

5. Surgery

Multiple level fusion decreases ADL activity

Spine (Phila Pa 1976). 2018 Dec 1;43(23):1638-1647. doi: 10.1097/BRS.0000000000002676.

Activity of Daily Living After Long Level Fusion in Adult Spinal Deformity: Compared With Over 60-Year-Old Degenerative Spine Patients Without Adult Spinal Deformity.

Kim WJ¹, Lee JW, Hwang SY, Park KY, Chang SH, Song DG, Choy WS.

STUDY DESIGN:

Prospective single center study.

OBJECTIVE:

The aim of this study was to evaluate 1) the activity of daily living (ADL) of three categorized patients group; over 60-year-old degenerative spine patients without adult spinal deformity (ASD), nonoperative ASD patients, and operative ASD patients, 2) what kinds of activities would be impaired, and 3) how the ADL changes over time after long level fusion.

SUMMARY OF BACKGROUND DATA:

There is still debate how surgeons could decide treatment methods for old-aged adult spinal deformity, operatively or not. There was lack of information how long level fusion impacts daily activities, especially sedentary Asian lifestyle. In Asia, impaired ADL is much more important issue because of different lifestyle.

METHODS:

Patients were categorized into three groups; Group 1 was over 60-year old aged degenerative spine disease without deformity, Group 2 was ASD patients who did not have surgery, and Group 3 was ASD patients who had surgery for deformity correction. Patients were evaluated using answer Oswestry Low Back Pain Disability Questionnaire, and Assessment activities of daily living for sedentary Asian culture (ADL-SA) questionnaire.

RESULTS:

Group 1 showed nearly full functions in every activity (ADL-SA: 41.4). ADL-SA scores of Group 2 were similar to Group 1 (P=0.452). However, get up from bottom (P<0.001), and pick up object (P<0.001) were impaired. After long level fusion, ADL was impaired but gradually improved by time. From postoperative 1 year, total ADL score recovered to acceptable range. However, among ADL, activities associated sedentary lifestyle (get up from bottom, wipe floor, pick up object, and sit cross-legged) were still impaired after 2 years postoperatively.

CONCLUSION:

ADL was impaired after long level fusion; however it would improve as time goes by. However, among ADL, activities associated sedentary lifestyle was still impaired. Hence give enough information to patients about limited activities before deciding operation.

7. PELVIC ORGANS/WOMAN'S HEALTH

Mediterranean diet helps infant

The Association of Mediterranean Diet during Pregnancy with Longitudinal Body Mass Index Trajectories and Cardiometabolic Risk in Early Childhood

Sílvia Fernández-Barrés, RD, Jesús Vioque, PhD Victoria Arija, MD, PhD Jordi Sunyer, MD, PhD,

Dora Romaguera, PhD

DOI: <https://doi.org/10.1016/j.jpeds.2018.10.005>

Objective

To evaluate the associations between maternal adherence to the Mediterranean diet during pregnancy and their offspring's longitudinal body mass index (BMI) trajectories and cardiometabolic risk in early childhood.

Study design

We included mother-child pairs from the Infancia y Medio Ambiente (INMA) longitudinal cohort study in Spain. We measured dietary intake during pregnancy using a validated food frequency questionnaire and calculated the relative Mediterranean diet score (rMED). We estimated offspring's BMI z score trajectories from birth to age 4 years using latent class growth analyses (n = 2195 mother-child pairs). We measured blood pressure, waist circumference, and cardiometabolic biomarkers to construct a cardiometabolic risk score at 4 years (n = 697 mother-child pairs). We used multivariable adjusted linear and multinomial regression models.

Results

A higher maternal rMED in pregnancy was associated with a lower risk in offspring of larger birth size, followed by accelerated BMI gain (reference trajectory group: children with average birth size and subsequent slower BMI gain) (relative risk of high vs low rMED score, 0.68; 95% CI, 0.47-0.99). rMED score during pregnancy was not associated with the cardiometabolic risk score, its components, or related biomarkers.

Conclusions

Higher adherence to the Mediterranean diet in pregnancy was associated with lower risk of having offspring with an accelerated growth pattern. This dietary pattern was not associated with the offspring's cardiometabolic risk at 4 years.

Low birth weight and adult metabolic problems**Metabolic Outcomes in Adults Born Preterm With Very Low Birthweight or Small for Gestational Age at Term: A Cohort Study**

Chandima N D Balasuriya Astrid Kamilla Stunes Mats P Mosti Berit ScheiMarit S Indredavik Ingrid K Hals Kari Anne I Evensen Unni Syversen

The Journal of Clinical Endocrinology & Metabolism, Volume 103, Issue 12, 1 December 2018, Pages 4437–4446, <https://doi.org/10.1210/jc.2018-00464>

Context and Objectives

Low birthweight (LBW) has emerged as a risk factor of metabolic syndrome (MetS). Whether adults with very low birthweight (VLBW) born preterm are at higher risk than individuals who were term-born small for gestational age (tb-SGA) is not established. We assessed metabolic outcomes, including relation with skeletal parameters, in these two LBW categories.

Design, Participants, and Outcomes

This follow-up cohort study included 189 individuals (females 51%), aged 25 to 28 years; 55 were preterm VLBW (≤ 1500 g), 59 were tb-SGA (< 10 th percentile), and 75 were controls (≥ 10 th percentile). Outcomes were indices of MetS: blood pressure (BP), waist circumference, fasting glucose, lipid profile, and association between calculated MetS score and bone mineral density (BMD) and trabecular bone score (TBS), a measure of bone quality.

Results

Compared with controls, individuals with VLBW displayed higher systolic [mean (SD), 126 (13.3) vs 119 (12.3) mm Hg; 95% CI, 1.27 to 11.48 mm Hg] and diastolic [71.9 (7.6) vs 68.6 (7.1) mm Hg; 95% CI, 0.3 to 6.2 mm Hg] BP, higher glycated hemoglobin, higher C-peptide, increased insulin resistance (Homeostatic Model Assessment 2), and lower high-density lipoprotein cholesterol [1.34 (0.3) vs 1.50 (0.4); 95% CI, 0.32 to 0.01]. Substantial differences were mainly seen between control females and females with VLBW. The adults who were tb-SGA had higher waist circumference and higher total and low-density lipoprotein cholesterol compared with controls. In males, MetS score correlated positively with BMD and inversely with TBS.

Conclusions

The LBW groups and preferentially females in the VLBW group displayed a less favorable metabolic profile than did controls. The inverse association between MetS score and bone quality suggests enhanced future fracture risk.

Endometriosis and depression

Depressive symptoms among women with endometriosis: A systematic review and meta-analysis

American Journal of Obstetrics and Gynecology 13 November 2018

Gambadauro P, et al. - The researchers carried out a systematic review and meta-analysis to assess whether endometriosis correlates with depressive symptoms and whether the relationship is modulated by pelvic pain via a systematic search of PubMed, Embase, PsychINFO, and the Cochrane Library through September 2017. They found that patients with endometriosis who reported pelvic pain had significantly higher depression levels vs without pain. There was no significant difference between pelvic pain and endometriosis women and pelvic pain women but without endometriosis. Findings revealed that the association of endometriosis with depressive symptoms is largely determined by chronic pain, but can also be modulated by vulnerabilities in individual and context. Data reported that awareness of the complex association between endometriosis and depressive symptoms informs tailored care and patient-centred research results.

Mediterranean diet and infants

The association of Mediterranean diet during pregnancy with longitudinal body mass index trajectories and cardiometabolic risk in early childhood

The Journal of Pediatrics 14 November 2018

Fernández-Barrés S, et al. –

Researchers investigated whether there was an association between maternal adherence to the Mediterranean diet during pregnancy and their offspring's longitudinal body mass index (BMI) trajectories and cardiometabolic risk in early childhood. For this investigation, mother-child pairs from the Infancia y Medio Ambiente (INMA) longitudinal cohort study were included in Spain.

Findings suggested an association of higher adherence to the Mediterranean diet in pregnancy with lower risk of having offspring with an accelerated growth pattern. This dietary pattern was not linked to the cardiometabolic risk of the offspring at 4 years.

8. VISCERA

Health lifestyle important

Genetic risk, incident stroke, and the benefits of adhering to a healthy lifestyle: cohort study of 306 473 UK Biobank participants

BMJ 2018; 363 doi: <https://doi.org/10.1136/bmj.k4168>

Abstract

Objective To evaluate the associations of a polygenic risk score and healthy lifestyle with incident stroke.

Design Prospective population based cohort study.

Setting UK Biobank Study, UK.

Participants 306 473 men and women, aged 40-73 years, recruited between 2006 and 2010.

Main outcome measure Hazard ratios for a first stroke, estimated using Cox regression. A polygenic risk score of 90 single nucleotide polymorphisms previously associated with stroke was constructed at $P < 1 \times 10^{-5}$ to test for an association with incident stroke. Adherence to a healthy lifestyle was determined on the basis of four factors: non-smoker, healthy diet, body mass index < 30 kg/m², and regular physical exercise.

Results During a median follow-up of 7.1 years (2 138 443 person years), 2077 incident strokes (1541 ischaemic stroke, 287 intracerebral haemorrhage, and 249 subarachnoid haemorrhage) were ascertained. The risk of incident stroke was 35% higher among those at high genetic risk (top third of polygenic score) compared with those at low genetic risk (bottom third): hazard ratio 1.35 (95% confidence interval 1.21 to 1.50), $P = 3.9 \times 10^{-8}$. Unfavourable lifestyle (0 or 1 healthy lifestyle factors) was associated with a 66% increased risk of stroke compared with a favourable lifestyle (3 or 4 healthy lifestyle factors): 1.66 (1.45 to 1.89), $P = 1.19 \times 10^{-13}$. The association with lifestyle was independent of genetic risk strata.

Conclusion In this cohort study, genetic and lifestyle factors were independently associated with incident stroke. These results emphasise the benefit of entire populations adhering to a healthy lifestyle, independent of genetic risk.

Obesity linked to childhood use of antibiotics and acid suppression meds**Antibiotic and acid-suppression medications during early childhood are associated with obesity**

1. Christopher M Stark^{1,2}, Apryl Susi³, Jill Emerick^{2,3}, Cade M Nylund^{2,3}

Objective Gut microbiota alterations are associated with obesity. Early exposure to medications, including acid suppressants and antibiotics, can alter gut biota and may increase the likelihood of developing obesity. We investigated the association of antibiotic, histamine-2 receptor antagonist (H2RA) and proton pump inhibitor (PPI) prescriptions during early childhood with a diagnosis of obesity.

Design We performed a cohort study of US Department of Defense TRICARE beneficiaries born from October 2006 to September 2013. Exposures were defined as having any dispensed prescription for antibiotic, H2RA or PPI medications in the first 2 years of life. A single event analysis of obesity was performed using Cox proportional hazards regression.

Results 333 353 children met inclusion criteria, with 241 502 (72.4%) children prescribed an antibiotic, 39 488 (11.8%) an H2RA and 11 089 (3.3%) a PPI. Antibiotic prescriptions were associated with obesity (HR 1.26; 95% CI 1.23 to 1.28). This association persisted regardless of antibiotic class and strengthened with each additional class of antibiotic prescribed. H2RA and PPI prescriptions were also associated with obesity, with a stronger association for each 30-day supply prescribed. The HR increased commensurately with exposure to each additional medication group prescribed.

Conclusions Antibiotics, acid suppressants and the combination of multiple medications in the first 2 years of life are associated with a diagnosis of childhood obesity. Microbiota-altering medications administered in early childhood may influence weight gain.

<http://dx.doi.org/10.1136/gutjnl-2017-314971>

GI Infection increases risk of IBS

Article in Press

Gastrointestinal Infection Increases Odds of Inflammatory Bowel Disease in a Nationwide Case–Control Study

Jordan E. Axelrad, MD, MPH Ola Olén, MD, PhD Johan Askling, MD, Ph Benjamin Lebwohl, MD, MS Hamed Khalili, MD, MPH Michael C. Sachs, PhD Jonas F. Ludvigsson, MD, PhD

DOI: <https://doi.org/10.1016/j.cgh.2018.10.046>**Background & Aims**

Gastrointestinal infections have been associated with later development of inflammatory bowel diseases (IBD). However, studies have produced conflicting results. We performed a nationwide case–control study in Sweden to determine whether gastroenteritis is associated with the development of Crohn’s disease (CD) or ulcerative colitis (UC).

Methods

Using the Swedish National Patient Register, we identified 44,214 patients with IBD (26,450 with UC; 13,387 with CD; and 4,377 with IBD-unclassified) from 2002 to 2014 and matched them with 436,507 individuals in the general population (controls). We then identified patients and controls with reported episodes of gastroenteritis (from 1964 to 2014) and type of pathogen associated. We collected medical and demographic data and used logistic regression to estimate odds ratios (ORs) for IBD associated with enteric infection.

Results

Of the patients with IBD, 3105 (7.0%) (1672 with UC, 1050 with CD, and 383 with IBD-unclassified) had a record of previous gastroenteritis compared with 17,685 controls (4.1%). IBD cases had higher odds for an antecedent episode of gastrointestinal infection (aOR, 1.64; 1.57–1.71), bacterial gastrointestinal infection (aOR, 2.02; 1.82–2.24), parasitic gastrointestinal infection (aOR, 1.55; 1.03–2.33), and viral gastrointestinal infection (aOR, 1.55; 1.34–1.79). Patients with UC had higher odds of previous infection with *Salmonella*, *Escherichia coli*, *Campylobacter*, or *Clostridium difficile* compared to controls. Patients with CD had higher odds of previous infection with *Salmonella*, *Campylobacter*, *Yersinia enterocolitica*, *Clostridium difficile*, amoeba, or norovirus compared to controls. Increasing numbers of gastroenteritis episodes were associated with increased odds of IBD, and a previous episode of gastroenteritis was significant associated with odds for IBD more than 10 years later (aOR, 1.26; 1.19–1.33).

Conclusion

In an analysis of the Swedish National Patient Register, we found previous episodes of gastroenteritis to increase odds of later development of IBD. Although we cannot formally exclude misclassification bias, enteric infections might induce microbial dysbiosis that contributes to the development of IBD in susceptible individuals.

3 fold increase risk of death with childhood IBD**Increased Mortality of Patients with Childhood-onset Inflammatory Bowel Diseases, Compared With the General Population**

O. Olén, MD, PhD J. Askling, MD, PhD P. Malmberg, MD, PhD J.F. Ludvigsson, MD, PhD
DOI: <https://doi.org/10.1053/j.gastro.2018.10.028>

Background & Aims

Childhood onset inflammatory bowel disease (IBD) is believed to be a more severe disease than adult-onset IBD, but there is little information on all-cause and cause-specific mortality in patients with childhood-onset IBD. We performed a population-based cohort study, with 50 years of follow up, to estimate absolute and relative risks for overall and cause-specific mortality in patients with childhood-onset IBD, during childhood and adulthood.

Methods

We identified children with a diagnosis of IBD (less than 18 years old) in the Swedish nationwide health registers (1964–2014; n=9442) and individuals from the general population matched for sex, age, calendar year, and place of residence (reference group; n=93,180). Hazard ratios (HR) for death were estimated using Cox regression separately in patients with ulcerative colitis (n=4671), Crohn's disease (n=3780), and inflammatory bowel disease unclassified (n=991). HRs were compared among calendar periods.

Results

During 138,690 person-years of follow-up, 294 deaths (2.1/1000 person-years) occurred among the patients with IBD compared with 940 deaths in the reference group (0.7/1000 person-years; adjusted HR, 3.2; 95% CI, 2.8–3.7). Mean age at end of follow up was 30 years. HRs were increased for patients with ulcerative colitis 4.0; 95% CI, 3.4–4.7, Crohn's disease 2.3; 95% CI, 1.8–3.0, and IBD unclassified 2.0; 95% CI, 1.2–3.4. Among patients younger than 18 years, there were 27 deaths from IBD 4.9; 95% CI, 3.0–7.7. Among young adults with IBD, we found no evidence that HRs for death decreased from 1964 through 2014 ($P=.90$).

Conclusions

Children with IBD have a 3-fold increase in risk of death when followed through adulthood. The relative risk for death has not decreased with development of new drugs for treatment of IBD.

More falls and fx in individuals with overactive bladders

Adv Ther. 2018 Nov;35(11):1831-1841. doi: 10.1007/s12325-018-0796-8. Epub 2018 Sep 25.

The Association Between Overactive Bladder and Falls and Fractures: A Systematic Review.

Szabo SM1, Gooch KL2, Walker DR2, Johnston KM3, Wagg AS4.

INTRODUCTION:

Urinary symptoms are associated with an increased risk of falls, but few studies have focused on patients with overactive bladder (OAB). This study aimed to synthesize estimates of the risk of falls and fractures in patients with OAB.

METHODS:

Medline, EMBASE, the Cumulative Index to Nursing and Allied Health Literature, and Scopus were systematically searched for observational studies that focused on patients with OAB. When available, data from a non-OAB comparison sample were included. Double independent review and data extraction were performed. Falls and fractures data were summarized by unadjusted and adjusted risks, and percent attributable risk (PAR) of falls and fractures associated with OAB.

RESULTS:

Fifteen studies were included in the analyses. The proportion of patients with OAB experiencing at least one fall over a year ranged from 18.9% to 50.0%, and the proportion of patients with OAB experiencing recurrent or serious falls ranged from 10.2% to 56.0%. In studies that included a non-OAB comparison sample, a higher risk of falls was observed in patients with OAB compared to those without. A significantly increased (1.3- to 2.3-fold) adjusted OAB-associated risk of falls was reported, while unadjusted PARs for OAB associated falls ranged from 3.7% to 15.5%. Risk was higher among women and those 65 years of age or older. While analysis of fractures showed elevated point estimates, most studies were underpowered to detect a statistically significant difference between groups.

CONCLUSIONS:

Evidence from the published literature clearly demonstrates the importance of OAB and its symptoms as risk factors for falls and fractures.

AF not as common in elite athletes

Incidence of Atrial Fibrillation in Elite Athletes

Araceli Boraita, MD, PhD¹; Alejandro Santos-Lozano, PhD^{2,3}; María E. Heras, MD, PhD¹; et al Florencia González-Amigo, MD¹; Susana López-Ortiz, BSc²; Julián P. Villacastín, MD, PhD⁴; Alejandro Lucia, MD, PhD^{3,5}

JAMA Cardiol. Published online October 31, 2018. doi:10.1001/jamacardio.2018.3482

Key Points

Question What is the incidence of atrial fibrillation in a large cohort of elite athletes and its association with potential risk factors?

Findings In this 20-year study of 6813 athletes (35.0% women), with most sports disciplines represented, only 21 athletes (1 woman) had atrial fibrillation. Increasing values of age, years of competition, and left atrial anteroposterior diameter were the main factors associated with higher atrial fibrillation risk.

Meaning The incidence of atrial fibrillation is low among young elite athletes, but potential contributors (eg, atrial dimensions) need to be monitored.

Importance Vigorous exercise (particularly endurance sports) might increase the risk of atrial fibrillation (AF), but there is variability in the reported frequency of this condition among elite athletes. The underlying pathophysiologic source remains unclear.

Objective To determine AF incidence in a large cohort of elite athletes and its association with potential risk factors.

Design, Setting, and Participants Retrospective observational cohort of all Spanish athletes (N = 6813) referred to a single center was used to determine AF incidence from January 1, 1997, to December 31, 2017, and cross-sectional analysis was conducted to compare athletes with and without reported AF. The cohort covered most sports disciplines, and the studied athletes were on national teams and competed in major international events. Cardiologists responsible for echocardiographic assessment were not blinded to the condition (AF or no AF) of the athletes.

Exposures All participants underwent at least 1 cardiologic evaluation, including assessment at time of AF diagnosis in those with this condition.

Main Outcomes and Measures Diagnosis of AF based on resting and/or exercise electrocardiogram, and/or 24-hour Holter monitoring and echocardiography-assessed atrial dimensions.

Results A total of 6813 Spanish elite athletes (2385 [35.0%] women) were referred for cardiac evaluation during the study period. Mean (SD) age was 22 (7) years, and mean (SD) time of competition was 8 (5) years. Only 21 athletes (1 woman), participating in different types of sports, had AF (ie, paroxysmal [n = 18], persistent [n = 1], or long-standing persistent [n = 2]) during the 20-year study. In multivariate analysis, increasing values of age (odds ratio [OR], 1.07; 95% CI, 1.00-1.14), years of competition (OR, 1.14; 95% CI, 1.07-1.22), and left atrial anteroposterior diameter (OR, 1.21; 95% CI, 1.10-1.32) were associated with higher AF risk.

Conclusions and Relevance The incidence of AF is low among young Spanish elite athletes, even when considering only endurance athletes. Yet, potential contributors (particularly atrial remodeling) need to be monitored.

13 B. TMJ/ORAL**PRP helps TMJ pain****Effectiveness of platelet-rich plasma injection in patients with temporomandibular joint osteoarthritis: a systematic review and meta-analysis of randomized controlled trials**Meng-TingLinMD^bHsien-PoChangMD^b

Show more

<https://doi.org/10.1016/j.oooo.2018.09.003>Get rights and content**Objective**

The aim of this study was to investigate the effectiveness of platelet-rich plasma (PRP) injection after arthrocentesis or arthroscopy in patients with temporomandibular joint osteoarthritis.

Study Design

Electronic databases (PubMed, EMBASE, Scopus, and Cochrane Library) were searched for reports up to July 30, 2018. We included all published or unpublished randomized controlled trials (RCTs). The primary outcome was pain reduction, and the secondary outcome was the improvement of maximal mouth opening. Weighted mean differences were utilized for random-effect meta-analysis.

Results

Five RCTs were enrolled in the meta-analysis, comparing PRP injection to placebo (hyaluronic acid [HA] injection, saline injection, or no injection). The results revealed that PRP injection was more effective than placebo in pain reduction, but not in the improvement of maximal mouth opening, in the long term. In the subgroup analysis, PRP injection yielded better outcome only in pain reduction comparing to HA injection (Weighted mean difference 1.34, 95% confidence interval [CI] 0.95–1.73).

Conclusions

This meta-analysis demonstrated that PRP injection provided adjuvant efficacy to arthrocentesis or arthroscopy in pain reduction for temporomandibular joint osteoarthritis in the long term. Furthermore, PRP injection significantly reduced pain better compared with HA injection, saline injection, or no injection.

13 C. AIRWAYS/SWALLOWING/SPEECH

Sleep apnea increases shoulder pathology

Association between sleep apnea and perioperative outcomes among patients undergoing shoulder arthroscopy

Canadian Journal of Anesthesia 13 November 2018

Masaracchia MM, et al. –

In a cohort of 128,932 patients who underwent shoulder arthroscopy, researchers examined the link between sleep apnea and perioperative outcomes, mainly complications and healthcare utilization. They analyzed administrative data collected from 583 U.S. hospitals between 2010-2015. They used cross-sectional study design and focused on mortality, stroke, myocardial infarction, and pulmonary complications occurring perioperatively in relation to sleep apnea. Subjects with sleep apnea diagnosis comprised approximately 6% of the overall study population. The overall complication rate in these patients was 1.39%.

According to findings, an increased risk of complications and resource utilization was observed in relation to sleep apnea in patients undergoing shoulder arthroscopy.

CPAP impact on the heart

Cardiac effects of CPAP treatment in patients with obstructive sleep apnea and atrial fibrillation

Journal of Interventional Cardiac Electrophysiology 13 November 2018

Abumuamar AM, et al. –

Given that obstructive sleep apnea (OSA) has been recognized as an independent risk factor for the development and progression of atrial fibrillation (AF), researchers determined how continuous positive airway pressure (CPAP) treatment in patients with OSA and AF influences heart rate and atrial and ventricular ectopy. They performed ambulatory sleep monitoring on consecutive patients with AF. OSA was defined as an Apnea-Hypopnea-Index (AHI) ≥ 5 /h. In-laboratory CPAP titration study was completed by treated patients.

At baseline and at 3 and 6 months after CPAP treatment, a 24-h electrocardiogram (ECG) Holter was performed. Compared to baseline, patients with AF and OSA had significantly decreased atrial and ventricular ectopy count/24 h at 3 and 6 months of CPAP treatment.

15. VESTIBULAR

Diagnostic algorithm

Assessment of a Statistical Algorithm for the Prediction of Benign Paroxysmal Positional Vertigo

Christopher J. Britt, MD¹; Bryan K. Ward, MD¹; Yaw Owusu, BS¹; et al David Friedland, MD, PhD²; Jonathon O. Russell, MD¹; Heather M. Weinreich, MD, MPH³

JAMA Otolaryngol Head Neck Surg. 2018;144(10):883-886. doi:10.1001/jamaoto.2018.1657

Key Points

Question What is the clinical effectiveness of the linear predictor model calculated from a statistical algorithm for diagnosing benign paroxysmal positional vertigo in an outpatient, clinical setting?

Findings In this case series study, 106 of 200 patient visits had the required information to calculate the linear predictor value. Patients with benign paroxysmal positional vertigo had a significantly different linear predictor result compared with those with all other vestibular disorders.

Meaning The statistical algorithm may serve as a useful tool in the diagnosis of benign paroxysmal positional vertigo as a source of dizziness in the outpatient, clinical setting.

Importance Benign paroxysmal positional vertigo (BPPV) is an otologic pathologic condition defined as a sensation of spinning triggered by changes in head position relative to gravity and caused by an entrapment of fragmented endolymph debris most commonly in the posterior semicircular canal. Confirmation of diagnosis requires experience with procedures that are poorly known by those other than practitioners with advanced otologic training. The complexity in the diagnosis of BPPV inspired the design of a questionnaire-based algorithm that would be useful for determining a vestibular diagnosis and treatment options.

Objective To assess a statistical algorithm for the diagnosis of BPPV in a busy tertiary care setting, with the long-term goal of implementing a clinical pathway to efficiently diagnose and treat patients with dizziness.

Design, Setting, and Participants In this retrospective case series, 200 patients who visited the Department of Otolaryngology–Head and Neck Surgery at Johns Hopkins University School of Medicine for their initial vertigo symptoms from September 1, 2016, to December 31, 2016, were assessed.

Interventions Use of a validated patient questionnaire as a tool to differentiate patients with dizziness in an electronic medical record review.

Main Outcomes and Measures Linear predictor (LP) value based on the questionnaire for the diagnosis of BPPV.

Results Of the 200 patient visits reviewed (132 [66%] female), 106 (53.0%; 68 [64%] female) had the information necessary to calculate the LP value and had a confirmed final diagnosis. On the basis of an LP value of 0.2 or greater, the sensitivity for a diagnosis of BPPV was 0.75 and the specificity was 1.0. The positive predictive value was 1.0, whereas the negative predictive value was 0.96. Patients with BPPV had a statistically significantly different LP value (odds ratio, 5.92; 95% CI, 2.73-12.83) than did patients without BPPV.

Conclusions and Relevance The findings of this study suggest that the algorithm is efficient for the diagnosis of BPPV in a clinical care setting.

16. CONCUSSIONS

Blood biomarkers

Clin J Sport Med. 2018 Nov;28(6):561-571. doi: 10.1097/JSM.0000000000000478.

Use of Blood Biomarkers in the Assessment of Sports-Related Concussion-A Systematic Review in the Context of Their Biological Significance.

O'Connell B^{1,2}, Kelly ÁM³, Mockler D⁴, Orešič M⁵, Denvir K², Farrell G², Janigro D⁶, Wilson F¹.

OBJECTIVES:

To critically review current knowledge on the positive and negative predictive value of blood biomarkers for concussion; to illustrate the clinical and biological contexts that help evaluate the use of these markers in sport-related traumatic brain injuries (TBIs).

METHODS:

This systematic review was performed in accordance with PRISMA guidelines. We reviewed the measurement, clinical utility, endpoint, and biological significance of blood biomarkers in concussion.

RESULTS:

A total of 4352 publications were identified. Twenty-six articles relating to blood biomarkers were included in the review. Four common blood biomarkers, namely S100B, tau, neuron-specific enolase (NSE), and glial fibrillary acidic protein (GFAP), were examined. Overall, the studies showed S100B measurement and use, either acutely or at several time points, can distinguish injured from noninjured patients with an uncertain degree of utility in predicting mortality. At present, S100B has largely become an acceptable biomarker of TBI; however, studies have begun to highlight the need to incorporate clinical symptoms instead of S100B concentration in isolation on the basis of inconsistent results and lack of specificity across published studies. Further research is needed to evaluate and validate the use of tau, NSE, and GFAP as a diagnostic aid in the management of concussion and TBI.

CONCLUSIONS:

At present, blood biomarkers have only a limited role in the evaluation and management of concussion. Although several biomarkers of brain injury have been identified, continued research is required. S100B holds promise as the most clinically useful diagnostic biomarker. Blood biomarkers, in combination with other clinical data, such as head computed tomography, would maximize the diagnostic accuracy. The methodological limitations evident in blood biomarker research results in the need for the clinical utility of blood biomarker use in concussion to be further explored.

Concussion and suicide

Association of Concussion With the Risk of Suicide: A Systematic Review and Meta-Analysis

Michael Fralick, MD, SM^{1,2}; Eric Sy, MD, MPH^{3,4}; Adiba Hassan, MSPH, MPH⁵; et al Matthew J. Burke, MD⁶; Elizabeth Mostofsky, MPH, ScD^{7,8}; Todd Karsies, MD, MPH⁹

Key Points

Question Is concussion and/or mild traumatic brain injury (TBI) associated with a higher risk of suicide?

Findings This systematic review and meta-analysis found a 2-fold higher risk of subsequent suicide among more than 700 000 patients diagnosed with concussion and/or mild TBI, compared with more than 6.2 million individuals who had not been so diagnosed. Experiencing concussion and/or mild TBI was also associated with a higher risk of suicide attempt and suicidal ideation.

Meaning These results suggest that experiencing concussion and/or mild TBI is associated with an increased risk of suicide.

Importance Concussion is the most common form of traumatic brain injury (TBI). While most patients fully recover within 1 week of injury, a subset of patients might be at a higher risk of suicide.

Objective To assess the risk of suicide after concussion.

Data Sources We performed a systematic search of Medline (PubMed), Embase, PsycINFO, and Published International Literature on Traumatic Stress (PILOTS) from 1963 to May 1, 2017. We also searched Google Scholar and conference proceedings and contacted experts in the field to seek additional studies.

Study Selection Studies that quantified the risk of suicide, suicide attempt, or suicidal ideation after a concussion and/or mild TBI were included. Studies that included children and adults, including military and nonmilitary personnel, were included. Two authors independently reviewed all titles and abstracts to determine study eligibility.

Data Extraction and Synthesis Study characteristics were extracted independently by 2 trained investigators. Study quality was assessed using the Newcastle-Ottawa Scale. Study data were pooled using random-effects meta-analysis.

Main Outcomes and Measures The primary exposure was concussion and/or mild TBI, and the primary outcome was suicide. Secondary outcomes were suicide attempt and suicidal ideation.

Results Data were extracted from 10 cohort studies (n = 713 706 individuals diagnosed and 6 236 010 individuals not diagnosed with concussion and/or mild TBI), 5 cross-sectional studies (n = 4420 individuals diagnosed and 11 275 individuals not diagnosed with concussion and/or mild TBI), and 2 case-control studies (n = 446 individuals diagnosed and 8267 individuals not diagnosed with concussion and/or mild TBI). Experiencing concussion and/or mild TBI was associated with a 2-fold higher risk of suicide (relative risk, 2.03 [95% CI, 1.47-2.80]; $I^2 = 96%$; $P < .001$). In 2 studies that provided estimates with a median follow-up of approximately 4 years, 1664 of 333 118 individuals (0.50%) and 750 of 126 114 individuals (0.59%) diagnosed with concussion and/or mild TBI died by suicide. Concussion was also associated with a higher risk of suicide attempt and suicide ideation. The heightened risk of suicide outcomes after concussion was evident in studies with and without military personnel.

Conclusions and Relevance Experiencing concussion and/or mild TBI was associated with a higher risk of suicide. Future studies are needed to identify and develop strategies to decrease this risk.

27. HIP**Measuring potential for injury****Decreased average power of the hip external muscles as a predictive parameter for lower extremity injury in women: A prospective study**

Clinical Journal of Sport Medicine — Verrelst R, et al. | November 19, 2018

Using data from healthy 89 female physical education students aged 19.53 ± 1.07 years, researchers prospectively investigated hip strength related risk factors contributing to the development of lower extremity (LE) injury. They conducted this study in the institution of the University of Ghent. They found that, LE injury was remarkably predicted by decreased average power (AP) of the hip external rotator (ER) muscles, however, no predictive ability was shown by any of the hip abduction weakness or peak torque parameters. More challenged LE extremity movements might be seen in a dynamic measure such as AP than in a point measure such as peak torque owing to the fact that controlling LE extremity movements is an important function of the hip muscles. \

Therefore, concentric AP of hip ER muscles can be seen as an interesting factor to include in LE injury screening protocols.

37. OSTEOARTHRITIS/KNEE

PT effective

Physical Therapy Treatment Effectiveness for Osteoarthritis of the Knee: A Randomized Comparison of Supervised Clinical Exercise and Manual Therapy Procedures Versus a Home Exercise Program

Gail D Deyle Stephen C Allison Robert L Matekel Michael G Ryder John M Stang David D Gohdes Jeremy P Hutton Nancy E Henderson Matthew B Garber
Physical Therapy, Volume 85, Issue 12, 1 December 2005, Pages 1301–1317, <https://doi.org/10.1093/ptj/85.12.1301>

Background and Purpose Manual therapy and exercise have not previously been compared with a home exercise program for patients with osteo-arthritis (OA) of the knee. The purpose of this study was to compare outcomes between a home-based physical therapy program and a clinically based physical therapy program.

Subjects. One hundred thirty-four subjects with OA of the knee were randomly assigned to a clinic treatment group (n=66; 61% female, 39% male; mean age [\pm SD]=64 \pm 10 years) or a home exercise group (n=68, 71% female, 29% male; mean age [\pm SD]=62 \pm 9 years).

Methods. Subjects in the clinic treatment group received supervised exercise, individualized manual therapy, and a home exercise program over a 4-week period. Subjects in the home exercise group received the same home exercise program initially, reinforced at a clinic visit 2 weeks later. Measured outcomes were the distance walked in 6 minutes and the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).

Results. Both groups showed clinically and statistically significant improvements in 6-minute walk distances and WOMAC scores at 4 weeks; improvements were still evident in both groups at 8 weeks. By 4 weeks, WOMAC scores had improved by 52% in the clinic treatment group and by 26% in the home exercise group. Average 6-minute walk distances had improved about 10% in both groups. At 1 year, both groups were substantially and about equally improved over baseline measurements. Subjects in the clinic treatment group were less likely to be taking medications for their arthritis and were more satisfied with the overall outcome of their rehabilitative treatment compared with subjects in the home exercise group.

Discussion and Conclusion Although both groups improved by 1 month, subjects in the clinic treatment group achieved about twice as much improvement in WOMAC scores than subjects who performed similar unsupervised exercises at home. Equivalent maintenance of improvements at 1 year was presumably due to both groups continuing the identical home exercise program. The results indicate that a home exercise program for patients with OA of the knee provides important benefit. Adding a small number of additional clinical visits for the application of manual therapy and supervised exercise adds greater symptomatic relief.

48 A. STM

Massage impact on glandular system

The Journal of Alternative and Complementary Medicine Vol. 18, No. 8 Original Articles

A Preliminary Study of the Effects of Repeated Massage on Hypothalamic–Pituitary–Adrenal and Immune Function in Healthy Individuals: A Study of Mechanisms of Action and Dosage

Mark H. Rapaport Pamela Schettler Catherine Bresee

Published Online: 13 Aug 2012 <https://doi.org/10.1089/acm.2011.0071>

Objectives: This study gathers preliminary data about the biologic effects of repeated Swedish massage therapy compared to a light-touch control condition.

Design: The study design was a 5-week comparison of repeated Swedish massage and light touch on oxytocin (OT), arginine-vasopressin (AVP), adrenal corticotropin hormone (ACTH), cortisol (CORT), circulating phenotypic lymphocyte markers, and mitogen-stimulated cytokine function.

Setting: The setting was an outpatient research unit in an academic medical center.

Participants: The study subjects were medically and psychiatrically healthy young adults.

Intervention: The study comprised 45 minutes of Swedish massage or light touch, using highly specified and identical protocols, either weekly or twice weekly for 5 weeks.

Outcome measures: The outcome measures were mean differences between massage and light touch on OT, AVP, ACTH, CORT, lymphocyte markers, and cytokine levels.

Results: Compared to the touch control condition, weekly Swedish massage stimulated a sustained pattern of increased circulating phenotypic lymphocyte markers and decreased mitogen-stimulated cytokine production, similar to what was previously reported for a single massage session, while having minimal effect on hypothalamic–pituitary–adrenal function. Twice-weekly massage produced a different response pattern with increased OT levels, decreased AVP, and decreased CORT but little effect on circulating lymphocyte phenotypic markers and a slight increase in mitogen-stimulated interferon- γ , tumor necrosis factor- α , interleukin (IL)-1b and IL-2 levels, suggesting increased production of pro-inflammatory cytokines.

Conclusions: There are sustained cumulative biologic actions for the massage and touch interventions that persist for several days or a week, and these differ profoundly depending on the dosage (frequency) of sessions. Confirmatory studies in larger samples are needed.

Mechanical basis of myofascial injuries

J Bodyw Mov Ther. 2013 Apr;17(2):221-34. doi: 10.1016/j.jbmt.2012.08.006. Epub 2012 Sep 20.

Mechanistic basis of manual therapy in myofascial injuries. Sonoelastographic evolution control.

Martínez Rodríguez R¹, Galán del Río F.

The term myofascia is referred to the skeleton of muscle fibres organized as an interconnected 3D network that surrounds and connects the musculoskeletal system. Extracellular matrix muscle is relevant in tissue structural support and transmission of mechanical signals between fibres and tendons. Acute and chronic musculoskeletal injuries (muscle strain) are one of the major problems faced by those who practice any type of sport, regardless of whether they are professionals or amateurs. Therapeutic boarding is of uncertain value in most cases because there are many contributing factors such as type, severity, functional implication of the damaged tissue, progression or risk of relapse. Different studies suggest that the musculoskeletal cell matrix is essential for the development, maintenance and regeneration of skeletal muscle. In this article, we highlight the action of "non-contractile" structures, in particular the myofascial system or muscle fascia, which can be responsible for the pathophysiology and healing process of muscular injuries. Manual therapy plays a predominant role in the treatment of these types of injuries and is key in the process of obtaining a scar capable of transmitting mechanical information. The scientific basis of this process is described in this article.

Through real-time sonoelastography we have accurate information regarding the current stage of the repair process and, thus, guide our treatment at all times. Some new concepts are introduced, including local elasticity, the relationship between fascial pretension and the different stages of the physiological myofascia repair process, scar modelling technique, and sonoelastographic evolution control.

Skin and scar

J Multidiscip Healthc. 2013 Dec 28;7:11-24. doi: 10.2147/JMDH.S52870. eCollection 2013.

Skin, fascias, and scars: symptoms and systemic connections.

Bordoni B¹, Zanier E².

Every element or cell in the human body produces substances that communicate and respond in an autocrine or paracrine mode, consequently affecting organs and structures that are seemingly far from each other. The same also applies to the skin. In fact, when the integrity of the skin has been altered, or when its healing process is disturbed, it becomes a source of symptoms that are not merely cutaneous. The skin is an organ, and similar to any other structure, it has different functions in addition to connections with the central and peripheral nervous system. This article examines pathological responses produced by scars, analyzing definitions and differences.

At the same time, it considers the subcutaneous fascias, as this connective structure is altered when there is a discontinuous cutaneous surface. The consequence is an ample symptomatology, which is not limited to the body area where the scar is located, such as a postural or trigeminal disorder.

C section STM

Fascia science and clinical applications: Pilot study

Effect of myofascial induction therapy on post-c-section scars, more than one and a half years old. Pilot study

Antonio Chamorro Comesaña^{PT^aM^a} del Pilar Suárez Vicente^{PT^a} Tirso Docampo Ferreira^{PT^bM^a} del Mar Pérez-La Fuente Varela^{MD^cM^a} Magdalena Porto Quintáns^{MD^d} Andrzej Pilat^{PT^ef}

<https://doi.org/10.1016/j.jbmt.2016.07.003> Get rights and content

Summary

Myofascial Induction Therapy (MIT) is a manually-applied method used in physiotherapy and focused on restoring altered fascial tissue. In a healthy body, the fascial system maintains elasticity and coordination of movements. However, injuries and their after-effects, such as scars, may reduce this tissue role, causing a dysfunction.

The aim of this study is to ascertain the effect of MIT on scars which have completed the repair process in healthy individuals without any associated pathology that might affect the healing process.

In all 10 cases studied, changes were observed after applying MIT on the structure of the scar fold, both at deep (shown by ultrasound) and at superficial (shown by scar fold measurement) levels. Eight weekly MIT sessions were applied, establishing this number as a reference for future studies. Functional improvement was determined using Schober's Test and patient quality of life was measured with a specific questionnaire. These outcomes lay the groundwork for future research.

Massage in burns helps

Burns. 2014 Dec;40(8):1513-20. doi: 10.1016/j.burns.2014.02.005. Epub 2014 Mar 12.

The effect of burn rehabilitation massage therapy on hypertrophic scar after burn: a randomized controlled trial.

Cho YS¹, Jeon JH¹, Hong A², Yang HT³, Yim H³, Cho YS³, Kim DH³, Hur J³, Kim JH³, Chun W⁴, Lee BC⁵, Seo CH⁶.

OBJECTIVE:

To evaluate the effect of burn rehabilitation massage therapy on hypertrophic scar after burn.

METHOD:

One hundred and forty-six burn patients with hypertrophic scar(s) were randomly divided into an experimental group and a control group. All patients received standard rehabilitation therapy for hypertrophic scars and 76 patients (massage group) additionally received burn scar rehabilitation massage therapy. Both before and after the treatment, we determined the scores of visual analog scale (VAS) and itching scale and assessed the scar characteristics of thickness, melanin, erythema, transepidermal water loss (TEWL), sebum, and elasticity by using ultrasonography, Mexameter(®), Tewameter(®), Sebumeter(®), and Cutometer(®), respectively.

RESULTS:

The scores of both VAS and itching scale decreased significantly in both groups, indicating a significant intragroup difference. With regard to the scar characteristics, the massage group showed a significant decrease after treatment in scar thickness, melanin, erythema, TEWL and a significant intergroup difference. In terms of scar elasticity, a significant intergroup difference was noted in immediate distension and gross skin elasticity, while the massage group significant improvement in skin distensibility, immediate distension, immediate retraction, and delayed distension.

CONCLUSION:

Our results suggest that burn rehabilitation massage therapy is effective in improving pain, pruritus, and scar characteristics in hypertrophic scars after burn.

Psychological stress impact wound healing

Curr Opin Psychiatry. 2012 Mar;25(2):135-40. doi: 10.1097/YCO.0b013e32834e1424.

The psychology of wound healing.

Broadbent E¹, Koschwanez HE.

PURPOSE OF REVIEW:

Research into the effects of psychological factors on wound healing represents an ideal research model for psychoneuroimmunology, as both the impact on clinically relevant health outcomes and the underlying biological mechanisms can be examined. Mounting interest in this topic from biological scientists, psychologists, and medical specialists has resulted in new findings that are discussed in this review.

RECENT FINDINGS:

Known psychological influences on wound healing include stress as well as coping styles, positive affect, environmental enrichment, and social support. Research has highlighted the roles of oxytocin, vasopressin, epinephrine, cortisol, and leukocyte redistribution in wound healing. Clinical significance has been demonstrated by a growing number of studies in patient populations. Furthermore, pragmatic interventions with clinical samples have demonstrated clear benefits of psychological interventions on wound healing.

SUMMARY:

Recent studies add to growing evidence that psychology impacts wound repair, and highlight in particular the positive role of social support on modulating the negative effects of stress. The first few studies to demonstrate that psychological interventions can improve healing in clinical populations are exciting developments. New knowledge of psychobiological mechanisms provides opportunities to develop further interventions to improve health outcomes.