

2. LBP

Factors for adolescent girls LBP

The Risk Factors of Low Back Pain in Female High School Students

Noormohammadpour, Pardis, MD^{*†}; Borghei, Alireza, MD^{*}; Mirzaei, Shadi, MD^{*}; Mansournia, Mohammad Ali, MD, PhD^{*‡}; Ghayour-Najafabadi, Mahboubeh, PhD^{*§}; Kordi, Mahla, Msc^{*}; Kordi, Ramin, MD, PhD^{*†}

Spine: March 15, 2019 - Volume 44 - Issue 6 - p E357-E365

Study Design. A prospective cross-sectional study.

Objective. The aim of this study was to evaluate the prevalence and associated factors with low back pain (LBP) in female adolescents of high school age.

Summary of Background Data. The prevalence of LBP in Tehran is high, and the majority of previous studies on LBP in adolescent and its risk factors have been performed in the developed countries. Therefore, identification of risk factors and planning appropriate protocols for prevention of LBP in adolescents may substantially decrease the prevalence of LBP and its burden in developing countries in future.

Methods. In a prospective cross-sectional study, demographic characteristics, including age, body mass index (BMI), weight and mode of using backpack, family history of LBP in first degree relatives, and passive smoking status of the participants along with a history of LBP were recorded. Joint hypermobility was assessed using Beighton scale. Also, anthropometric measurements, spinal flexion, and hip joint range of motion were measured for each participant.

Results. In total, 372 students participated in the study. The mean (SD) age of the participants was 15.8 (0.9) years. The lifetime, more than 3 months, and last month history of LBP was 46.2%, 11.6%, and 31.2%, respectively. Positive history of LBP in the first-degree relatives was significantly associated with LBP in the participants ($P < 0.01$). The prevalence of passive smoking was significantly higher in the participants with last month history of LBP ($P = 0.03$). The prevalence of joint hypermobility was 15.9% and was significantly higher in those with the lifetime and last month history of LBP ($P < 0.01$).

Conclusion. LBP is a common complaint among adolescent and high school girl students. The results of this study identified the prevalence and associated factors with LBP in high school students and will help develop strategies for prevention and treatment of LBP in the adolescent population.

Level of Evidence: 3

3. DISC

Disc end-plate

Spine (Phila Pa 1976). 2019 Mar 15;44(6):E338-E347. doi: 10.1097/BRS.0000000000002852.

Alpha 2-Macroglobulin as Dual Regulator for Both Anabolism and Catabolism in the Cartilaginous Endplate of Intervertebral Disc.

Huang B¹, Chen J¹, Zhang X¹, Wang J¹, Zheng Z¹, Shan Z¹, Liu J¹, Zhu Z², Zhao F¹.

STUDY DESIGN:

Basic science study.

OBJECTIVE:

To illustrate supplemental alpha-2 macroglobulin (α 2M) has beneficial effects on cartilaginous endplates (CEPs) that may slow the progression of intervertebral disc (IVD) degeneration.

SUMMARY OF BACKGROUND DATA:

CEPs play a vital role in progression of intervertebral disc degenerative diseases. However, the ideal and economic therapies for CEPs degeneration are still urgently required.

METHODS:

Firstly, we confirmed degenerative CEP characters by H&E and Safranin O fast green staining and detected increasing level of α 2M and matrix metalloproteinase 13(MMP-13) in degenerative CEP by immunohistochemistry. Then, effects of exogenous α 2M on tumor necrosis factor alpha (TNF- α)-induced CEP catabolic enzyme and anabolic molecules were evaluated by qRT-PCR, Western blotting and ELISA in cultured CEP cells obtained from rats. Furthermore, suppression of α 2M on TNF- α -induced activation of NF- κ B signaling pathway was measured by Western blotting and immunofluorescence. In addition, function of α 2M on TNF- α -treated ex vivo IVDs from rats lumbar IVDs was estimated by measuring the expression of MMP-13, Sox9, aggrecan, and type II collagen in CEP area.

RESULTS:

Compared with normal CEP, level of α 2M was slightly increased in CEP from degenerative patients, whereas MMP-13 was sharply elevated. In vitro, α 2M inhibited expression and activity of MMP-3 or MMP-13 in a dose-dependent manner in rat CEP cells stimulated by TNF- α . The α 2M refrained phosphorylation of I κ B α and inhibited nuclear translocation of p65. Finally, supplemental α 2M reduced expression of MMP-13, and promoted expression of Sox9, aggrecan, and type II collagen in CEP area of ex vivo IVDs cultured with TNF- α .

CONCLUSION:

α 2M is not sufficiently produced to inactivate higher concentrations of catabolic factor MMP-13 found in the degenerated CEP. Supplemental α 2M protects against the progression of IVD degeneration by inhibiting effects of proinflammatory cytokines.

5. SPINAL SURGERY

Cages shown to have higher non-union

Spine (Phila Pa 1976). 2019 Mar 15;44(6):384-388. doi: 10.1097/BRS.0000000000002854.

Cages in ACDF are Associated With a Higher Nonunion Rate Than Allograft: A Stratified Comparative Analysis of 6130 Patients.

Pirkle S¹, Kaskovich S, Cook DJ, Ho A, Shi LL, Lee MJ.

STUDY DESIGN:

A retrospective database review.

OBJECTIVE:

The purpose of this study was to analyze the rate of nonunion in patients treated with structural allograft and intervertebral cages in anterior cervical discectomy and fusion (ACDF).

SUMMARY OF BACKGROUND DATA:

Existing literature consists primarily of single-center studies with inconsistent findings.

METHODS:

We performed a retrospective analysis of 6130 patients registered in the PearlDiver national database through Humana Insurance from 2007 to 2016. All ACDF patients with anterior plating who were active in the database for at least 1 year were included in the study. Patients with a fracture history within 1 year of intervention, past arthrodesis of hand, foot, or ankle, or a planned posterior approach were excluded from the study. Patients were stratified by number of levels treated, tobacco use, and diabetic condition. Nonunion rates of structural allograft and intervertebral cage groups after 1 year were compared using Chi-squared analyses.

RESULTS:

Four thousand sixty-three patients were included in the allograft group, while 2067 were included in the cage group. Overall nonunion rates were significantly higher in the cage group (5.32%) than in allograft group (1.97%) ($P < 0.01$). When controlling for confounders, increased rates of nonunion were consistently observed in the cage group, achieving statistical significance in 25 of the 26 analyses.

CONCLUSION:

The increased rate of nonunion associated with intervertebral cages may suggest the superiority of allograft over cages in ACDF.

LEVEL OF EVIDENCE: 3.

Depression and post-surgical neurological problems

Clin Spine Surg. 2019 Mar;32(2):E78-E85. doi: 10.1097/BSD.0000000000000730.

Depression Increases the Rates of Neurological Complications and Failed Back Surgery Syndrome in Patients Undergoing Lumbar Spine Surgery.

Schoell K¹, Wang C, D'Oro A, Heindel P, Lee L, Wang JC, Buser Z.

STUDY DESIGN:

This was a retrospective database study.

OBJECTIVE:

The aim of this study was to use a large sample to accurately determine risk factors and rates of neurological complications in patients undergoing commonly performed lumbar spine surgeries.

SUMMARY OF BACKGROUND DATA:

Damage to neurological structures and failed back surgery syndrome (FBSS) are among the most feared complications of lumbar spine surgery. Despite the large impact on quality of life these complications have, reported rates of neurological complications vary immensely, ranging from 0.46% to 24%.

MATERIALS AND METHODS:

Data were obtained for patients undergoing initial posterior lumbar interbody fusion, transforaminal lumbar interbody fusion, anterior lumbar interbody fusion, posterolateral fusion, discectomy, and laminectomy procedures from January 2007 to June 2015 covered by the nationwide insurance carrier Humana. Patient records were analyzed to determine rates of dural tear, damage to nervous tissue, cauda equina syndrome, neurogenic bowel/bladder, and FBSS following each procedure. Rates were determined for patients undergoing single/multilevel procedures, by age, and for patients with a previous diagnosis of depression to determine the influence these factors had on the risk of neurologic complications.

RESULTS:

Analysis of 70,581 patient records revealed a dural tear rate of 2.87%, damage to the nervous tissue of 1.47%, cauda equina syndrome of 0.75%, neurogenic bowel or bladder of 0.45%, and FBSS of 15.05% following lumbar spine surgery. The incidence of complications was highest for patients undergoing multilevel procedures and posterior fusion. Depression was a significant risk factor for FBSS (risk ratio, 1.74; $P < 0.0001$), damage to nervous tissue (1.41; $P < 0.0001$), and dural tear (1.15; $P < 0.0001$), but had no impact on risk of cauda equina syndrome or neurogenic bowel or bladder. Increased age was associated with higher rates of dural tear and damage to nervous tissue.

CONCLUSIONS:

Patients with a history of depression are at significantly increased risk for neurologic complications following lumbar spine surgery and should be managed accordingly.

Comparing surgeries for spondylolisthesis

Clin Spine Surg. 2019 Mar;32(2):E71-E77. doi: 10.1097/BSD.0000000000000729.

Perioperative Effects Associated With the Surgical Treatment of Degenerative Spondylolisthesis: Interbody Versus No Interbody.

Colman MW¹, Baronne LM 2nd², Brodke DS², Woodbury AM², Annis P², Lawrence BD².

STUDY DESIGN:

This is a retrospective analysis.

OBJECTIVE:

The purpose of this study was to compare the clinical, radiographic, and perioperative complication profiles of performing an interbody and posterior arthrodesis (CAGE) versus posterolateral lumbar fusion (PLF) alone in patients undergoing surgery for degenerative spondylolisthesis (DS).

SUMMARY OF BACKGROUND DATA:

DS is a common disorder that, failing nonoperative treatment, may be managed with surgical decompression and concomitant posterior arthrodesis. At present, the risk/benefit ratio of including an additional interbody arthrodesis has not been clearly delineated in the literature.

MATERIALS AND METHODS:

We reviewed 174 consecutive patients (118 female and 56 male) diagnosed with single-level DS that met the inclusion/exclusion criteria, from January 1, 2000 to August 1, 2011. Clinical outcomes, fusion rates, radiographic outcomes, and complication profiles were recorded.

RESULTS:

We identified 174 patients who received a single-level lumbar interbody fusion with posterolateral fusion (CAGE, n=89) or posterolateral fusion alone (PLF, n=85). No difference in patient-reported outcomes or fusion rate was detected between the 2 groups. We did identify better segmental lordosis increase (4.9 ± 3.2 vs. 0.9 ± 1.9 degrees; $P=0.001$) and interdiscal height change (2.1 ± 2.4 vs. 0.6 ± 1.6 mm) in the CAGE group. Operative time, 199.8 ± 36.6 versus 142.6 ± 28.5 minutes ($P<0.001$); blood loss, 355 ± 216.4 versus 269 ± 28.5 mL ($P<0.001$); and postoperative radiculitis, 28.9% versus 7.0% ($P=0.003$) were worse in the CAGE group compared with the PLF group.

CONCLUSIONS:

The ideal surgical approach when treating patients with DS remains in question. This study suggests, when comparing PLF with or without additional interbody fusion, that the lack of clinical or fusion-related benefit may not justify the higher risk profile including longer surgery, higher blood loss, and increased risk of postoperative radiculitis. Long-term prospective studies are required to further clarify these findings.

Unilateral decompression surgery for stenosis

Unilateral laminectomy for bilateral decompression improves low back pain while standing equally on both sides in patients with lumbar canal stenosis: analysis using a detailed visual analogue scale

Hiroshi Takahashi Yasuchika Aoki, Seiji Ohtori and Koichi Nakagawa

BMC Musculoskeletal Disorders 2019 **20**:100

<https://doi.org/10.1186/s12891-019-2475-6>

Background

Unilateral laminectomy for bilateral decompression (ULBD) for lumbar spinal stenosis (LSS) is a less invasive technique compared to conventional laminectomy. Recently, several authors have reported favorable results of low back pain (LBP) in patients of LSS treated with ULBD. However, the detailed changes and localization of LBP before and after ULBD for LSS remain unclear. Furthermore, unsymmetrical invasion to para-spinal muscle and facet joint may result in the residual unsymmetrical symptoms. To clarify these points, we conducted an observational study and used detailed visual analog scale (VAS) scores to evaluate the characteristics and bilateral changes of LBP and lower extremity symptoms.

Methods

We included 50 patients with LSS treated with ULBD. A detailed visual analogue scale (VAS; 100 mm) score of LBP in three different postural positions: motion, standing, and sitting, and bilateral VAS score (approached side versus opposite side) of LBP, lower extremity pain (LEP), and lower extremity numbness (LEN) were measured. Oswestry Disability Index (ODI) was used to quantify the clinical improvement.

Results

Detailed LBP VAS score before surgery was 51.5 ± 32.5 in motion, 63.0 ± 30.1 while standing, and 37.8 ± 31.8 while sitting; and showed LBP while standing was significantly greater than LBP while sitting ($p < 0.01$). After surgery, LBP while standing was significantly improved relative to that while sitting ($p < 0.05$), and levels of LBP in the three postures became almost the same with ODI improvement. Bilateral VAS scores showed significant improvement equally on both sides ($p < 0.01$).

Conclusions

ULBD improves LBP while standing equally on both sides in patients with LCS. The improvement of LBP by the ULBD surgery suggests radicular LBP improved because of decompression surgery. Furthermore, the symmetric improvement of LBP by the ULBD surgery suggests unsymmetrical invasion of the paraspinal muscles and facet joints is unrelated to residual LBP.

7. PELVIC ORGANS/WOMAN'S HEALTH

Vit. Intake during first trimester reduces Autism births

JAMA Psychiatry. 2019 Feb 27. doi: 10.1001/jamapsychiatry.2018.3901.

Association of Maternal Prenatal Vitamin Use With Risk for Autism Spectrum Disorder Recurrence in Young Siblings.

Schmidt RJ^{1,2}, Iosif AM^{1,2}, Guerrero Angel E¹, Ozonoff S^{2,3}.

IMPORTANCE: Maternal use of folic acid supplements has been inconsistently associated with reduced risk for autism spectrum disorder (ASD) in the child. No study to date has examined this association in the context of ASD recurrence in high-risk families.

OBJECTIVE: To examine the association between maternal prenatal vitamin use and ASD recurrence risk in younger siblings of children with ASD.

DESIGN, SETTING, AND PARTICIPANTS:

This prospective cohort study analyzed data from a sample of children (n = 332) and their mothers (n = 305) enrolled in the MARBLES (Markers of Autism Risk in Babies: Learning Early Signs) study. Participants in the MARBLES study were recruited at the MIND Institute of the University of California, Davis and were primarily from families receiving services for children with ASD in the California Department of Developmental Services. In this sample, the younger siblings at high risk for ASD were born between December 1, 2006, and June 30, 2015, and completed a final clinical assessment within 6 months of their third birthday. Prenatal vitamin use during pregnancy was reported by mothers during telephone interviews. Data analysis for this study was conducted from January 1, 2017, to December 3, 2018.

MAIN OUTCOMES AND MEASURES:

Autism spectrum disorder, other nontypical development (non-TD), and typical development (TD) were algorithmically defined according to Autism Diagnostic Observation Schedule and Mullen Scales of Early Learning subscale scores.

RESULTS:

After exclusions, the final sample comprised 241 younger siblings, of which 140 (58.1%) were male and 101 (41.9%) were female, with a mean (SD) age of 36.5 (1.6) months. Most mothers (231 [95.9%]) reported taking prenatal vitamins during pregnancy, but only 87 mothers (36.1%) met the recommendations to take prenatal vitamins in the 6 months before pregnancy. The prevalence of ASD was 14.1% (18) in children whose mothers took prenatal vitamins in the first month of pregnancy compared with 32.7% (37) in children whose mothers did not take prenatal vitamins during that time. Children whose mothers reported taking prenatal vitamins during the first month of pregnancy were less likely to receive an ASD diagnosis (adjusted relative risk [RR], 0.50; 95% CI, 0.30-0.81) but not a non-TD 36-month outcome (adjusted RR, 1.14; 95% CI, 0.75-1.75) compared with children whose mothers reported not taking prenatal vitamins. Children in the former maternal prenatal vitamin group also had statistically significantly lower autism symptom severity (adjusted estimated difference, -0.60; 95% CI, -0.97 to -0.23) and higher cognitive scores (adjusted estimated difference, 7.1; 95% CI, 1.2-13.1).

CONCLUSIONS AND RELEVANCE:

Maternal prenatal vitamin intake during the first month of pregnancy may reduce ASD recurrence in siblings of children with ASD in high-risk families. Additional research is needed to confirm these results; to investigate dose thresholds, contributing nutrients, and biologic mechanisms of prenatal vitamins; and to inform public health recommendations for ASD prevention in affected families.

Hormone replacement might encourage Alzheimer's disease

Use of postmenopausal hormone therapy and risk of Alzheimer's disease in Finland: nationwide case-control study

BMJ 2019; 364 doi: <https://doi.org/10.1136/bmj.l665>

1. Päivi Rahkola-Soisalo, Fabian Hoti, statistician³, Pia Vattulainen, statistician³, Mika Gissler, professor^{4 5 6}, Olavi Ylikorkala, professor¹, Tomi S Mikkola, associate professor^{1 2}

Abstract

Objectives To compare the use of hormone therapy between Finnish postmenopausal women with and without a diagnosis for Alzheimer's disease.

Design Nationwide case-control study.

Setting Finnish national population and drug register, between 1999 and 2013.

Participants All postmenopausal women (n=84 739) in Finland who, between 1999 and 2013, received a diagnosis of Alzheimer's disease from a neurologist or geriatrician, and who were identified from a national drug register. Control women without a diagnosis (n=84 739), matched by age and hospital district, were traced from the Finnish national population register.

Interventions Data on hormone therapy use were obtained from the Finnish national drug reimbursement register.

Main outcome measures Odds ratios and 95% confidence intervals for Alzheimer's disease, calculated with conditional logistic regression analysis.

Results In 83 688 (98.8%) women, a diagnosis for Alzheimer's disease was made at the age of 60 years or older, and 47 239 (55.7%) women had been over 80 years of age at diagnosis. Use of systemic hormone therapy was associated with a 9-17% increased risk of Alzheimer's disease.

The risk of the disease did not differ significantly between users of estradiol only (odds ratio 1.09, 95% confidence interval 1.05 to 1.14) and those of oestrogen-progestogen (1.17, 1.13 to 1.21).

The risk increases in users of oestrogen-progestogen therapy were not related to different progestogens (norethisterone acetate, medroxyprogesterone acetate, or other progestogens); but in women younger than 60 at hormone therapy initiation, these risk increases were associated with hormone therapy exposure over 10 years. Furthermore, the age at initiation of systemic hormone therapy was not a decisive determinant for the increase in risk of Alzheimer's disease. The exclusive use of vaginal estradiol did not affect the risk of the disease (0.99, 0.96 to 1.01).

Conclusions Long term use of systemic hormone therapy might be accompanied with an overall increased risk of Alzheimer's disease, which is not related to the type of progestogen or the age at initiation of systemic hormone therapy. By contrast, use of vaginal estradiol shows no such risk. Even though the absolute risk increase for Alzheimer's disease is small, our data should be implemented into information for present and future users of hormone therapy.

High blood pressure and fetal development**Maternal blood pressure, cord glucocorticoids, and child neurodevelopment at 2 years of age: a birth cohort study**

Qi Liu Shuna Jin Xiaojie Sun Xia Sheng Zhenxing Mao Yangqian Jiang Hongxiu LiuChen
Hu Wei Xia Yuanyuan Li

American Journal of Hypertension, hpz024, <https://doi.org/10.1093/ajh/hpz024>

Background

Pregnancy hypertensive disorders have impaired neurodevelopment in offspring. We aimed to explore the association of normal range maternal blood pressure (BP) with child neurodevelopment, as well as the possible role of placental 11-beta-hydroxysteroid dehydrogenase type 2 (11 β -HSD2) therein.

Methods

Among 1,008 mother-child pairs recruited in Wuhan, China, in 2013-2015, we measured maternal third-trimester BP (systolic and diastolic BP, SBP and DBP) and cord glucocorticoids (cortisol and cortisone), a marker reflecting placental 11 β -HSD2 activity. We evaluated child neurodevelopment using the Bayley Scales of Infant Development (BSID) with obtaining the Mental and Psychomotor Development Index (MDI and PDI). Multiple regression and mediation analysis were performed to estimate the effect.

Results

Each 5 mmHg increase in maternal third-trimester SBP was associated with 1.54 points decrease in MDI (95% CI: -2.60, -0.48) and 1.23 points decrease in PDI (95% CI: -2.14, -0.31); similar association was observed between DBP and BSID (adjusted β = -1.32; 95% CI: -2.53, -0.10 for MDI and -1.37; 95% CI: -2.42, -0.33 for PDI). Also, we found significant associations between cord cortisol/cortisone ratio and PDI (adjusted β = 2.95; 95% CI: 0.91, 4.99), as well as between maternal BP and cord cortisol/cortisone ratio (adjusted β = -0.03; 95% CI: -0.06, -0.01 for both SBP and DBP). Mediation analysis revealed that cord cortisol/cortisone ratio explained 6.29% of the association between SBP and PDI, and 6.85% between DBP and PDI.

Conclusions

Increased maternal normal range BP may affect child neurodevelopment. Furthermore, placental 11 β -HSD2 activity might be involved in the process.

8. VISCERA

Vegan diet and blood pressure

THE EFFECT OF VEGAN DIETS ON BLOOD PRESSURE IN ADULTS: A META-ANALYSIS OF RANDOMIZED, CONTROLLED TRIALS

Persio D. Lopez Eder H. Cativo Steven A. Atlas

,

Clive Rosendorff*

DOI: <https://doi.org/10.1016/j.amjmed.2019.01.044>

Background

Vegan diets are increasing in popularity and have beneficial effects on glycemia and blood lipids, but the evidence is inconclusive regarding their effect on blood pressure. The purpose of this study was to review the effect of vegan diets on blood pressure in adults.

Methods

We searched MEDLINE, EMBASE, CENTRAL and ClinicalTrials.gov for records that compared a vegan diet to any less restrictive diet and reported pre- and post-intervention systolic and diastolic blood pressures. Two reviewers independently screened abstracts for randomized, controlled clinical trials in individuals ≥ 18 years of age and older. We used the PRISMA guidelines to select 11 clinical trials from 1673 records. Data synthesis was performed through a random-effects model.

Results

The pooled data included 983 participants. Compared to less restrictive diets, a vegan diet did not result in a significant change in systolic (-1.33 mmHg; 95% CI -3.50 to 0.84 ; $p = 0.230$) or diastolic (-1.21 mmHg; 95% CI -3.06 to 0.65 ; $p = 0.203$) blood pressure. A pre-specified subgroup analysis of studies with baseline systolic blood pressure ≥ 130 mmHg revealed that a vegan diet resulted in a mean decrease in the systolic (-4.10 mmHg; 95% CI -8.14 to -0.06 ; $p = 0.047$) and diastolic (-4.01 mmHg; 95% CI -5.97 to -2.05 ; $p = 0.000$) blood pressures.

Conclusion

The changes in blood pressure induced by a vegan diet without caloric restrictions are comparable to those induced by dietary approaches recommended by medical societies and portion-controlled diets.

Probiotics and IBS

Neurogastroenterol Motil. 2018 Dec;30(12):e13513. doi: 10.1111/nmo.13513.

Probiotics in irritable bowel syndrome: Where are we?

Barbara G¹, Cremon C¹, Azpiroz F².

We have only recently begun to understand how alterations of the intestinal microbial ecosystem lead to the disruption of host-microbial interactions and are associated with diseases, including functional gastrointestinal disorders such as irritable bowel syndrome (IBS).

Although we are still far from understanding the human microbiome, gut microbiota is already a therapeutic target. Probiotics are live microorganisms that, when administered in adequate amounts, confer a health benefit to the host and may represent a therapeutic option for diseases characterized by dysbiosis such as IBS. Meta-analyses suggest that probiotics provide a therapeutic gain over placebo on global symptoms with a high safety profile in IBS patients. However, the mechanisms by which they provide benefit in IBS remain virtually unknown. In this issue of Neurogastroenterology and Motility, BIO-25, a multispecies probiotic, did not significantly modify the composition of the fecal microbiota, but interestingly, patients with specific basal features of the intestinal microbial ecosystem improved with treatment.

Based on these data, it is tantalizing to speculate that microbiota composition serves as a predictor of the response to probiotic intervention. This mini-review addresses unresolved issues related to mechanisms through which probiotics may exert their beneficial effects, the biological, as well as clinical predictors of favorable outcomes in IBS and finally considers possible new directions for future studies.

Isometric test for high blood pressure

J Hypertens. 2018 Sep 17. doi: 10.1097/HJH.0000000000001943.

A brief submaximal isometric exercise test 'unmasks' systolic and diastolic masked hypertension.

Koletsos N¹, Dipla K², Triantafyllou A¹, Gkaliagkousi E¹, Sachpekidis V³, Zafeiridis A², Douma S¹.

OBJECTIVES:

An exaggerated blood pressure (BP) response during dynamic exercise testing has been proposed as an additional screening tool to identify systolic masked hypertension (masked-HYP). However, masked-HYP in young people is often characterized by an elevated DBP. Static/isometric exercise elicits augmented sympathetic stimulation causing greater increases in both SBP and DBP than dynamic exercise.

AIMS:

To examine whether individuals with masked-HYP exhibit exaggerated BP responses during a submaximal handgrip vs. normotensive individuals and individuals with sustained hypertension (true-HYP), and the possible associations of exercise BP with total peripheral resistance (TPR), central/aortic BP, and 24-h-ambulatory BP (24-h BP).

METHODS:

Eighty-six participants [untreated, newly diagnosed, masked-HYP (n=27), true-HYP (n=31), and normotensive individuals (n=28); 46.3±10.7 years], following evaluation of office BP, central/aortic BP, pulse wave velocity, carotid intima-media thickness, echocardiography, and 24-h BP, underwent a 3-min handgrip (30% maximal voluntary contraction) with beat-by-beat BP and hemodynamics assessment (Finapres Medical Systems).

RESULTS:

Despite similar baseline-BP in masked-HYP and normotensive individuals, during exercise masked-HYP exhibited a markedly greater ($P<0.01$) SBP and DBP vs. normotensive individuals, and similar BP to true-HYP. TPR significantly increased ($P<0.001$) during exercise, in masked-HYP and true-HYP. The exaggerated BP responses in masked-HYP were evident from the 1st minute of exercise and correlated ($P<0.05$) with central/aortic-BP, aortic stiffness, 24-h BP, day-BP, night-time-BP, and interventricular septum thickness.

CONCLUSION:

During handgrip, masked-HYP exhibited exaggerated BP and TPR responses, similar to those of true-HYP. These responses were evident from the 1st minute of exercise and correlated with 24-h BP, suggesting that systolic and diastolic masked-HYP can be 'unmasked' during a brief, submaximal, handgrip test.

13 D. SLEEP

Food addiction and sleep among college students

Prevalence of food addiction and association with stress, sleep quality and chronotype: a cross-sectional survey among university students

JoelleNajem^{a1}MarounSaber^{b1}CarlaAoun^{ab}NadaEl Osta^{cde}TatianaPapazian^{ab}Lydia RabbaaKhabbaz^a
<https://doi.org/10.1016/j.clnu.2019.02.038>Get rights and content

Aims Food addiction (FA) is defined as an insatiable desire for the consumption of specific high-fat, high-sugar foods beyond the required energy needs for sustenance. The aims of this study were to determine FA prevalence and to assess associations between FA, stress, sleep quality and chronotype among university students.

Design

and setting: A cross-sectional questionnaire-based survey conducted among students from 8 major Lebanese universities. Students were randomly selected and requested to fill the questionnaire. 644 agreed to participate. Data were collected via a face-to-face interview conducted by 2 trained research assistants.

Participants

University students above 18 years old and not presenting any cognitive or chronic illnesses, after signing a written consent form.

Measurements

In addition to sociodemographic data, all participants filled the following self-administered standardized and validated questionnaires: Yale Food Addiction Scale (YFAS), Perceived Stress Scale (PSS), Morningness-Eveningness Questionnaire (MEQ) and Pittsburgh Sleep Quality Index (PSQI).

Findings

FA prevalence was 10.1% with a 95% confidence interval of 7.8 to 12.4%. 56.5% of all the participants had a poor quality of sleep, whereas 81.2 % of the participants presenting FA experienced a poor sleep quality (versus 57.2% when no FA is present). 70.2% of the students presented an intermediate chronotype, 20.5 % an evening chronotype and 8.7% a morning chronotype. Age, smoking status, BMI, PSS and PSQI remained significantly correlated to the continuous YFAS score in multivariate analysis.

Conclusions

Our findings denote the importance of identifying and offering help to individuals presenting a FA because it is frequent among youth, associated to higher BMI and to smoking, seems to be a very intertwined and complex phenomenon coexisting with other neuropsychiatric problems, such as stress and poor sleep quality and therefore can have serious health implications.

20 A. ROTATOR CUFF**Active ROM after surgery seems ok**

Original Article

Early Active Motion Versus Sling Immobilization After Arthroscopic Rotator Cuff Repair: A Randomized Controlled Trial

AneliseSilveiraP.T., M.R.Sc.^bLaurenBeaupreP.T., Ph.D.^{bc}FionaStyles-TrippB.Sc.P.T.^dRobertBalykM.D., F.R.C.S.C.^{abd}AleemLalaniM.D., F.R.C.S.C.^{abe}RobertGlasgowM.D., F.R.C.S.C.^{abd}JosephBergmanM.D., F.R.C.S.C.^{bc}MartinBoulianeM.D., F.R.C.S.C.^{abd}

<https://doi.org/10.1016/j.arthro.2018.10.139>Get rights and content

Arthroscopy: The Journal of Arthroscopic & Related Surgery, Volume 35, Issue 3, March 2019, Pages 761-762

Purpose

To compare the effect of early mobilization (EM) with standard rehabilitation (SR) over the initial 24 months following arthroscopic rotator cuff (RC) repair.

Methods

A total of 206 patients with full-thickness RC tears undergoing arthroscopic repair were randomized following preoperative assessment of shoulder range of motion (ROM), pain, strength, and health-related quality of life (HRQOL) to either EM (n = 103; self-weaned from sling and performed pain-free active ROM during the first 6 weeks) or SR (n = 103; wore a sling for 6 weeks with no active ROM). Shoulder ROM, pain, and HRQOL were reassessed at 6 weeks and 3, 6, 12, and 24 months postoperatively by a blinded assessor. At 6, 12, and 24 months, strength was reassessed. At 12 months, ultrasound verified RC integrity. Independent t tests assessed 6-week group differences and 2-way repeated measures analysis of variance assessed changes over time between groups.

Results

The groups were similar preoperatively ($P > .12$). The mean age of participants was 55.9 (minimum, 26; maximum, 79) years, and 131 (64%) were men. A total of 171 (83%) patients were followed to 24 months. At 6 weeks postoperatively, EM participants had significantly better forward flexion and abduction ($P < .03$) than the SR participants; no other group differences were noted. Over 24 months, there were no group differences in ROM after 6 weeks ($P > .08$), and pain ($P > .06$), strength ($P = .35$), or HRQOL ($P > .20$) at any time. Fifty-two (25%) subjects (30% EM; 33% SR) had a full-thickness tear present at 12-month postoperative ultrasound testing ($P > .8$).

Conclusions

EM did not show significant clinical benefits, but there was no compromise of postoperative ROM, pain, strength, or HRQOL. Repair integrity was similar at 12 months postoperatively between groups. Consideration should be given to allow pain-free active ROM within the first 6 weeks following arthroscopic RC repair.

35. KNEE/TOTAL

Problems of flexion contracture

Sagittal alignment of the femoral component and patient height are associated to persisting flexion contracture after primary total knee arthroplasty

Yoshinori Okamoto, MD, PhD^{1,*}, Shuhei Otsuki, MD, PhD¹, Iki Nakajima, MD, PhD², Tsuyoshi Jotoku, MD, PhD², Hitoshi Wakama, MD¹, Masashi Neo, MD, PhD¹

DOI: <https://doi.org/10.1016/j.arth.2019.02.051>

Background

The aim of our retrospective case-control study was to identify risk factors associated with a persisting flexion contracture after total knee arthroplasty (TKA). This is an important clinical issue as a flexion contraction can lead to poor long-term clinical outcomes and patient satisfaction after TKA.

Methods

The study group included 120 knees treated for a varus osteoarthritic deformity of the knee using a posterior cruciate-retaining TKA. We evaluated the association between a flexion contracture $>10^\circ$, two years after surgery, and the following potential risk factors, using logistic regression analysis: age, body height, body mass index, pre-operative knee extension and hip-knee-ankle angle, and radiological parameters of component alignment, namely the femoral component medial angle (FMA), the femoral component flexion angle (FFA), the tibial component medial angle (TMA), and the posterior tibial slope (PTS).

Results

Of the 120 knees, a persisting flexion contracture $>10^\circ$ was identified in 33 (28%). The mean FFA in these cases was 7.3° (standard deviation [SD], 1.4) compared to 4.2° (SD, 1.2) for cases with a contracture of $\leq 10^\circ$ ($p = 0.034$). On multivariate analysis, the FFA (Odds ratio [OR], 3.73; 95% confidence interval [CI], 1.16 - 17.81; $p = 0.034$) and body height (OR, 0.43; 95% CI, 0.29 - 0.57; $p = 0.041$) were independent predictive risk factors for a residual flexion contracture $>10^\circ$.

Conclusions

Clinicians should be aware that flexed position of the femoral component, particularly in patients of short stature, is associated with increased occurrence of persistent flexion contracture.

Extensor lag

Treatment of extensor tendon disruption after total knee arthroplasty: a systematic review

Sravya Vajapey, MD Ryan Blackwell, MD aron Maki, MD Timothy L. Miller, MD*

DOI: <https://doi.org/10.1016/j.arth.2019.02.046>

Background

Patellar or quadriceps tendon ruptures after total knee arthroplasty constitute a devastating complication with historically poor outcomes. With advances in soft tissue reconstruction and repair techniques, treatment has become more nuanced. Numerous graft options for reconstruction and suture techniques for repair have been described but there is no consensus regarding optimal treatment.

Methods

A search of PUBMED, MEDLINE, EMBASE, and SCOPUS was conducted. Articles meeting inclusion criteria were reviewed. Type of intervention performed, type of injury studied, outcome measures, and complications were recorded. Quantitative and qualitative analyses were performed.

Results

Twenty-eight articles met inclusion criteria. The complication rate after repair of patellar tendon (63.16%) was higher than the complication rate after repair of quadriceps tendon (25.37%). However, the complication rate for patellar and quadriceps tendon tears after autograft, allograft, or mesh reconstruction was similar (18.8 % vs 19.2 % respectively). The most common complication after extensor mechanism repair or reconstruction was extension lag of 30 degrees or greater (45.33%). This was followed by re-rupture and infection (25.33% and 22.67% respectively). Early ruptures had a higher overall complication rate than late injuries.

Conclusions

Extensor mechanism disruption after total knee arthroplasty is a complication with high morbidity. Reconstruction of patellar tendon rupture has a much lower complication rate than repair. Our findings support the recommendation of patellar tendon reconstruction in both the early and late presentation stages. Quadriceps rupture can be treated with repair in early ruptures or with reconstruction in the late rupture or in the case of revision surgery.

41 B. COMPARTMENT SYNDROME

Impact of surgery

Surgical management of acute compartment syndrome and sequential complications

- Weili Du Xiaohua Hu, Yuming Shen and Xing Teng

*BMC Musculoskeletal Disorders*2019**20**:98
<https://doi.org/10.1186/s12891-019-2476-5>

Background

Acute compartment syndrome occurs when pressure within a compartment increases and affects the function of the muscle and tissues after an injury. Compartment syndrome is most common in lower leg and may lead to permanent injury to the muscle and nerves if left untreated.

Methods

46 patients with acute compartment syndrome were enrolled, including 8 cases with serious complications, between January 2008 and December 2012. The protocols combining early management and the correction of deformities were adjusted in order to attempt to enable full recovery of all patients.

Results

All patients had necrotic muscles and nerves, damaged vascular, and severe foot deformities. In the early stage, each patient received systemic support and wound debridement to promote wound healing. For patients with serious complications, a number of medical measures, including installation of Ilizarov external frames, arthrodesis, osteotomy fusion, arthroplasty, or tendon lengthening surgery, were performed to achieve satisfactory clinical outcomes. All the patients resumed weight-bearing walking and daily exercises.

Conclusion

Acute compartment syndrome and sequential complications could be managed using a number of medical procedures.

53. CORE**Ballerina**

PM R. 2018 Nov 19. doi: 10.1002/pmrj.12002.

Lumbar Multifidus and Erector Spinae Muscle Synergies in Patients with Nonspecific Low Back Pain During Prone Hip Extension: A Cross-sectional Study.

Wattananon P¹, Silfies SP², Tretriluxana J³, Jalayondeja W³.

BACKGROUND:

Prone hip extension is used to clinically assess movement control in patients with nonspecific low back pain (LBP). Excessive lumbopelvic movements and altered muscle activation patterns are common in patients with nonspecific LBP. However, no evidence exists regarding lumbar multifidus and lumbar erector spinae muscle synergy patterns in patients with nonspecific LBP during this clinical test.

OBJECTIVE:

To determine the difference in lumbopelvic motion and change in muscle synergy between patients with nonspecific LBP and healthy individuals.

DESIGN:

A cross-sectional study design.

SETTING:

University physical therapy clinic and laboratory.

PARTICIPANTS:

Seven patients with nonspecific LBP (age [mean \pm SD] 29 ± 5 years, 43% female, body mass index [BMI] of 25 ± 2 kg/m², Numeric Pain Rating Scale 6 ± 2 ; Oswestry Disability Index $20\% \pm 8\%$) and seven age-, sex-, and BMI-matched healthy individuals (mean age 28 ± 5 years, 43% female, BMI of 22 ± 2 kg/m²) were recruited.

METHODS:

Each participant performed six repetitions of prone hip extension on each side; kinematic and electromyographic data were collected simultaneously.

MAIN OUTCOME MEASUREMENTS:

Kinematic data were used to represent lumbopelvic motion, whereas electromyography (EMG) data were used to represent muscle activity. A paired t-test was used to determine the difference in lumbopelvic motion. Principal component analysis and two-way repeated-measures analysis of variance were used to extract muscle synergies and identify differences in muscle synergy patterns between and within groups.

RESULTS:

Results demonstrated no significant group difference ($P > .05$) in amount of lumbopelvic motion. However, healthy individuals synergistically activate lumbar multifidus and lumbar erector spinae with 81.0% variance accounted for (VAF). Patients with nonspecific LBP had an altered synergy with independent activation of lumbar multifidus on the painful side with 32.0% VAF and the lumbar multifidus on the nonpainful side, and both lumbar erector spinae with 52.2% VAF synergistically activated.

CONCLUSIONS:

These findings suggest that clinicians should focus on muscle activation patterns rather than the amount of lumbopelvic motion during clinical observation of prone hip extension.

LEVEL OF EVIDENCE: Level III.

59. PAIN**Cannabis and pain relief in adolescents**

J Pain. 2019 Feb 6. pii: S1526-5900(18)30488-7. doi: 10.1016/j.jpain.2019.02.001.

Pain Relief as a Motivation for Cannabis Use Among Young Adult Users With and Without Chronic Pain.

Fales JL¹, Ladd BO², Magnan RE².

This study aims to determine the rate of chronic pain in a community sample of young adult cannabis users, assess the extent to which pain relief is an important motivation for cannabis use, and explore differences in consumption patterns and problem behaviors between users with and without chronic pain.

The study design was cross-sectional. Self-selected community-dwelling young adults (ages 18-29 years; n = 143) who regularly use cannabis completed an online survey. Results revealed that approximately 40% of the sample met the criteria for chronic pain, and pain relief was their primary motivation for use. There were no differences between groups with respect to frequency of use or estimated potency of their preferred strains; however, users with chronic pain reported using a wider variety of administration methods and a greater quantity of cannabis with each use. Users with chronic pain also reported more extensive histories of use, with younger age at initiation and longer duration of regular use. Despite riskier consumption patterns, there were no between-group differences in negative consequences owing to use after controlling for gender and educational status. On average, the total sample reported approximately 8 problems in the past 30 days owing to use.

These findings suggest that chronic pain is commonly experienced among young adult cannabis users and pain relief is the primary motivation for users with pain. For some users, clinically significant chronic pain and pain-related interference persist despite heavy use. Cannabis users with and without chronic pain report experiencing several negative consequences owing to their use. PERSPECTIVE:

This article compares motivations for cannabis use and describes differences in consumption patterns among a community sample of young adult users with and without chronic pain. This information may be useful for providers who assess and treat pain in young adults, particularly in settings that have legalized recreational use.

Phantom limb pain management

Ann Neurol. 2019 Jan;85(1):59-73. doi: 10.1002/ana.25371. Epub 2019 Jan 7.

Neural basis of induced phantom limb pain relief.

Kikkert S^{1,2,3}, Mezue M¹, O'Shea J¹, Henderson Slater D⁴, Johansen-Berg H¹, Tracey I¹, Makin TR^{1,5,6}.

OBJECTIVE:

Phantom limb pain (PLP) is notoriously difficult to treat, partly due to an incomplete understanding of PLP-related disease mechanisms. Noninvasive brain stimulation (NIBS) is used to modulate plasticity in various neuropathological diseases, including chronic pain. Although NIBS can alleviate neuropathic pain (including PLP), both disease and treatment mechanisms remain tenuous. Insight into the mechanisms underlying both PLP and NIBS-induced PLP relief is needed for future implementation of such treatment and generalization to related conditions.

METHODS:

We used a within-participants, double-blind, and sham-controlled design to alleviate PLP via task-concurrent NIBS over the primary sensorimotor missing hand cortex (S1/M1). To specifically influence missing hand signal processing, amputees performed phantom hand movements during anodal transcranial direct current stimulation. Brain activity was monitored using neuroimaging during and after NIBS. PLP ratings were obtained throughout the week after stimulation.

RESULTS:

A single session of intervention NIBS significantly relieved PLP, with effects lasting at least 1 week. PLP relief associated with reduced activity in the S1/M1 missing hand cortex after stimulation. Critically, PLP relief and reduced S1/M1 activity correlated with preceding activity changes during stimulation in the mid- and posterior insula and secondary somatosensory cortex (S2).

INTERPRETATION:

The observed correlation between PLP relief and decreased S1/M1 activity confirms our previous findings linking PLP with increased S1/M1 activity. Our results further highlight the driving role of the mid- and posterior insula, as well as S2, in modulating PLP. Lastly, our novel PLP intervention using task-concurrent NIBS opens new avenues for developing treatment for PLP and related pain conditions. ANN NEUROL 2019;85:59-73.

Chronic pain and adverse childhood events

Pain Med. 2019 Mar 1;20(3):486-494. doi: 10.1093/pm/pny106.

Cumulative Childhood Adversity as a Risk Factor for Common Chronic Pain Conditions in Young Adults.

You DS¹, Albu S², Lisenbardt H¹, Meagher MW¹.

OBJECTIVE:

Multiple and specific types of childhood adverse events are risk factors for chronic pain conditions. Although both can covary, no study has evaluated one aspect while controlling for the other. Therefore, the current study examined whether more adverse events would be a risk factor for common chronic pain conditions and pain medication use in young adults after controlling for different adversity types such as physical, emotional, and sexual traumatic events or vice versa.

METHODS:

This cross-sectional study recruited 3,073 undergraduates (72% female, mean age = 18.8 years, SD = 1.4 years) who completed the survey for current health status and early life traumatic events.

RESULTS:

More adverse events were associated with a 1.2-1.3-fold increase in the odds of any chronic pain, chronic back pain, headache, and dysmenorrhea with adjusting for adversity types, but they were not associated with the risk of comorbid pain conditions and use of pain medications. In contrast, specific adversity types were unrelated to chronic pain conditions when controlling for the number of adverse events.

CONCLUSIONS:

Cumulative childhood adverse events may be a more relevant risk factor for chronic pain conditions than the experience of a specific type of adverse event. Clinicians and researchers need to evaluate cumulative childhood adversity when assessing its link to chronic pain.

62 A. NUTRITION/VITAMINS**Non-communicable disease risk****Lifetime risk and multimorbidity of non-communicable diseases and disease-free life expectancy in the general population: A population-based cohort study**

PLoS Medicine

Licher S, et al. | March 04, 2019

Using long-term data from a community-based, prospective cohort study, researchers quantified the occurrence and multimorbidity of non-communicable diseases (NCDs), leading causes of premature disability and death worldwide. According to findings, 9 out of 10 people aged 45 years and older develop an NCD in this Western European community during their remaining lifetime. Multiple NCDs are subsequently diagnosed with at least one-third of those individuals who develop an NCD. Compression of NCD morbidity was related to the absence of 3 common shared risk factors. These findings underline the importance of avoiding these common shared risk factors in reducing NCD's attributable premature morbidity and mortality.

Methods

- Investigators followed participants from the prospective Rotterdam Study aged 45 years and older who were free from NCDs at baseline for incident stroke, heart disease, diabetes, chronic respiratory disease, cancer, and neurodegenerative disease between July 6, 1989, and January 1, 2012.
- In a competing risk framework, they quantified occurrence/co-occurrence and remaining lifetime risk of any NCD.
- In addition, they studied the lifetime risk of any NCD, age at onset, and overall life expectancy for strata of 3 shared risk factors at baseline: smoking, hypertension, and overweight.

Results

- Out of a total of 9,061 participants (mean age 63.9 years, 60.1% women), 814 participants were diagnosed with stroke, 1,571 with heart disease, 625 with diabetes, 1,004 with chronic respiratory disease, 1,538 with cancer and 1,065 with neurodegenerative disease during 75,354 person-year follow-up years.
- With 1,563 participants (33.7% of those who developed any NCD) diagnosed with multiple diseases during follow-up, NCDs tended to co-occur substantially.
- From the age of 45, the lifetime risk of any NCD was 94.0% (95% CI 92.9% -95.1%) for men and 92.8% (95% CI 91.8% -93.8%) for women.
- Even for those without the 3 risk factors of smoking, hypertension, and overweight, these risks remained high (>90.0%).
- Absence of smoking, hypertension, and overweight was related to a 9.0-year delay (95% CI 6.3–11.6) in the age at onset of any NCD.
- In addition, participants without these risk factors had an overall life expectancy of 6.0 years (95% CI 5.2–6.8) longer than those with all 3 risk factors.
- Participants aged 45 years and older without the 3 smoking, hypertension, and baseline overweight risk factors spent 21.6% of their remaining lifespan with 1 or more NCDs, compared to 31.8% of their remaining lifespan for participants with all these baseline risk factors.
- This difference is a 2-year compression of NCD morbidity.
- This study's limitations include potential residual confounding, unmatched changes in risk factor profiles during follow - up, and potentially limited generalizability to various healthcare settings and non-European descent populations.