risk of diagnosis of ASD (odds ratio [OR], 1.44; 95% CI, 1.13-1.84), ADHD (OR, 1.37; 95% CI, 1.14-1.64), and ID (OR, 2.20; 95% CI, 1.61-3.01) in offspring in models that included socioeconomic, maternal, and pregnancy-related factors. Early anemia diagnosis was similarly associated with risk of ASD (OR, 2.25; 95% CI, 1.24-4.11) and ID (OR, 2.59; 95% CI, 1.08-6.22) in a matched sibling comparison. Considering mutually exclusive diagnostic groups, we observed the strongest association between anemia and ID without co-occurring ASD (OR, 2.72; 95% CI, 1.84-4.01). Associations of these disorders with anemia diagnosed later in pregnancy were greatly diminished.

CONCLUSIONS AND RELEVANCE:

In contrast to maternal anemia diagnosed toward the end of pregnancy, anemia diagnosed earlier in pregnancy was associated with increased risk of the development of ASD, ADHD, and particularly ID in offspring. Given that iron deficiency and anemia are common among women of childbearing age, our findings emphasize the importance of early screening for iron status and nutritional counseling in antenatal care.

Early testing for breast CA

Risk-Based Screening Mammography for Women Aged <40: Outcomes From the National Mammography DatabaseCindy S.LeeMD^{ab}HeidiAshihMD, PhD^cDebapriyaSenguptaMBBS, MPH^dEdwardA.SicklesMD^aMargaritaZuleyMD^eEttaPisanoMD^{cf}<https://doi.org/10.1016/j.jacr.2019.08.033>Get rights and content**Objective**

There is insufficient large-scale evidence for screening mammography in women <40 years at elevated risk. This study compares risk-based screening of women aged 30 to 39 with risk factors versus women aged 40 to 49 without risk factors in the National Mammography Database (NMD).

Methods

This retrospective, HIPAA-compliant, institutional review board–exempt study analyzed data from 150 NMD mammography facilities in 31 states. Patients were stratified by 5-year age intervals, availability of prior mammograms, and specific risk factors for breast cancer: family history of breast cancer, personal history of breast cancer, and dense breasts. Four screening performance metrics were calculated for each age and risk group: recall rate (RR), cancer detection rate (CDR), and positive predictive values for biopsy recommended (PPV₂) and biopsy performed (PPV₃).

Results

Data from 5,986,131 screening mammograms performed between January 2008 and December 2015 in 2,647,315 women were evaluated. Overall, mean CDR was 3.69 of 1,000 (95% confidence interval: 3.64-3.74), RR was 9.89% (9.87%-9.92%), PPV₂ was 20.1% (19.9%-20.4%), and PPV₃ was 28.2% (27.0%-28.5%). Women aged 30 to 34 and 35 to 39 had similar CDR, RR, and PPVs, with the presence of the three evaluated risk factors associated with significantly higher CDR. Moreover, compared with a population currently recommended for screening mammography in the United States (aged 40-49 at average risk), incidence screening (at least one prior screening examination) of women aged 30 to 39 with the three evaluated risk factors has similar cancer detection rates and recall rates.

Discussion

Women with one or more of these three specific risk factors likely benefit from screening commencing at age 30 instead of age 40.

8. VISCERA

Celiac disease has increased risk of autoimmune disorders

J Pediatr Gastroenterol Nutr. 2019 Jun 18. doi: 10.1097/MPG.0000000000002418

The Risk of Autoimmune Disorders in Treated Celiac Disease Patients in Olmsted County, Minnesota.

Khan MR¹, Nellikkal SS¹, Barazi A¹, Larson JJ², Murray JA³, Absah I^{1,3}.

BACKGROUND:

Patients with autoimmune disorders (ADs) are at increased risk for celiac disease (CD), but data is conflicting on the risk of ADs in treated patients with CD. We aimed to assess the incidence of ADs in treated CD patients.

METHODS:

Using the Rochester Epidemiology Project, we retrospectively searched for the medical records at Mayo Clinic and Olmsted Medical Center from January 1997 to December 2015 for CD patients who met accepted diagnostic criteria. For each CD patient, we identified 2 age and sex matched controls during the same study period. The incidence rate of AD diagnosis 5 years after index date was calculated using Kaplan-Meier analysis for the CD cases and controls and compared using the log-rank test.

RESULTS:

We identified 249 treated patients with CD during the study period and 498 matched controls, with mean (SD) ages of 32 (22) years and 33 (22) years, respectively. One-third of patients (n=85) and controls (n=170) were male. Five years after the index date, 5.0% of CD patients and 1.3% of controls had a de novo AD diagnosis (P=0.006). In the presence of a prior AD, the cumulative risk of a de novo or additional AD was significantly higher in the CD group vs controls (P<0.001). Children had a significantly higher risk of AD development compared with adults (P=0.010).

CONCLUSION:

Treated CD patients are at higher risk for the development of ADs. The risk of a new AD is higher in children, especially when more than one AD diagnosis exists.

14. HEADACHES

Central sensitization

Pain Pract. 2019 Sep 20. doi: 10.1111/papr.12839

Widespread Hyperesensitivity to Pressure Pain in Men with Cluster Headache during Prolonged Remission is not Related to the Levels of Depression and Anxiety.

Gómez-Mayordomo V¹, Palacios-Ceña M², Guerrero-Peral Á^{3,4}, Fuensalida-Novo S², Fernández-de-Las-Peñas C², Cuadrado ML^{1,5}.

BACKGROUND:

Diminished pressure pain thresholds (PPTs) have been found in patients with cluster headache (CH), suggesting the presence of central sensitization. However, it is not known whether sensitization persists over time during the asymptomatic periods.

OBJECTIVE:

To investigate if men with episodic CH in a long-lasting remission phase exhibit widespread pressure pain hypersensitivity.

METHODS:

Forty men with episodic CH and forty matched controls were enrolled. PPTs were assessed bilaterally over one trigeminal (temporalis muscle) and three extra-trigeminal points (C5/C6 zygapophyseal joint, second metacarpal, tibialis anterior muscle) by a blinded assessor. Patients were assessed in a prolonged remission phase, at least 6 months after their last CH attack and without taking any medication. Depression and anxiety levels were assessed with the Hospital Anxiety and Depression Scale (HADS). For each point, differences in PPTs were evaluated with a multivariate mixed-model ANCOVA test, with side and group as main factors and depression and anxiety levels as covariates.

RESULTS:

PPTs were significantly decreased bilaterally over the temporalis muscle (mean difference: 85-100kPa), C5/C6 zygapophyseal joint (mean difference: 65-80kPa), second metacarpal (mean difference: 65-90kPa) and tibialis anterior muscle (mean difference: 135-155kPa) in CH patients when compared to headache-free subjects (all, $P < 0.001$). No effect of anxiety or depression levels was found.

CONCLUSIONS:

CH patients exhibited bilateral widespread hypersensitivity to pressure pain during long-lasting remission periods, which was not associated with depression or anxiety. These results support the persistence of central sensitization in episodic CH, even in remote asymptomatic phases.

16. CONCUSSIONS

Types of head motions and impact

Am J Phys Med Rehabil. 2019 Apr 23. doi: 10.1097/PHM.0000000000001205.

Head Motion Predicts Transient Loss of Consciousness in Human Head Trauma: a Case-Control Study of Mixed Martial Artists.

Fogarty AE¹, Guay CS², Simoneau G³, Colorado BS⁴, Segal GR⁵, Werner JK Jr⁶, Ellenbogen JM⁶.

OBJECTIVE:

Concussion with transient loss of consciousness (tLOC) is a commonly observed but poorly understood phenomenon with mounting clinical significance. This study aimed to examine the relationship between head motion in varying planes and tLOC in athletes with brain injuries.

STUDY DESIGN:

A case-control design was utilized. The Ultimate Fighting Championship database was screened for events ending with knockouts (KO) from 2013 to 2016. Time of strike, striking implement, strike location, and head motion were recorded for all KO strikes (cases), and for a subset of non-KO strikes (controls). Characteristics of winners and losers were compared using 2-tailed t-tests. Multivariate logistic regression was used to determine odds ratios for strike characteristics associated with tLOC. The Kaplan-Meier estimate was used to describe the temporal distribution of KO's.

RESULTS:

136 fights were identified and 110 videos were included. Head motion in the axial plane was strongly associated with tLOC (OR, 45.3; 95% CI, 20.8 - 98.6). Other predictors of tLOC were head motion in sagittal and coronal planes, non-fist striking implements and strikes to the mandible or maxilla. The Kaplan-Meier survival curve demonstrated a decreasing rate of KO's through time.

CONCLUSION:

Rotational head acceleration, particularly in the axial plane, is strongly associated with tLOC.

52. EXERCISE

This is an interesting article that looked at the differences in resistance loads and what impact that this makes on the corticospinal pathway. It begs the question, Are we loading up our patients and challenging them enough? This correlated heavy strength training to motor learning via enhanced proprioceptive input. It has been added to the SOP bibliography and will be discussed in the NM section of the intro to the course.

“Light load strength training may be insufficiently demanding on the motor system when compared with skill training or heavy load training”.

J Strength Cond Res. 2019 Sep;33(9):2299-2307.

Determining the Corticospinal Responses to Single Bouts of Skill and Strength Training.

Mason J1, Frazer AK1, Jaberzadeh S1, Ahtiainen JP2, Avela J2, Rantalainen T2, Leung M3, Kidgell DJ1.

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Abstract

Neuroplastic changes in the primary motor cortex accompany performance improvements following motor practice. Recent evidence suggests that the corticospinal responses to strength and skill training are similar, following both a single session and repeated bouts of training, promoting discussion that strength training is a form of motor learning. However, these findings are limited by the lack of a light-load strength training group. Therefore, the aim of the current study was to determine whether a single session of heavy-load strength training, light-load strength training or skill training differentially modulates the corticospinal pathway. Transcranial magnetic stimulation was used to assess the excitatory and inhibitory circuitry of the motor cortex following a single session of skill training, and following a single session of light-load and heavy-load strength training. Following a single session of training, participants in all groups experienced comparable increases in corticospinal excitability (ranging from 38 to 46%, all $p < 0.05$); however, disparity was observed in the inhibitory responses. Corticospinal inhibition was reduced in all 3 single-sessions, although to a greater magnitude in the heavy-load and skill-training sessions (22 and 18% respectively, compared with 11% following light-load training, all $p < 0.05$). Short-interval intracortical inhibition was reduced immediately following single sessions of heavy-load strength training (40% $p < 0.05$) and skill training (47% $p < 0.05$), but remained unchanged the following light-load strength training session. It appears that the corticospinal responses to single sessions of different types of strength and skill training are task-dependent. **These findings reinforce the notion that strength training, at least when heavily-loaded, can be considered a form of motor learning, potentially because of the sensory feedback involved.**

54. POSTURE**Changes with age.**

Spine (Phila Pa 1976). 2019 Oct 1;44(19):E1144-E1150. doi: 10.1097/BRS.0000000000003082.

Age-related Changes in Cervical Sagittal Alignment: A Radiographic Analysis.

Tang R¹, Ye IB, Cheung ZB, Kim JS, Cho SK.

STUDY DESIGN:

Retrospective cohort study.

OBJECTIVE:

To identify age-related changes in cervical sagittal parameters using standard radiographs.

SUMMARY OF BACKGROUND DATA:

Cervical sagittal balance is important for the maintenance of neutral head posture and horizontal gaze. Degenerative changes in the cervical spine that occur with aging may alter cervical sagittal balance, which can lead to chronic neck pain and predispose to various cervical spine pathologies.

METHODS:

We performed a retrospective cohort study of 151 patients with lateral cervical spine radiographs taken at our institution between December 2017 and June 2018. Cervical sagittal parameters were measured, including C1 inclination, C2 slope, C2-C7 Cobb angle, cervical sagittal vertical axis (cSVA), cervical tilt, upper and lower C7 slopes, T1 slope, and T1 slope minus cervical lordosis (TS-CL). The association between age and cervical sagittal parameters was assessed using the Pearson correlation coefficient and a linear regression analysis. An analysis of variance (ANOVA) with Tukey adjustments was then performed to identify differences in cervical sagittal parameters among patients aged 18 to 39 years, 40 to 64 years, and >64 years of age.

RESULTS:

There were positive correlations between age and C2-C7 Cobb angle ($r=0.231$, $P=0.004$), upper C7 slope ($r=0.280$, $P<0.001$), lower C7 slope ($r=0.283$, $P<0.001$), and T1 slope ($r=0.189$, $P=0.020$). Upper C7 slope ($R=0.079$) and lower C7 slope ($R=0.074$) had the strongest correlation with age in the linear regression analysis. The ANOVA found significant differences among the age subgroups in terms of C2-C7 Cobb angle ($P=0.002$), upper C7 slope ($P<0.001$), lower C7 slope ($P<0.001$), and T1 slope ($P=0.031$). Patients >64 years old had significantly higher C2-C7 Cobb angle, upper C7 slope, lower C7 slope, and T1 slope.

CONCLUSION:

Changes in cervical sagittal alignment with age are characterized by increased cervical lordosis and increased thoracic kyphosis.

55. SCOLIOSIS

Post-operative pain

European Spine Journal pp 1–7

Factors leading to postoperative pain in adolescent idiopathic scoliosis patients including sagittal alignment and lumbar disc degeneration

- Tetsuhiko Mimura Shota Ikegami

Purpose

This study examined for factors contributing to postoperative pain in adolescent idiopathic scoliosis (AIS), including those of sagittal alignment and lumbar disc degeneration.

Methods

A total of 101 consecutive patients who underwent posterior spinal fusion for AIS and who were followed for a minimum of 2 years were included in this investigation. We assessed Lenke curve type, age, Risser grade, body mass index (BMI), radiographic parameters, lumbar disc degeneration, correction rate, number of fused vertebrae, lowest instrumented vertebra, preoperative SRS-22r survey mental health score, and pre- and postoperative SRS-22r survey pain scores. Univariate and multivariate general linear models were employed to identify factors associated with pain 2 years after AIS surgery.

Results

In multivariate analysis, patients with a lower preoperative pain score (i.e. higher pain) ($P < 0.01$) or higher postoperative T5-12 kyphotic angle ($P = 0.02$) had a worsened pain score 2 years after surgery. There were no remarkable differences for Lenke curve type, age, BMI, coronal radiographic parameters, lumbar disc degeneration, correction rate, number of fused vertebrae, or lowest instrumented vertebra. Higher preoperative Risser grade ($P = 0.01$) and lower preoperative SRS-22r mental health score ($P < 0.01$) were significantly related to a diminished preoperative SRS-22r pain score.

Conclusion

While preoperative lumbar disc degeneration was not associated with pre- or postoperative pain in AIS, higher preoperative pain and higher postoperative T5-12 kyphotic angle had significant associations with augmented postoperative pain. Higher preoperative pain was related to increased Risser grade and lower mental health score.

Changes in paraspinal muscles

Spine (Phila Pa 1976). 2019 Oct 1;44(19):1356-1363. doi: 10.1097/BRS.0000000000003078.

Magnetic Resonance Imaging-Based Morphological Change of Paraspinal Muscles in Girls With Adolescent Idiopathic Scoliosis.

Yeung KH¹, Man GCW², Shi L¹, Hui SCN¹, Chiyanka C¹, Lam TP², Ng BKW², Cheng JCY², Chu WCW¹.

STUDY DESIGN:

A cross-sectional study.

OBJECTIVE:

To investigate and compare any morphological differences in paraspinal muscles (PSM) between adolescent idiopathic scoliosis (AIS) patients (with severe or non-severe curves) and healthy controls.

SUMMARY OF BACKGROUND DATA:

Several studies have reported abnormalities in biochemical, electromyographic activity, and histological changes of PSM in AIS. However, these studies only had qualitative data and without comparison with controls. Changes of muscle mass and mean density at the lumbar region have been described for scoliotic spines. All these findings suggested that imbalance of PSM in AIS could be a contributing factor to the development of severe scoliotic curve.

METHODS:

T2-weighted MR images with multi-planar reconstruction were acquired in 41 Chinese AIS girls with a primary right-sided thoracic curve and 23 age-matched controls. In AIS, measurements of PSM were taken on both concavity and convexity of scoliosis starting from two vertebrae above and two below the apex. Morphological assessments of the multifidus (MF) and erector spinae (ES) muscles on both sides were made including signal intensity (SI) and fat deposition using manual tracing and thresholding technique, respectively. Same parameters were measured in controls at matched vertebrae. One-way analysis of variance (ANOVA) and Pearson correlation tests were used for statistical analysis.

RESULTS:

Abnormalities were found at concavity of muscles between AIS and controls. Significantly higher SI and fatty components was observed in AIS at MF muscles on concavity than controls (P-value <0.001). Additionally, SI at MF muscles was significantly correlated with Cobb angle.

CONCLUSION:

Increased SI and fatty components are asymmetrically present in PSM at apex in AIS. Our results showed higher intensity in PSM at concavity in AIS when compared with controls. There was a significant linear correlation between abnormal muscle signal and scoliotic curve. Above features are suggestive of altered muscle composition in concave PSM, possibly due to prolonged compression and reduced muscle activity of PSM caused by the spinal deformity.

56. ATHLETICS

FMS value to screen pain location

J Orthop Sports Phys Ther. 2019 Sep 17:1-24. doi: 10.2519/jospt.2020.9168

Functional Movement Screen Pain Location and Impact on Scoring Has Limited Value for Junior Australian Football Injury Risk Estimation.

Fuller JT¹, Lynagh M², Tarca B², Zacharia A², Townsley A², Gleeson C², Milanese S², Chalmers S^{3,4}.

STUDY DESIGN:

Prospective cohort study.

BACKGROUND:

Pain during Functional Movement Screen (FMS) testing is common and has a significant effect on FMS scoring but the effect on FMS injury risk predictions is unknown.

OBJECTIVES:

Describe the location and severity of pain during FMS testing in junior Australian football players and investigate its effect on FMS composite score (CS) and injury risk.

METHODS:

Junior male Australian football players (n=439) completed pre-season FMS testing. Pain location and 0-10 numerical pain rating scale (NPRS) severity were assessed for painful sub-tests. FMS CS was calculated using three scoring approaches: CS_{traditional} scored all painful sub-tests zero, CS_{moderate} scored painful sub-tests zero if NPRS >4, and CS_{raw} did not adjust painful sub-test scores. Players were monitored throughout the competitive season and considered injured if ≥1 match was missed due to injury.

RESULTS:

170 players reported pain during FMS testing. Pain scoring approach affected mean CS (CS_{raw}: 14.9 > CS_{moderate}: 14.5 > CS_{traditional}: 13.6; $P < 0.001$). Sixty-eight percent of pain was mildly severe (NPRS ≤5). Back pain (50%) was more common than upper (24%) or lower (26%) limb pain ($P < 0.001$). Upper limb pain caused a small increase in injury risk (Hazard ratio: 1.59; $P = 0.023$). No other FMS pain location nor pain severity influenced injury risk ($P > 0.280$). FMS CS was not associated with injury risk, regardless of pain scoring approach ($P > 0.500$).

CONCLUSION:

Pain is common during FMS testing in junior Australian football and has a notable effect on FMS CS, but minimal effect on subsequent injury risk. *J Orthop Sports Phys Ther, Epub 17 Sep 2019. doi:10.2519/jospt.2020.9168.*

Soccer players groin injuries

J Orthop Sports Phys Ther. 2019 Sep 17:1-34. doi: 10.2519/jospt.2020.9022

Preseason Hip/Groin Strength and HAGOS Scores Are Associated With Subsequent Injury in Professional Male Soccer Players.

Bourne MN^{1,2}, Williams M³, Jackson J², Williams KL⁴, Timmins RG⁵, Pizzari T².

STUDY DESIGN:

Prospective cohort.

BACKGROUND:

Hip and groin injuries are a significant cause of time lost from training and competition in elite soccer.

OBJECTIVES:

To explore the association between pre-season assessments of 1) isometric hip adductor and abductor strength using a novel field-test; and 2) the Copenhagen Hip and Groin Outcome Score (HAGOS), and subsequent hip/groin injury in professional male soccer players.

METHODS:

In total, 204 elite male soccer players from ten professional Hyundai A-League and English Championship League clubs had assessments of hip adductor and abductor strength and completed the HAGOS in the 2017-18 pre-season. In-season hip/groin injuries were reported by team medical staff. Data reduction was conducted using principal component analysis. The principal component for HAGOS and three principal components for strength and imbalance measures were entered with age and prior hip/groin injury into a multivariable logistic regression model to determine their association with prospectively occurring hip/groin injury.

RESULTS:

Twenty-four players suffered at least one hip/groin injury throughout the 2017-18 season. The principal component for between-limb abduction imbalance (peak strength in the preferred [kicking] limb - non-preferred limb) (OR = 0.58, 95% CI = 0.38 to 0.90, p = 0.011), the principal component for peak adduction and abduction strength (OR = 0.71, 95% CI = 0.50 to 1.00, p=0.045), and the principal component for HAGOS (OR = 0.77, 95% CI = 0.62 to 0.96, p = 0.022), were independently associated with a reduced risk of future hip/groin injury. Receiver operator curve analysis of the whole model revealed an area under the curve of 0.76, which indicates a fair combined sensitivity and specificity of the included variables but an inability to correctly identify all subsequently injured players.

CONCLUSION:

Hip abduction imbalance, favouring the preferred kicking limb, higher levels of hip adductor and abductor strength, and superior HAGOS values, were associated with a reduced likelihood of future hip/groin injury in professional soccer players. *J Orthop Sports Phys Ther, Epub 17 Sep 2019. doi:10.2519/jospt.2020.9022.*

59. PAIN**Neuropathic pain**

Spine (Phila Pa 1976). 2019 Oct 1;44(19):E1130-E1135. doi: 10.1097/BRS.0000000000003073.

The Relationship Between Neuropathic Pain and Spinal Alignment: Independent Risk Factors for Low Quality of Life in Middle-Aged and Elderly People.

Imagama S¹, Ando K¹, Kobayashi K¹, Seki T¹, Hamada T¹, Machino M¹, Ota K¹, Tanaka S¹, Morozumi M¹, Kanbara S¹, Ito S¹, Ishiguro N¹, Hasegawa Y^{1,2}.

STUDY DESIGN:

Prospective research in middle-aged and elderly people.

OBJECTIVE:

To investigate low back pain (LBP) and neuropathic pain (NeP); spinal alignment and range of motion (ROM); spinal degenerative changes in plain radiography; osteoporosis; muscle strength; and physical ability as possible risk factors for poor quality of life (QOL).

SUMMARY OF BACKGROUND DATA:

The aging of society has led to an increase in elderly people with chronic pain, including LBP and NeP. However, there has been no analysis of NeP and spinal sagittal alignment as potential risk factors for decreased QOL in the healthy general population.

METHODS:

The subjects were 1128 people (male 473, female 655, average age: 64.3 yrs) who attended an annual health checkup in Yakumo study. The prevalence of LBP and sciatica were investigated using a visual analogue scale (VAS), and NeP was defined as more than or equal to 13 points on the painDETECT questionnaire. Sagittal spinal alignment with spinal ROM was also measured. Body mass index, muscle strength, physical ability, osteoporosis, and lumbar degenerative changes were measured, and 36-item short-form health survey (SF-36) was used for QOL analysis.

RESULTS:

NeP was present in 113 people (10%). The NeP (+) subjects had significantly more severe pain, lower gait speed, higher osteoporosis rate, lumbar kyphosis, and larger spinal inclination ($P < 0.01$) compared with NeP (-) subjects. On SF-36, physical and mental QOL were significantly lower for NeP (+) subjects ($P < 0.0001$). In multivariate logistic regression analysis adjusted for age and sex, NeP (+) (odds ratio [OR]: 3.01), positive spinal inclination (OR: 1.14), and high VAS for LBP (OR: 1.04) were identified as risk factors for low physical QOL, and NeP (+) (OR: 5.32) was the only significant risk factor for low mental QOL.

CONCLUSION:

These results suggest that interventions for NeP and other identified risk factors may contribute to improvement of low physical and mental QOL in middle-aged and elderly people.

Inflammation and weight**Predictors of the dietary inflammatory index in children and associations with childhood weight status: a longitudinal analysis in the Lifeways Cross-Generation Cohort Study**

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Celine M. Murrin, PhD^a Cecily C. Kelleher, DMed^a Catherine M. Phillips, PhD^{a,*}
DOI: <https://doi.org/10.1016/j.clnu.2019.09.004>

Background & Aims

The family environment can influence offspring diet and weight status. Obesity is a pro-inflammatory state, which is associated with the dietary inflammatory index (DII®). Predictors of the DII in children (C-DIITM) and its associations with childhood obesity are relatively unknown. We evaluated the intergenerational relationships between the energy-adjusted DII (E-DII) scores in adults, predictors of C-DII and associations with childhood weight status.

Methods

The study comprises 551 children and index-child's mothers, fathers and grandparents in the Lifeways Cross-Generation Cohort Study. E-DII scores were generated at baseline for expectant mothers, fathers, and grandparents, and at 5-year follow-up for the mothers and children, using a validated food frequency questionnaire. Body mass index (BMI) and waist circumference were determined at age 5 and 9 years. Associations were assessed by logistic regression and mediation analysis.

Results

Higher C-DII scores indicating a more pro-inflammatory diet among children, were associated with greater risk of childhood obesity at age 5 (OR:1.09; 95%CI:1.00-1.37; $P=0.02$) and overweight/obese status at 5 and 9 years (OR:1.06; 95%CI:1.01-1.09; $P=0.01$ and OR:1.12; 95%CI:1.07-1.18; $P=0.01$, respectively). Maternal and paternal smoking during pregnancy (OR:1.98; 95%CI:1.19-3.03; $P=0.001$ and OR:1.64; 95%CI:1.12-2.49; $P=0.006$, respectively) increased likelihood of higher C-DII at age 5. Child BMI, TV watching and all meals given by the childcare provider were associated with a more pro-inflammatory diet ($P<0.05$), whereas breastfeeding and family meals at home were associated with a more anti-inflammatory diet ($P<0.04$). Higher maternal, but not paternal, E-DII scores during pregnancy ($P<0.001$) and at 5-year follow-up ($P=0.008$) were associated with more pro-inflammatory diet at age 5. Results from the mediation analysis suggest that maternal grandmothers E-DII scores may influence C-DII indirectly via the mothers E-DII scores.

Conclusions

A more pro-inflammatory dietary score was associated with childhood overweight and obesity. Parental, familial and personal factors independently influenced the C-DII score.